

DEVON/STATEN ISLAND, LLC

STATEN ISLAND, NEW YORK

Remedial Action Report

NYC BCP Number: 12CBCP032R

Prepared for:

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REMEDIAL ACTION REPORT

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LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
BLS	Below Land Surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAMP	Community Air Monitoring Plan
DER-10	NYSDEC Division of Environmental Remediation Technical Guidance Manual 10
EC	Engineering Control
ft ²	Square Feet
HASP	Health and Safety Plan
IC	Institutional Control
NYC VCP	New York City Voluntary Cleanup Program
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York City Department of Health and Mental Hygiene
NYC OER	New York City Office of Environmental Remediation
ORC	Oxygen Release Compound
PCE	Tetrachloroethene
PID	Photoionization Detector
PAHs	Polycyclic Aromatic Hydrocarbons
QA/QC	Quality Assurance/Quality Control
QEP	Qualified Environmental Professional
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan
RI	Remedial Investigation
SCG	Standards, Criteria and Guidance
SCO	Soil Cleanup Objective
SMMP	Soil/Materials Management Plan
SMP	Site Management Plan
SVOCs	Semivolatile Organic Compounds
TCE	Trichloroethane
TCLP	Toxicity Characteristic Leaching Potential

Acronym	Definition
µg/L	Micrograms per Liter
µg/m ³	Micrograms per Cubic Meter
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

CERTIFICATION

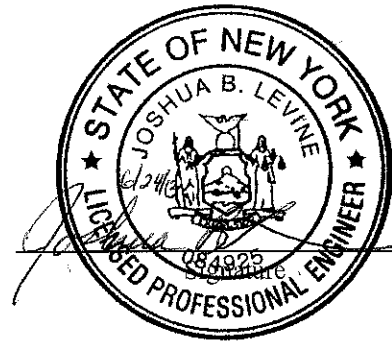
I, Joshua Levine, am currently a registered professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the Devon/Staten Island, LLC Site 12C BCP032R.

I certify that the OER-approved Remedial Action Work Plan dated March 2012 and Stipulations in a letter dated July 18, 2012 were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

Joshua B. Levine, P.E.

NYS Professional Engineer #084925

6/24/13
Date



EXECUTIVE SUMMARY

Site Location and Current Usage

The Site is located at 3131 Richmond Terrace in the Mariners Park section of Staten Island, New York and is identified as Block 1208 and Lot 10 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 78,000-square feet and is bounded by May Ship Repair (3075 Richmond Terrace) to the north, Richmond Terrace to the south, May Ship Repair to the east, and McAllister Towing & Transportation (3165 Richmond Terrace) to the west. A Site Plan is provided in Figure 2. Currently, the Site is used as a commercial self-storage facility and contains one 4-story warehouse building connected to one 2-story warehouse building. The buildings are connected by a common wall and comprise the majority (at least 70%) of the property. Concrete paved driveways, concrete pads and asphalt parking areas comprise the remainder of the Site. The building is designed for vehicular access and includes a heating ventilation and air conditioning (HVAC) system to meet high level air exchange requirements established in NYC building codes for buildings occupied by motor vehicles. In addition, a grass landscaped area was installed in front of the building during Site development in 2007 through 2010. All of tax lot 10 and former tax lot 9 compose the Site. The tax lots were merged into one lot identified as tax lot 10 in 2008.

Summary of Site Redevelopment History

The Site was redeveloped in 2007 – 2010 to construct the Devon Self Storage Facility. Site redevelopment consisted of renovation of one 2-story building (north building) and demolition of one pre-existing building (south building) and construction of a new 4-story self-storage warehouse in its place. In July 1, 2012, Devon Self Storage ceased operations as property manager for the property and the new property manager, Extra Space, commenced operations on the Site. Site ownership by Devon/Staten Island LLC has remained consistent throughout the property manager transfer. The Site is currently zoned as M3-1 for Occupancy Group B-1 – Moderate Hazard Storage per the New York City Building Code, Title 27, Subchapter 3. Both Devon's and Extra Space's client storage agreement do not allow for the storage of any hazardous materials on-site. The current and future use of the property as a self-storage warehouse is consistent with existing zoning for the property. The storage facility is used entirely for commercial purposes and contains a total floor area of 141,724 square feet (ft²) (sum of 105,480 ft² new 4-story warehouse and 36,244 ft² existing 2-story building).

The warehouse contains an indoor drive through access path for vehicular offloading, multiple climate controlled storage units, two elevator bays and a 1,200 ft² office area.

The redevelopment construction work included localized excavation to approximately five (5) feet below land surface (bls) for pile caps, supports and formwork and less than two (2) feet bls to build the south building slab. In addition, excavation was performed during the installation of the drainage system and other small utility installations associated with the building. The existing concrete slab floor remained intact for the north building and the south building slab was removed, processed through a crusher, and used as fill at the Site. A Site Summary Report documenting inspections of the soil handling and disposal was conducted by Professional Services Industries, Inc. (PSI) during redevelopment and was included with the Remedial Action Work Plan (RAWP).

During redevelopment, a total of 1,212.75 tons of excavated soil was transported to the Middlesex County Utilities Authority Landfill and used as landfill cover. Soil disposal and characterization documentation including non-hazardous waste manifests, facility disposal acceptance data, and soil stockpile analytical data is included in the Site Summary Report. Excavation was timed during the tidal cycles due to the relatively shallow depth to water (approximately 5 feet bls) and dewatering was not necessary. No visible signs of petroleum sheen or petroleum impacts were observed during the excavation. Stockpiled soil sampled for waste profiling indicated low level concentrations of diesel range organics and heavy metals were present with lead and mercury detected in excess of the Part 375 Unrestricted Use Soil Cleanup Objectives (SCO) yet at concentrations below the applicable Part 375 Restricted Commercial SCO. No exceedances of the Toxicity Characteristic Leachate Procedure (TCLP) metals were detected.

Summary of Environmental Findings

1. The elevation of the Site ranges from 3.8 to 7.5 feet above mean sea level.
2. Depth to groundwater ranges from 3.07 to 4.87 feet bls at the Site.
3. Groundwater flow is generally from the southwest to the northeast beneath the Site.
4. Depth to bedrock is reportedly 40 feet bls based upon driller correspondence, but was not encountered during the investigation at the Site.

5. The stratigraphy of the Site, from the surface down, consists of an approximately 10 foot thick fine to coarse sand and gravel fill layer underlain by an organic silty clay layer of undetermined thickness.
6. Soil/fill samples collected during the Remedial Investigation (RI) showed no volatile organic compounds (VOCs) that exceeded Track 2 Commercial SCOs in any of the 23 samples collected. Several samples were observed with VOC detections above Track 1 Unrestricted SCOs for benzene, carbon tetrachloride, cis-1,2 dichloroethene, acetone, and trichloroethene. These detections were all well below Track 2 Commercial SCOs. Other VOCs, including some benzene, toluene, ethylbenzene, and xylenes (collectively BTEX) and associated compounds were detected at low and trace levels and well below Track 1 Unrestricted SCOs. A variety of semivolatile organic compounds (SVOCs) were identified above Track 1 and Track 2 Commercial SCOs. All of these exceedances were polycyclic aromatic hydrocarbons (PAH) compounds. Three metals: barium, copper, and lead, exceeded Track 2 Commercial SCOs in soil samples collected at the Site. However, soil samples did not exceed TCLP limits for lead. Several metals exceeded Track 1 Unrestricted SCOs including selenium, zinc, cadmium, arsenic and mercury. In most of these cases Track 1 SCOs were exceeded in only one or two samples. No polychlorinated biphenyls (PCBs) or pesticides exceeded Track 2 Commercial SCOs. PCBs were detected in one sample slightly above the Track 1 Unrestricted SCO. One pesticide, 4,4-DDT was detected in four samples above Track 1 SCOs.
7. Groundwater samples collected during the RI showed no VOCs were detected in groundwater above 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Several VOCs were detected in groundwater at trace or low levels but below GQS. Trichloroethane (TCE) and tetrachloroethene (PCE) were not detected in groundwater samples collected during the 2011 sampling event. TCE was found at a trace concentration (1 microgram per liter [$\mu\text{g/L}$]) in one sample below GQS in the 2007 sampling event. No PCBs or pesticides were detected in groundwater. No SVOCs were detected in groundwater in the 2007 sampling event. Several SVOCs were detected at low concentrations in one sample in the 2011 sampling event. All of the compounds were high molecular weight PAH compounds and may be related to entrained particulates from fill material. Dissolved metals showed no exceedances of GQS with the exception of sodium and manganese. High sodium and manganese suggests the influence of saline intrusion.
8. Soil vapor samples collected during the RI contained a variety of low level findings for BTEX and associated petroleum compounds but generally concentrations were identified below 50 micrograms per cubic meter ($\mu\text{g/m}^3$). PCE was identified in most vapor samples at concentrations as high as $160 \mu\text{g/m}^3$. TCE was also identified in most samples collected at concentrations as high as $2,100 \mu\text{g/m}^3$. Chloroform, acetone, and carbon tetrachloride also exceeded $1,000 \mu\text{g/m}^3$ in one soil vapor sample. These findings generally correlate with VOCs identified in onsite soil samples that exceed Track 1 SCOs and suggest an onsite origin for these vapors. Most of the Site is covered with pavement or concrete building slab and buildup of vapor in the vadose zone below the Site is expected. These findings support the need for vapor mitigation in the remedial action for this property.

Summary of the Remedy

The following remedial actions were completed in this program:

1. Prepared a Community Protection Statement and implemented a Citizen Participation Plan. A fact sheet announcing start of remedial construction was issued on August 27, 2012.
2. Performed a Community Air Monitoring Program for particulates and volatile organic carbon compounds. Excavated soil/fill material was screened during intrusive work for indications of contamination by visual means, odor, and monitoring with a photo ionization detector (PID).
3. Site mobilization involving Site security setup, equipment mobilization, and marking & staking of proposed SSDS extraction points. A pre-construction meeting with all project personnel was conducted on February 6, 2013.
4. Performed all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
5. Established Track 4 Soil Cleanup Objectives (SCOs).
6. Excavated two suction pits, each pit 2-feet wide by 2-feet long by 18-inches deep.
7. Obtained post-excavation end point samples for chemical analysis.
8. Completed an engineered composite cover consisting of concrete and asphalt pavement and building slab to prevent human exposure to residual soil/fill remaining under the Site.
9. Replaced damaged vapor barrier in the suction pit areas by new vapor barrier manufactured by W. R. Meadows.
10. Installed an active sub-slab depressurization system (SSDS). This new SSDS was tested for operations on March 1, 2013.
11. Imported washed gravel materials from Tilcon, NY Inc. This gravel was used as backfill material in compliance with the RAWP and in accordance with applicable laws and regulations.
12. Transported 1,212.75 tons of excavated soil to the Middlesex County Utilities Authority Landfill and used as landfill cover for off Site in accordance with applicable laws and regulations for handling, transport, and disposal, and the RAWP. Sampling and analysis of excavated media was performed as required by disposal facilities.
13. Submitted a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, describes all Engineering and Institutional Controls to be implemented at the Site, and lists any changes from the RAWP.

14. Submitted an OER approved Site Management Plan (SMP) in the RAR for long-term management of residual historic fill contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
15. Recorded a Declaration of Covenants and Restrictions that includes a listing of Engineering Controls and a requirement that management of these controls must be in compliance with an approved SMP; and Institutional Controls including 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.

1.0 SITE BACKGROUND

Devon/Staten Island, LLC (Devon) has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 3131 Richmond Terrace in the Mariners Park section of Staten Island, New York. A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop a Remedial Action Work Plan (RAWP). A remedial action was performed pursuant to an OER-approved RAWP in a manner that has rendered the Site protective of public health and the environment consistent with the proposed use of the property. This Remedial Action Report (RAR) describes the remedial action performed under the RAWP. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 Site Location and Current Usage

The Site is located at 3131 Richmond Terrace in the Mariners Park section of Staten Island, New York and is identified as Block 1208 and Lot 10 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 78,000-square feet and is bounded by May Ship Repair (3075 Richmond Terrace) to the north, Richmond Terrace to the south, May Ship Repair to the east, and McAllister Towing & Transportation (3165 Richmond Terrace) to the west. A Site Plan is provided in Figure 2. Currently, the Site is used as a commercial self-storage facility and contains one 4-story warehouse connected to one 2-story warehouse building. The buildings are connected by a common wall and comprise the majority (at least 70%) of the property. Concrete paved driveways, concrete pads and asphalt parking areas comprise the remainder of the Site. The building is designed for vehicular access and includes a heating ventilation and air conditioning (HVAC) system to meet high level air exchange requirements established in NYC building codes for buildings occupied by motor vehicles. In addition, a grass landscaped area was installed in front of the building during Site development in 2007 through 2010. All of tax lot 10 and former tax lot 9 compose the Site. The tax lots were merged into one lot identified as tax lot 10 in 2008.

1.2 Summary of Site Redevelopment History

The Site was redeveloped from 2007 through 2010 to construct the Devon Self Storage Facility. Site redevelopment consisted of renovation of one 2-story building (north building) and demolition of one pre-existing building (south building) and construction of a new 4-story self-

storage warehouse in its place. In July 1, 2012, Devon Self Storage ceased operations as property manager for the property and the new property manager, Extra Space, commenced operations on the Site. Site ownership by Devon/Staten Island LLC has remained consistent throughout the property manager transfer. The Site is currently zoned as M3-1 for Occupancy Group B-1 – Moderate Hazard Storage per the New York City Building Code, Title 27, Subchapter 3. Both Devon's and Extra Space's client storage agreement do not allow for the storage of any hazardous materials on-site. The current and future use of the property as a self-storage warehouse is consistent with existing zoning for the property. The storage facility is used entirely for commercial purposes and contains a total floor area of 141,724 square feet (ft²) (sum of 105,480 ft² new 4-story warehouse and 36,244 ft² existing 2-story building).

The warehouse contains an indoor drive through access path for vehicular offloading, multiple climate controlled storage units, two elevator bays and a 1,200 ft² office area.

The redevelopment construction work included localized excavation to approximately five (5) feet below land surface (bls) for pile caps, supports and formwork and less than two (2) feet bls to build the south building slab. In addition, excavation was performed during the installation of the drainage system and other small utility installations associated with the building. The existing concrete slab floor remained intact for the north building and the south building slab was removed, processed through a crusher, and used as fill at the Site. A Site Summary Report documenting inspections of the soil handling and disposal was conducted by Professional Services Industries, Inc. (PSI) during redevelopment and was included in the RAWP.

During redevelopment, a total of 1,212.75 tons of excavated soil was transported to the Middlesex County Utilities Authority Landfill and used as landfill cover. Soil disposal and characterization documentation including non-hazardous waste manifests, facility disposal acceptance data, and soil stockpile analytical data is included in the Site Summary Report. Excavation was timed during the tidal cycles due to the relatively shallow depth to water (approximately 5 feet bls) and dewatering was not necessary. No visible signs of petroleum sheen or petroleum impacts were observed during the excavation. Stockpiled soil sampled for waste profiling indicated low level concentrations of diesel range organics and heavy metals were present with lead and mercury detected in excess of the Part 375 Unrestricted Use Soil Cleanup Objectives (SCOs) yet at

concentrations below the applicable Part 375 Restricted Commercial SCOs. No exceedances of the Toxicity Characteristic Leachate Procedure (TCLP) metals were detected.

1.3 Description of Surrounding Property

The Site is located in a mixed use area with industrial, residential, and commercial neighbors bordering the Site. Historically, ship building and maintenance were performed on the Site and on the surrounding properties to the north, west and east. Currently, residential housing is located across the street on the south side of Richmond Terrace. Industrial and commercial land uses border the property on all three sides north of Richmond Terrace. McAllister Towing & Transportation, a maritime barge and tugboat company, is located directly to the west of the Site. Richmond Industrial composes several lots located to the north and east of the Site. North and east of the Richmond Industrial property is the Kill Van Kull/Newark Bay that separates Staten Island from New Jersey. A pier extending into Newark Bay is approximately 100 feet east of the Site. Directly east of the Site is a building owned by JT&JG realty that is leased to a commercial coffee roasting business, Unique Coffee Roasters.

Sensitive receptors include the downgradient Newark Bay and upgradient residential properties located south of Richmond Terrace. No known schools, hospitals or day care centers are within 500 feet of the Site. A day care center, Fellowship Learning Center, is located approximately 700 feet upgradient of the Site on the southeast corner of Richmond Terrace and Lockman Avenue (3036 Richmond Terrace).

Figure 3 shows the surrounding land usage.

1.4 Remedial Investigation

A remedial investigation was performed and the results are documented in a companion document called “*Remedial Investigation Report, Devon/Staten Island LLC*,” dated March 2012 (RIR).

Summary of Past Uses of Site and Areas of Concern

Past Site uses included historic ship building and maintenance operations from owners including Staten Island Shipbuilding Co., United Shipyards, Inc., and Bethlehem Steel. These owners were listed in Sanborn maps dating from 1917 through 1962. Following the 1960’s various users

occupied the premises and prior to site redevelopment in 2007, the property was used for chair manufacturing (e.g., injection foam molding, metal fabrication, and chair assembly).

Past usage of the property and the likely presence of historic fill constitute the Areas of Concern (AOC) for this property.

Summary of the Work Performed under the Remedial Investigation

Devon/Staten Island LLC performed the following scope of work:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e., structures, buildings, etc.);
2. Installed eight soil borings across the entire project Site, and collected nine soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed four groundwater monitoring wells throughout the Site to establish groundwater flow and collected five groundwater samples for chemical analysis to evaluate groundwater quality;
4. Installed six soil vapor probes around Site perimeter and collected six soil vapor samples and one indoor air sample for chemical analysis.

Summary of Environmental Findings

1. Elevation of the property ranges from 3.8 to 7.5 feet above mean seal level.
2. Depth to groundwater ranges from 3.07 to 4.87 feet bls at the Site.
3. Groundwater flow is generally from the southwest to the northeast beneath the Site towards Newark Bay.
4. Depth to bedrock is reportedly 40 feet bls based upon driller correspondence, but was not encountered during the investigation at the Site.
5. The stratigraphy of the Site, from the surface down, consists of an approximately 10 foot thick fine to coarse sand and gravel fill layer underlain by an organic silty clay layer of undetermined thickness.
6. Soil/fill samples collected during the RI showed no VOCs that exceeded Track 2 Commercial SCOs in any of the 23 samples collected. Several samples were observed with VOC detections above Track 1 Unrestricted SCOs for benzene, carbon tetrachloride, cis-1,2 dichloroethene, acetone and trichloroethene. These detections were all well below Track 2 Commercial SCOs. Other VOCs including some petroleum (i.e., benzene, toluene, ethylbenzene, and xylenes (collectively BTEX) associated compounds were detected at low and trace levels and well below Track 1 Unrestricted SCOs. A variety of

SVOCs were identified above Track 1 and Track 2 Commercial SCOs. All of these exceedances were PAH compounds. Three metals: barium, copper and lead, exceeded Track 2 Commercial SCOs in soil samples collected at the Site. However, soil samples did not exceed TCLP limits for lead. Several metals exceeded Track 1 Unrestricted SCOs including selenium, zinc, cadmium, arsenic and mercury. In most of these cases Track 1 SCOs were exceeded in only one or two samples. No PCBs or pesticides exceeded Track 2 Commercial SCOs. PCBs were detected in one sample slightly above the Track 1 Unrestricted SCO. One pesticide, 4,4-DDT was detected in four samples above Track 1 SCOs.

7. Groundwater samples collected during the RI showed no VOCs were detected in groundwater above 6NYCRR Part 703.5 Class GA GQS. Several VOCs were detected in groundwater at trace or low levels but below GQS. TCE and PCE were not detected in groundwater samples collected during the 2011 sampling event. TCE was found at a trace concentration (1µg/L) in one sample below GQS in the 2007 sampling event. No PCBs or pesticides were detected in groundwater. No SVOCs were detected in groundwater in the 2007 sampling event. Several SVOCs were detected at low concentrations in one sample in the 2011 sampling event. All of the compounds were high molecular weight PAH compounds and may be related to entrained particulates from fill material. Dissolved metals showed no exceedance of GQS with the exception of sodium and manganese. High sodium suggests the influence of saline intrusion.
8. Soil vapor samples collected during the RI contained a variety of low level findings for BTEX and associated petroleum compounds but generally concentrations were identified below 50 µg/m³. PCE was identified in most vapor samples at concentrations as high as 160 µg/m³. TCE was also identified in most samples collected and had a high concentration of 2,100 µg/m³. Chloroform, acetone and carbon tetrachloride also exceeded 1,000 µg/m³ in at least one soil vapor sample. These findings generally correlate with VOCs identified in onsite soil samples that exceed Track 1 SCOs and suggest an onsite origin for these vapors. Most of the Site is covered with pavement or concrete building slab and buildup of vapor in the vadose zone below the Site is expected. These findings support the need for vapor mitigation in the remedial action for this property.

For more detailed results, consult the RIR. Based on an evaluation of the data and information presented in the RIR and the RAWP, disposal of significant amounts of hazardous waste is not suspected at this Site.

2.0 DESCRIPTION OF REMEDIAL ACTIONS

The factors considered during the selection of the remedial action included protection of human health, protection of 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, land use, and sustainability of the remedial action. The Site was remediated in accordance with the scope of work presented in an OER-approved RAWP dated March 2012 and the stipulations as noted in a July 18, 2012 Stipulation Letter. All deviations from the RAWP are noted below.

The following remedial actions were completed in this program:

1. Prepared a Community Protection Statement and implemented a Citizen Participation Plan. A fact sheet announcing start of remedial construction was issued on August 27, 2012.
2. Performed a Community Air Monitoring Program for particulates and volatile organic carbon compounds. Excavated soil/fill material was screened during intrusive work for indications of contamination by visual means, odor, and monitoring with a photo ionization detector (PID).
3. Site mobilization involving Site security setup, equipment mobilization, and marking & staking of proposed SSDS extraction points. A pre-construction meeting with all project personnel was conducted on February 6, 2013.
4. Performed all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
5. Established Track 4 Soil Cleanup Objectives (SCOs).
6. Excavated two suction pits, each pit 2 feet wide by 2 feet long by 18 inches deep.
7. Obtained post-excavation end point samples for chemical analysis.
8. Completed an engineered composite cover consisting of concrete and asphalt pavement and building slab to prevent human exposure to residual soil/fill remaining under the Site.
9. Replaced damaged vapor barrier in the suction pit areas by new vapor barrier manufactured by W. R. Meadows.
10. Installed an active sub-slab depressurization system (SSDS). This new SSDS was tested for operations on March 1, 2013.

11. Imported washed gravel materials from Tilcon, NY Inc. This gravel was used as backfill material in compliance with the RAWP and in accordance with applicable laws and regulations.
12. Transported 1,212.75 tons of excavated soil to the Middlesex County Utilities Authority Landfill and used as landfill cover for off Site in accordance with applicable laws and regulations for handling, transport, and disposal, and the RAWP. Sampling and analysis of excavated media was performed as required by disposal facilities.
13. Submitted a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, describes all Engineering and Institutional Controls to be implemented at the Site, and lists any changes from the RAWP.
14. Submitted an OER approved Site Management Plan (SMP) in the RAR for long-term management of residual historic fill contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
15. Recorded a Declaration of Covenants and Restrictions that includes a listing of Engineering Controls and a requirement that management of these controls must be in compliance with an approved SMP; and Institutional Controls including 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.

3.0 COMPLIANCE WITH REMEDIAL ACTION WORK PLAN

3.1 Health and Safety Plan (HASP)

The remedial construction activities performed under this program were in compliance with the Health and Safety Plan and applicable laws and regulations. The Site Safety Coordinator was Christina Prete.

3.2 Community Air Monitoring Plan

Intrusive work performed under this program was limited to two small excavations for the installation of suction pits associated with the SSDS. Both suction pits are located in the floor of the office space of the south building. Since both excavations were located indoors, community air monitoring at the site perimeter was not required by OER. Localized screening of the excavated soils with a photoionization detector was performed.

3.3 Soil/Materials Management Plan

The Soil/Materials Management Plan (SMMP) in the RAWP provided detailed plans for managing all soils/materials that were disturbed at the Site, including excavation, handling, storage, transport, and disposal. It also included a series of controls to assure effective, nuisance free remedial activity in compliance with applicable laws and regulations. Remedial construction activities performed under this program were in full compliance with the SMMP in the approved RAWP.

3.4 Storm-Water Pollution Prevention

Intrusive work performed under this program was limited to two small excavations for the installation of suction pits associated with the SSDS. Both suction pits are located in the floor of the office space of the south building. Since both excavations were located indoors, storm water pollution prevention was not required by OER.

3.5 Deviations from the Remedial Action Work Plan

Intrusive work performed under this program was limited to two small excavations for the installation of suction pits associated with the SSDS. Both suction pits are located in the floor of the office space of the south building. Since both excavations were located indoors, community

air monitoring at the site perimeter was not required by OER. Localized screening of the excavated soils with a photoionization detector was performed.

The location of one SSDS suction pit, SP-1, was modified, with prior OER consent, approximately 3 feet from the main vestibule client entry space to the office space directly beyond the main vestibule client entry space's rear wall. SP-1 was relocated approximately 3 feet on the other side of this wall to avoid damaging granite floor tile and prevent vertical suction piping installation in the main vestibule client entry space. This suction pit relocation had no effect on the system's functionality as evidenced by the startup testing results.

4.0 REMEDIAL PROGRAM

4.1 Project Organization

Principal personnel who participated in the remedial action include Joshua B. Levine, Principal Engineer and Christina Prete, Staff Engineer. The Professional Engineer (PE) for this project is Joshua Levine. The Remedial Contractor that installed the SSDS was Metro Environmental Contracting Corp. of Lindenhurst, New York.

4.2 Site Controls

Site Preparation

Mobilization was conducted as necessary for each phase of work at the Site. Mobilization included field personnel orientation, equipment mobilization (including securing all sampling equipment needed for the field investigation), marking/staking sampling locations and utility mark-outs. Each field team member attended an orientation meeting to become familiar with the general operation of the Site, health and safety requirements, and field procedures.

A pre-construction meeting was held with all contractors on February 6, 2013. An OER Project Notice was erected at the project entrance and in place during all phases of the Remedial Action.

Utility Marker Layouts, Easement Layouts

Proper safety and protective measures pertaining to utilities and easements, and compliance with all laws and regulations were employed during invasive and other work completed under the RAWP. The integrity and safety of on-Site and off-Site structures was maintained during all invasive work including excavation.

Equipment and Material Staging

Equipment and materials were stored and staged in a manner that complies with applicable laws and regulations.

Soil Screening

Excavated soils associated with the installation of the two suction pits were screened for impacts using visual, olfactory and PID observations. Impacted soils were not observed and no PID detections were identified during excavation soil screening.

Stockpile Management

In order to prevent stockpiling, excavated soils were transferred directly to 55-gallon drums located on poly-sheeting next to the excavation. No soil stockpiles were generated during the Remedial Action.

Site Security

Site access was controlled by Devon/Staten Island, LLC through keypad access to the storage facility. All construction activities were performed inside the building. The work areas were delineated and access was restricted with barrier tape and cones.

Reporting

Daily reports providing a general summary of activities for each day of *intrusive remedial work* were emailed to the OER Project Manager by the end of the following day. Those reports included:

- Project number and statement of the activities and an update of progress made and locations of work performed;
- Quantities of material imported and exported from the Site;
- Status of on-Site soil/fill stockpiles;
- A summary of all citizen complaints, with relevant details (basis of complaint; actions taken; etc.), if any;
- Photographs of notable Site conditions and activities.

Daily reports are included as Appendix A. Digital photographs of the remedial action are included in Appendix B.

4.3 Materials Excavation and Removal

Construction of suction pits one and two associated with the SSDS were performed on February 6 and 7, 2013. Construction of the suction pits entailed removing the concrete slab and excavating each pit 2-feet wide by 2-feet long by 18-inches deep. The excavated soils were directly transferred to 55-gallon drums and temporarily stored onsite pending offsite transportation for proper disposal. In total, four 55-gallon drums of nonhazardous waste soil were generated during construction of the suction pits.

A map showing the location where excavations were performed is shown in Plate 1.

End Point Sample Results

No end point samples were collected.

4.4 Materials Disposal

A composite sample was collected from the excavated soils associated with the suction pits for waste characterization purposes. Analytical results indicated that the soils can be classified as non-hazardous.

The tonnage and destination of material removed and disposed off Site is presented below:

Destination	Type of Material	Quantity
Republic Environmental Systems (PA), Inc.	Nonhazardous Soil	4 Drums (1.5 tons estimated)

Letters from Roux Associates to the disposal facility providing materials type, source and data, and acceptance letters from disposal facility stating it is approved to accept above materials are attached in Appendix C. The drum disposal waste manifest is included in Appendix D. The table above shows the total quantities of each class of material removed from the Site and the disposal locations.

4.5 Backfill Import

The two suction pits were both backfilled with washed gravel supplied by Tilcon, NY Inc. (Tilcon) from their West Nyack facility. Tilcon provided a letter that certified the material was 100% virgin Traprock (Diabase) that is quarried and processed to finished sizes and is clean and free from contamination.

A copy of the Tilcon certification letter is included in Appendix E. A map showing backfill placement locations at the Site is shown on Plate 1.

5.0 ENGINEERING CONTROLS

Engineering Controls were employed in the remedial action to address residual contamination remaining at the Site. The Site has three primary Engineering Control Systems. These are:

- (1) composite cover system consisting of asphalt covered roads, concrete covered sidewalks, and concrete building slabs;
- (2) soil vapor barrier; and
- (3) sub-slab depressurization system (SSDS).

Composite Cover System

Exposure to residual soil/fill is prevented by the existing composite cover system on Site. This composite cover system is comprised of:

- asphalt covered roads/parking;
- concrete covered sidewalks/driveway; and
- concrete building slabs.

Figure 4 shows the location of each cover type built at the Site.

The composite cover system is a permanent engineering control for the Site. The system will be inspected and reported at specified intervals as required by the RAWP and the SMP. A Soil Management Plan will be included in the Site Management Plan and will outline the procedures to be followed in the event that the composite cover system and underlying residual soil/fill is disturbed after the remedial action is complete. Maintenance of this composite cover system is described in the Site Management Plan in (Section 7.0).

Vapor Barrier

Migration of soil vapor is accomplished with a combination of building slab and vapor barrier. A vapor barrier was installed during construction of the south warehouse building in 2007. Construction details depicting the vapor barrier were not provided in the development design drawings, but the vapor barrier was confirmed in 2011 by Roux Associates during the RI and in March 6 and 7, 2013 during installation of the SSDS suction pits. The existing yellow vapor barrier with red tape shown in the photos provided in Appendix B is consistent with Stego Wrap, a standard vapor barrier that comes in 10 mil and 15 mil thicknesses.

A new 10-mil vapor barrier, Perminator by W.R. Meadows, was placed overlapping the existing vapor barrier and taped prior to restoration of the concrete slab in each suction pit. The product specification for the new vapor barrier is provided in Appendix F.

Sub-slab Depressurization System

Migration of soil vapor is mitigated with the construction of an active SSDS. The purpose of the SSDS is to mitigate the elevated concentrations of contamination within the soil gas beneath the building and minimize exposure risk to the workers within the building.

The following describes the layout details of the SSDS:

- The SSDS is comprised of two suction pits (SP-1 and SP-2) spaced approximately 20 feet apart and located under the office space, which is the only occupied area in the building (Plate 1).
- The suction pits are 2-feet by 2-feet by 18-inches deep gravel pits installed just below the concrete slab as detailed in Plate 1.
- A 4-inch diameter Schedule 80 polyvinyl chloride (PVC) pipe was installed within the gravel suction pit terminating with a tee connected to slotted PVC screen (Plate 1).
- Each suction pit's extraction pipe runs vertically from the suction pit slab penetration to the first floor ceiling where the individual vertical pipes are manifolded together to a common horizontal header pipe mounted to the ceiling's structural steel support system. The common horizontal header pipe penetrates the warehouse building exterior sidewall and runs to the SSDS equipment area shown in Plate 1.
- A vapor extraction blower equipped with a control panel, vacuum gauge, flow meter, vapor sampling port and effluent discharge stack was installed in the SSDS equipment area.

On March 1, 2013, System testing and effluent air monitoring was performed at SSDS startup to confirm operation. Vacuum and flow levels were recorded and an effluent air sample was collected and analyzed for TO-15 list VOCs.

Flow readings were collected at both the influent and effluent side of the blower (indicated by pressure and vacuum gauges) and ranged from 90- 95cubic feet per minute (cfm) corresponding to an influent and effluent discharge pressure of 5 inches of water column.

Vacuum measurements were taken at soil vapor monitoring points SV-1 and SV-2, which are located 10 feet and 60 feet away from suction pit SP-2 respectively. Vacuum readings were 0.108 inches of water at SV-1 and 0.073 inches of water at SV-2.

6.0 INSTITUTIONAL CONTROLS

A series of Institutional Controls are required under this Remedial Action to implement, maintain and monitor Engineering Controls and prevent future exposure to residual contamination by controlling disturbances of the subsurface soil. Adherence to these Institutional Controls is required under the Declaration of Covenants and Restrictions recorded with the deed for this property and will be implemented under the Site Management Plan included in this RAR. These Institutional Controls for the Site are:

- (1) Recording of an OER-approved Declaration of Covenant and Restrictions (DCR) with the City Register or county clerk as appropriate. The DRAFT DCR is included as Appendix J. DCR includes a description of all ECs and ICs, including items (2) through (6) below, summarizes the requirements of the Site Management Plan, and will note that the property owner and property owner's successors and assigns must comply with the approved SMP;
- (2) Submittal of a Site Management Plan in this RAR that provides procedures for appropriate operation, maintenance, monitoring, inspection, reporting, and certification of ECs. The SMP is included as Section 7.0, requires that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; 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. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted annually and will comply with RCNY §43-1407(1)(3).
- (3) Vegetable gardens and farming on the Site are prohibited;
- (4) Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;
- (5) All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP;
- (6) The Site will be used for commercial use and will not be used for a higher level of use without prior approval by OER.

7.0 SITE MANAGEMENT PLAN

Site management is the last phase of the remedial process and begins after the approval of the Remedial Action Report (RAR) and issuance of the Notice of Completion (NOC) by OER. It is the responsibility of the property owner to ensure that all Site management responsibilities are performed. The penalty for failure to implement the SMP includes revocation of the Notice of Completion and all associated certifications and liability protections.

Engineering Controls (ECs) and Institutional Controls (ICs) have been incorporated into this remediation to ensure that the Site remains protective of public health and the environment. EC's provide physical protective measures. ICs provide restrictions on Site usage and provide operation, maintenance, monitoring and reporting measures. A Site-specific Declaration of Covenants and Restrictions has been recorded to memorialize these ECs and ICs. This SMP includes all methods necessary to ensure compliance with ECs and ICs required for the property.

The SMP provides a detailed description of procedures required to manage residual material at the Site following the completion of remedial construction in accordance with the NYC Brownfield Cleanup Agreement with OER. This includes: (1) implementation of Engineering and Institutional Controls; (2) operation and maintenance of Engineering Controls (3) periodic inspections and (4) certification of Engineering Controls and Institutional Controls.

Site inspection and EC/IC certification will be performed in the third year and every third year thereafter.

ENGINEERING AND INSTITUTIONAL CONTROLS

Engineering Controls

Engineering Controls are employed in the remedial action to address residual materials remaining at the site. The Site has three Engineering Controls. These are:

- composite cover system consisting of asphalt covered roads, concrete covered sidewalks, and concrete building slabs;
- soil vapor barrier; and
- sub-slab depressurization system.

Composite Cover System

The composite cover system is a permanent engineering control for the Site. The system will be inspected and its performance certified at specified intervals defined in this SMP. A Soil/Materials Management Plan is included in this Site Management Plan to outline the procedures to be followed in the event that the composite cover system and underlying residual soil/material must be disturbed after the remedial action is complete.

Vapor Barrier

Migration of soil vapor is mitigated with a combination of building slab and vapor barrier. The vapor barrier is a permanent engineering control for the Site underlying the concrete slab. The concrete slab will be inspected at specific intervals defined in this SMP. Any visible damage to the concrete slab that could indicate damage to the underlying vapor barrier will be inspected at specific intervals as required by this SMP.

Sub-Slab Depressurization System (SSDS)

Migration of soil vapor is mitigated with the construction of an active sub-slab depressurization system. Sub-slab depressurization is a permanent engineering control for the site. The system will be inspected and its performance certified at specific intervals as required by this SMP.

The SSDS will be operated and maintained as prescribed below.

System Operation: Routine Operation Procedures

When properly piped, fitted and applied, little maintenance is required. The blower is equipped with sealed bearings that require no maintenance.

The moisture separator has been designed to require minimal maintenance. During normal operation a layer of sludge may build up on the bottom of the separator. As necessary, the top assembly of the separator should be removed and the inside cleaned out with water. Keeping the inside clean will prevent the valve from being clogged with sediment. The relief valve should be inspected upon emptying the separator and readjusted upon restart.

- Manufacturers' specifications, recommendations, troubleshooting guides, and operation and maintenance schedules are included in Appendix I.

Institutional Controls

A series of Institutional Controls are employed in the remedial action of this property. Institutional Controls are intended to: 1) operate, maintain, inspect and certify Engineering Controls and Institutional Controls; 2) prevent future exposure to residual soil/materials by controlling disturbances in the subsurface; and, 3) restrict higher uses of the property than those addressed by the remedy. The following Institutional Controls apply to this property:

- (1) Recording of an OER-approved Declaration of Covenant and Restrictions (DCR) with the City Register or county clerk as appropriate. The DCR is included as Appendix J. DCR includes a description of all ECs and ICs, including items (2) through (6) below, summarizes the requirements of the Site Management Plan, and will note that the property owner and property owner's successors and assigns must comply with the approved SMP;
- (2) Submittal of a Site Management Plan that provides procedures for appropriate operation, maintenance, monitoring, inspection, reporting, and certification of ECs. The SMP requires that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; 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. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at the end of the third years and every three years thereafter.
- (3) Vegetable gardens and farming on the Site are prohibited;
- (4) Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;
- (5) All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP;
- (6) The Site will be used for commercial use and will not be used for a higher level of use without prior approval by OER.

Engineering Controls and Institutional Controls will be inspected and their performance certified at a frequency and in a manner defined in this SMP. A Declaration of Covenants and Restrictions or Environmental Designation has been recorded that provides notice of obligations for site management.

INSPECTIONS

Inspection of IC/EC's will be conducted in the third year and every three years thereafter. The inspections will evaluate the following:

- Whether Engineering Controls continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- If compliance with this SMP has been maintained;
- If remedial performance criteria continues to be achieved;
- If site records are complete and up to date; and
- Whether changes are needed to the remedial systems;
- If compliance with institutional controls has been maintained; and
- General Site conditions at the time of inspection.

If an emergency, such as a natural disaster or an unforeseen failure of any of the engineering controls occurs, an inspection of the Site will be conducted by a qualified environmental professional.

Engineering Control Inspection

The engineering control inspections will include the following:

- Composite Cover
 - The composite cover will be inspected to confirm that interior concrete building slabs and exterior concrete and asphalt parking and driveways are continuous and do not show signs of removal/replacement.
- Vapor Barrier
 - The Vapor barrier underlying the interior concrete slab is inaccessible since it is beneath the slab. Therefore, an inspection of the interior building concrete slab will be performed to check for cracking or patchwork that could indicate damage to the slab. Any new signs of disturbance to the slab and potential damage to the underlying vapor barrier will be identified in the inspection.
- SSDS
 - The SSDS will be inspected for system operation. Items to be noted during inspection include:
 - ♦ Condition of interior and exterior piping;

- ◆ Condition of floor in vicinity of suction pits 1 and 2;
- ◆ Water levels in moisture separator (drain as necessary);
- ◆ Dilution inlet filter screen (remove and clean or replace as necessary);
- ◆ Influent and Effluent blower discharge pressure (for assessing flow);
- ◆ Dilution valve status (confirm dilution valve is closed to maximize flow from under slab as practical to avoid water intake);
- ◆ Record vacuum readings at vapor monitoring points SV-1 and SV-2;
- ◆ Collect annual vapor effluent sample via Summa Canister as necessary.

Inspection Reporting

Inspection results will be reported to OER in a letter report. The letter report will include, at a minimum:

- Date of inspection;
- Personnel conducting inspection;
- Description of the inspection activities performed;
- Any observations, conclusions, or recommendations;
- Copy of inspection forms;
- Certification of Engineering Controls and Institutional Controls, as discussed below.

Inspection letter reports will be submitted in digital format.

Certifications

Site inspections will take place as outlined above. Certification of all institutional controls and engineering controls will be performed in conjunction with Site inspection and will be submitted to OER by March 31 of the year following the inspection. A qualified environmental professional will perform inspection and certification.

The Certification will certify whether:

- On-site engineering and institutional controls are unchanged from the previous certification;

- On-site engineering and institutional controls remain in place and effective;
- On-site engineering and institutional controls are performing as designed;
- Anything has occurred that would impair the ability of the controls to protect public health and the environment; and
- Site usage is compliant with the Declaration of Covenants and Restrictions.

The signed certification will be included in the inspection letter report.

NOTIFICATIONS

Notifications are to be submitted by the property owner to OER as described below:

- 60-day advance notice of any proposed changes in Site use to Residential that is not contemplated is the Remedial Action.
- Notice within 10 days of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls in place at the Site.

8.0 SOIL/MATERIALS MANAGEMENT PLAN

Any future intrusive work that will disturb any residual soil/materials beneath the property, including modifications or repairs to the existing composite cover system, will be performed in compliance with this Soil/Materials Management Plan (SMMP). Intrusive work will also be conducted in accordance with the procedures defined in the Community Air Monitoring Plan (CAMP) included in this plan and a Health and Safety Plan (HASP). The HASP is the responsibility of the property owner and should be in compliance with NYSDEC DER-10 Technical Guide and 29 CFR 1910 and 1926, and all other applicable Federal, State and City regulations. Intrusive construction work should be compliant with this SMMP and described in the next inspection letter report.

8.1 Soil/Materials Management Plan

8.1.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed under the supervision of a Qualified Environmental Professional and is reported in the RAR. Soil screening will be performed during invasive work performed during the remedy and development phases prior to issuance of the Notice of Completion.

8.1.2 Stockpile Methods

Excavated soil from suspected areas of contamination (e.g., hot spots, USTs, drains, etc.) will be stockpiled separately and will be segregated from clean soil and construction materials. Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. Excavated soils will be stockpiled on, at minimum, double layers of 8-mil minimum sheeting, will be kept covered at all times with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced.

All stockpile activities will be compliant with applicable laws and regulations. Soil stockpile areas will be appropriately graded to control run-off in accordance with applicable laws and regulations. Stockpiles of excavated soils and other materials shall be located at least of 50 feet from the property boundaries, where possible. Hay bales or equivalent will surround soil

stockpiles except for areas where access by equipment is required. Silt fencing and hay bales will be used as needed near catch basins, surface waters and other discharge points.

8.1.3 Characterization of Excavated Materials

Soil/fill or other excavated media that is transported off Site for disposal will be sampled in a manner required by the receiving facility, and in compliance with applicable laws and regulations. Soils proposed for reuse on-Site will be managed as defined in this plan.

8.1.4 Materials Excavation, Load-Out and Departure

The PE/QEP overseeing the remedial action will:

- oversee remedial work and the excavation and load-out of excavated material;
- ensure that there is a party responsible for the safe execution of invasive and other work performed under this work plan;
- ensure that Site development activities and development-related grading cuts will not interfere with, or otherwise impair or compromise the remedial activities proposed in this RAWP;
- ensure that the presence of utilities and easements on the Site has been investigated and that any identified risks from work proposed under this plan are properly addressed by appropriate parties;
- ensure that all loaded outbound trucks are inspected and cleaned if necessary before leaving the Site;
- ensure that all egress points for truck and equipment transport from the Site will be kept clean of Site-derived materials during Site remediation.

Locations where vehicles exit the Site shall be inspected daily for evidence of soil tracking off premises. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

Open and uncontrolled mechanical processing of historical fill and contaminated soil on Site will not be performed without prior OER approval.

8.1.5 Off-Site Materials Transport

Loaded vehicles leaving the Site will comply with all applicable materials transportation requirements (including appropriate covering, manifests, and placards) in accordance with applicable laws and regulations, including use of licensed haulers in accordance with 6 NYCRR Part 364. If loads contain wet material capable of causing leakage from trucks, truck liners will be used. Queuing of trucks will be performed on-Site, when possible in order to minimize off-Site disturbance. Off-Site queuing will be minimized.

Outbound truck transport routes will proceed west 0.2 miles on Richmond Terrace, south 1.4 miles on South Avenue and then merge on to Route 278. This routing takes into account the following factors: (a) limiting transport through residential areas and past sensitive sites; (b) use of mapped truck routes; (c) minimizing 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. To the extent possible, all trucks loaded with Site materials will travel from the Site using these truck routes. Trucks will not stop or idle in the neighborhood after leaving the project Site.

8.1.6 Materials Disposal Off Site

The following documentation will be established and reported by the PE/QEP for each disposal destination used in this project to document that the disposal of regulated material exported from the Site conforms with applicable laws and regulations: (1) a letter from the PE/QEP or Enrollee to each disposal facility describing the material to be disposed and requesting written acceptance of the material. This letter will state that material to be disposed is regulated material generated at an environmental remediation Site in Staten Island, New York under a governmental remediation program. The letter will provide the project identity and the name and phone number of the PE/QEP or Enrollee. The letter will include as an attachment a summary of all chemical data for the material being transported; and (2) a letter from each disposal facility stating it is in receipt of the correspondence (1, above) and is approved to accept the material. These documents will be included in the RAR.

The Remedial Action Report will include an itemized account of the destination of all material removed from the Site during this remedial action. Documentation associated with disposal of all

material will include records and approvals for receipt of the material. This information will be presented in the RAR.

All impacted soil/fill or other waste excavated and removed from the Site will be managed as regulated material and will be disposed in accordance with applicable laws and regulations. Historic fill and contaminated soils taken off Site will be handled as solid waste and will not be disposed at a Part 360-16 Registration Facility (also known as a Soil Recycling Facility).

Waste characterization will be performed for off-Site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results, and QA/QC will be reported in the RAR. A manifest system for off-Site transportation of exported materials will be employed. Manifest information will be reported in the RAR. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

8.1.7 Import of Backfill Soil from Off-Site Sources

This Section presents the requirements for imported fill materials to be used below the cover layer and within the clean soil cover layer. All imported soils will meet OER-approved backfill and cover soil quality objectives for this Site. The backfill and cover soil quality objectives are listed in Table 1.

A process will be established to evaluate sources of backfill and cover soil to be imported to the Site, and will include an examination of source location, current and historical use(s), and any applicable documentation. Material from industrial sites, spill sites, environmental remediation sites or other potentially contaminated sites will not be imported to the Site.

The following potential sources may be used pending attainment of backfill and cover soil quality objectives:

- Clean soil from construction projects at non-industrial sites in compliance with applicable laws and regulations;
- Clean soil from roadway or other transportation-related projects in compliance with applicable laws and regulations;

- Clean recycled concrete aggregate (RCA) from facilities permitted or registered by the regulations of NYS DEC.

All materials received for import to the Site will be approved by a PE/QEP and will be in compliance with provisions in this RAWP. The RAR will report the source of the fill and a Site map indicating the locations where backfill or soil cover was placed.

Source Screening and Testing

Inspection of imported fill material will include visual, olfactory and PID screening for evidence of contamination. Materials imported to the Site will be subject to inspection, as follows:

- Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;
- The PE/QEP is responsible to ensure that every truck load of imported material is inspected for evidence of contamination; and
- Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables or foreign matter.

Composite samples of imported material will be taken at a minimum frequency of one sample for every 500 cubic yards of material. Once it is determined that the fill material meets imported backfill or cover soil chemical requirements and is non-hazardous, and lacks petroleum contamination, the material will be loaded onto trucks for delivery to the Site.

RCA will be imported from facilities permitted or registered by NYSDEC. Facilities will be identified in the RAR. A PE/QEP is responsible to ensure that the facility is compliant with 6NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require additional testing, unless required by NYSDEC under its terms for operation of the facility. RCA imported to the Site must be derived from recognizable and uncontaminated concrete. RCA material is not acceptable for, and will not be used as cover material.

8.1.8 Contingency Plan

This contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during excavation. Identification of unknown

contamination source areas during invasive Site work will be promptly communicated to OER's Project Manager. Petroleum spills will be reported to the NYSDEC Spill Hotline. These findings will be included in the daily report. If previously unidentified contaminant sources are found during on-Site remedial excavation or development-related excavation, sampling will be performed on contaminated source material and surrounding soils and reported to OER. Chemical analytical testing will be performed for target analyte list (TAL) metals, target compound list (TCL) volatiles and semi-volatiles, TCL pesticides and PCBs, as appropriate.

Emergency Telephone Numbers

In the event of any emergency condition pertaining to this remedial system, the Owner's representative(s) should contact the appropriate parties from the contact list below. Prompt contact should also be made to [qualified environmental professional]. These emergency contact lists must be maintained in an easily accessible location at the Site.

Emergency Contact Numbers	
Medical, Fire, and Police:	911
One Call Center:	800-272-4480 (three-day notice required for utility markout)
Poison Control Center:	800-222-1222
Pollution Toxic Chemical Oil Spills:	800-424-8802
NYSDEC Spills Hotline	800-457-7362

Contact Numbers	
Joshua B. Levine	631-232-2600
Office of Environmental Remediation	212-788-8841; 311

Map and Directions to Nearest Hospital:

Hospital Name: **Richmond University Medical Center**

Hospital Location: 355 Bard Avenue
Staten Island, New York

Hospital Telephone: 718-818-1234

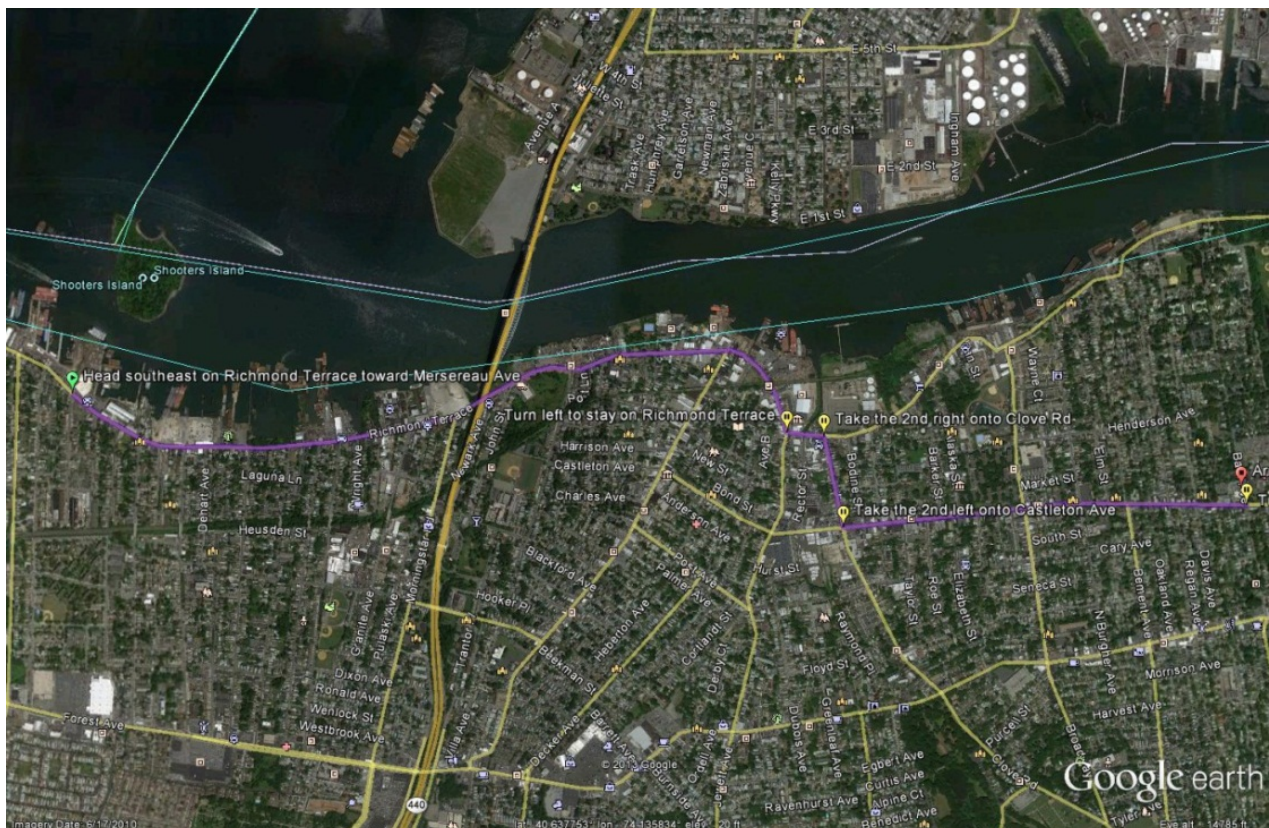
Directions to the Hospital:

1. Head southwest on Richmond Terrace (2.0 miles)
2. Turn left to stay on Richmond Terrace (0.1 miles)
3. Take 2nd right onto Clove Road (0.2 miles)
4. Take the 2nd left onto Castleton Avenue (1.0 miles)
5. Turn left onto Bard Avenue, proceed 381 feet to destination

Total Distance: 3.5 miles

Total Estimated Time: 10 minutes

Map Showing Route from the Site to the Hospital



8.1.9 Odor, Dust and Nuisance Control

Odor Control

All necessary means will be employed to prevent on- and off-Site odor 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) use of foams to cover exposed odorous soils. If odors develop and cannot otherwise be controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-Site disposal; and (e) use of chemical odorants in spray or misting systems.

This odor control plan is capable of controlling emissions of nuisance odors. 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. OER will be notified of all odor complaint events. Implementation of all odor controls, including halt of work, will be the responsibility of the PE/QEP's certifying the Remedial Action Report.

Dust Control

Dust management during invasive on-Site work will include, at a minimum:

- Use of a dedicated water spray methodology for roads, excavation areas, and stockpiles.
- Use of properly anchored tarps to cover stockpiles.
- Exercise extra care during dry and high-wind periods.
- Use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface.

This dust control plan is capable of controlling emissions of dust. If nuisance dust emissions are identified, work will be halted and the source of dusts will be identified and corrected. Work will not resume until all nuisance dust emissions have been abated. OER will be notified of all dust complaint events. Implementation of all dust controls, including halt of work, will be the responsibility of the PE/QEP's responsible for certifying the Remedial Action Report.

Other Nuisances

Noise control will be exercised during the remedial program. All remedial work will conform, at a minimum, to NYC noise control standards.

FIGURES

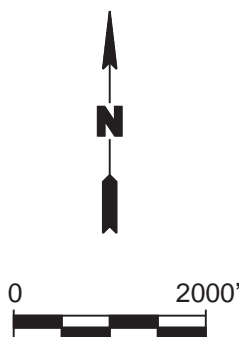
1. Site Location Map
2. Site Plan
3. Surrounding Land Usage
4. Site Plan with Composite Cover System



QUADRANGLE LOCATION



SOURCE:
USGS; 1995, ELIZABETH, NJ-NY
7.5 Minute Topographic Quadrangle



Title:

SITE LOCATION MAP

DEVON #87 STATEN ISLAND
3131 RICHMOND TERRACE
STATEN ISLAND, NEW YORK 10303

Prepared for:

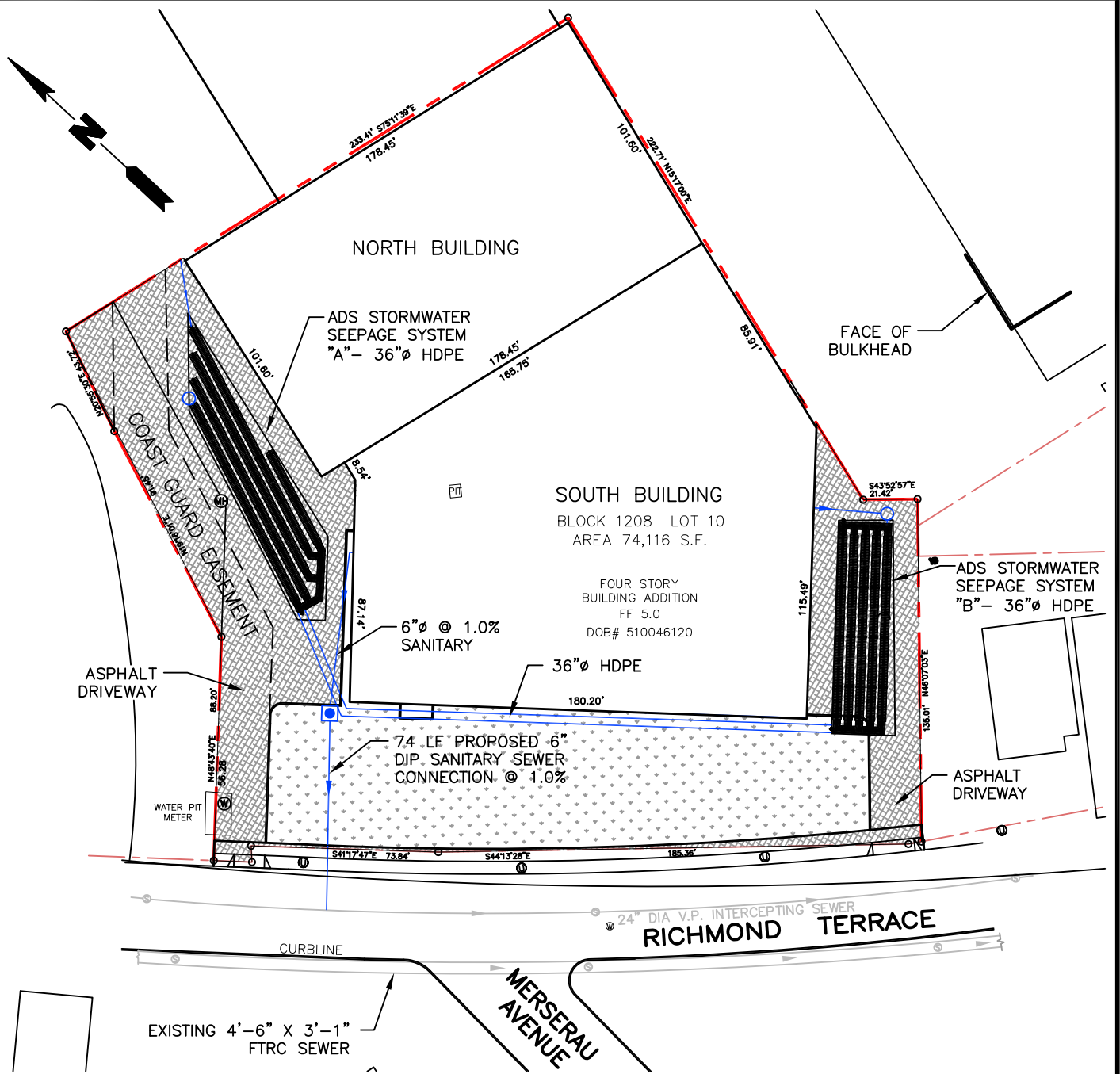
DEVON SELF STORAGE HOLDINGS, LLC

ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting
& Management

Compiled by: J.L.	Date: 14MAR13
Prepared by: J.A.D.	Scale: AS SHOWN
Project Mgr.: J.L.	Project No.: 2077.0001Y000
File: 2077.0001Y107.01.CDR	

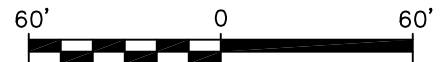
FIGURE

1



SOURCE

STANTEC CONSULTANT SERVICES INC.
SITE DRAINAGE PLAN SDP-1



LEGEND

--- SUBJECT PROPERTY BOUNDARY

Title:

SITE PLAN

DEVON #87 STATEN ISLAND
3131 RICHMOND TERRACE
STATEN ISLAND, NEW YORK 1303

Prepared For:

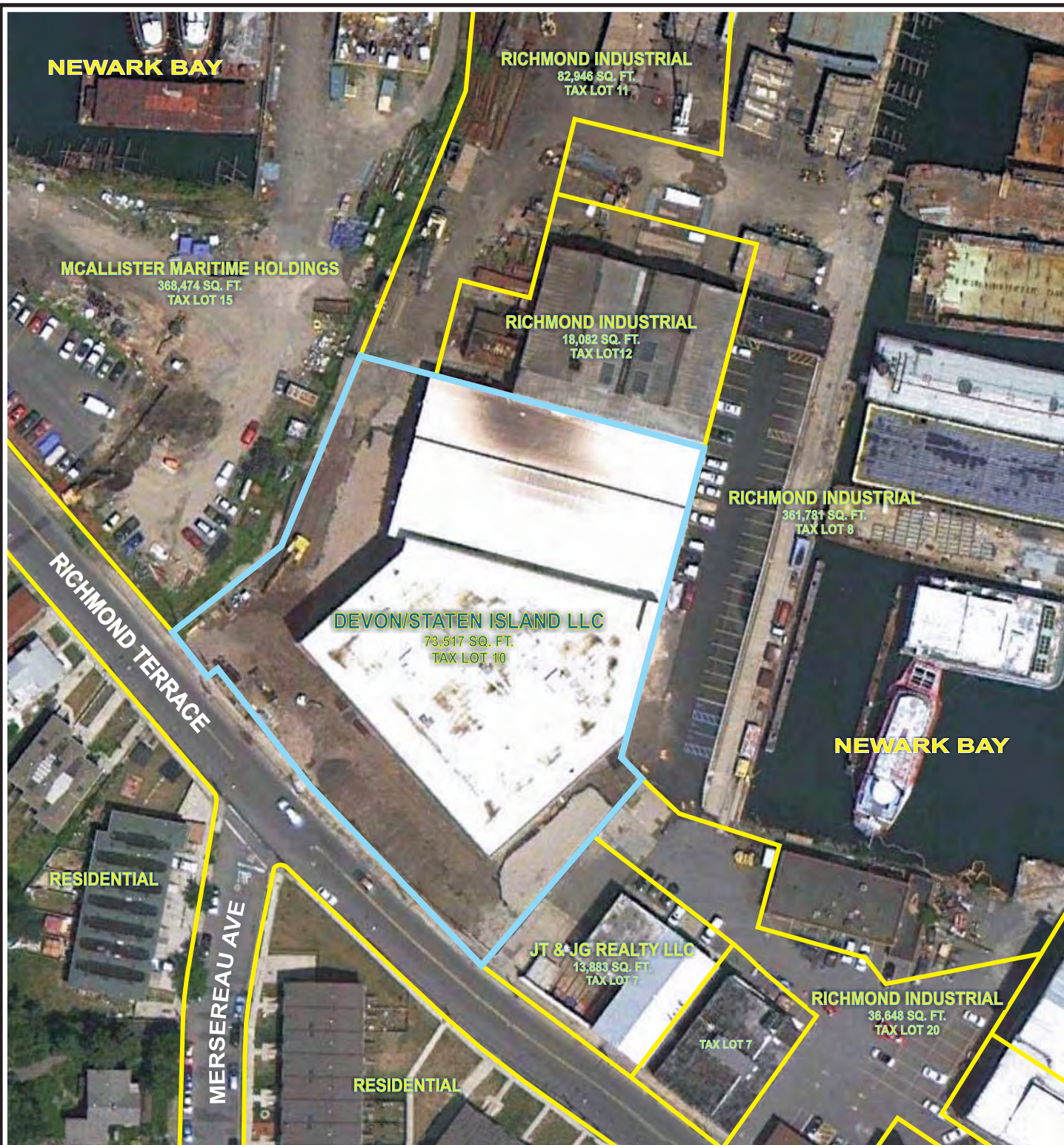
DEVON SELF STORAGE HOLDINGS, LLC

ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting
and Management

Compiled by: J.L.	Date: 14MAR13
Prepared by: J.A.D.	Scale: AS SHOWN
Project Mgr: J.L.	Project: 2077.0001Y000
File: 2077.0001Y107.02.DWG	

FIGURE

2



SOURCE:
GOOGLE EARTH, IMAGERY DATE: 2010

Title:

SURROUNDING LAND USES

DEVON #87 STATEN ISLAND
3131 RICHMOND TERRACE
STATEN ISLAND, NEW YORK 10303

Prepared for:

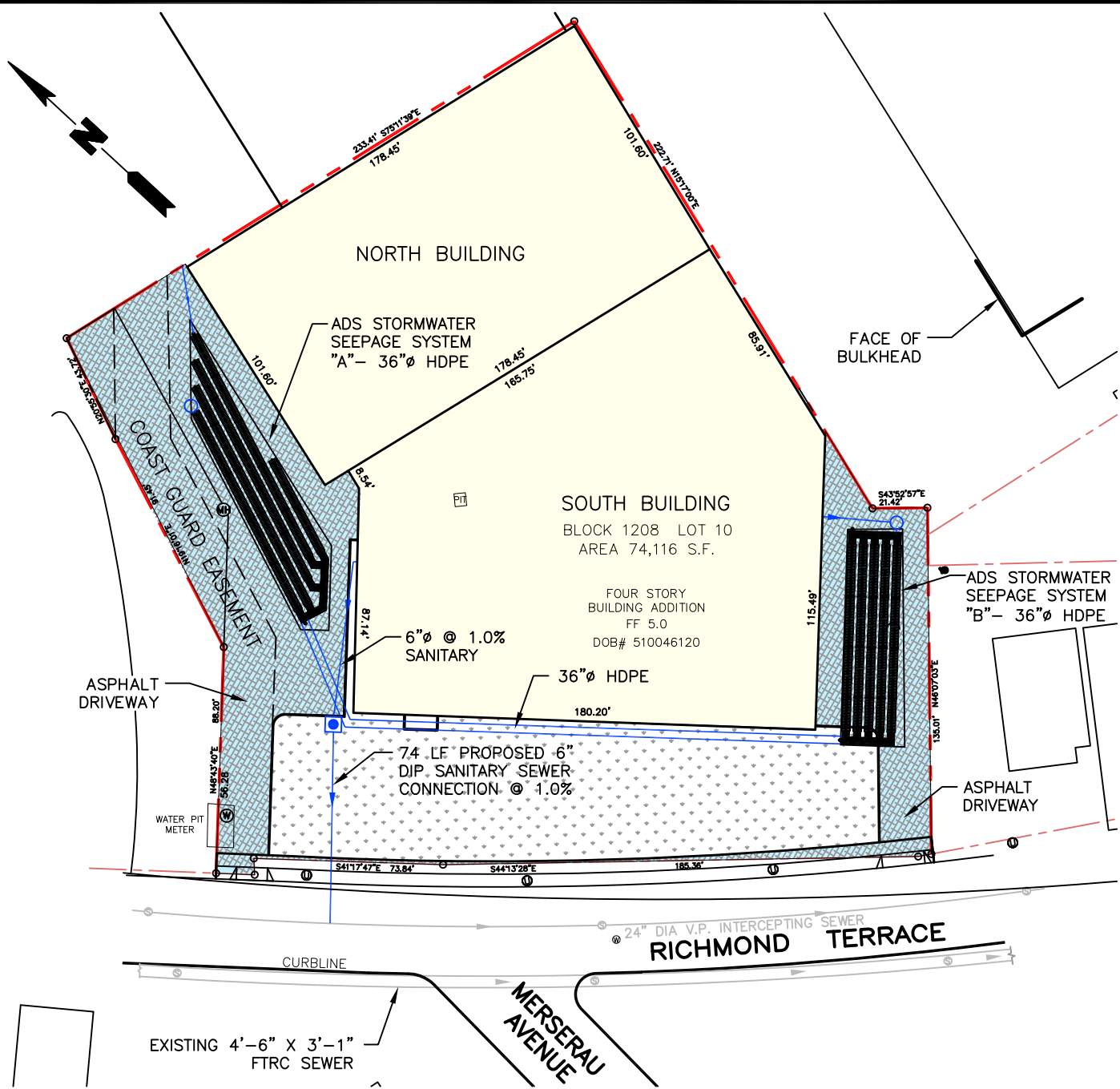
DEVON SELF STORAGE HOLDINGS, LLC

ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting
& Management

Compiled by: J.L.	Date: 18MAR13
Prepared by: J.A.D.	Scale: AS SHOWN
Project Mgr.: J.L.	Project No.: 2077.0001Y000
File: 2077.0001Y107.04.CDR	

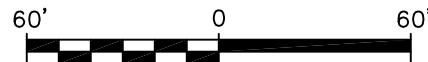
FIGURE

3



SOURCE

STANTEC CONSULTANT SERVICES INC.
SITE DRAINAGE PLAN SDP-1



LEGEND

- SUBJECT PROPERTY BOUNDARY
- CONCRETE BUILDING SLAB FOOTPRINT
- ASPHALT PARKING LOT

Title:

SITE PLAN WITH COMPOSITE COVER SYSTEM

DEVON #87 STATEN ISLAND
3131 RICHMOND TERRACE
STATEN ISLAND, NEW YORK 1303

Prepared For:

DEVON SELF STORAGE HOLDINGS, LLC

ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting
and Management

Compiled by: J.L.	Date: 18MAR13
Prepared by: J.A.D.	Scale: AS SHOWN
Project Mgr: J.L.	Project: 2077.0001Y000
File: 2077.0001Y107.02.DWG	

FIGURE

4

APPENDICES

- A. Daily Reports
- B. Project Photographs
- C. Disposal Facility Approval Letters
- D. Disposal Manifest
- E. Imported Fill Documentation
- F. Vapor Barrier Product Information
- G. System Startup Effluent Vapor Analytical Results
- H. Air Guide-1 Evaluation
- I Declaration of Restricted Covenants
- J. SSDS Operations and Maintenance Manual

Daily Reports

DAILY STATUS REPORT

Prepared By: Josh Levine

WEATHER	Snow		Rain		Overcast		Partly Cloudy		Bright Sun	
TEMP.	TO 32		32-50		50-70		70-85		>85	

BCP Project No:	12CBCP032R	E-Number:		Date:	2/6/13
Project Name:	Devon Self Storage				

Consultant: Roux Associates	Safety Officer: Christina Prete
Contractor: Metro Environmental Corp	
Work Activities Performed (Since Last Report): Metro Environmental installed SP-2 according to specs. They loaded 1.5-55 gallon drums with native soil and staged outside near roll up door. They back filled the pit with washed gravel. Reinstalled vapor barrier and finished with 8" of concrete. Metro also unloaded blower unit and staged next to roll up door.	
Working In Grid #: Inside Office	

Samples Collected (Since Last Report): none
Air Monitoring (Since Last Report): PID monitoring - No detections observed during suction pit screening of excavated soils
Problems Encountered: none
Planned Activities for Next Week: Piping installation inside building

DAILY STATUS REPORT

Prepared By: Josh Levine

WEATHER	Snow		Rain		Overcast		Partly Cloudy		Bright Sun	
TEMP.	TO 32		32-50		50-70		70-85		>85	

BCP Project No:	12CBCP032R	E-Number:		Date:	2/7/13
Project Name:	Devon Self Storage				

Consultant: Roux Associates	Safety Officer: Christina Prete
Contractor: Metro Environmental Corp	
Work Activities Performed (Since Last Report): Metro Environmental installed SSDS suction pit SP-1. Modified location of suction pit SP-1 to middle office room after consultation with NYCOER project manager, William Wong, on 2/6/13. Metro loaded two 55 gallon drums with native soil and staged labeled drums outside near roll up door. A total of four drums of waste were generated, labeled and are currently staged outside per work on 2/6 and 2/7/13. Drums will be disposed after receipt of waste characterization sample results (expected 3/1/13). Metro back filled the pit with washed gravel. Reinstalled vapor barrier and finished with 8" of concrete slab.	
Working In Grid #: Inside Office	

Samples Collected (Since Last Report): 1 composite waste characterization sample collected 2/7/13 from drummed waste and analyzed for VOCs, SVOCs, metals, PCBs, Pesticides, TCLP metals and RCRA characteristics for waste profiling
Air Monitoring (Since Last Report): PID monitoring - No detections observed during suction pit screening of excavated soils
Problems Encountered: none
Planned Activities for Next Week: Above ground piping installation inside building. No more subsurface work necessary since both SSDS suction pits are installed as of 2/7/13.

Project Photographs



Photograph 1: Suction Pit 1 construction



Photograph 2: Suction Pit 2 construction



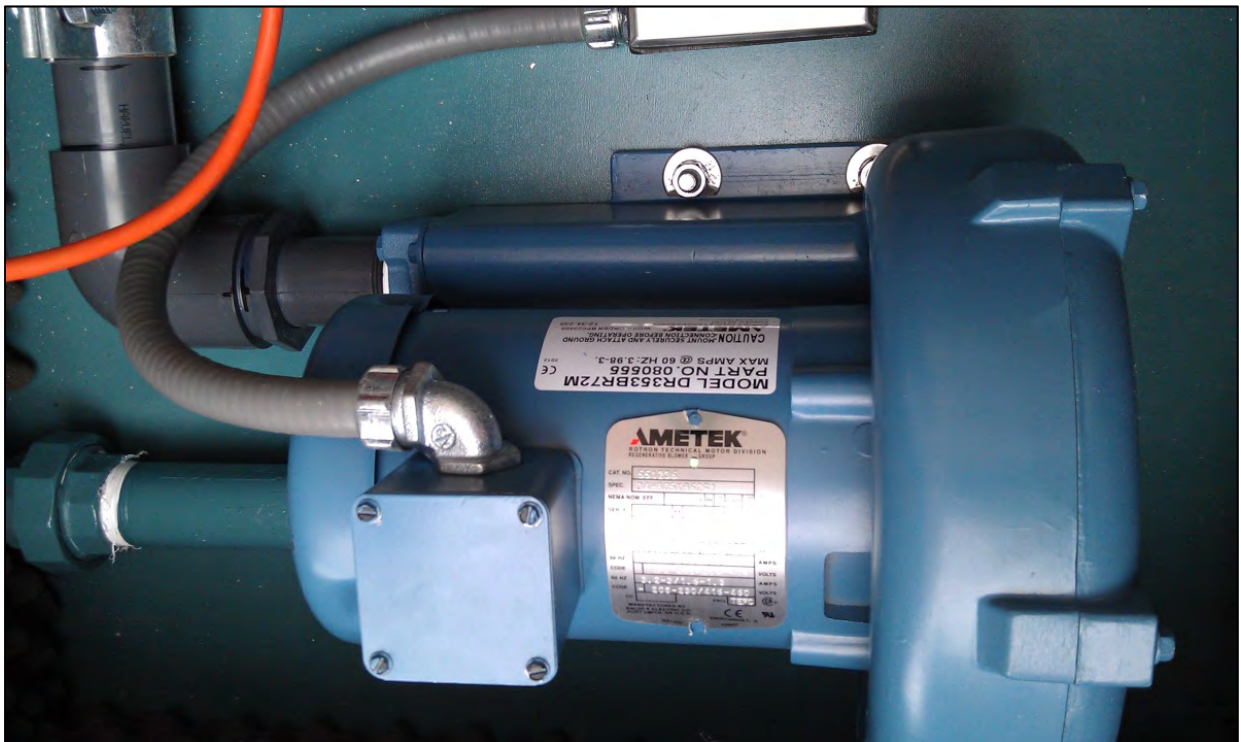
Photograph 3: Suction Pit 1 backfill



**Photograph 4: Vapor barrier installed
in Suction Pit 2**



Photograph 5: Suction Pit 2 completed



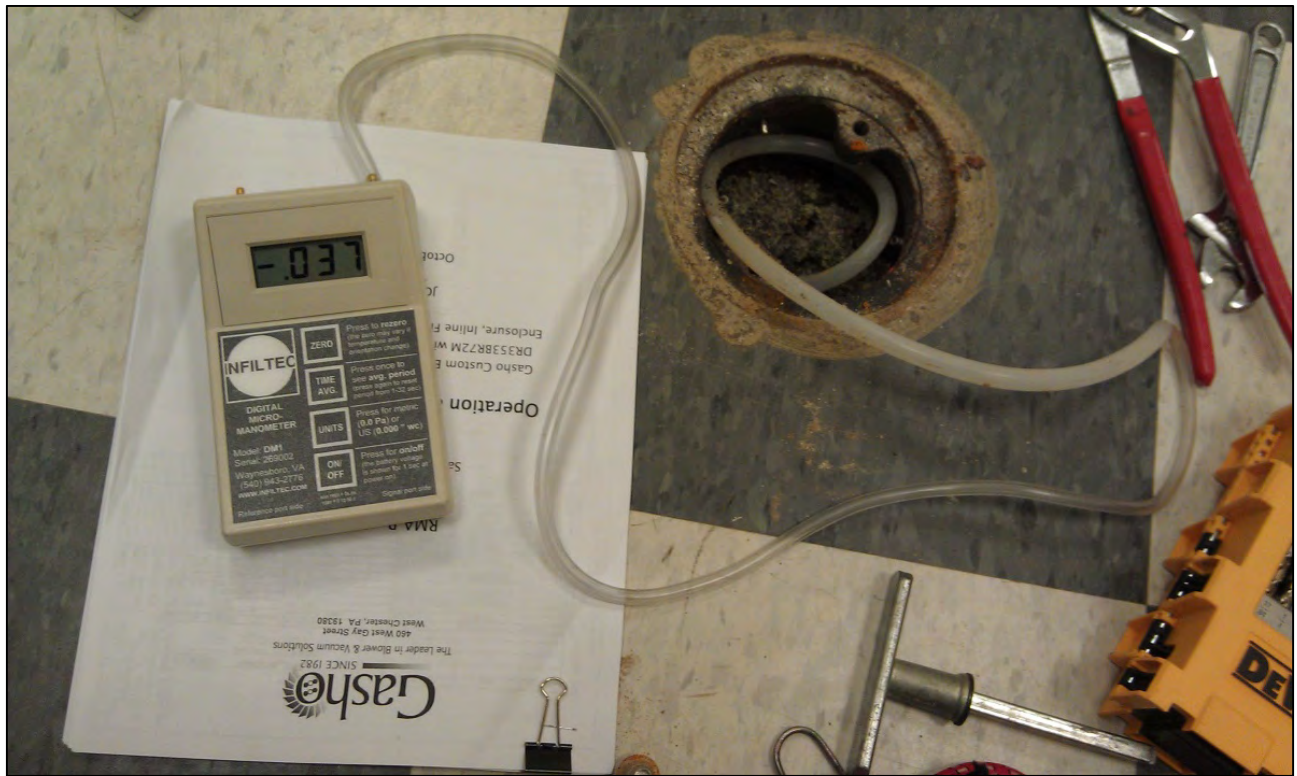
Photograph 6: Blower



Photograph 7: Blower inside enclosure



**Photograph 8: Vacuum at SV-1
with dilution closed**



Photograph 9: Vacuum at SV-1 with dilution open



Photograph 10: Vacuum at SV-2



Photograph 11: Sub slab depressurization system

Disposal Facility Approval Letters



ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES INC

209 SHAFTER STREET
ISLANDIA, NEW YORK 11749 TEL 631-232-2600 FAX 631-232-9898

March 12, 2013

Ms. Julie James
Customer Service Representative
Republic Environmental Systems (PA), Inc.
2869 Sandstone Drive
Hatfield, Pennsylvania 19440

Re: Material Approval Request

Dear Ms. James:

I'm writing to you to request written approval for soil that has been generated at a site enlisted in the New York City Brownfield Cleanup Program. The site identified as Devon/Staten Island, LLC, is located at 3131 Richmond Terrace in Staten Island, New York (Site). The soil which was generated under an approved remedial action is to be disposed of as a regulated waste material generated at an environmental remediation site in Staten Island, New York under a governmental remediation program. The soil is containerized in four 55-gallon drums. Attached are laboratory analytical results of waste characterization samples collected from the drums. Please provide written acceptance of this material at your earliest convenience.

If you have any questions concerning this matter, please do not hesitate to contact the undersigned at 631-232-2600.

Sincerely,

ROUX ASSOCIATES, INC.

A handwritten signature in black ink, appearing to read "Joshua B. Levine", is written over a light gray circular stamp.

Joshua B. Levine, P.E.

Principal Engineer

Attachment

cc: Lisa Baldwin, Innovative Recycling Technologies, Inc.
Gary Hughes, Metro Environmental

Laboratory Analytical Results

Report of Analysis

Client Sample ID:	WC-1		
Lab Sample ID:	JB28533-1	Date Sampled:	02/07/13
Matrix:	SO - Soil	Date Received:	02/11/13
Method:	SW846 8260B	Percent Solids:	85.5
Project:	Devon Self Storage, 3131 Richmond Terminal, Staten Island, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	A191750.D	1	02/16/13	OTR	n/a	n/a	VA7217
Run #2							

	Initial Weight
Run #1	5.1 g
Run #2	

VOA Soil Cleanup Objectives Priority List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	11	1.9	ug/kg	
71-43-2	Benzene	ND	1.1	0.14	ug/kg	
78-93-3	2-Butanone (MEK)	ND	11	2.7	ug/kg	
104-51-8	n-Butylbenzene	ND	5.7	0.13	ug/kg	
135-98-8	sec-Butylbenzene	ND	5.7	0.13	ug/kg	
98-06-6	tert-Butylbenzene	ND	5.7	0.34	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.7	0.15	ug/kg	
108-90-7	Chlorobenzene	ND	5.7	0.12	ug/kg	
67-66-3	Chloroform	ND	5.7	0.095	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	5.7	0.22	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	5.7	0.21	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	5.7	0.20	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.7	0.16	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.15	ug/kg	
75-35-4	1,1-Dichloroethene	ND	5.7	0.29	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	5.7	0.21	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	5.7	0.27	ug/kg	
123-91-1	1,4-Dioxane	ND	140	68	ug/kg	
100-41-4	Ethylbenzene	ND	1.1	0.30	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.1	0.27	ug/kg	
75-09-2	Methylene chloride	ND	5.7	1.5	ug/kg	
103-65-1	n-Propylbenzene	ND	5.7	0.14	ug/kg	
127-18-4	Tetrachloroethene	ND	5.7	0.20	ug/kg	
108-88-3	Toluene	ND	1.1	0.12	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.7	0.12	ug/kg	
79-01-6	Trichloroethene	2.0	5.7	0.20	ug/kg	J
95-63-6	1,2,4-Trimethylbenzene	ND	5.7	0.24	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.7	0.18	ug/kg	
75-01-4	Vinyl chloride	ND	5.7	0.17	ug/kg	
	m,p-Xylene	0.43	1.1	0.20	ug/kg	J
95-47-6	o-Xylene	ND	1.1	0.16	ug/kg	
1330-20-7	Xylene (total)	0.43	1.1	0.16	ug/kg	J

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-1	Date Sampled:	02/07/13
Lab Sample ID:	JB28533-1	Date Received:	02/11/13
Matrix:	SO - Soil	Percent Solids:	85.5
Method:	SW846 8260B		
Project:	Devon Self Storage, 3131 Richmond Terminal, Staten Island, NY		

VOA Soil Cleanup Objectives Priority List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		70-130%
17060-07-0	1,2-Dichloroethane-D4	86%		70-122%
2037-26-5	Toluene-D8	100%		81-127%
460-00-4	4-Bromofluorobenzene	106%		66-132%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-1		
Lab Sample ID:	JB28533-1	Date Sampled:	02/07/13
Matrix:	SO - Soil	Date Received:	02/11/13
Method:	SW846 8270D SW846 3550C	Percent Solids:	85.5
Project:	Devon Self Storage, 3131 Richmond Terminal, Staten Island, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z77954.D	1	02/21/13	KH	02/19/13	OP63714	EZ3987
Run #2	Z78074.D	2	02/25/13	KH	02/19/13	OP63714	EZ3993

	Initial Weight	Final Volume
Run #1	33.9 g	1.0 ml
Run #2	33.9 g	1.0 ml

ABN Soil Cleanup Objectives Priority List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-48-7	2-Methylphenol	ND	69	39	ug/kg	
	3&4-Methylphenol	ND	69	44	ug/kg	
87-86-5	Pentachlorophenol	ND	350	59	ug/kg	
108-95-2	Phenol	ND	69	36	ug/kg	
83-32-9	Acenaphthene	105	35	10	ug/kg	
208-96-8	Acenaphthylene	218	35	11	ug/kg	
120-12-7	Anthracene	378	35	12	ug/kg	
56-55-3	Benzo(a)anthracene	1690	35	11	ug/kg	
50-32-8	Benzo(a)pyrene	1310	35	11	ug/kg	
205-99-2	Benzo(b)fluoranthene	1080	35	12	ug/kg	
191-24-2	Benzo(g,h,i)perylene	983	35	13	ug/kg	
207-08-9	Benzo(k)fluoranthene	978	35	13	ug/kg	
218-01-9	Chrysene	1700	35	12	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	266	35	12	ug/kg	
132-64-9	Dibenzofuran	56	69	10	ug/kg	
206-44-0	Fluoranthene	3760 ^a	69	30	ug/kg	
86-73-7	Fluorene	115	35	11	ug/kg	
118-74-1	Hexachlorobenzene	ND	69	11	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	880	35	12	ug/kg	
91-20-3	Naphthalene	43.3	35	9.4	ug/kg	
85-01-8	Phenanthrene	1420	35	16	ug/kg	
129-00-0	Pyrene	3130	35	13	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	48%	55%	21-116%
4165-62-2	Phenol-d5	50%	52%	19-117%
118-79-6	2,4,6-Tribromophenol	49%	56%	24-136%
4165-60-0	Nitrobenzene-d5	44%	49%	21-122%
321-60-8	2-Fluorobiphenyl	46%	51%	30-117%
1718-51-0	Terphenyl-d14	46%	58%	31-129%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-1	Date Sampled:	02/07/13
Lab Sample ID:	JB28533-1	Date Received:	02/11/13
Matrix:	SO - Soil	Percent Solids:	85.5
Method:	SW846 8270D SW846 3550C		
Project:	Devon Self Storage, 3131 Richmond Terminal, Staten Island, NY		

ABN Soil Cleanup Objectives Priority List

CAS No.	Compound	Result	RL	MDL	Units	Q
---------	----------	--------	----	-----	-------	---

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-1						
Lab Sample ID:	JB28533-1				Date Sampled:	02/07/13	
Matrix:	SO - Soil				Date Received:	02/11/13	
Method:	SW846 8081B SW846 3546				Percent Solids:	85.5	
Project:	Devon Self Storage, 3131 Richmond Terminal, Staten Island, NY						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G73258.D	1	03/01/13	VDT	02/14/13	OP63576	G3G2528
Run #2							

	Initial Weight	Final Volume
Run #1	15.1 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.77	0.36	ug/kg	
319-84-6	alpha-BHC	ND	0.77	0.23	ug/kg	
319-85-7	beta-BHC	ND	0.77	0.48	ug/kg	
319-86-8	delta-BHC	21.5	0.77	0.38	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.77	0.38	ug/kg	
5103-71-9	alpha-Chlordane	18.9	0.77	0.29	ug/kg	
60-57-1	Dieldrin	ND	0.77	0.30	ug/kg	
72-54-8	4,4'-DDD	ND	0.77	0.42	ug/kg	
72-55-9	4,4'-DDE	6.1	0.77	0.31	ug/kg	
50-29-3	4,4'-DDT ^a	29.1	0.77	0.38	ug/kg	
72-20-8	Endrin	ND	0.77	0.25	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.77	0.33	ug/kg	
959-98-8	Endosulfan-I	ND	0.77	0.29	ug/kg	
33213-65-9	Endosulfan-II	ND	0.77	0.46	ug/kg	
76-44-8	Heptachlor	ND	0.77	0.38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	94%		23-137%
877-09-8	Tetrachloro-m-xylene	33%		23-137%
2051-24-3	Decachlorobiphenyl	129%		22-160%
2051-24-3	Decachlorobiphenyl	61%		22-160%

(a) More than 40 % RPD for detected concentrations between the two GC columns.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-1		
Lab Sample ID:	JB28533-1	Date Sampled:	02/07/13
Matrix:	SO - Soil	Date Received:	02/11/13
Method:	SW846 8082A SW846 3546	Percent Solids:	85.5
Project:	Devon Self Storage, 3131 Richmond Terminal, Staten Island, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF117682.D	1	02/20/13	HQ	02/14/13	OP63577	GEF4687
Run #2							

	Initial Weight	Final Volume
Run #1	15.1 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	39	10	ug/kg	
11104-28-2	Aroclor 1221	ND	39	23	ug/kg	
11141-16-5	Aroclor 1232	ND	39	20	ug/kg	
53469-21-9	Aroclor 1242	ND	39	12	ug/kg	
12672-29-6	Aroclor 1248	ND	39	12	ug/kg	
11097-69-1	Aroclor 1254	ND	39	18	ug/kg	
11096-82-5	Aroclor 1260	ND	39	13	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	127%		22-141%
877-09-8	Tetrachloro-m-xylene	120%		22-141%
2051-24-3	Decachlorobiphenyl	86%		18-163%
2051-24-3	Decachlorobiphenyl	97%		18-163%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: WC-1
Lab Sample ID: JB28533-1
Matrix: SO - Soil

Date Sampled: 02/07/13
Date Received: 02/11/13
Percent Solids: 85.5

Project: Devon Self Storage, 3131 Richmond Terminal, Staten Island, NY

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	6.7	2.2	mg/kg	1	02/20/13	02/21/13 ND	SW846 6010C ¹	SW846 3050B ⁴
Barium	79.0	22	mg/kg	1	02/20/13	02/21/13 ND	SW846 6010C ¹	SW846 3050B ⁴
Beryllium	0.36	0.22	mg/kg	1	02/20/13	02/21/13 ND	SW846 6010C ¹	SW846 3050B ⁴
Cadmium	< 0.56	0.56	mg/kg	1	02/20/13	02/21/13 ND	SW846 6010C ²	SW846 3050B ⁴
Chromium	28.0	1.1	mg/kg	1	02/20/13	02/21/13 ND	SW846 6010C ¹	SW846 3050B ⁴
Copper	44.8	2.8	mg/kg	1	02/20/13	02/21/13 ND	SW846 6010C ¹	SW846 3050B ⁴
Lead	188	2.2	mg/kg	1	02/20/13	02/21/13 ND	SW846 6010C ¹	SW846 3050B ⁴
Manganese	190	1.7	mg/kg	1	02/20/13	02/21/13 ND	SW846 6010C ¹	SW846 3050B ⁴
Mercury	0.38	0.038	mg/kg	1	02/23/13	02/23/13 DP	SW846 7471B ³	SW846 7471B ⁵
Nickel	25.6	4.5	mg/kg	1	02/20/13	02/21/13 ND	SW846 6010C ¹	SW846 3050B ⁴
Selenium	< 2.2	2.2	mg/kg	1	02/20/13	02/21/13 ND	SW846 6010C ¹	SW846 3050B ⁴
Silver	0.67	0.56	mg/kg	1	02/20/13	02/21/13 ND	SW846 6010C ¹	SW846 3050B ⁴
Zinc	140	2.2	mg/kg	1	02/20/13	02/21/13 ND	SW846 6010C ¹	SW846 3050B ⁴

- (1) Instrument QC Batch: MA30531
(2) Instrument QC Batch: MA30540
(3) Instrument QC Batch: MA30555
(4) Prep QC Batch: MP69909
(5) Prep QC Batch: MP69989

Report of Analysis**Client Sample ID:** WC-1**Lab Sample ID:** JB28533-1**Matrix:** SO - Soil**Date Sampled:** 02/07/13**Date Received:** 02/11/13**Percent Solids:** 85.5**Project:** Devon Self Storage, 3131 Richmond Terminal, Staten Island, NY**General Chemistry**

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Corrosivity as pH	8.44 NC		su	1	02/21/13 12:47	MET	SW846 CHAP7
Cyanide Reactivity	< 12	12	mg/kg	1	02/15/13 09:42	BP	SW846 CHAP7/9012 B
Ignitability (Flashpoint)	> 200		Deg. F	1	02/21/13	CB	SW846 CHAP7/ASTM D93
Solids, Percent	85.5		%	1	02/19/13 15:45	AR	SM2540 G-97
Sulfide Reactivity	< 120	120	mg/kg	1	02/15/13	JA	SW846 CHAP7/9034

Report of Analysis

Client Sample ID: WC-1	Date Sampled: 02/07/13
Lab Sample ID: JB28533-1A	Date Received: 02/11/13
Matrix: SO - Soil	Percent Solids: 85.5
Project: Devon Self Storage, 3131 Richmond Terminal, Staten Island, NY	

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	1	02/14/13	02/14/13	ND	SW846 3010A ³
Barium	< 1.0	D005	100	1.0	mg/l	1	02/14/13	02/14/13	ND	SW846 3010A ³
Cadmium	< 0.0050	D006	1.0	0.0050	mg/l	1	02/14/13	02/14/13	ND	SW846 3010A ³
Chromium	< 0.010	D007	5.0	0.010	mg/l	1	02/14/13	02/14/13	ND	SW846 3010A ³
Lead	< 0.50	D008	5.0	0.50	mg/l	1	02/14/13	02/14/13	ND	SW846 3010A ³
Mercury	< 0.00020	D009	0.20	0.00020	mg/l	1	02/14/13	02/14/13	DP	SW846 7470A ⁴
Selenium	< 0.50	D010	1.0	0.50	mg/l	1	02/14/13	02/14/13	ND	SW846 3010A ³
Silver	< 0.010	D011	5.0	0.010	mg/l	1	02/14/13	02/14/13	ND	SW846 3010A ³

(1) Instrument QC Batch: MA30488

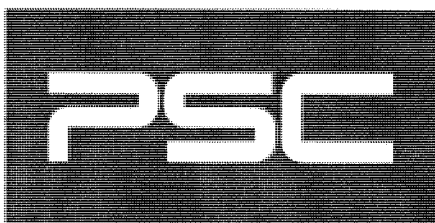
(2) Instrument QC Batch: MA30493

(3) Prep QC Batch: MP69810

(4) Prep QC Batch: MP69822

RL = Reporting Limit

MCL = Maximum Contamination Level (40 CFR 261.6/96)



March 12, 2013

Innovative Recycling Technologies, Inc.
Attn: Ms. Lisa Baldwin
690 N. Queens Ave.
Lindenhurst NY 11757

Generator: Devon/Staten Island, LLC
Approval Date: 03-12-13
Approval Number: 568453-Non Hazardous Soil

Dear Ms. Baldwin,

Pursuant to Federal and State notification requirements found in 40 CFR Parts 262 and 264 and 6 NYCRR 372 and 373, this letter hereby certifies that PSC Environmental Services, LLC/Republic Environmental Systems (PA) LLC, Hatfield, PA, currently maintains the appropriate permits and has the capacity to treat and/or repackage for off-site disposal, the above-listed non-hazardous waste stream. The material submitted on the Waste Characterization Report for approval, are within our acceptance criteria.

PSC Environmental Services, LLC/Republic Environmental Systems (PA) LLC assures that the above listed non hazardous wastes will be managed in accordance with the ultimate disposal methods specified in our permits.

Should you have any questions concerning this certification, please call me at 215-822-2676.

Sincerely,

Julie James

Julie James
Customer Service Representative
PSC Environmental Services, LLC



Waste Characterization Report

Sales Rep.	Process Code	Reference #	Approval Code
------------	--------------	-------------	---------------

☒ Republic Env. Systems (PA), Inc.
2869 Sandstone Drive Hatfield, PA 19440
(215) 822-2676 Fax (215) 997-8219
PAD085690592

☐ Northland Environmental
275 Allens Avenue Providence, RI 02905
(401) 781-6340 Fax (401) 781-9710
RID040098352

☐ Chemical Pollution Control
120 S. Fourth St. Bayshore, NY 11706
(631) 586-0333 Fax (631) 586-0727
NYD082785429

☐ PSC - Allworth, Inc.
500 Medco Road Birmingham, AL 35217
(205) 841-1707 Fax (205) 841-1744
ALD094476793

☐ PSC - Georgia Recovery Systems
8025 Spence Road Fairburn, GA 30213
(770) 969-7886 Fax (770) 964-9531
GAR000026088

A Generator Information

Generator Name:	Devon/Staten Island, LLC	S.I.C./NAICS Code:	US EPA ID #:	E Mail Address:	n/a
Address (site):	3131 Richmond Terrace	City:	Staten Island	State:	CT
				Zip:	10303
Address (mailing):	455 Market Street, Suite 1460	City:	San Francisco	State:	CA
				Zip:	94105
Contact:	Chris Miers	Phone:	(415)269-4628	Fax:	
				Form Code:	

B Invoicing Information

Customer Name:	Innovative Recycling Technologies, Inc.	E Mail Address:	jdull@irtwaste.com
Address:	690 North Queens Avenue		
City:	Lindenhurst	State:	NY
		Zip Code:	11757
Contact:	John Dull	Phone:	631-225-3044
		Fax:	631-225-3056

C Waste Information

Waste Common Name	Soil
Detailed description of process generating waste. (attach additional sheets if necessary)	From excavation of pits

D General Information

1. Has laboratory analysis been performed on the waste?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please attach a copy.
2. Is this waste a commercial product or spill residue?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, please provide MSDS(s)
3. Is a representative sample provided which matches the description on this form?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
a. Where was sample taken?	b. Date sample obtained	c. Sampling device:
4. Does your company have an approved facilities list?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, please attach a copy.
5. Are there any specific requirements for the disposal of this waste?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, please indicate.

E Regulatory Information

1. Is this a US EPA hazardous waste?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7. Is this waste infectious or medical waste?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Is this a state hazardous waste?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	8. Is this waste radioactive?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
3. Is this waste subject to Categorical Discharge Standards?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	9. Is this waste explosive	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
4. Is this a PCB waste regulated under TSCA?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	10. Does this waste contain asbestos?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
5. Is this waste generated from a CERCLA cleanup action?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	11. Is this waste subject to RCRA subpart CC Regulations?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
6. Is this a dioxin bearing waste as per 40 CFR part 261.31?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	(Contains >500 ppm VOC's by weight)	
		12. Is this waste subject to benzene NESHAP regulations?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Comments

F Chemical Composition

List all constituents of this waste. (Both hazardous and non hazardous, trade names are not acceptable; ranges must be less than 30%). If any of the below listed constituents are subject to Toxic Release Inventory reporting requirements under 40 CFR, Part 372 please indicate by checking the box marked TRI.

1	Soil	<input type="checkbox"/> TRI	Range %	100%
2		<input type="checkbox"/> TRI	Range %	
3		<input type="checkbox"/> TRI	Range %	
4		<input type="checkbox"/> TRI	Range %	
5		<input type="checkbox"/> TRI	Range %	

G Physical Characteristics

Odor: ☒ None ☐ Mild ☐ Strong Description: _____ Specific Gravity: ☐ <0.8 ☐ 0.8-1.0 ☐ >1.0 Actual _____ Solid _____

Viscosity: ☒ Low ☐ Medium ☐ High Layering: ☒ Single Layer ☐ Multilayered

Flash Point (F) ☐ <70 ☐ 70-100 ☐ 100-140 ☒ >140 Actual _____ Color: _____ Brown _____

pH ☐ <2.0 ☐ 2.01-5.0 ☒ 5.01-9.0 ☐ 9.01-12.49 ☐ >12.50 Actual _____

Reactivity: ☐ Unstable ☐ Water reactive ☐ Cyanides ☐ Sulfides ☒ None Pumpable? ☐ Yes ☒ No % Free Liquids 0

Physical State: ☒ Solid ☐ Liquid ☐ Solid/Liquid ☐ Semi-solid ☐ Powder Fuel Info: BTU/lb. <2000 % Halogens 0

H Organics

Results based on ☐ Generator Knowledge ☒ Analysis
Results expressed in ☐ TCLP (mg/l) ☒ Total (mg/kg)

Endrin	<input checked="" type="checkbox"/> <0.02	1,2-Dichloroethane	<input checked="" type="checkbox"/> <0.8
Lindane	<input checked="" type="checkbox"/> <0.4	1,1-Dichloroethylene	<input checked="" type="checkbox"/> <0.7
Methoxychlor	<input checked="" type="checkbox"/> <10.0	2,4-Dinitrotoluene	<input checked="" type="checkbox"/> <0.13
Toxaphene	<input checked="" type="checkbox"/> <0.5	Heptachlor	<input checked="" type="checkbox"/> <0.008
2,4-D	<input checked="" type="checkbox"/> <10.0	Hexachlorobenzene	<input checked="" type="checkbox"/> <0.13
Silvex (2,4,5-TP)	<input checked="" type="checkbox"/> <1.0	Hexachlorobutadiene	<input checked="" type="checkbox"/> <0.5
Benzene	<input checked="" type="checkbox"/> <0.5	Hexachloroethane	<input checked="" type="checkbox"/> <3.0
Carbon Tetrachloride	<input checked="" type="checkbox"/> <0.5	Methyl Ethyl Ketone	<input checked="" type="checkbox"/> <200
Chlordane	<input checked="" type="checkbox"/> <0.03	Nitrobenzene	<input checked="" type="checkbox"/> <2.0
Chlorobenzene	<input checked="" type="checkbox"/> <100	Pentachlorophenol	<input checked="" type="checkbox"/> <100
Chloroform	<input checked="" type="checkbox"/> <6.0	Pyridine	<input checked="" type="checkbox"/> <5.0
O-Cresol	<input checked="" type="checkbox"/> <200	Tetrachloroethylene	<input checked="" type="checkbox"/> <0.7
M-Cresol	<input checked="" type="checkbox"/> <200	Trichloroethylene	<input checked="" type="checkbox"/> <0.5
P-Cresol	<input checked="" type="checkbox"/> <200	2,4,5-Trichlorophenol	<input checked="" type="checkbox"/> <400
Cresol	<input checked="" type="checkbox"/> <200	2,4,6-Trichlorophenol	<input checked="" type="checkbox"/> <2.0
1,4-Dichlorobenzene	<input checked="" type="checkbox"/> <7.5	Vinyl Chloride	<input checked="" type="checkbox"/> <0.2

I Heavy Metals

Results based on ☐ Generator Knowledge ☒ Analysis
Results expressed in ☒ TCLP (mg/l) ☐ Total (mg/kg)

Arsenic	<input checked="" type="checkbox"/> <5.0	Selenium	<input checked="" type="checkbox"/> <1.0
Barium	<input checked="" type="checkbox"/> <100	Silver	<input checked="" type="checkbox"/> <5
Cadmium	<input checked="" type="checkbox"/> <1	Copper	
Chromium	<input checked="" type="checkbox"/> <5	Nickel	
Lead	<input checked="" type="checkbox"/> <5	Zinc	
Mercury	<input checked="" type="checkbox"/> <0.2	Other	

J Other Components (mg/kg) (ranges are acceptable)

Total Cyanide	0	Amenable cyanide	0
Total Sulfide	0	Reactive Sulfide	0
Pesticides	0	Herbicides	0
Ammonia	0	Total PCB's	0
Total HOC's	0	Total VOC's	0

K Land Disposal Restrictions

Is this waste subject to land ban restrictions? ☐ Yes ☒ No
Is this waste considered RCRA debris? ☐ Yes ☒ No

Is this waste a ☐ Waste water? or ☒ Non-waste water?

Identify all UHC's in this waste: _____

Identify all waste Subcategories: _____

L DOT Information

Is this waste DOT hazardous? ☐ Yes ☒ No Marine Pollutant? ☐ Yes ☒ No Poison Inhalation Hazard? ☐ Yes ☒ No Zone _____

DOT Shipping Name: Soil Non-DOT Regulated Material

Technical Constituents: _____

DOT UN/NA # _____ Hazard Class: _____ Packaging Group: _____

EPA/State Hazardous Waste Numbers: _____

M Frequency and Mode of Shipments

Method of shipment: ☐ Bulk liquid ☐ Bulk solid ☒ Drums ☐ Other _____ Container type/size: 55 gal

Volume per shipment: 4 _____ ☐ Gallons ☐ Tons ☒ Drums ☐ Other _____

Frequency: ☒ One time ☐ Weekly ☐ Monthly ☐ Quarterly ☐ Yearly ☐ Other _____

N Pennsylvania Facility Specific Information (to be completed only if waste is destined for a TSD in PA.)

- If this waste is considered non-regulated, please indicate the appropriate Pennsylvania Residual Waste Code, and complete question #2.
- Describe any source reduction strategies currently in place or being evaluated to reduce the volume of this waste.

O Generator Certification

I hereby certify that the above and attached information is complete and accurate and that no deliberate or willful omission of composition or properties exists, and that all known or suspected hazards have been disclosed.

Title: _____ Date: _____

Name: _____ Signature: _____

P TSD Facility Use Only:

I certify that I have reviewed and am familiar with the information in the application submitted for approval. I believe the information provided herein conforms to the facilities approved waste analysis plan and operating permits.

Title: RMA Management, LLC, as authorized agent of Devon/Staton Island, LLC Date: 3/7/13Name: Michael Potter, authorized agent Signature: [Signature]

Disposal Manifest

810951-13

1621809

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. N / A		Manifest Document No. 38518		2. Page 1 of 1	
3. Generator's Name and Mailing Address Devon/Staten Island, LLC 455 Market Street, Suite 1460 San Francisco, CA 94105				3131 Richmond Terrace Staten Island, NY 10303			
4. Generator's Phone (415) 269-4628		5. Transporter 1 Company Name Metro Environmental Contracting		6. US EPA ID Number NYR000134957		A. State Transporter's ID	
7. Transporter 2 Company Name Kearbals Env Sys (Trans Corp) LLC		8. US EPA ID Number PAD982661381		B. Transporter 1 Phone (631) 884-1880		C. State Transporter's ID	
9. Designated Facility Name and Site Address Republic Environmental Systems 2869 Sandstone Drive Hatfield, PA 19440		10. US EPA ID Number PAD085690592		D. Transporter 2 Phone		E. State Facility's ID	
				F. Facility's Phone (215) 822-8995			
11. WASTE DESCRIPTION				12. Containers		13. Total Quantity	
				No. Type		Unit Wt./Vol.	
a. Non Hazardous Soil Non-DOT Regulated Material				04 dm		2600 P	
b.							
c.							
d.							
G. Additional Descriptions for Materials Listed Above				H. Handling Codes for Wastes Listed Above			
15. Special Handling Instructions and Additional Information 11a) 568453 DOCH 810951-13							
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.							
Printed/Typed Name Pam Palin				Signature <i>[Signature]</i>		Date 03 21 13	
17. Transporter 1 Acknowledgement of Receipt of Materials				Printed/Typed Name James Welch		Signature <i>[Signature]</i>	
				Signature <i>[Signature]</i>		Date 03 21 13	
18. Transporter 2 Acknowledgement of Receipt of Materials				Printed/Typed Name Michael V...		Signature <i>[Signature]</i>	
				Signature <i>[Signature]</i>		Date 03 21 13	
19. Discrepancy Indication Space							
20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.							
Printed/Typed Name				Signature		Date	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY

Imported Fill Documentation

METRO ENVIRONMENTAL CONTRACTING CORP.
690-A NORTH QUEENS AVENUE, LINDENHURST, NEW YORK 11757

February 5, 2013

Mr. Josh Levine
Roux Associates, Inc.
209 Shafter Street
Islandia, New York 11749

Re: $\frac{3}{4}$ Inch Stone

Dear Mr. Levine:

Enclosed please find the receipt for one truck load of $\frac{3}{4}$ " clean stone (ASTM 5) which was delivered to a Metro Environmental Contracting job-site. Metro shoveled the stone into 4 drums to take to the Devon Storage site located at 3131 Richmond Terrace, Staten Island, NY. This stone will be used in the Sub Slab Depressurization pits at that location. Tilcon New York, Inc. would not deliver that small amount to the job-site.

If you have any questions or require any additional information, please call.

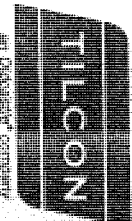
Sincerely,


Gary Hughes
President

CUSTOMER COPY 1

TILCON NEW YORK INC.
162 OLD MILL ROAD, WEST NYACK, NY 10994

NEW YORK ORDERS 800 TRAP ROCK 872-7762
NEW JERSEY ORDERS 800 789 ROCK 789-7625



SCALE NO.	TICKET NO.	DATE	TIME
2	20978901	01/29/13	06:56
WM	ORDER NO.	43	
SHIPPING PLANT			
209 WEST NYACK QUARRY		SOURCE CODE	B-5R
CUSTOMER CODE	CUSTOMER NAME	PROJECT CODE	12177A
87867	METRO ENVIRONMENTAL CONT	HAULER	10114A CONVE
DELIVERY METHOD	ZONE CODE	CONTRACT NUMBER	PURCHASE ORDER
1 Delivery	62120		
DRIVER PRINT NAME (NO INITIALS)		TRUCK CODE	
		1A02	
DRIVER SIGNATURE			

DELIVERY ADDRESS
555 SOUTH BROADWAY TARRYTOWN OLD KRAFT SERVICES

INSTRUCTIONS

516-216-0025 GARY ** ON SITE 7 TO 3 **

ITEM CODE	DESCRIPTION
1015003	3/4" (ASTM#5)

GROSS		771801b	38.59UT
TARE		273801b	13.69UT
NET		498001b	24.90UT
# OF LOADS	US TONS TODAY	METRIC TONS TODAY	
1	24.9	22.59	

CUSTOMER SIGNATURE:

Carles Tola

TILCON NEW YORK INC. ISSUES THIS RECEIPT SOLELY FOR CALCULATING THE WEIGHT OF PURCHASED MATERIALS. CUSTOMER-SHIPPED HAULERS SOLELY RESPONSIBLE FOR OPERATING THE VEHICLE WITHIN ITS PERMITTED WEIGHT LIMITATION AND FOR THE SAFE AND PROPER PICK-UP, HAULING AND DELIVERY OF MATERIALS. CUSTOMER-SHIPPED HAULERS SHALL DERIVED AND NOBODY TILCON NEW YORK INC. AGAINST ANY AND ALL CLAIMS ARISING OUT OF A FAILURE TO (1) COMPLY WITH PERMITTED WEIGHT LIMITATIONS AND (2) SAFELY PICK-UP, HALL AND DELIVER MATERIALS.

OSHA M.S.D.S. AVAILABLE UPON REQUEST

CONTROL NO. C7869808

ON JOB ☐ AM ☐ PM

OFF JOB ☐ AM ☐ PM



162 Old Mill Road
West Nyack, NY 10994
845.358.4500

February 12, 2013

Metro Environmental Contracting Corp.
690 A North Queens Avenue
Lindenhurst, NY 11757

RE: Kraft Food Project, Tarrytown, NY

Gentlemen:

As it is supplied by our West Nyack facility, NYSDOT #2 Stone is produced to meet New York State Department of Transportation (NYSDOT) Standard Specifications. Our West Nyack facility, NYSDOT Source #8-8R, supplies 100% virgin trap rock (diabase) that is quarried and processed to finished sizes. Material shipped from our West Nyack facility is chemically clean and free of contaminants prior to loading for shipment.

The following gradation is presented as typical for NYSDOT #2 Stone:

NYSDOT #2 Stone	
<u>Sieve Size</u>	<u>Percent Passing</u>
1 1/2"	100
1"	92.9
3/4"	34.9
1/2"	1.9
3/8"	1.2
No. 4	1.1

If you have any questions or require additional information, please contact me at 845.422.0675 or at mkalinowski@tilconny.com.

Very truly yours,
Tilcon New York, Inc.

Mike Kalinowski
Supervisor, Quality Control

Vapor Barrier Product Information

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Vapor Barrier & Vapor Retarder - PERMINATOR

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[03 33 00](#)No. 723 [Print Version](#)[Related Cont](#)

Specification – 10 mil	Application I
Specification – 15 mil	
Canada Spec – 10 mil	Material Safety C
Canada Spec – 15 mil	(USA, Canada,

PERMINATOR®

10 and 15 Mil Underslab Vapor Barrier/Retarder

DESCRIPTION

PERMINATOR underslab vapor barrier/retarder is a new generation of polyolefin-based resin/chemical technology. PERMINATOR provides the vapor barrier industry with a highly effective, economical choice for helping to reduce the penetration of moisture and water vapor through the slab into the structure, thereby helping to reduce fungus, mildew, and mold growth. PERMINATOR also helps reduce radon gas from entering the structure.



New resin technology allows dramatically greater puncture resistance while maintaining one of the lowest perm ratings in the market.



PERMINATOR vapor barrier/retarder is tough enough to withstand normal construction jobsite conditions and traffic. It will not crack, puncture, snag, split, or tear easily.

PERMINATOR helps meet and maintain the maximum slab moisture transfer rate of 3 lb./1000 ft.²/24 hr by the flooring industry's specifications.

PERMINATOR is available in 10 mil and 15 mil thicknesses. Both versions are furnished in 200' (61 m) long

PERMINATOR's 12' wide (15 mil) and 15' wide (10 mil) rolls require fewer seams in application. Installation side and end, should be overlapped 6" (152.4 mm) and taped using 4" (101.6 mm) wide PERMINATOR TAPE over level tamped soil or compacted fill.

USES

PERMINATOR underslab vapor barrier/retarder is primarily designed for underslab construction, where compacted fill has been applied. The 200' (61 m) long sheets are unrolled as is or cut to size and installed. Seams are 6" (152.4 mm) wide and these seams are sealed using 4" (101.6 mm) wide PERMINATOR TAPE.

PERMINATOR can also be used as a protection course for waterproofing membranes. The desired sheet top of the waterproofing membranes by PERMINATOR TAPE or TERMINATION BAR. PERMINATOR 10 mil applications of MEL-ROL® LM.

FEATURES/BENEFITS

- Vapor barrier/retarder is available in 10 mil and 15 mil thicknesses, in 200' (61 m) long rolls.
- Helps reduce the penetration of moisture and water vapor through the slab into the structure.
- Helps reduce fungus, mildew, and mold.
- Helps reduce radon gas from entering a structure.
- Resistant to methane gas.
- Tough enough to withstand normal construction jobsite conditions and traffic ... will not crack, puncture, snag, split, or tear easily.
- Installs quickly and easily over tamped grade ... no gravel, fill, or sand needed.
- 12' (15 mil) and 15' (10 mil) wide rolls require fewer seams in application.
- Helps meet and maintain the maximum slab moisture transfer rate of 3 lb./1000 ft.²/24 hours (1.45 flooring industry's specifications).
- 10 or 15 mil thickness clearly marked on membrane for easy visual identification on jobsite.
- VOC content is 0 g/L.
- Made in America.

PACKAGING

10 mil: 15' wide (4.57 m), 200' long (60.96 m) or 54" wide (1.37 m), 400' long (121.92 m) by special order

15 mil: 12' wide (3.66 m), 200' long (60.96 m)

SPECIFICATIONS

Meets or exceeds all requirements of ASTM E-1745-11 Class A, B & C.

ACI 302.2R: Guide for Concrete Slabs that Receive Moisture Sensitive Flooring Materials makes a suggestion when flooring materials require protection lower than that determined by ASTM E-1745. PERMINATOR 1

TECHNICAL DATA

Properties	PERMINATOR (10 mil)
Water Vapor Permeance ASTM E-96, Water Method Perms	0.0183
Puncture Resistance ASTM D-1709 Method B Grams	>3500
Tensile Strength ASTM E-154 Section 9 Lb. Force/Inch	52
Water Vapor Permeance After Wetting Out Drying Out and After Long-Term Soaking ASTM E-154 Section 8 ASTM E-96 Procedure B Perms	0.0219
Water Vapor Permeance Resistance to Plastic Flow and Elevated Temperature ASTM E-154 Section 11 ASTM E-96 Procedure B Perms	0.0197
Water Vapor Permeance Effect Low Temperature and Flexibility	0.0212

**System Startup
Effluent Vapor Analytical Results**



03/28/13

Technical Report for

Roux Associates

Devon Self Storage, 3131 Richmond Terminal, Staten Island, NY

2077.0001Y000

Accutest Job Number: JB31535

Sampling Date: 03/01/13

Report to:

Roux Associates

jlevine@rouxinc.com

ATTN: Josh Levine

Total number of pages in report: **12**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

A handwritten signature in black ink that reads 'Nancy F. Cole'.

Nancy Cole
Laboratory Director

Client Service contact: Marty Vitanza 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, OH VAP (CL0056), PA, RI, SC, TN, VA, WV

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

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Sample Summary

Roux Associates

Job No: JB31535

Devon Self Storage, 3131 Richmond Terminal, Staten Island, NY
Project No: 2077.0001Y000

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JB31535-1	03/01/13	11:20 CP	03/15/13	AIR	Soil Vapor Grab	EFF030113

Summary of Hits

Job Number: JB31535**Account:** Roux Associates**Project:** Devon Self Storage, 3131 Richmond Terminal, Staten Island, NY**Collected:** 03/01/13

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

JB31535-1 EFF030113

Acetone	30.3	0.80	0.28	ppbv	TO-15
Chloroform	11.2	0.80	0.10	ppbv	TO-15
Carbon tetrachloride	7.4	0.80	0.078	ppbv	TO-15
Cyclohexane	1.5	0.80	0.20	ppbv	TO-15
Dichlorodifluoromethane	0.42 J	0.80	0.095	ppbv	TO-15
Ethanol	2.4	2.0	0.68	ppbv	TO-15
Ethylbenzene	1.4	0.80	0.12	ppbv	TO-15
Isopropyl Alcohol	11.4	0.80	0.26	ppbv	TO-15
Methylene chloride	0.93	0.80	0.22	ppbv	TO-15
Methyl ethyl ketone	49.8	0.80	0.17	ppbv	TO-15
Tetrachloroethylene	0.22	0.16	0.097	ppbv	TO-15
Tetrahydrofuran	201	2.0	0.74	ppbv	TO-15
Trichloroethylene	11.4	0.16	0.14	ppbv	TO-15
m,p-Xylene	2.4	0.80	0.23	ppbv	TO-15
Xylenes (total)	2.4	0.80	0.15	ppbv	TO-15
Acetone	72.0	1.9	0.67	ug/m3	TO-15
Chloroform	54.7	3.9	0.49	ug/m3	TO-15
Carbon tetrachloride	47	5.0	0.49	ug/m3	TO-15
Cyclohexane	5.2	2.8	0.69	ug/m3	TO-15
Dichlorodifluoromethane	2.1 J	4.0	0.47	ug/m3	TO-15
Ethanol	4.5	3.8	1.3	ug/m3	TO-15
Ethylbenzene	6.1	3.5	0.52	ug/m3	TO-15
Isopropyl Alcohol	28.0	2.0	0.64	ug/m3	TO-15
Methylene chloride	3.2	2.8	0.76	ug/m3	TO-15
Methyl ethyl ketone	147	2.4	0.50	ug/m3	TO-15
Tetrachloroethylene	1.5	1.1	0.66	ug/m3	TO-15
Tetrahydrofuran	593	5.9	2.2	ug/m3	TO-15
Trichloroethylene	61.3	0.86	0.75	ug/m3	TO-15
m,p-Xylene	10	3.5	1.0	ug/m3	TO-15
Xylenes (total)	10	3.5	0.65	ug/m3	TO-15

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	EFF030113	Date Sampled:	03/01/13
Lab Sample ID:	JB31535-1	Date Received:	03/15/13
Matrix:	AIR - Soil Vapor Grab Summa ID: A774	Percent Solids:	n/a
Method:	TO-15		
Project:	Devon Self Storage, 3131 Richmond Terminal, Staten Island, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2W37886.D	1	03/19/13	YXC	n/a	n/a	V2W1584
Run #2	2W37895.D	1	03/19/13	YXC	n/a	n/a	V2W1585

	Initial Volume
Run #1	100 ml
Run #2	40.0 ml

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
67-64-1	58.08	Acetone	30.3	0.80	0.28	ppbv		72.0	1.9	0.67	ug/m3
106-99-0	54.09	1,3-Butadiene	ND	0.80	0.11	ppbv		ND	1.8	0.24	ug/m3
71-43-2	78.11	Benzene	ND	0.80	0.11	ppbv		ND	2.6	0.35	ug/m3
75-27-4	163.8	Bromodichloromethane	ND	0.80	0.12	ppbv		ND	5.4	0.80	ug/m3
75-25-2	252.8	Bromoform	ND	0.80	0.12	ppbv		ND	8.3	1.2	ug/m3
74-83-9	94.94	Bromomethane	ND	0.80	0.096	ppbv		ND	3.1	0.37	ug/m3
593-60-2	106.9	Bromoethene	ND	0.80	0.11	ppbv		ND	3.5	0.48	ug/m3
100-44-7	126	Benzyl Chloride	ND	0.80	0.19	ppbv		ND	4.1	0.98	ug/m3
75-15-0	76.14	Carbon disulfide	ND	0.80	0.094	ppbv		ND	2.5	0.29	ug/m3
108-90-7	112.6	Chlorobenzene	ND	0.80	0.16	ppbv		ND	3.7	0.74	ug/m3
75-00-3	64.52	Chloroethane	ND	0.80	0.14	ppbv		ND	2.1	0.37	ug/m3
67-66-3	119.4	Chloroform	11.2	0.80	0.10	ppbv		54.7	3.9	0.49	ug/m3
74-87-3	50.49	Chloromethane	ND	0.80	0.22	ppbv		ND	1.7	0.45	ug/m3
107-05-1	76.53	3-Chloropropene	ND	0.80	0.14	ppbv		ND	2.5	0.44	ug/m3
95-49-8	126.6	2-Chlorotoluene	ND	0.80	0.12	ppbv		ND	4.1	0.62	ug/m3
56-23-5	153.8	Carbon tetrachloride	7.4	0.80	0.078	ppbv		47	5.0	0.49	ug/m3
110-82-7	84.16	Cyclohexane	1.5	0.80	0.20	ppbv		5.2	2.8	0.69	ug/m3
75-34-3	98.96	1,1-Dichloroethane	ND	0.80	0.078	ppbv		ND	3.2	0.32	ug/m3
75-35-4	96.94	1,1-Dichloroethylene	ND	0.80	0.090	ppbv		ND	3.2	0.36	ug/m3
106-93-4	187.9	1,2-Dibromoethane	ND	0.80	0.12	ppbv		ND	6.1	0.92	ug/m3
107-06-2	98.96	1,2-Dichloroethane	ND	0.80	0.11	ppbv		ND	3.2	0.45	ug/m3
78-87-5	113	1,2-Dichloropropane	ND	0.80	0.14	ppbv		ND	3.7	0.65	ug/m3
123-91-1	88.12	1,4-Dioxane	ND	0.80	0.47	ppbv		ND	2.9	1.7	ug/m3
75-71-8	120.9	Dichlorodifluoromethane	0.42	0.80	0.095	ppbv	J	2.1	4.0	0.47	ug/m3
124-48-1	208.3	Dibromochloromethane	ND	0.80	0.14	ppbv		ND	6.8	1.2	ug/m3
156-60-5	96.94	trans-1,2-Dichloroethylene	ND	0.80	0.11	ppbv		ND	3.2	0.44	ug/m3
156-59-2	96.94	cis-1,2-Dichloroethylene	ND	0.80	0.10	ppbv		ND	3.2	0.40	ug/m3
10061-01-5	111	cis-1,3-Dichloropropene	ND	0.80	0.13	ppbv		ND	3.6	0.59	ug/m3
541-73-1	147	m-Dichlorobenzene	ND	0.80	0.11	ppbv		ND	4.8	0.66	ug/m3
95-50-1	147	o-Dichlorobenzene	ND	0.80	0.15	ppbv		ND	4.8	0.90	ug/m3
106-46-7	147	p-Dichlorobenzene	ND	0.80	0.24	ppbv		ND	4.8	1.4	ug/m3
10061-02-6	111	trans-1,3-Dichloropropene	ND	0.80	0.096	ppbv		ND	3.6	0.44	ug/m3

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EFF030113	Date Sampled:	03/01/13
Lab Sample ID:	JB31535-1	Date Received:	03/15/13
Matrix:	AIR - Soil Vapor Grab Summa ID: A774	Percent Solids:	n/a
Method:	TO-15		
Project:	Devon Self Storage, 3131 Richmond Terminal, Staten Island, NY		

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
64-17-5	46.07	Ethanol	2.4	2.0	0.68	ppbv		4.5	3.8	1.3	ug/m3
100-41-4	106.2	Ethylbenzene	1.4	0.80	0.12	ppbv		6.1	3.5	0.52	ug/m3
141-78-6	88	Ethyl Acetate	ND	0.80	0.51	ppbv		ND	2.9	1.8	ug/m3
622-96-8	120.2	4-Ethyltoluene	ND	0.80	0.11	ppbv		ND	3.9	0.54	ug/m3
76-13-1	187.4	Freon 113	ND	0.80	0.11	ppbv		ND	6.1	0.84	ug/m3
76-14-2	170.9	Freon 114	ND	0.80	0.093	ppbv		ND	5.6	0.65	ug/m3
142-82-5	100.2	Heptane	ND	0.80	0.11	ppbv		ND	3.3	0.45	ug/m3
87-68-3	260.8	Hexachlorobutadiene	ND	0.80	0.12	ppbv		ND	8.5	1.3	ug/m3
110-54-3	86.17	Hexane	ND	0.80	0.20	ppbv		ND	2.8	0.70	ug/m3
591-78-6	100	2-Hexanone	ND	0.80	0.21	ppbv		ND	3.3	0.86	ug/m3
67-63-0	60.1	Isopropyl Alcohol	11.4	0.80	0.26	ppbv		28.0	2.0	0.64	ug/m3
75-09-2	84.94	Methylene chloride	0.93	0.80	0.22	ppbv		3.2	2.8	0.76	ug/m3
78-93-3	72.11	Methyl ethyl ketone	49.8	0.80	0.17	ppbv		147	2.4	0.50	ug/m3
108-10-1	100.2	Methyl Isobutyl Ketone	ND	0.80	0.34	ppbv		ND	3.3	1.4	ug/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	0.80	0.18	ppbv		ND	2.9	0.65	ug/m3
80-62-6	100.12	Methylmethacrylate	ND	0.80	0.15	ppbv		ND	3.3	0.61	ug/m3
115-07-1	42	Propylene	ND	2.0	0.14	ppbv		ND	3.4	0.24	ug/m3
100-42-5	104.1	Styrene	ND	0.80	0.098	ppbv		ND	3.4	0.42	ug/m3
71-55-6	133.4	1,1,1-Trichloroethane	ND	0.80	0.097	ppbv		ND	4.4	0.53	ug/m3
79-34-5	167.9	1,1,2,2-Tetrachloroethane	ND	0.80	0.14	ppbv		ND	5.5	0.96	ug/m3
79-00-5	133.4	1,1,2-Trichloroethane	ND	0.80	0.14	ppbv		ND	4.4	0.76	ug/m3
120-82-1	181.5	1,2,4-Trichlorobenzene	ND	0.80	0.38	ppbv		ND	5.9	2.8	ug/m3
95-63-6	120.2	1,2,4-Trimethylbenzene	ND	0.80	0.12	ppbv		ND	3.9	0.59	ug/m3
108-67-8	120.2	1,3,5-Trimethylbenzene	ND	0.80	0.18	ppbv		ND	3.9	0.88	ug/m3
540-84-1	114.2	2,2,4-Trimethylpentane	ND	0.80	0.12	ppbv		ND	3.7	0.56	ug/m3
75-65-0	74.12	Tertiary Butyl Alcohol	ND	0.80	0.20	ppbv		ND	2.4	0.61	ug/m3
127-18-4	165.8	Tetrachloroethylene	0.22	0.16	0.097	ppbv		1.5	1.1	0.66	ug/m3
109-99-9	72.11	Tetrahydrofuran	201 ^a	2.0	0.74	ppbv		593 ^a	5.9	2.2	ug/m3
108-88-3	92.14	Toluene	ND	0.80	0.13	ppbv		ND	3.0	0.49	ug/m3
79-01-6	131.4	Trichloroethylene	11.4	0.16	0.14	ppbv		61.3	0.86	0.75	ug/m3
75-69-4	137.4	Trichlorofluoromethane	ND	0.80	0.11	ppbv		ND	4.5	0.62	ug/m3
75-01-4	62.5	Vinyl chloride	ND	0.80	0.087	ppbv		ND	2.0	0.22	ug/m3
108-05-4	86	Vinyl Acetate	ND	0.80	0.22	ppbv		ND	2.8	0.77	ug/m3
	106.2	m,p-Xylene	2.4	0.80	0.23	ppbv		10	3.5	1.0	ug/m3
95-47-6	106.2	o-Xylene	ND	0.80	0.15	ppbv		ND	3.5	0.65	ug/m3
1330-20-7	106.2	Xylenes (total)	2.4	0.80	0.15	ppbv		10	3.5	0.65	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	93%	96%	65-128%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 3 of 3

Client Sample ID:	EFF030113	Date Sampled:	03/01/13
Lab Sample ID:	JB31535-1	Date Received:	03/15/13
Matrix:	AIR - Soil Vapor Grab	Summa ID:	A774
Method:	TO-15	Percent Solids:	n/a
Project:	Devon Self Storage, 3131 Richmond Terminal, Staten Island, NY		

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
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(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Summa Canister and Flow Controller Log

CHAIN OF CUSTODY

Air Sampling Field Data Sheet

== 2020/01/01 ==

ML-21257201-28 PAGE 1 OF 1

2031535

Company Name K&K Associates		Client Reporting Information Project Name: Bacon Springs		Weather Parameters Temperature (Fahrenheit) Site: 37.0 F Max/min Site: 37.4 F Min/min		Requested Analysis Standard TO-15 Reporting Unit					
Address 209. S. Main St City: ISHMAN State: NY Zip: 11749		Street 331 Richmond Ter. City: Stony Brook State: NY		Atmospheric Pressure (inches of Hg) Site: 29.69 Max/min Site: 29.69 Min/min							
Project Contact John Leone Email: jleone@kka.com		Project # 20770011000		Other weather comment							
Phone # (631) 232-2666		Client Purchase Order #									
Sampler(s) Name(s) Christina Pfeiffer											
Lab Sample # -1		Field ID: Point of Collection EFF050113		Air Type SV		Sampling Equipment Info Canister Serial: 7774 Canister Size: 6L Flow Control: V1A	Start Sampling Information Date: 3/11/13 Time (24hr): 1120 Canister Pressure (PSI): N/A Temp (F): 37 Sampler Temp (F): CP		Stop Sampling Information Date: 3/11/13 Time (24hr): 1120 Canister Pressure (PSI): N/A Temp (F): 37 Sampler Temp (F): CP		Standard TO-15 Reporting Unit
				Comments / Remarks Summer							
Turnaround Time / Business days: Standard - 15 Days: X 10 Day: <input type="checkbox"/> 5 Day: <input type="checkbox"/> 3 Day: <input type="checkbox"/> 2 Day: <input type="checkbox"/> 1 Day: <input type="checkbox"/> Other: <input type="checkbox"/>											
Approved By: _____ Date: _____				Data Release Information: A. UNDER TO-15's mandatory P. 11: Comment A: <input checked="" type="checkbox"/> Comment B: <input type="checkbox"/> Reduced T2: <input type="checkbox"/> Full T1: <input type="checkbox"/> Other: <input type="checkbox"/>							
Sample Custody must be documented below each line sample of a single possession, including courier delivery											
Requisitioned by: <i>Chris Pfeiffer</i> Date: 3/25/10		Date Rec'd: 3/15/13 1545		Requisitioned by: <i>Chris Pfeiffer</i> Date: 3/11/13 1400		Received by: <i>Chris Pfeiffer</i>					
Requisitioned by: _____ Date: _____		Date Rec'd: _____		Requisitioned by: _____ Date: _____		Received by: _____					

JB31535: Chain of Custody

Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JB31535 Client: _____ Project: _____
 Date / Time Received: 3/15/2013 Delivery Method: _____ Airbill #s: _____

Cooler Temps (Initial/Adjusted):

Cooler Security 1. Custody Seals Present: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N 2. Custody Seals Intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N	3. COC Present: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N 4. Smpl Dates/Time OK: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N
---	---

Cooler Temperature
 1. Temp criteria achieved: ☒ Y ☐ N
 2. Cooler temp verification: _____
 3. Cooler media: _____
 4. No. Coolers: _____ 0

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Sample Integrity - Documentation
 1. Sample labels present on bottles: ☒ Y ☐ N
 2. Container labeling complete: ☒ Y ☐ N
 3. Sample container label / COC agree: ☒ Y ☐ N

Sample Integrity - Condition
 1. Sample recvd within HT: ☒ Y ☐ N
 2. All containers accounted for: ☒ Y ☐ N
 3. Condition of sample: _____ Intact

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

Summa Canister and Flow Controller Log

Job Number: JB31535
Account: ROUXNYI Roux Associates
Project: Devon Self Storage, 3131 Richmond Terminal, Staten Island, NY
Received: 03/15/13

SUMMA CANISTERS												
Shipping							Receiving					
Summa ID	Vac L	Date " Hg Out	By	SCC Batch	SCC FileID	Sample Number	Date In	By	Vac " Hg	Pres psig	Final psig	Dil Fact
A774	6	29.4	02/25/13	YMH	CP6004	3W32453.D	JB31535-1	03/18/13	DF	1.5		1

Accutest Bottle Order(s):
MV-2/25/2013-28

Prep Date Room Temp(F) Bar Pres "Hg
02/25/13 70 29.92

Air Guide-1 Evaluation

Table 1. New York State Department of Environmental Conservation DAR-1 (formerly Air Guide-1) Worksheet, Devon Self Storage, Staten Island, New York.

DIVISION OF AIR RESOURCES (FORMERLY AIR GUIDE-1) - WORKSHEET

Version: 1991 Edition with update October 18, 2010 from NYSDEC Air Guide-1 Appendix B.

DATE:		03/22/13	CALCULATED BLDG. CAVITY HEIGHT			77.125	feet		
JOB NAME:		Devon Self Storage	THE PHYSICAL STACK HEIGHT IS LESS THAN THE BLDG CAVITY HEIGHT						
JOB NUMBER:		2077.001Y000	THEREFORE:						
LOCATION:		Staten Island, NY	CAVITY IMPACTS NEED TO BE CALCULATED						
			CONTAMINANT	CAS #		LOADING			
						(lbs/hr)	(lbs/yr)		
Influent Concentrations from March 1, 2013 gw, calculated at 90 acfm to obtain loading in lbs/hr			Acetone	00067-64-1		2.43E-02	212.79		
AIR EMISSION POINT			Chloroform	00067-66-3		1.85E-02	161.66		
			Carbon tetrachloride	00056-23-5		1.59E-02	138.90		
MAXIMUM VAPOR FLOWRATE:			90	acfm	Cyclohexane	00110-82-7	1.75E-03	15.37	
					Dichlorodifluoromethane	00075-71-8	7.08E-04	6.21	
DISCHARGE TEMPERATURE:			50	Degrees F	Ethanol	00064-17-5	1.52E-03	13.30	
					Ethylbenzene	00100-41-4	2.06E-03	18.03	
AMBIENT TEMPERATURE:			30	Degrees F	Isopropyl Alcohol	00075-09-2	9.45E-03	82.75	
					Methylene Chloride	00078-93-3	1.08E-03	9.46	
BUILDING HEIGHT:			51.42	feet	Methyl ethyl ketone	00067-63-0	4.96E-02	434.44	
					Tetrachlorethylene	00127-18-4	5.06E-04	4.43	
MAX BUILDING WIDTH:			110.00	feet	Tetrahydrofuran	00109-99-9	2.00E-01	1752.54	
					Trichloroethylene	00079-01-6	2.07E-02	181.16	
PHYSICAL STACK HEIGHT:			20	feet	m,p-Xylene	01330-20-7	3.37E-03	29.55	
					Xylenes (total)	01330-20-7	3.37E-03	29.55	
STACK DIAMETER:			4	inches	CAVITY IMPACT EVALUATION (USING BASIC CAVITY IMPACT METHOD)				
CAPPED STACK EXIT? (Y/N)			N		CONTAMINANT	AGC	Cc	Ccst	SGC LIMIT
						(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)
MAXIMUM EXIT VELOCITY:			8.59	feet/sec	Acetone	30000	0.138	5.490	180000
					Chloroform	0.043	0.105	4.171	150
STACK / BUILDING RATIO(Hs/Hb):			0.4		Carbon tetrachloride	0.170	0.090	3.584	1900
					Cyclohexane	6000	0.010	0.396	--
STACK REDUCTION FACTOR:			1.00		Dichlorodifluoromethane	12000	0.004	0.160	--
					Ethanol	45000	0.009	0.343	--
DIST. TO PROP. LINE:			120	feet	Ethylbenzene	1000	0.012	0.465	54000
note: If greater than 3 times building height ignore cavity impacts.					Isopropyl Alcohol	7000	0.054	2.135	98000
					Methylene Chloride	2.10	0.006	0.244	14000
EFFECTIVE STACK HEIGHT:			20.0	feet	Methyl ethyl ketone	5000	0.283	11.208	13000
(INCLUDING MOMENTUM AND BUOYANCY RISE CREDITS)					Tetrachlorethylene	1.00	0.003	0.114	1000
					Tetrahydrofuran	350	1.140	45.214	30000
					Trichloroethylene	0.500	0.118	4.674	14000
					m,p-Xylene	100	0.019	0.762	4300
					Xylenes (total)	100	0.019	0.762	4300

AGC and SGC values from the October 18, 2010 DAR-1 (Air Guide-1) AGC/SGC Tables.

CONCLUSIONS

Short Term Impact Criteria are all met.

There are no exceedances of Short Term Cavity Impacts (Ccst) since Ccst < SGC limit for all compounds.

Annual Cavity Impact (Cc) exceeds the Annual Guidance Criteria (AGC) for Chloroform.

Annual Cavity Impact (Cc) is calculated assuming 24 hr/day, 7 day/week, 365 day/year continuous operation.

Operation of SSDS is not anticipated to maintain Cc concentration over full year duration.

Declaration of Covenants and Restrictions

DECLARATION of COVENANTS and RESTRICTIONS

THIS DECLARATION of Covenants and Restrictions is made as of the ____ day of _____, 20, by [_____] ,a [_____] (for/not-for profit) corporation, having an office at [_____]

WITNESSETH

WHEREAS, [_____] is the current owner of a parcel of real property located at [_____] in [_____] County, State of New York, and comprised of Block [_____] Lot [_____] , on the Borough of Tax Assessor's Map, (the "Property");

WHEREAS, the Property is the subject of a City Brownfield Cleanup Agreement, entitled [project name] dated [_____] , by [_____] and the New York City Office of Environmental Remediation ("Office") (the "Agreement");

WHEREAS, subject to and in accordance with the Agreement, the Office approved the Remedial Action Work Plan (RAWP) for [_____] , dated [_____] which sets forth the selected remedy for the Controlled Property, and such RAWP required submission of a Site Management Plan and that the Controlled Property be subject to restrictive covenants.

1. **NOW, THEREFORE**, [_____] , for itself and its successors and assigns, covenants that:
The Controlled Property is hereby made subject to this Declaration of Covenants and Restrictions. Unless the prior written approval of the Office is first obtained or, if the Office shall no longer exist or no longer have jurisdiction with respect to the enforcement of this Declaration of Covenants and Restrictions, the prior written approval of any New York City agency or agencies whose purpose shall be to protect the public health and environment of the city (the "Relevant Agency") is first obtained:
 - a. The Property may not be used for residential or residential and commercial use without prior approval by the Office. (If residential-strike, if commercial includes residential, if industrial includes residential and commercial.)
 - b. Vegetable gardens are prohibited on the Property.
 - c. Farming is prohibited on the Property.
 - d. This property is subject to engineering and institutional controls defined in a site management plan.
 - e. Engineering controls must be operated and maintained as specified in the Site Management Plan and may not be discontinued or modified without an amendment of the Site Management Plan (approved by the Office) or the termination of this Declaration of Covenants and Restrictions.
 - f. All inspections and certifications pertinent to site management for the Property must be reported at the frequency and in a manner specified in the Site Management Plan.

- h. All future activities on the Property that will disturb residual Soil/ Fill must be conducted in accordance with the Soil/ Fill management provisions in the Site Management Plan.
 - i. The use of the groundwater underlying the Property is prohibited without treatment rendering it safe for the intended purpose.
- 2. This Declaration of Covenants and Restrictions is and shall be deemed a covenant that shall run with the land and shall be binding upon all future owners of the Property.
- 3. Any deed conveying all or a portion of the Property shall recite unless the Relevant Agency has consented to the termination of such covenants and restrictions, that the said conveyance is subject to this Declaration of Covenants and Restrictions and the Site Management Plan.
- 4. It shall be a condition of this Declaration of Covenants and Restrictions that any owner of the Property or Volunteer may, upon not less than thirty (30) days written notice to each of the owners of record of the Property, petition the Relevant Agency to modify or terminate this Declaration of Covenants and Restrictions provided that such party certifies that written notice was provided to each owner of record and Volunteer and that human health and the environment will continue to be protected notwithstanding such modification or termination.
- 5. Any owner of the Property will be subject to loss of benefits conferred by the Office under The Brownfield Cleanup Program if compliance with this Declaration and the Soil Management Plan is not monitored.

IN WITNESS WHEREOF, the undersigned has executed this instrument as of the day set forth below.

By: _____

Name: _____

Title: _____

STATE OF NEW YORK)
) ss:
COUNTY OF)

On the ____ day of _____; in the year 2008, before me, the undersigned,
personally appeared _____,
(Full name)

personally known to me who, being duly sworn, did depose and say that he/she/they reside at

(Full mailing address)

and that he/she/they is (are) the _____
(President or other officer or director or attorney in fact duly appointed)

of the _____,
(Full legal name of corporation)

the corporation described in and which executed the above instrument; and that he/she/they signed his/her/their name (s) thereto by the authority of the board of directors of said corporation.

Notary Public, State of New York

Appendix A

Description of the Controlled Property

**SSDS
Operations and Maintenance Manual**



The Leader in Blower & Vacuum Solutions

460 West Gay Street
West Chester, PA 19380

RMA Real Estate

455 Market Street

Suite 1460

San Francisco, CA 94105

Operation & Maintenance Manual

Gasho Custom Blower Package utilizing Model
DR353BR72M with Moisture Separator #300PS,
Enclosure, Inline Filter, Gauges and Control Panel

JG12G-2651

October 19, 2012

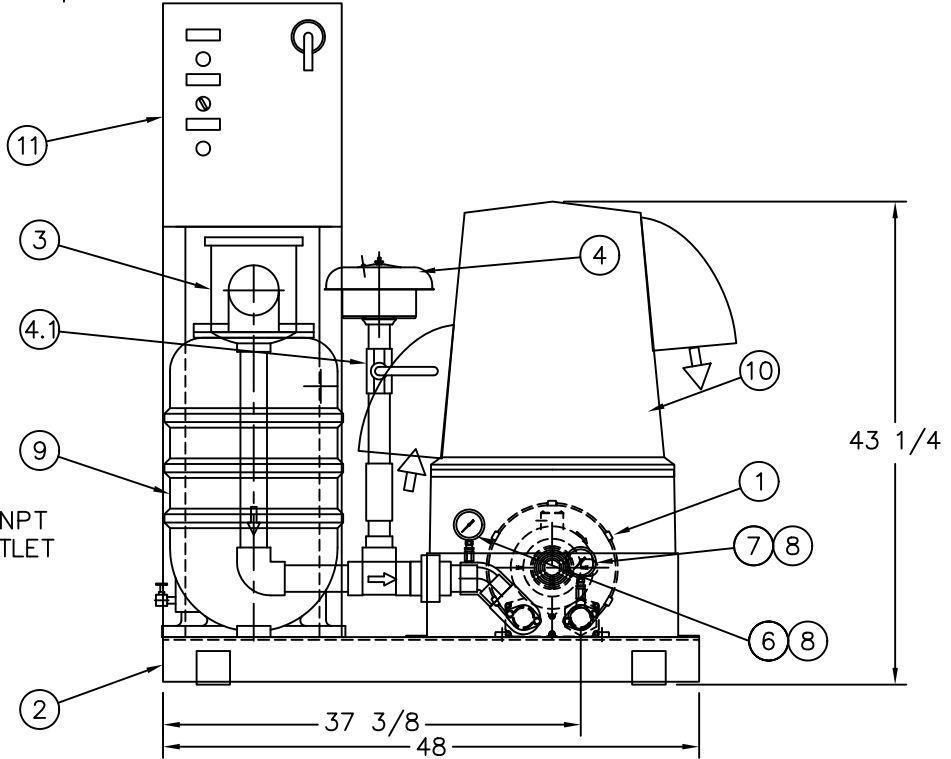
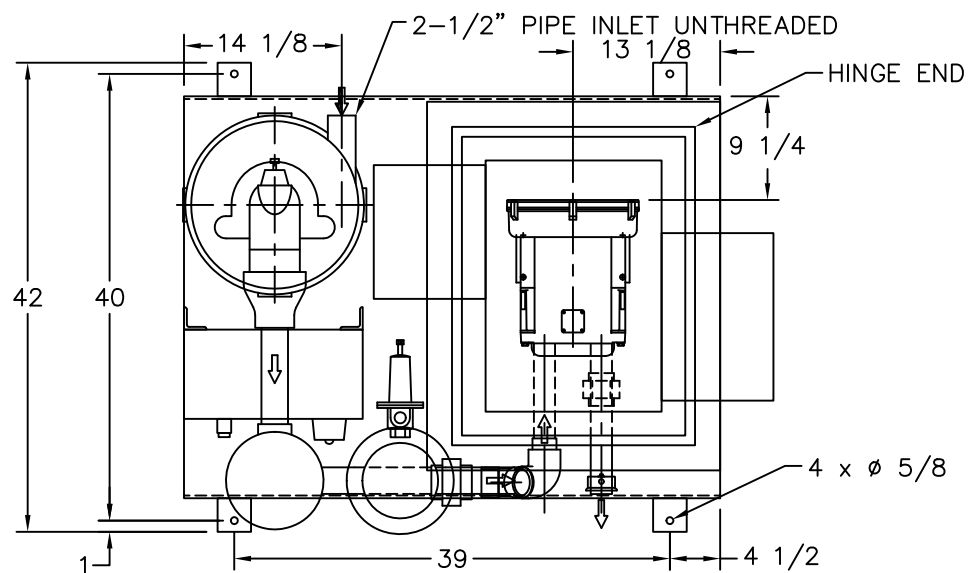
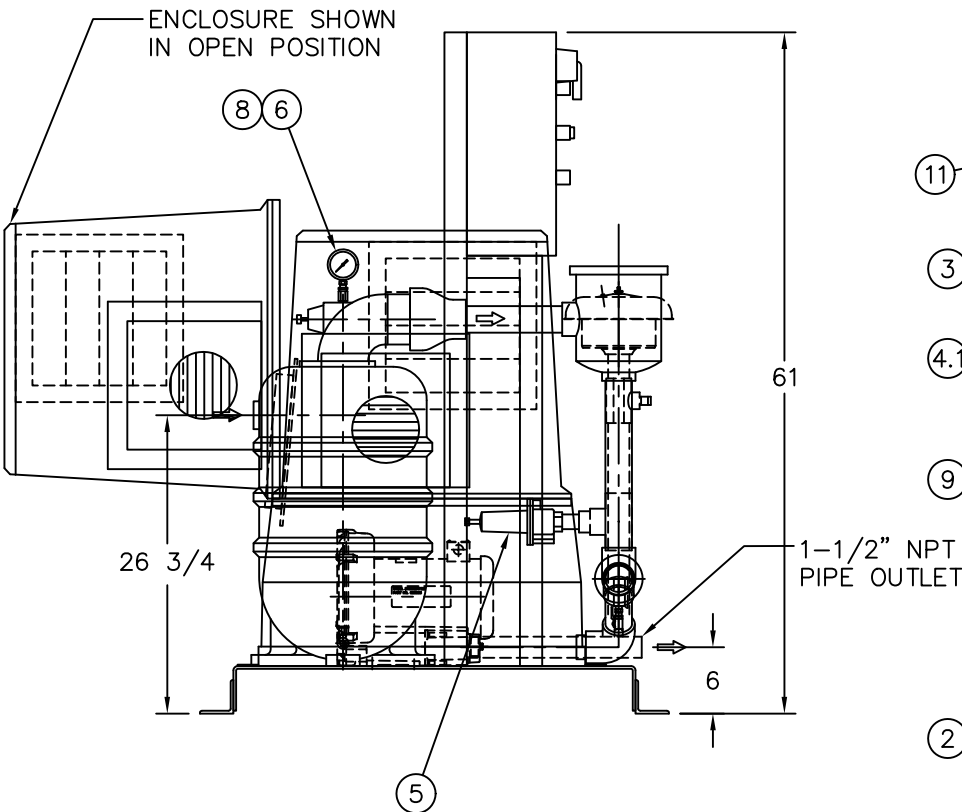


Gasho, Inc.
Blower Package
JG12G-2651

Description	Date	Revision

Item	Qty.	Supplier	Description	Part Number	Misc ID	Weight
1	1	Ametek Rotron	Regenerative Blower	DR353BR72M	P/N 080555	54
2	1	Gasho	Bent Plate	B75 FLOOR		85
3	1	Solberg Mfg.	2" Inline Filter	CSL-851-200HC	element: GA-851	15
4	1	Westwood	1-1/2" Dilution Valve	EMSP-15	element: GA-0471	7
4.01	1	Apollo	1 1/2" Bronze Ball Valve	64-107-01		1
5	1	Fisher	1" Relief Valve	289H-41	set @ 40" H2O	1
6	2	Gasho	Vacuum Gauges	25.0.160.IWC.012.HG		1
7	1	Gasho	Pressure Gauge	25.0.160.IWC.006.PSI		1
8	3	SMC Specialties	Isolation Valves	VA BRS 025-4F4M-BT		1
9	1	Ametek Rotron	Moisture Separator	MS300PS	P/N 038520	42
10	1	Dyer	Enclosure, Deep Base	D-102-39MS	with freight	35
10.1	1	Dyer	48 scfm vent fan and tstat		230v / 3ph / 60hz	
10.2	2	Dyer	Hoods			
10.3	1	Dyer	SS continuous hinge			
11	1	ICP	Nema 4 Control panel	031212-SG2		40
					Weight	283

- NOTES:
1. CUSTOMER PIPING TO BE INDEPENDENTLY SUPPORTED
2. TOLERANCE $\pm 1/2"$
3. CONTROL BOX (ITEM 11) IS REPRESENTATIVE ONLY



- ← ENCLOSURE AIR FLOW
← AIR/LIQUID LINES
← AIR LINES

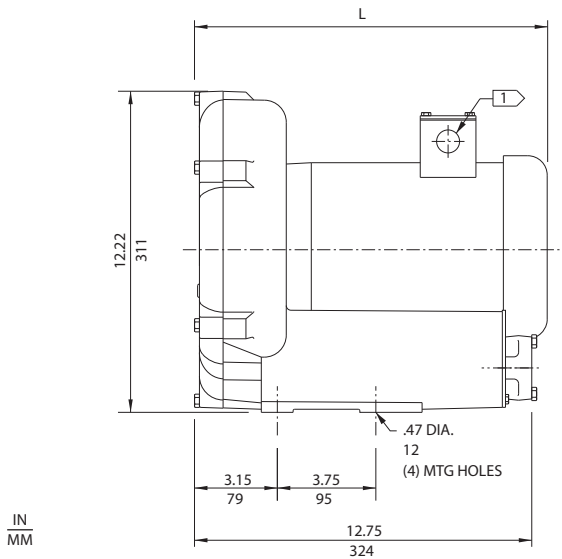
			DRAWN BY: JJH	DATE 8/27/12	J.E.GASHO & Assoc., Inc. 460 W. GAY ST. WEST CHESTER, PENNSYLVANIA 19380	
			APPROVED BY:	DATE		
			DIMENSIONS IN INCHES		BLOWER SYSTEM DR353BR72M MS300 CONT PANEL JG12-H-2651	
			SCALE			
			TOLERANCE ±1/2"	ANGULAR TOLERANCE		
			MATERIAL	WEIGHT		
REV.	DATE	DESCRIPTION	SHEET 1 OF 1		JG12-H-2651	-

Industrial / Chemical Processing Blowers

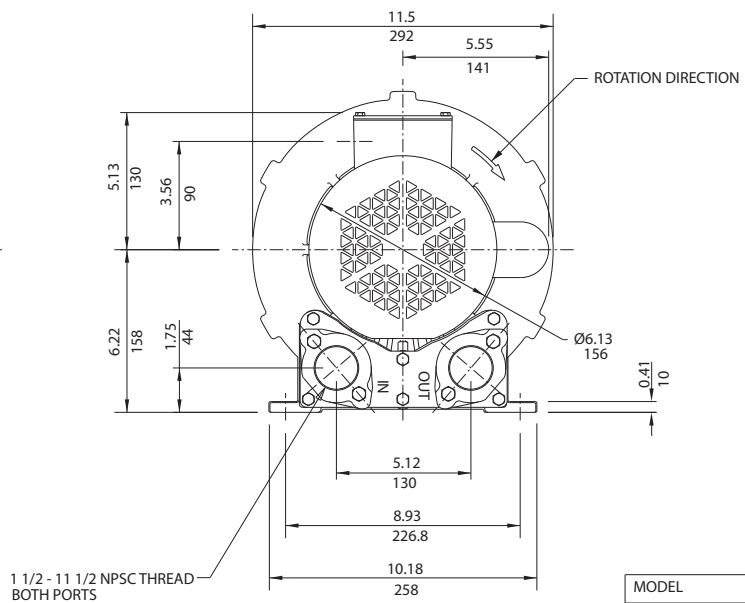
DR 353 & CP 353

.75 HP Regenerative Blower

ROTRON®



- NOTES
- 1) TERMINAL BOX CONNECTOR HOLE .88 (22) DIA.
 - 2) DRAWING NOT TO SCALE, CONTACT FACTORY FOR SCALE CAD DRAWING.
 - 3) CONTACT FACTORY FOR BLOWER MODEL LENGTHS NOT SHOWN.



MODEL	L (IN/MM)
DR353BR9M	13.97/355
DR353BR72M	12.5/317



		Part/Model Number				
Specification	Units	DR353BR9M	DR353BR72M	DR353BR86M	CP353BR72MLR	CP353FD72MLR
		080554	080555	080556		081612
Motor Enclosure - Shaft Mtl.	-	TEFC - CS	TEFC - CS	TEFC - CS	Chem TEFC - CS	Chem TEFC - SS
Horsepower	-	0.75	0.75	0.75	0.75	0.75
Voltage	AC	115/230	230/460	575	230/460	230/460
Phase - Frequency	-	Single - 60 Hz	Three - 60 Hz	Three - 60 Hz	Three 60 Hz	Three 60 Hz
Insulation Class	-	F	F	F	F	F
NEMA Rated Motor Amps	Amps (A)	10.0/5.0	3.0/1.5	0.96	3.0/1.5	3.0/1.5
Service Factor	-	1.15	1.25	1.25	1.25	1.25
Max. Blower Amps	Amps (A)	12/6	3.5/1.75	1.0	3.5/1.75	3.5/1.75
Locked Rotor Amps	Amps (A)	59.6/29.8	15.2/7.6	6.1	15.2/7.6	15.2/7.6
NEMA Starter Size	-	00/00	00/00	00	00/00	00/00
Shipping Weight	Lbs	60	54	54	54	54
	Kg	27.2	24.5	24.5	24.5	24.5

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

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

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

This document is for informational purposes only and should not be considered as a binding description of the products or their performance in all applications. The performance data on this page depicts typical performance under controlled laboratory conditions. AMETEK is not responsible for blowers driven beyond factory specified speed, temperature, pressure, flow or without proper alignment. Actual performance will vary depending on the operating environment and application. AMETEK products are not designed for and should not be used in medical life support applications. AMETEK reserves the right to revise its products without notification. The above characteristics represent standard products. For product designed to meet specific applications, contact AMETEK Technical & Industrial Products Sales department.

AMETEK TECHNICAL & INDUSTRIAL PRODUCTS
 75 North Street, Saugerties, NY 12477
 USA: +1 215-256-6601 - Europe: +44 (0) 845 366 9664 - Asia: +86 21 5763 1258
 Customer Service Fax: +1 215.256.1338
www.ametektip.com

.75 HP Regenerative Blower

FEATURES

- Manufactured in the USA - ISO 9001 and NAFTA compliant
- CE compliant - Declaration of Conformity on file
- Maximum flow: 100 SCFM
- Maximum pressure: 50 IWG
- Maximum vacuum: 45 IWG
- Standard motor: 3/4 HP, TEFC
- Cast aluminum blower housing, impeller & cover; cast iron flanges (threaded)
- UL & CSA approved motor with permanently sealed ball bearings
- Inlet & outlet internal muffling
- Quiet operation within OSHA standards

MOTOR OPTIONS

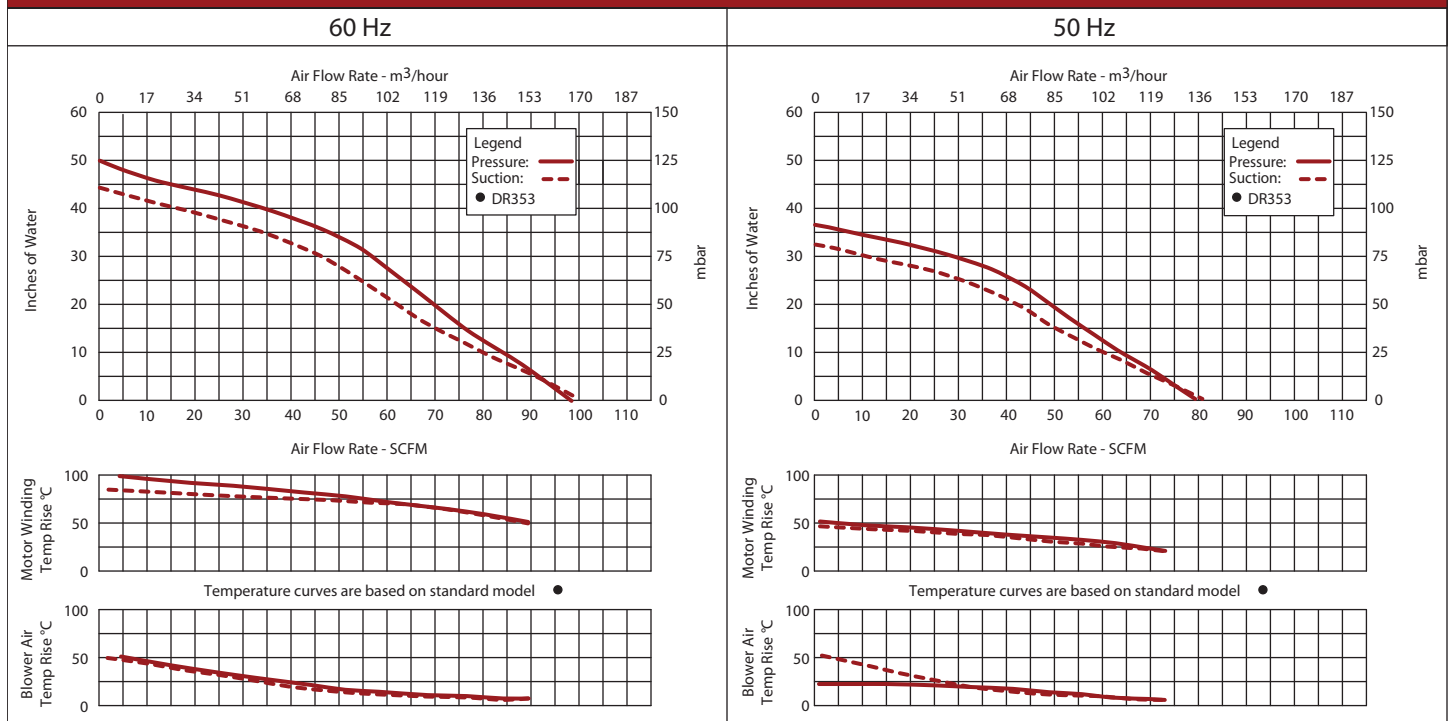
- International voltage & frequency (Hz)
- Chemical duty, high efficiency, inverter duty or industry-specific designs
- Various horsepower for application-specific needs

BLOWER OPTIONS

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

ACCESSORIES

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

**Blower Performance at Standard Conditions**

This document is for informational purposes only and should not be considered as a binding description of the products or their performance in all applications. The performance data on this page depicts typical performance under controlled laboratory conditions. AMETEK is not responsible for blowers driven beyond factory specified speed, temperature, pressure, flow or without proper alignment. Actual performance will vary depending on the operating environment and application. AMETEK products are not designed for and should not be used in medical life support applications. AMETEK reserves the right to revise its products without notification. The above characteristics represent standard products. For product designed to meet specific applications, contact AMETEK Technical & Industrial Products Sales department.

SERVICE AND PARTS MANUAL FOR BLOWER MODEL

DR068 – DR353



Technical & Industrial Products

627 Lake Street
Kent, Ohio 44240 USA
Telephone: 330-673-3452 Fax: 330-677-3306
e-mail: rotronindustrial@ametech.com
internet: <http://www.ametektip.com/>



Your Choice. Our Commitment.™

Revised – February 2005

WARRANTY, INSTALLATION, MAINTENANCE AND TROUBLESHOOTING INSTRUCTIONS



TECHNICAL AND INDUSTRIAL PRODUCTS

627 Lake Street, Kent, Ohio 44240 USA

Telephone: 330-673-3452 Fax: 330-677-3306

e-mail: rotronindustrial@ametek.com web site: www.ametektip.com

1. AMETEK Rotron DR, EN and HiE regenerative direct drive blowers are guaranteed for one full year from the date of installation (limited to 18 months from the date of shipment) to the original purchaser only. Should the blower fail we will evaluate the failure. If failure is determined to be workmanship or material defect related, we will at our option repair or replace the blower.
2. AMETEK Rotron Minispiral, Revaflow, Multiflow, Nautilair, remote drive blowers, moisture separators, packaged units, CP blowers, Nasty Gas™ models and special built (EO) products are guaranteed for one full year from date of shipment for workmanship and material defect to the original purchaser only. Should the blower fail, If failure is determined to be workmanship or material defect related, we will at our option repair or replace the blower.
3. **Parts Policy** - AMETEK Rotron spare parts and accessories are guaranteed for three months from date of shipment for workmanship and material defect to the original purchaser only. If failure is determined to be workmanship or material defect related we will at our option repair or replace the part.

Corrective Action - A written report will be provided indicating reason(s) for failure, with suggestions for corrective action. Subsequent customer failures due to abuse, misuse, misapplication or repeat offense will not be covered. AMETEK Rotron will then notify you of your options. Any failed unit that is tampered with by attempting repair or diagnosis will void the warranty, unless authorized by the factory.

Terms and Conditions - Our warranty covers repairs or replacement of regenerative blowers only, and will not cover labor for installation, outbound and inbound shipping costs, accessories or other items not considered integral blower parts. Charges may be incurred on products returned for reasons other than failures covered by their appropriate warranty. Out-of-warranty product and in warranty product returned for failures determined to be caused by abuse, misuse, or repeat offense will be subject to an evaluation charge. Maximum liability will in no case exceed the value of the product purchased. Damage resulting from mishandling during shipment is not covered by this warranty. It is the responsibility of the purchaser to file claims with the carrier. Other terms and conditions of sale are stated on the back of the order acknowledgement.

Installation Instructions for SL, DR, EN, CP, and HiE Series Blowers

1. **Bolt It Down** - Any blower must be secured against movement prior to starting or testing to prevent injury or damage. The blower does not vibrate much more than a standard electric motor.
2. **Filtration** - All blowers should be filtered prior to starting. Care must be taken so that no foreign material enters the blower. If foreign material does enter the blower, it could cause internal damage or may exit at extremely high velocity.

Should excessive amounts of material pass through the blower, it is suggested that the cover(s) and impeller(s) be removed periodically and cleaned to avoid impeller imbalance. Impeller

imbalance greatly speeds bearing wear, thus reducing blower life. Disassembling the blower will void warranty, so contact the factory for cleaning authorization.

3. **Support the Piping** - The blower flanges and nozzles are designed as connection points only and are not designed to be support members.

Caution: Plastic piping should not be used on blowers larger than 1 HP that are operating near their maximum pressure or suction point. Blower housing and nearby piping temperatures can exceed 200°F. Access by personnel to the blower or nearby piping should be limited, guarded, or marked, to prevent danger of burns.

4. **Wiring** - Blowes must be wired and protected/fused in accordance with local and national electrical codes. All blowers must be grounded to prevent electrical shock. Slo-Blo or time delay fuses should be used to bypass the first second of start-up amperage.
5. **Pressure/Suction Maximums** - The maximum pressure and/or suction listed on the model label should not be exceeded. This can be monitored by means of a pressure or suction gage (available from Rotron), installed in the piping at the blower outlet or inlet. Also, if problems do arise, the Rotron Field representative will need to know the operating pressure/suction to properly diagnose the problem.
6. **Excess Air** - Bleed excess air off. DO NOT throttle to reduce flow. When bleeding off excess air, the blower draws less power and runs cooler.

Note: Remote Drive (Motorless) Blowes - Properly designed and installed guards should be used on all belts, pulleys, couplings, etc. Observe maximum remote drive speed allowable. Due to the range of uses, drive guards are the responsibility of the customer or user. Belts should be tensioned using belt gauge.

Maintenance Procedure

When properly piped, filtered, and applied, little or no routine maintenance is required. Keep the filter clean. Also, all standard models in the DR, EN, CP, and HiE series have sealed bearings that require no maintenance. Bearing should be changed after 15,000 to 20,000 hours, on average. Replacement bearing information is specified on the chart below.

Bearing Part Number	Size	Seal Material	Grease	Heat Stabilized
510217 510218 510219	205 206 207	Polyacrylic	Nye Rheotemp 500 30% +/- 5% Fill	Yes – 325 F
510449 516440 516648	203 202 307	Buna N	Exxon Polyrex Grease	NO
516840 516841 516842 516843 516844 516845 516846 516847	206 207 208 210 309 310 311 313	Buna N	Exxon Polyrex Grease	NO

Troubleshooting

		POSSIBLE CAUSE	OUT OF WARRANTY REMEDY ***
IMPELLER DOES NOT TURN	Humming Sound	1. * One phase of power line not connected 2. * One phase of stator winding open 3. Bearings defective 4. Impeller jammed by foreign material 5. Impeller jammed against housing or cover 6. ** Capacitor open	1. Connect 2. Rewind or buy new motor 3. Change bearings 4. Clean and add filter 5. Adjust 6. Change capacitor
	No Sound	1. * Two phases of power line not connected 2. * Two phases of stator winding open	1. Connect 2. Rewind or buy new motor
IMPELLER TURNS	Blown Fuse	1. Insufficient fuse capacity 2. Short circuit	1. Use time delay fuse of proper rating 2. Repair
	Motor Overheated Or Protector Trips	1. High or low voltage 2. * Operating in single phase condition 3. Bearings defective 4. Impeller rubbing against housing or cover 5. Impeller or air passage clogged by foreign material 6. Unit operating beyond performance range 7. Capacitor shorted 8. * One phase of stator winding short circuited	1. Check input voltage 2. Check connections 3. Check bearings 4. Adjust 5. Clean and add filter 6. Reduce system pressure/vacuum 7. Change capacitor 8. Rewind or buy new motor
	Abnormal Sound	1. Impeller rubbing against housing or cover 2. Impeller or air passages clogged by foreign material 3. Bearings defective	1. Adjust 2. Clean and add filter 3. Change bearings
	Performance Below Standard	1. Leak in piping 2. Piping and air passages clogged 3. Impeller rotation reversed 4. Leak in blower 5. Low voltage	1. Tighten 2. Clean 3. Check wiring 4. Tighten cover, flange 5. Check input voltage
* 3 phase units ** 1 phase units *** Disassembly and repair of new blowers or motors will void the Rotron warranty. Factory should be contacted prior to any attempt to field repair an in-warranty unit.			

Blower Disassembly:

WARNING: Attempting to repair or diagnose a blower may void Rotron's warranty. It may also be difficult to successfully disassemble and reassemble the unit.

- 1) Disconnect the power leads. **CAUTION:** Be sure the power is disconnected before doing any work whatsoever on the unit.
- 2) Remove or separate piping and/or mufflers and filters from the unit.
- 3) Remove the cover bolts and then the cover. **NOTE:** Some units are equipped with seals. It is mandatory that these seals be replaced once the unit has been opened.
- 4) Remove the impeller bolt and washers and then remove the impeller. **NOTE:** Never pry on the edges of the impeller. Use a puller as necessary.
- 5) Carefully note the number and location of the shims. Remove and set them aside. **NOTE:** If the disassembly was for inspection and cleaning the unit may now be reassembled by reversing the above steps. If motor servicing or replacement and/or impeller replacement is required the same shims may not be used. It will be necessary to re-shim the impeller according to the procedure explained under assembly.

- 6) Remove the housing bolts and remove the motor assembly (arbor/housing on remote drive models).
- 7) Arbor disassembly (Applicable on remote drive models only):
 - a) Slide the bearing retraining sleeve off the shaft at the blower end.
 - b) Remove the four (4) screws and the bearing retaining plate from the blower end.
 - c) Lift the shaft assembly far enough out of the arbor to allow removal of the blower end snap ring.
 - d) Remove the shaft assembly from the arbor.
 - e) If necessary, remove the shaft dust seal from the pulley end of the arbor.

Muffler Material Replacement:

- 1) Remove the manifold cover bolts and then manifold cover.
- 2) The muffler material can now be removed and replaced if necessary. On blowers with fiberglass acoustical wrap the tubular retaining screens with the fiberglass matting before sliding the muffler pads over the screens.
- 3) Reassemble by reversing the procedure.

NOTE: On DR068 models with tubular mufflers it is necessary to remove the cover and impeller accessing the muffler material from the housing cavity.

Blower Reassembly:

- 1) Place the assembled motor (assembled arbor assembly for remote drive models) against the rear of the housing and fasten with the bolts and washer.
- 2) To ensure the impeller is centered within the housing cavity re-shim the impeller according to the procedure outlined below.
- 3) If blower had a seal replace the seal with a new one.
- 4) Place the impeller onto the shaft making sure the shaft key is in place and fasten with the bolt, washer and spacer as applicable. Torque the impeller bolt per the table below. Once fastened carefully rotate the impeller to be sure it turns freely.
- 5) Replace the cover and fasten with bolts.
- 6) Reconnect the power leads to the motor per the motor nameplate.

Bolt Size	Torque Pound-Force-Foot
1/4-20	6.25 +/- 0.25
5/16-18	11.5 +/- 0.25
3/8-16	20.0 +/- 0.5
1/2-13	49.0 +/- 1
5/8 –11	90.0 +/- 2

Impeller Shimming Procedure:

WARNING: This unit may be difficult to shim. Extreme care may be exercised.

Tools Needed: Machinist's Parallel Bar
Vernier Caliper with depth measuring capability
Feeler gauges or depth gauge

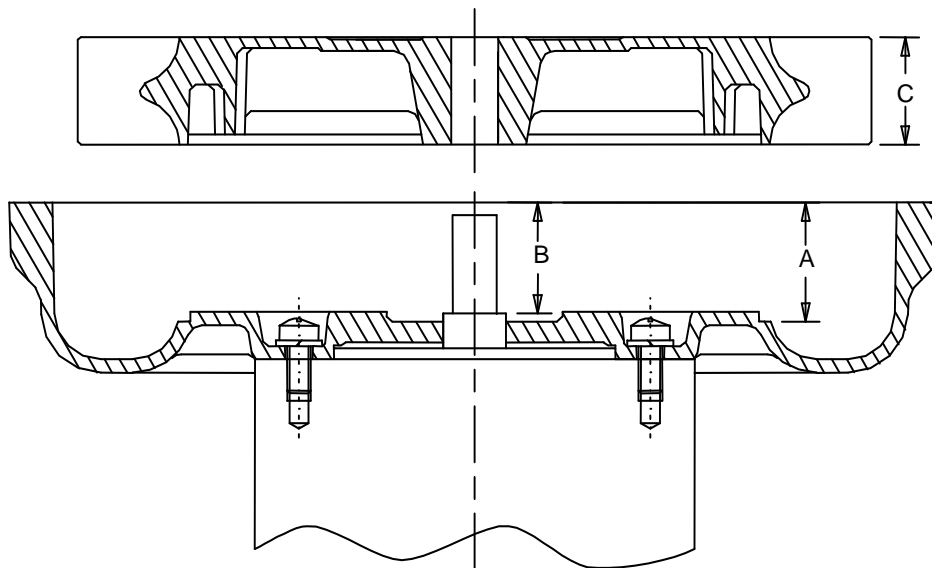
Measure the Following:

Distance from the flange face to the housing (A)
Distance from the flange face to the motor shaft shoulder (B)
Impeller Thickness (C)

Measurements (A) and (B) are made by laying the parallel bar across the housing flange face and measuring to the proper points. Each measurement should be made at three points, and the average of the readings should be used.

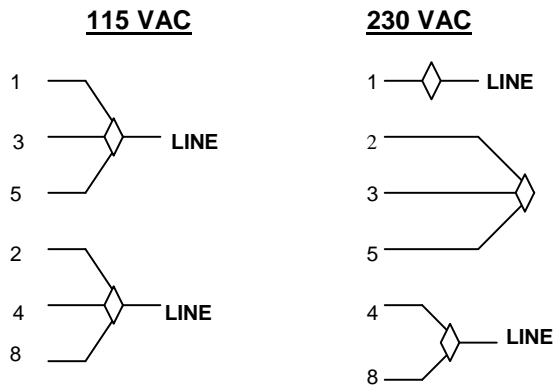
$$\text{Shim Thickness} = B - (A+C)/2$$

After the impeller installation (step #4 above) the impeller/cover clearance can be checked with feeler gauges, laying the parallel bar across the housing flange face. This clearance should nominally be $(A-C)/2$.



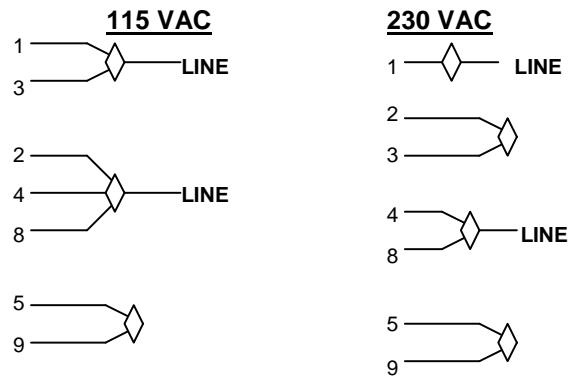
WIRING DIAGRAMS, TEFC and ODP MOTORS

A. 1Ø, 6 WIRE



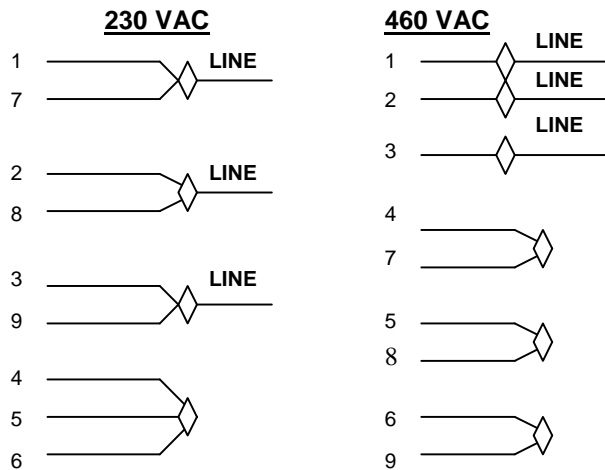
INTERCHANGE LEADWIRES 5 & 8 to REVERSE ROTATION

B. 1Ø, 7 WIRE



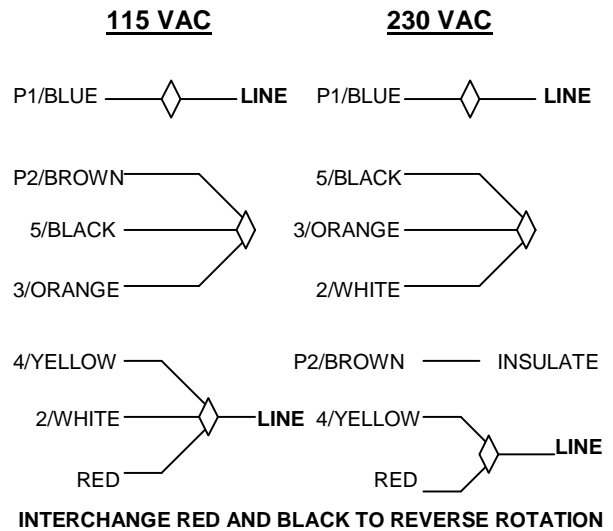
INTERCHANGE LEADWIRES 5 & 8 to REVERSE ROTATION

C. 3Ø, 9 WIRE



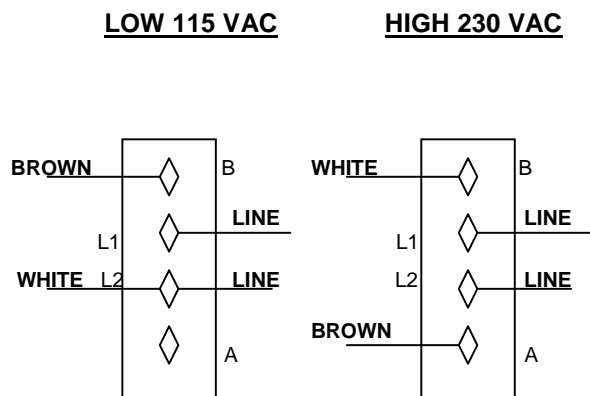
INTERCHANGE ANY TWO LEAD LINES TO REVERSE ROTATION

D. 1Ø, EMERSON 1/8 HP MOTOR



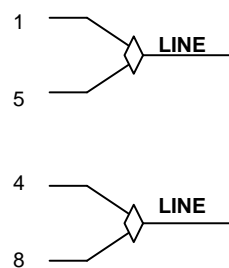
INTERCHANGE RED AND BLACK TO REVERSE ROTATION

E. 1Ø, SPA DUTY WITH TERMINAL STRIPS



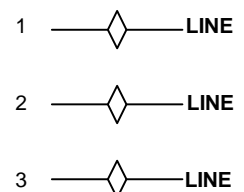
F. 1Ø, 230 VAC

SINGLE VOLTAGE



INTERCHANGE LEAD WIRES 5 & 8 TO REVERSE ROTATION

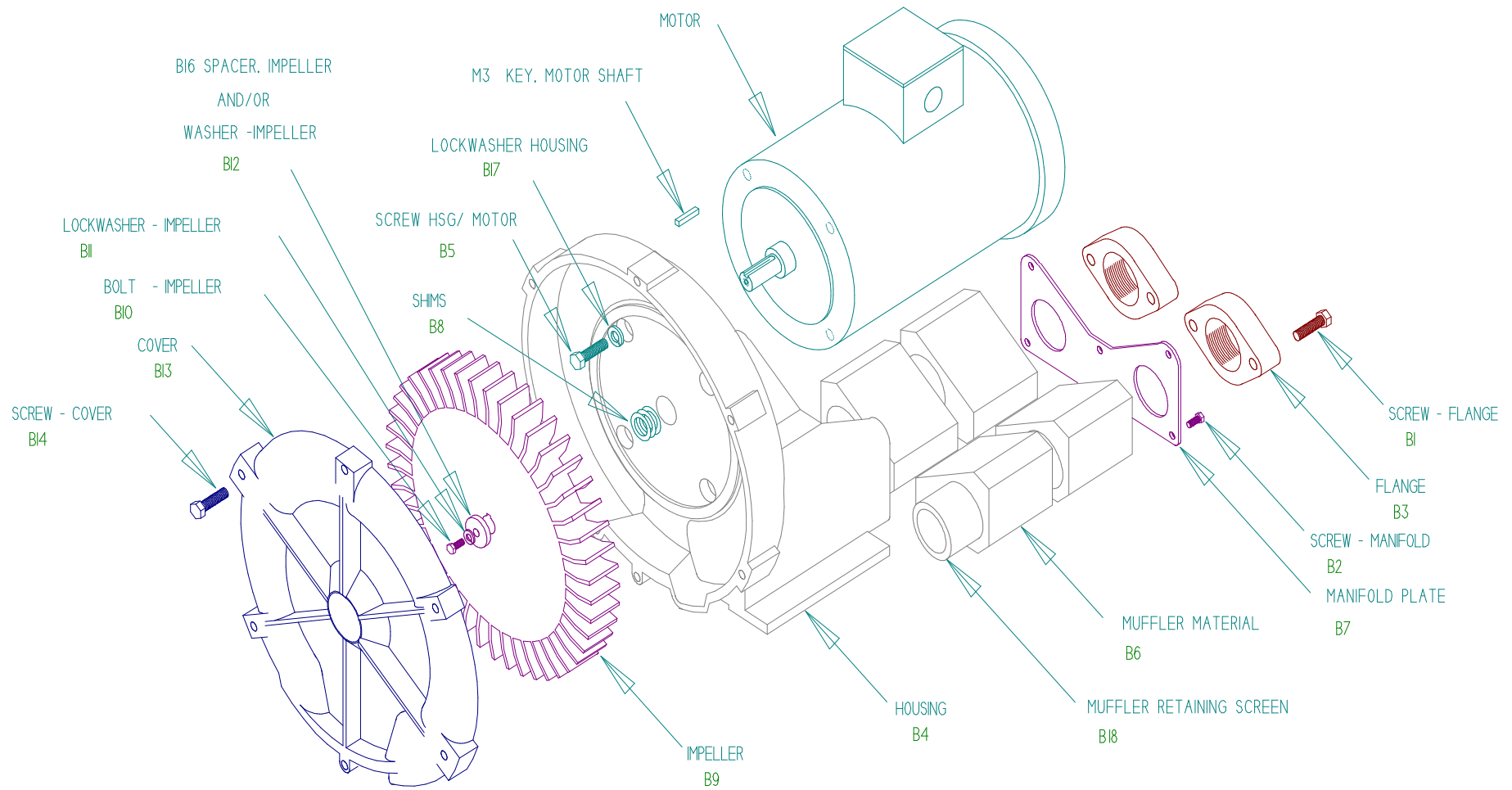
G. 3Ø, 575 VAC



INTERCHANGE ANY TWO LEAD LINES TO REVERSE ROTATION

ASSEMBLY DIAGRAM

DR068 - DR353



DR 068/083/101
Service and Parts Manual

Parts Breakdown

Model:	DR068DJ9Y	DR068DJ9Y	DR083DC9Y	DR101	DR101	DR101
Part No.:	037143	037326	036862	036244	038936	037252
	081657		081572	036245	038937	
				036672	038938	
		OBSOLETE		OBSOLETE		OBSOLETE

Item No.	Qty. Req'd	Description						
M3	1	Key Motor Shaft	155045	155045	155045	511501	511501	155045
B1	4	Screw, Flange	Not Used	Not Used	Not Used	120325	120262	120262
B2	6	Screw, Manifold	155477	Not Used	155477	120303	155423	120303
B3	2	Flange	Not Used	Not Used	Not Used	515212	510480	515212
B4	1	Housing	See next page	516714	515709	510347	550421	516616
B5	4	Screw, Hsg /Motor	See next page	155043	121925	121925	121925	121925
B6	4	Muffler Material	515779	(2 pcs)516720	516427	510544	(6 Pcs)510544	510544
B7	1	Manifold Plate	516373	Not Used	515654	510541	510541	510541
B8	*	Shim .002"	516360	510360	516360	510494	510494	516360
	*	Shim .005"	516361	510361	516361	510495	510495	516361
	*	Shim .010"	516362	510362	516362	510496	510496	516362
	*	Shim .020"	Not Used	Not Used	Not Used	155411	155411	155411
	*	Shim .030"	Not Used	Not Used	Not Used	155412	155412	155412
B9	1	Impeller	516631	516631	516416	510351	550410	516617
B10	1	Bolt, Impeller	155551	155551	155551	120118	120118	120237
B11	1	Lockwasher, Impeller	251690	251690	251690	120203	120203	251690
B12	1	Washer, Impeller	595332	595332	595332	Not Used	Not Used	Not Used
B13	1	Cover	515778	516718	515698	510349	550623	510349
B14	6	Screw, Cover	(5 pcs)155424	(5 pcs)120231	(5 pcs)155424	120232	155424	120232
B16	1	Spacer, Impeller Bolt	Not Used	Not Used	Not Used	510355	510355	155115
B17	4	Lockwasher, Housing	See next page	140009	140009	120203	120203	140009
B18		Screen, Muffler Retaining Right (**)	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used
		Screen, Muffler Retaining, Left (**)	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used
B19		Bolt, Muffler Hsg/Hsg	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used
B20		Muffler Housing	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used
		Bolt, Motor/Muffler	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used
		Lockwasher, Motor/Muffler	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used
		Washer, Motor/Muffler	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used
		Spacer, Motor/Muffler	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used

*As needed **Viewed looking at inlet/outlet ports

Model	Part #	Motor	Wiring	Specific Parts	Bearing,Rear (M1)	Bear
DR068DJ9Y	81657	552391	see motor	B4 552411, B5 251493 B17 120203		
DR068DJ9Y	037143	515729	D	B4 515784, B5 155043, B17 140009	Not Replaceable	Not Repl
DR068DJ9Y	037326	515730	D			
DR083DC9Y	081572	552391	see motor	B4 552412,B5 251493,B17 120203		
DR083DC9Y	036862	515729	D	B4 515709, B5 121925, B17 140009		
DR101DC9	037252	515729	D		Not Replaceable	Not Repl
DR101BX9	036244	510498	A		510449	5104
DR101BX72	036245	517356	C			
DR101BX86	036672	515211	G			
DR101DC9M	038939	515729	D		Not Replaceable	Not Repl
DR101BX9M	038936	510498	A		510449	5104
DR101BX72M	038937	510501	C			
DR101BX86M	038938	516610	G			

DR101
038939

155045
120262
155423
510480
550423
155043
(6 Pcs)510544
510541
516360
516361
516362
Not Used
Not Used
550412
120237
251690
Not Used
550623
155424
155115
140009
Not Used
Not Used
Not Used
Not Used
Not Used
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DR 202/202M/303/353/353M
Service and Parts Manual

Parts Breakdown

Model:	DR202	DR202M	DR303	DR303	DR353	DR353M
Part No.:	037066	080564	036699	038841	037146	080554
	037067	080565	036698	038842	037147	080555
	036373	080566	037207	038843	037148	080556
			OBSOLETE		OBSOLETE	

Item No.	Qty.	Req'd Description					
M3	1	Key Motor Shaft	511501	511501	511501	511501	510629
B1	4	Screw, Flange	120214	155425	120162	155425	120162
B2	6	Screw, Manifold	155477	155423	120303	155423	155130
B3	2	Flange	510480	510493	510493	510493	510962
B4	1	Housing	510341	550173	510335	550173	517002
B5	4	Screw, Hsg /Motor	120235	121925	121925	121925	155128
B6	4	Muffler Material	510485	550186	510488	550186	516384 (6 pcs) 517015
B7	1	Manifold Plate	510478	Not Used	510487	Not Used	516347 517008
B8	*	Shim .002"	510494	510494	510494	510494	510494 510356
	*	Shim .005"	510495	510495	510495	510495	510495 510357
	*	Shim .010"	510496	510496	510496	510496	510496 510358
	*	Shim .020"	155411	155411	155411	155411	155411 510359
	*	Shim .030"	155412	155412	155412	155412	155412 Not Used
B9	1	Impeller	510345	551222	510339	529888	516318 551223
B10	1	Bolt, Impeller	120118	120214	120118	120214	120325 120214
B11	1	Lockwasher, Impeller	120203	120203	120203	120203	120203 120203
B12	1	Washer, Impeller	Not Used	Not Used	Not Used	Not Used	Not Used Not Used
B13	1	Cover	510343	550132	510337	550132	516329 516990
B14	6	Screw, Cover	155424	155424	120232	155424 (5 pcs)	155129 155129
B16	1	Spacer, Impeller Bolt	510355	510355	510355	510355	510355 510355
B17	4	Lockwasher, Housing	120203	120203	120203	120203	120203 251787
B18		Screen, Muffler Retaining Right (**)	Not Used	Not Used	Not Used	Not Used	Not Used 517016
		Screen, Muffler Retaining, Left (**)	Not Used	Not Used	Not Used	Not Used	Not Used 517016
B19		Bolt, Muffler Hsg/Hsg	Not Used	Not Used	Not Used	Not Used	Not Used Not Used
B20	1	Muffler Housing	Integral	550170	Integral	550170	Not Used Not Used
		Bolt, Motor/Muffler	Not Used	Not Used	Not Used	Not Used	Not Used Not Used
		Lockwasher, Motor/Muffler	Not Used	Not Used	Not Used	Not Used	Not Used Not Used
		Washer, Motor/Muffler	Not Used	Not Used	Not Used	Not Used	Not Used Not Used

*As needed **Viewed looking at inlet/outlet ports

Spacer, Motor/Muffler	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used
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Model	Part #	Motor	Wiring Diagram	Specific Parts	Bearing Rear (M1)	Bearing, Impeller End (M2)
DR202Y9	037066	510498	A		510449	510449
DR202Y72	037067	510501	C			
DR202Y86	036373	516610	G			
DR202Y9M	080564	510498	A			
DR202Y72M	080565	510501	C			
DR202Y86M	080566	510933	G			
DR303AE9	036699	517355	A			
DR303AE72	036698	517356	C			
DR303AE86	037207	516610	G			
DR303AE9M	038841	517355	A			
DR303AE72M	038842	517356	C			
DR303AE86M	038843	516610	G			
DR353BR86	037146	510934	G			
DR353BR9	037147	510499	A			
DR353BR72	037148	510502	C			
DR353BR86M	080556	551237	G			
DR353BR9M	080554	551235	A			
DR353BR72M	080555	551236	C			



SMALL COMPACT INLET VACUUM FILTERS

"CSL" Series 3/8" - 3" FPT

APPLICATIONS & EQUIPMENT

- Vacuum Pumps & Systems – P.D., Side Channel, Rotary Vane, Screw, Piston
- Vacuum Packaging Equipment
- Vacuum Lifters
- Blowers - Side Channel & P.D.
- Intake Suction Filters
- Pneumatic Conveying Systems
- Soil Venting/Remediation
- Remote Installations for Piston & Screw Compressors
- Printing Industry
- Factory Automation Equip
- Leak Detection Systems
- Woodworking
- Medical Industry

FEATURES & SPECIFICATIONS

- **Vacuum level:** Typically 1×10^{-3} mmHg (1.3×10^{-3} mbar)
- Polyester: 99%+ removal efficiency standard to 5 micron
- Paper: 99%+ removal efficiency standard to 2 micron
- Brazed fittings for **High** vacuum duty
- Stainless steel torsion clips for durability
- Low pressure drop
- Positive engagement O-ring seal system
- Fully-drawn one piece canister
- **Large** dirt holding capacity and **Easy** field cleaning, especially when mounted horizontally or inverted
- Rugged all steel construction w/baked enamel finish
- Various media
- Temp (continuous): min -15°F (-26°C) max 220°F (104°C)
- Filter change out differential: 10" - 15" H₂O over initial delta P
- Pressure drop graphs available upon request

OPTIONS (Inquiries Encouraged)

- Vacuum gauge available
- Dome hood for high holding capacity
- Available in **Stainless Steel**
- Epoxy coated housings
- Activated carbon prefilter for odor
- Support brackets
- Alternate top-to-canister fastening system for low pressure or pulsating systems

CONFIGURATION

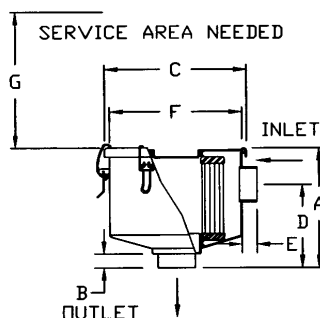


CSL 824-851
Series



CSL 239/238
Series

DRAWING



Dimension tolerance $\pm 1/4"$

I = Industrial Duty S = Severe Duty

	with Polyester Element	with Paper Element	FPT Inlet & Outlet	DIMENSIONS - inches							Rated Flow SCFM		Approx. Wt. lbs
				A	B	C	D	E	F	G	Nominal Rating	Element Rating	
I	CSL-825-038HC	CSL-824-038HC	3/8"	3 5/8	9/16	3 3/4	1 7/8	9/16	3 1/2	3	18	25	0.88
I	CSL-825-050HC	CSL-824-050HC	1/2"	3 5/8	9/16	3 3/4	1 7/8	9/16	3 1/2	3	18	25	0.88
I	CSL-843-050HC	CSL-842-050HC	1/2"	4 3/8	9/16	5 7/8	2 1/2	9/16	5	3 1/4	20	55	3
I	CSL-825-075HC	CSL-824-075HC	3/4"	3 3/4	9/16	3 3/4	1 7/8	9/16	3 1/2	3	24	25	0.88
S	CSL-843-075HC	CSL-842-075HC	3/4"	4 3/8	9/16	5 7/8	2 1/2	9/16	5	3 1/4	25	55	3
I	CSL-843-100HC	CSL-842-100HC	1"	4 3/8	3/4	5 7/8	2 5/8	3/4	5	3 1/4	35	55	3
S	CSL-849-100HC	CSL-848-100HC	1"	6 1/2	3/4	7 5/16	4 1/4	3/4	6 13/16	5 1/4	40	115	5
I	CSL-843-125HC	CSL-842-125HC	1 1/4"	4 3/8	3/4	5 7/8	2 5/8	3/4	5	3 1/4	55	55	3
S	CSL-849-125HC	CSL-848-125HC	1 1/4"	6 1/2	3/4	7 5/16	4 1/2	3/4	6 13/16	5 1/4	60	115	5
I	CSL-849-150HC	CSL-848-150HC	1 1/2"	6 1/2	3/4	7 5/16	4 1/2	3/4	6 13/16	5 1/4	80	115	5
I	CSL-851-200HC	CSL-850-200HC	2"	10 1/4	3/4	8 3/4	5	3/4	7 5/8	9 1/4	175	290	15
I	CSL-851-250HC	CSL-850-250HC	2 1/2"	10 1/2	1 1/4	8 3/4	5 1/2	1 1/4	7 5/8	9 1/4	210	290	15
I	CSL-239-300C*	CSL-238-300C*	3"	15 3/4	2 7/8	13 1/4	8 7/8	2 7/8	12	11	300	570	33

*1/4" taps standard on inlet and outlet

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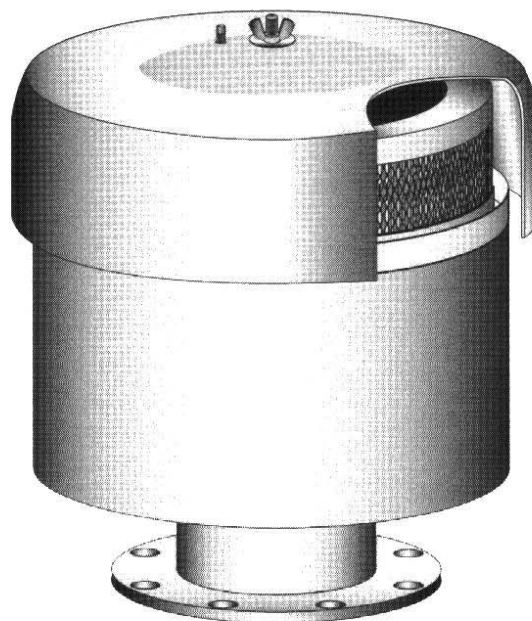
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CSL14-304

Air Intake Filter/Silencers

Model EMS - Series



The "EMS" Series air intake filter/silencer is designed for both indoor and outdoor applications requiring 6 - 8 dB noise reduction and a high degree of filtration. The unique heavy gauge construction reduces noise transmission and enhances durability in even the most severe environments. This series is ideal for applications such as reciprocating engines, positive displacement blowers and centrifugal compressors. Easy filter element access reduces maintenance time during filter element replacement.

Standard Construction Features

- Available in sizes from 1 inch to 16 inch
- Female NPT discharge connection sizes 1 inch to 4 inch
- 125/150# ANSI drilled plate flanges for sizes 5 inch to 16 inch
- Carbon steel construction
- Removable weatherhood

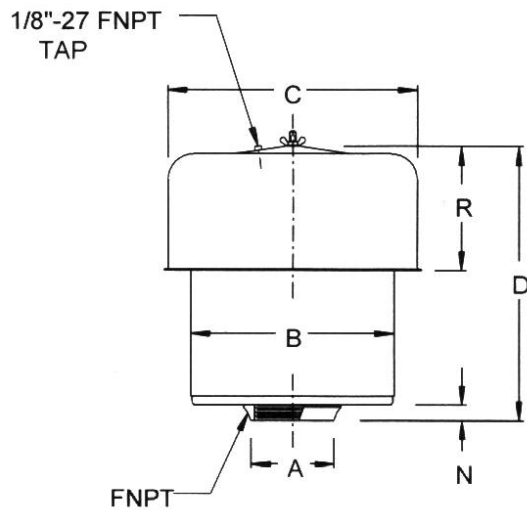
- Available with paper, felt and wire mesh filter element
- Removable weatherhood
- Gray phenolic resin based fast drying primer suitable for overcoating with urethanes, acrylics, epoxies and industrial enamels. Standard two mil thickness
- 1/8" NPT pressure tab

Optional Construction Features and Accessories

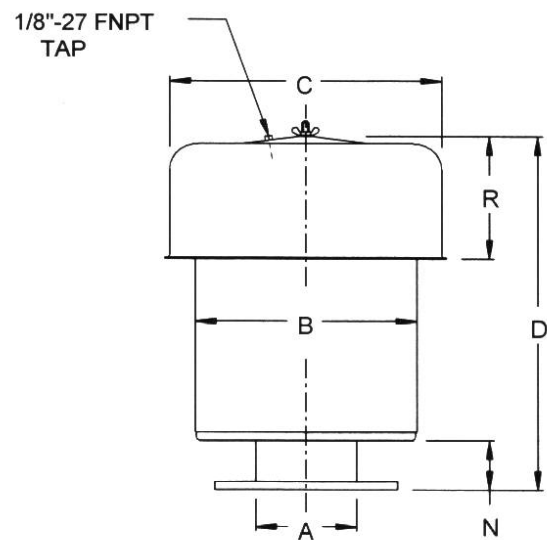
- Stainless steel construction
- Aluminum construction
- Special finish per specification
- Pre-filter wraps
- Special filtration and back-pressure designs
- Special acoustic designs
- Oversized flanges
- Contact factory for additional features to meet your requirements

Air Intake Filter/Silencers

Model EMS - Series



1" to 4" Female NPT Connection
(4" flange connection available upon request)



5" and Larger-125/150# ANSI Drilled Plate Flange
(5" FNPT connection available upon request)

Model No.	A	C	B	D	N	R	Weight	CFM	Element Model Number		
									Paper	Felt	Wire
EMS-1	1	9 1/2	6 5/8	5 3/8	9/16	2 1/4	8	35	P-642	F-642	W-642
EMS-125	1 1/4	9 1/2	6 5/8	5 3/8	9/16	2 1/4	8	35	P-642	F-642	W-642
EMS-15	1 1/2	9 1/2	6 5/8	5 3/8	9/16	2 1/4	8	75	P-642	F-642	W-642
EMS-2	2	9 1/2	6 5/8	5 7/16	5/8	2 1/4	8	120	P-642	F-642	W-642
EMS-25	2 1/2	14 7/8	12	11 7/8	13/16	4 7/16	20	200	P-974	F-974	W-974
EMS-3	3	14 7/8	12	13 5/8	13/16	4 7/16	20	275	P-974	F-974	W-974
EMS-35	3 1/2	14 7/8	12	13 5/8	13/16	6 7/16	25	375	P-976	F-976	W-976
EMS-4	4	14 7/8	12	13 5/8	1	6 7/16	25	500	P-976	F-976	W-976
EMS-5	5	14 7/8	12	25 1/2	3	7 3/8	36	750	P-1197	F-1197	W-1197
EMS-6	6	22	18	26 1/4	3	8 5/8	53	1100	P-13118	F-13118	W-13118
EMS-8	8	22	18	25	3	10 3/4	70	2200	P-171310	F-171310	W-171310
EMS-10	10	22	18	25	3	10 3/4	95	3000	P-171310	F-171310	W-171310
EMS-12	12	22	18	25	3	10 3/4	108	4300	P-171310	F-171310	W-171310
EMS-14	14	30	24	40	4	15 3/4	180	5900	P-231914	F-231914	W-231914
EMS-16	16	30	24	40	4	15 3/4	190	7700	P-231914	F-231914	W-231914

- When ordering specify paper (P); felt (F) or wire mesh (W) filter element.
- 1 inch to 4 inch standard female NPT connection; 4 inch flange connection available upon request
- 5 inch to 16 inch standard 125/150# ANSI drilled plate flange connection; 5 inch female NPT connection available upon request

Dimensions in inches, weights in pounds. Dimensions and weights are nominal and may vary slightly with production models. Request certified drawings for exact dimensions.



The Leader in Blower & Vacuum Solutions

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cs@gasho.org

Gasho Replacement Inlet Filter Elements

High quality replacement elements are available for the filters of various manufactures used on packages built by Gasho.

Paper elements are normally used in inlet filters and replaced when they are dirty.

Polyester elements are cleanable.

Filter Size, In.	Gasho Filter #	Box Quantity	O.D.	I.D.	Ht.	List Price
1	GA-0470	6	5-13/16	4	2	\$17.00
2	GA-0471	6	5-13/16	4	2-1/2	\$17.00
2.5-3	GA-0472	2	9-3/4	7-1/4	4	\$23.00
4	GA-1063	2	9-3/4	7-1/4	6	\$27.00
5	GA-0474	1	11-1/2	9-7/8	7	\$35.00
6	GA-0475	1	13-5/8	11-5/8	8-5/8	\$53.00
8-12	GA-1163	1	17	13	10	\$185.00

GA-0471 Elements are frequently used to replace GA -0470

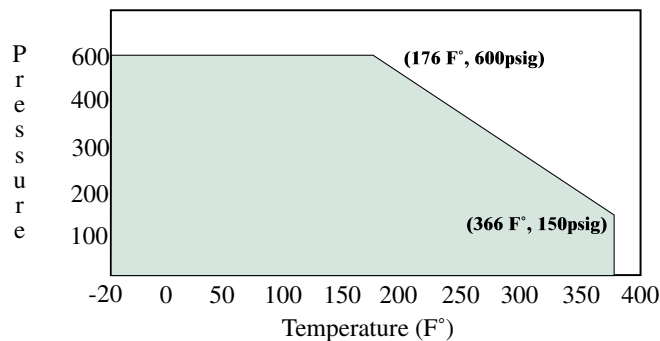
Manufacturer Cross Reference

Gasho Filter #	Universal Filter #	EM Prod. Filter #	Full-On Filters #	Solberg #
GA-0470	81-0470		FOF810470	32-00
GA-0471	81-0471	P-642	FOF810471	32-02
GA-0472	81-0472	P-974	FOF810472	32-04
GA-1063	81-1063	P-976	FOF811063	32-06
GA-0474	81-0474	P-1197	FOF810474	32-08
GA-0475	81-0475	P-13118	FOF810475	32-10
GA-1163	81-1163	P-171310	FOF811163	32-12

Standards Compliance

IPG's 64 series brass ball valves comply with the latest editions of these published standards:

- AGA Z21.15.CGA9.1
- AGA No. 3-88
- ANSI B1.20.1
- ANSI B16.18
- CAN/CGA-3.16-M88
- ASME/ANSI B16.33
- ASME/ANSI B16.38
- MSS SP-110
- UL Guide YSDT
- UL Guide YRPV
- UL Guide VQGU



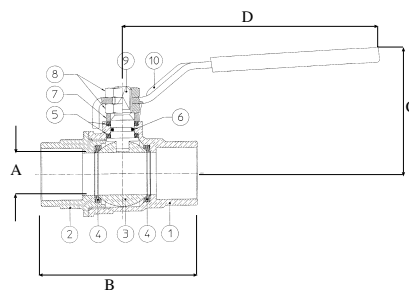
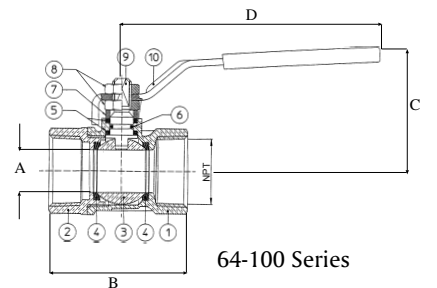
Materials of Construction

Description	Materials
1. Body	Brass UNI 5705-65
2. Retainer	Brass UNI 5705-65
3. Ball	Brass UNI 5705-65
4. Seats	PTFE
5. Stem Seals	PTFE
6. O-Ring	NBR 75 Shore A
7. Packing Gland	Brass UNI 5705-65
8. Nut	Plated Steel
9. Stem	Brass UNI 5705-65 Cr Plated
10. Lever Handle	Plated Steel 1/4" - 2" Models Aluminum 2 1/2" - 4" Models

Optional Kits

Valve Size	Locking Handle	Stem Extensions	Balancing Stops
1/4", 3/8" & 1/2"	78-1659-01	78-1501-0	78-1506-01
3/4" & 1"	78-1660-01	78-1502-0	78-1507-01
1-1/4" & 1-1/2"	78-1661-01	78-1503-0	78-1508-01
2"	78-1662-01	78-1504-0	78-1509-01
2-1/2" & 3"	-	78-1505-0	78-1510-01

NOTE: Specify (-07) suffix for T-Handle i.e. 64-105-07.



64-100 Dimensional Data

Size	Part No.	A	B	C	D	(Cv)
1/4" NPT	64-101-01	0.39	2.02	1.75	3.85	6
3/8" NPT	64-102-01	0.39	2.02	1.75	3.85	7
1/2" NPT	64-103-01	0.59	2.44	1.88	3.85	19
3/4" NPT	64-104-01	0.78	2.71	2.28	4.80	34
1" NPT	64-105-01	0.98	3.07	2.44	4.80	50
1-1/4" NPT	64-106-01	1.25	3.42	3.07	6.02	104
1-1/2" NPT	64-107-01	1.57	3.89	3.34	6.02	268
2" NPT	64-108-01	1.96	4.33	3.79	6.37	309
2-1/2" NPT	64-109-01	2.56	5.59	5.02	8.07	629
3" NPT	64-100-01	3.15	6.45	5.45	8.07	1018
4" NPT	64-10A-01	3.94	7.60	6.34	10.23	1622

64-200 Dimensional Data

Size	Part No.	A	B	C	D	(Cv)
1/2"	64-203-01	0.59	2.53	1.88	3.85	19
3/4"	64-204-01	0.78	2.99	2.28	4.80	34
1"	64-205-01	0.98	3.58	2.44	4.80	50
1-1/4"	64-206-01	1.25	4.09	3.07	6.02	104
1-1/2"	64-207-01	1.57	4.56	3.34	6.02	268
2"	64-208-01	1.96	5.43	3.79	6.37	309
2-1/2"	64-209-01	2.56	6.93	5.02	8.07	629
3"	64-200-01	3.15	8.09	5.45	8.07	1018

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289 Series Spring-Loaded Relief Valves

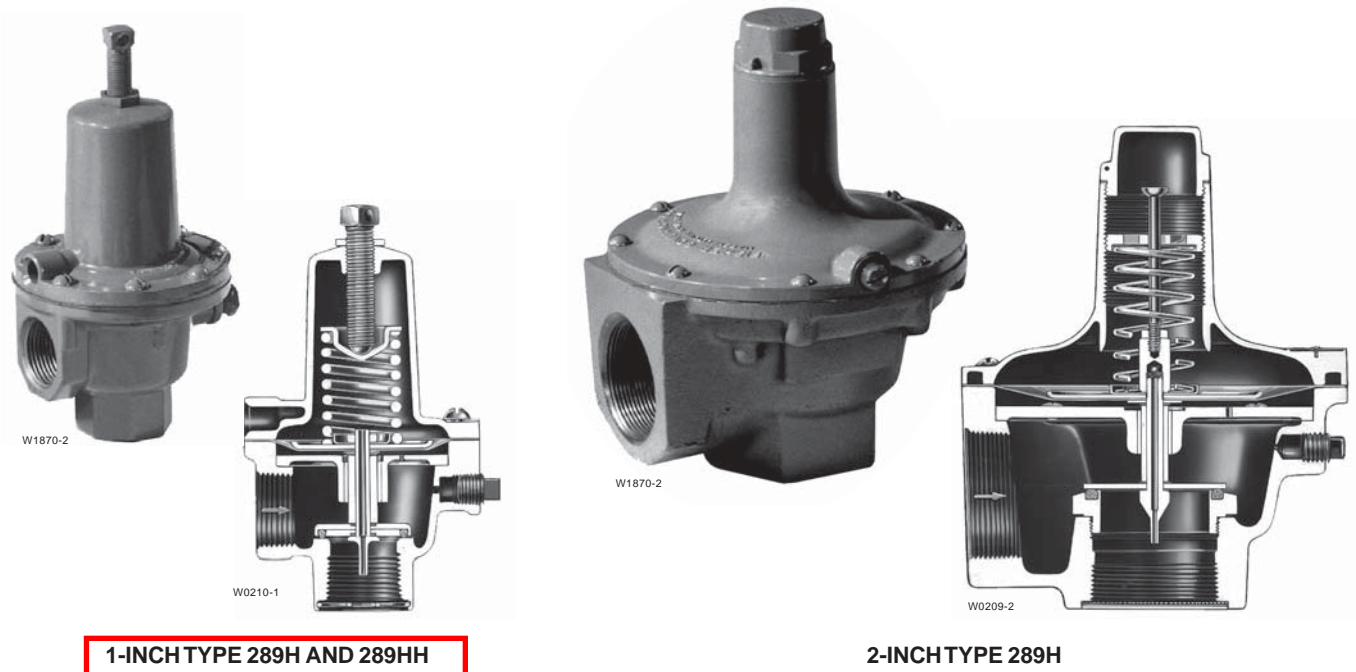


Figure 1. Type 289H and 289HH Relief Valves

The 289 Series relief valve is a throttling relief valve used downstream of pressure regulators to protect the downstream system from overpressure. A smooth throttling action minimizes pressure surges in the system during emergency operation. These relief valves are available in 1/4, 3/4, 1, or 2-inch sizes with spring ranges (relief pressure settings) from 5 inches w.c. to 75 psig (0.01 to 5.2 bar).

All sizes above 1/4-inch feature a pitot tube booster (figure 1) for achieving the highest possible relief capacity with a minimum buildup of system pressure. When the valve is opening, high gas velocity through the orifice creates an area of relatively low pressure near the end of the pitot tube. This pitot tube effect forms a partial vacuum above the diaphragm which helps to open the valve.

The relief valve diaphragm functions as a valve disk to control flow in all types except the 289H and 289HH, which use O-ring seats. The nitrile or neoprene seating

surfaces provide tight shutoff. The 289 Series relief valves are ideal for low pressure settings due to the increased sensitivity provided by the large diaphragm area.

Features

- **Throttling Type Relief**—Smooth, sensitive throttling action minimizes pressure surges.
- **High Flow Rates**—As shown by the figure 4 capacity curves, high flow rates can be achieved with minimum pressure buildup due to the boosting system which increases the relief valve opening.
- **Small Size**—The 289 Series relief valves are small and compact, making them suitable for areas limited in space.
- **Reliability Due to Simplicity**—A single internal assembly decreases the possibility of mechanical failure.

Specifications

Available Configurations

Type 289A (figure 2): 1/4-inch spring-loaded relief valve for relief pressure settings of 3 to 22 psig, (0.21 to 1.5 bar) two spring ranges

Type 289H (figure 1): 1 or 2-inch spring-loaded relief valve for relief pressure settings of 1 to 50 psig (0.07 to 3.5 bar) four spring ranges, in the 1-inch size and of 7-inches w.c. to 10 psig, (0.02 to 0.69 bar), four spring ranges, in the 2-inch size

Type 289HH (figure 1): 1-inch spring-loaded relief valve for relief pressure settings of 45 to 75 psig (3.1 to 5.2 bar)

Type 289L (figure 3): 3/4 or 1-inch spring-loaded relief valve for relief pressure settings of 10 to 40-inches w.c., (0.03 to 0.1 bar), two spring ranges

Type 289U (figure 2): 1/4-inch spring-loaded relief valve for relief pressure settings of 5-inches w.c. to 3 psig, (0.01 to 0.21 bar), two spring ranges

Inlet Connections

Type 289L: 3/4 or 1-inch NPT female

Types 289A and 289U: 1/4-inch NPT female

Type 289H: 1 or 2-inch NPT female

Type 289HH: 1-inch NPT female

Outlet (Vent) Connections

Same size as inlet connection

Maximum Allowable Relief (Inlet) Pressure⁽¹⁾ and Maximum Relief Set Pressure

See table 1

Capacity Data

See figure 4

Standard Construction Materials

Valve Body and Spring Case

Types 289A and 289U: Zinc

Type 289H (1-inch), 289HH, and 289L: Aluminum

Type 289H (2-inch): Cast iron body with aluminum spring case

Diaphragm

Type 289A: Neoprene

Types 289H and 289HH: Nitrile or fluoroelastomer

All Others: Nitrile

Orifice

Types 289A and 289L: Aluminum

Type 289H (2-inch Only): Brass or Stainless steel

O-Ring Seat (Types 289H and 289HH Only):

Nitrile or Fluoroelastomer⁽²⁾

O-Ring Seat Holder and Washer (1-inch Types 289H and 289HH Only):

Aluminum

Seat Washer (2-inch Type 289H Only): Stainless steel

Pitot Tube

Types 289H and 289HH (1-inch), and 289L: Aluminum

Type 289H (2-inch): Brass or Stainless steel

Gaskets

Type 289L: Neoprene

All Others: Composition

Spring: Zinc-plated steel

Diaphragm Plate

Types 289A and 289U: Zinc

All Others: Zinc-plated steel

Closing Cap

Type 289L: Plastic, Aluminum, or Zinc

Type 289H (2-inch): Zinc

Material Temperature Capabilities⁽¹⁾

With Nitrile and Neoprene Elastomers:

–20 to 150°F (–29 to 66°C)

With Fluoroelastomers: 20 to 300°F (–7 to 149°C)

Available with Types 289H and 289HH only

Approximate Shipping Weight

Types 289A and 289U: 0.75 lb (0.34 kg)

Type 289H

1-inch Size: 4 lb (1.8 kg)

2-inch Size: 15 lb (6.8 kg)

Type 289HH: 4 lb (1.8 kg)

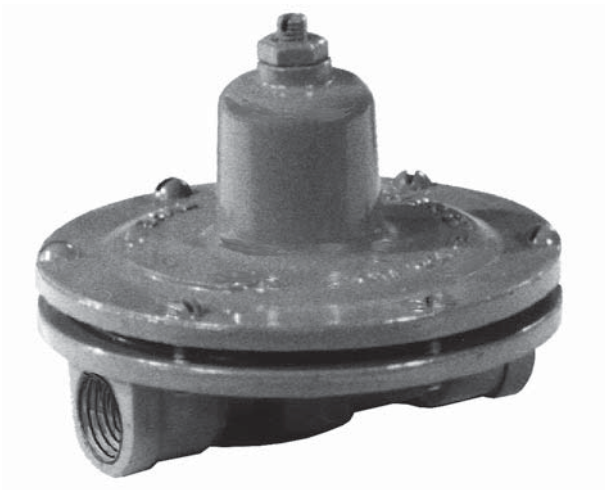
Type 289L: 1.5 lb (0.7 kg)

Options

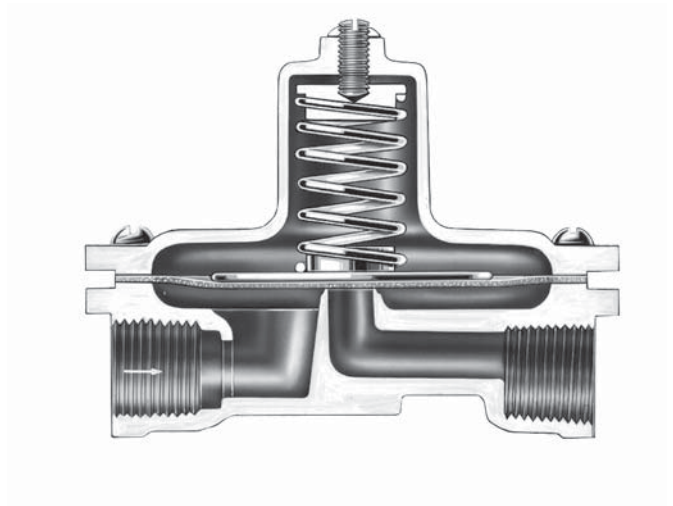
- TFE diaphragm protector (Types 289A and 289U only)
- wire-seal on closing cap (1-inch Type 289L only)

1. The pressure/temperature limits in this bulletin and any applicable standard limitation should not be exceeded.

2. Bubble-tight shutoff can not be attained at settings below 5 psig with fluoroelastomer O-ring seat.



W1870-2

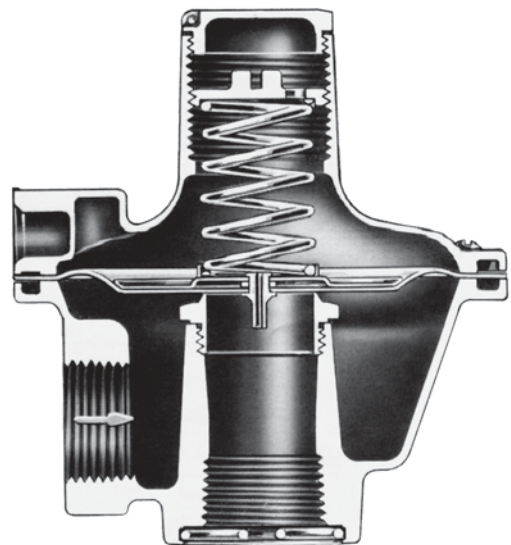


W0212-1

Figure 2. Type 289U Relief Valve (Also Typical of Type 289A Relief Valve)

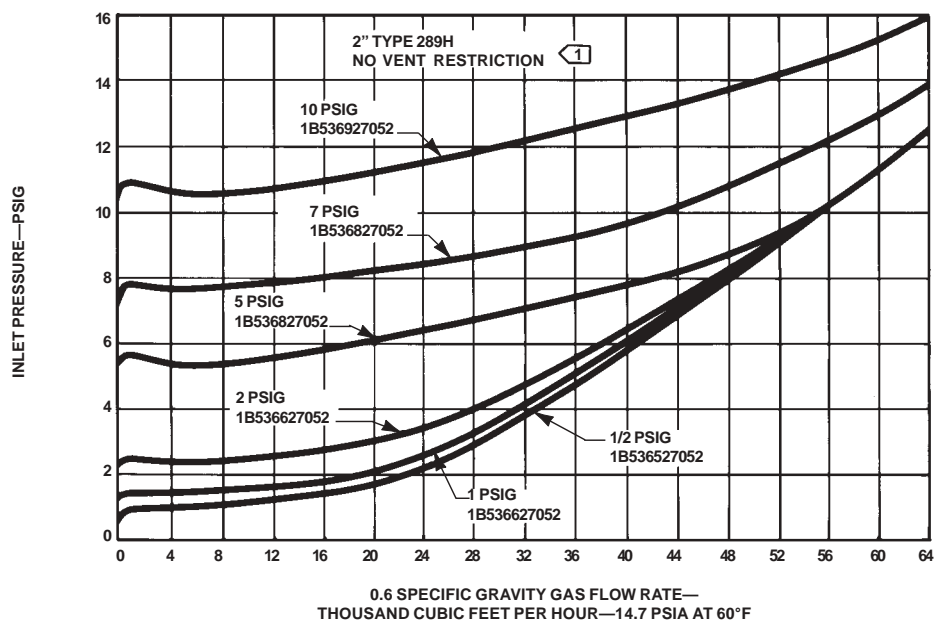
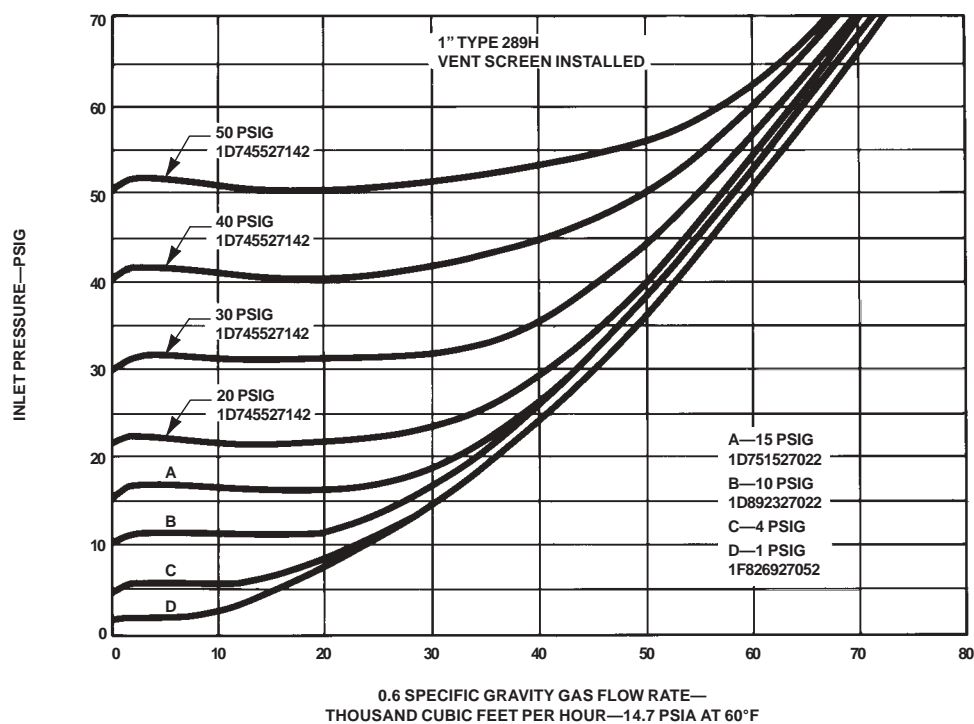


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W0203-1

Figure 3. Type 289L Relief Valve

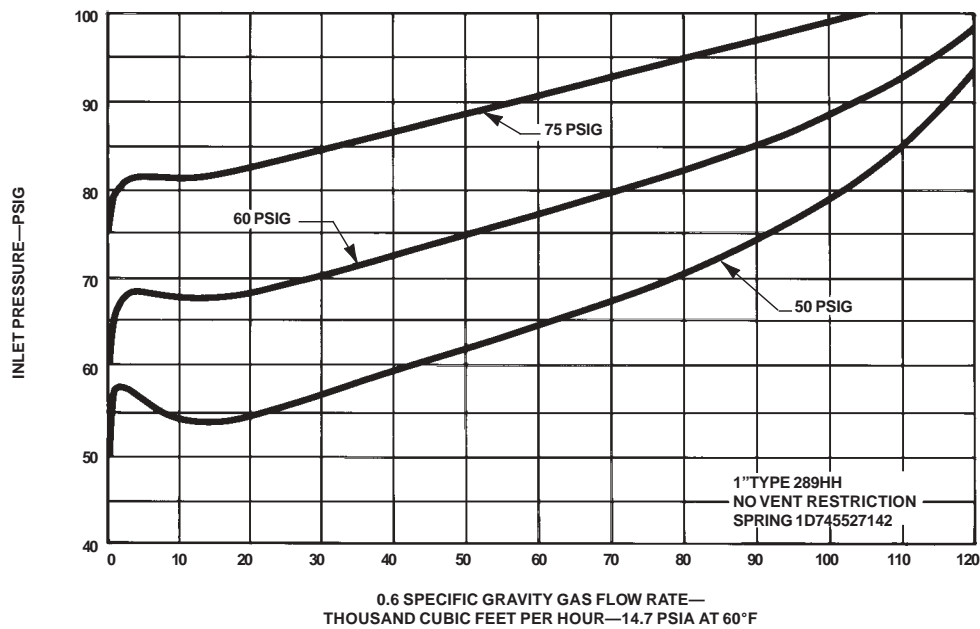
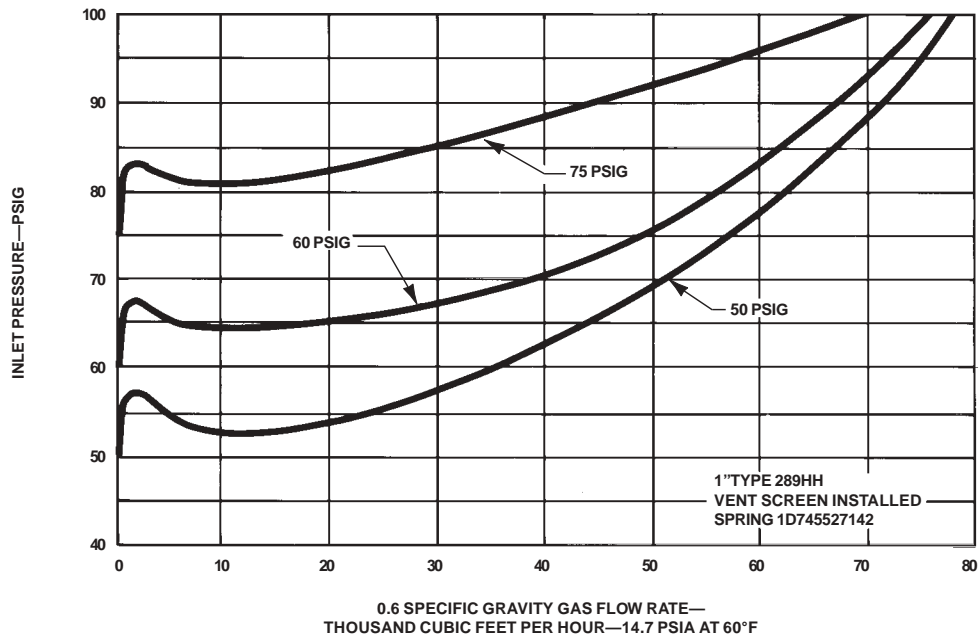


NOTE:

1. LESS THAN 5% CAPACITY LOSS CAN BE EXPECTED WITH THE VENT SCREEN INSTALLED ON THE 2-INCH TYPE 289H AT MAXIMUM FLOW.
2. WHEN SELECTING ANY RELIEF VALVE FOR INSTALLATION DOWNSTREAM OF A REGULATOR, THE CAPACITY OF THE RELIEF VALVE SHOULD BE COMPARED WITH THE WIDE-OPEN CAPACITY OF THE REGULATOR.
3. BUBBLE POINT RELIEF SETTING AND SPRING PART NUMBER ARE NOTED ON EACH CURVE.
4. TO CONVERT TO EQUIVALENT CAPACITIES OF OTHER GASES, MULTIPLY VALUES OBTAINED FROM CURVE BY THE FOLLOWING FACTORS: AIR—0.78, PROPANE—0.628, BUTANE—0.548, NITROGEN—0.789

B2309

Figure 4. Capacity for 0.6 Specific Gas at 14.7 Psia and 60° F

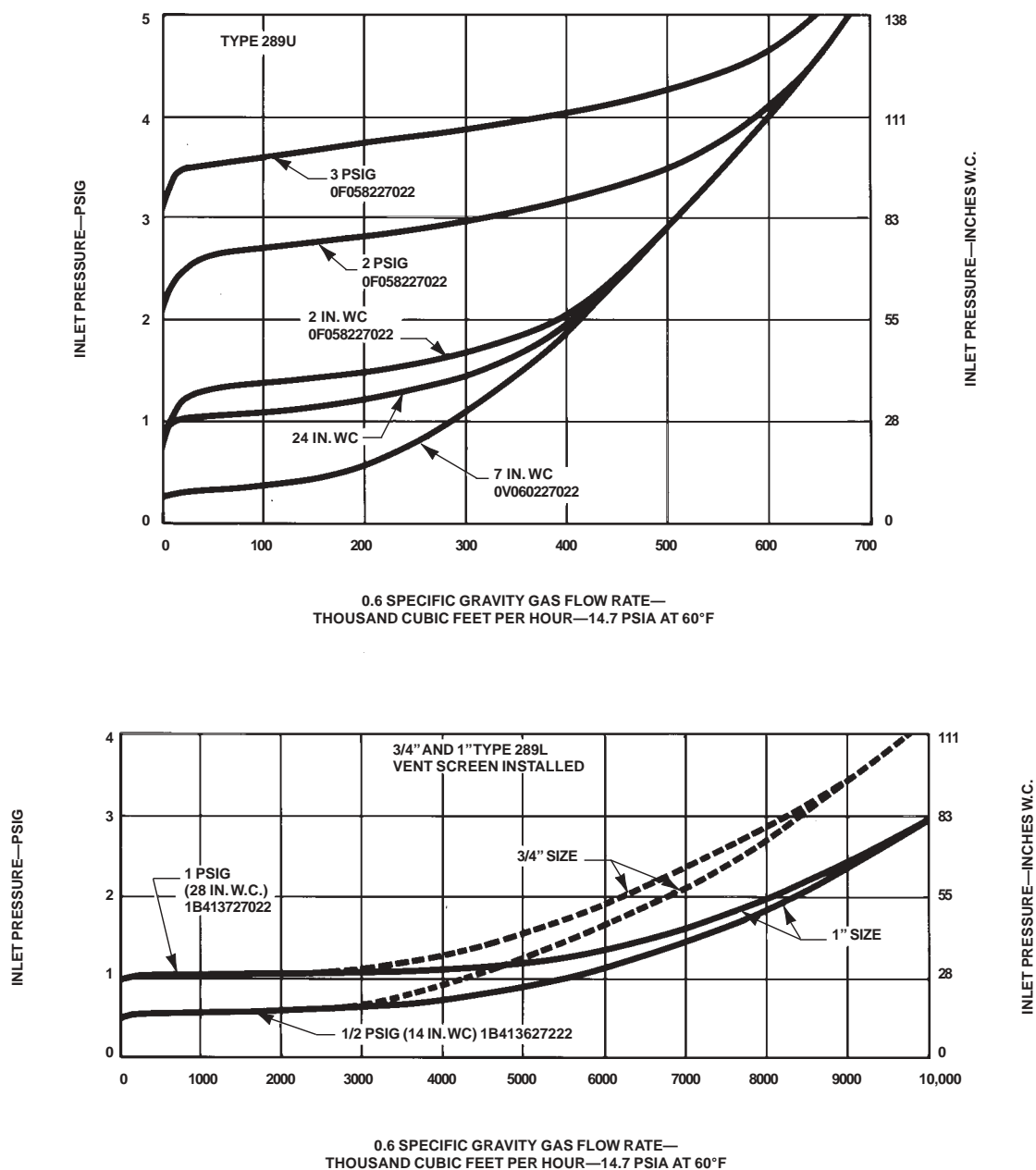


NOTE:

1. WHEN SELECTING ANY RELIEF VALVE FOR INSTALLATION DOWNSTREAM OF A REGULATOR, THE CAPACITY OF THE RELIEF VALVE SHOULD BE COMPARED WITH THE WIDE-OPEN CAPACITY OF THE REGULATOR.
2. BUBBLE POINT RELIEF SETTING AND SPRING PART NUMBER ARE NOTED ON EACH CURVE.
3. TO CONVERT TO EQUIVALENT CAPACITIES OF OTHER GASES, MULTIPLY VALUES OBTAINED FROM CURVE BY THE FOLLOWING FACTORS: AIR—0.78, PROPANE—0.628, BUTANE—0.548, NITROGEN—0.789

B2310

Figure 4. Capacity for 0.6 Specific Gas at 14.7 Psia and 60° F (Continued)



NOTE:

1. WHEN SELECTING ANY RELIEF VALVE FOR INSTALLATION DOWNSTREAM OF A REGULATOR, THE CAPACITY OF THE RELIEF VALVE SHOULD BE COMPARED WITH THE WIDE-OPEN CAPACITY OF THE REGULATOR.
2. BUBBLE POINT RELIEF SETTING AND SPRING PART NUMBER ARE NOTED ON EACH CURVE.
3. TO CONVERT TO EQUIVALENT CAPACITIES OF OTHER GASES, MULTIPLY VALUES OBTAINED FROM CURVE BY THE FOLLOWING FACTORS: AIR—0.78, PROPANE—0.628, BUTANE—0.548, NITROGEN—0.789

B2311

Figure 4. Capacity for 0.6 Specific Gas at 14.7 Psia and 60° F (Continued)

Table 1. Spring Ranges and Maximum Allowable Relief (Inlet) Pressures

BODY SIZES, INCHES	TYPE	SPRING RANGE (RELIEF PRESSURE SETTINGS)	SPRING PART NUMBER	MAXIMUM ALLOWABLE RELIEF SETTING ⁽¹⁾	MAXIMUM ALLOWABLE RELIEF (INLET) PRESSURE ⁽²⁾
1/4	289U	5 to 25-inches w.c. (12 to 62 mbar) 20-inches w.c. to 3 psig (50 mbar to 0.21 bar)	0V060227022 0F058227022	3 psig (0.21 bar)	10 psig (0.69 bar)
	289A	3 to 13 psig (0.21 to 0.9 bar) 11 to 22 psig (0.76 to 1.5 bar)	0Z056327022 1B268227022	22 psig (1.52 bar)	45 psig (3.1 bar)
3/4 or 1	289L	3 to 8-inches w.c. (7 to 20 mbar) 5 to 18-inches w.c. (12 to 45 mbar) 10 to 18-inches w.c. (25 to 45 mbar) 12 to 40-inches w.c. (30 to 99 mbar)	1B413527022 1N3112X0012 13A7917X012 13A7916X012	40-inches w.c. (99 mbar)	7 psig (0.52 bar)
1	289H	1 to 4.5 psig (0.069 to 0.3 bar) 4 to 15 psig (0.28 to 1.0 bar) 10 to 20 psig (0.69 to 1.4 bar) 15 to 50 psig (1.0 to 3.4 bar)	1F826927052 1D892327022 1D751527022 1D745527142	50 psig (3.4 bar)	100 psig (6.9 bar)
2	289H	7 to 18-inches w.c. (17 to 45 mbar) 0.5 to 2.25 psig (0.034 to 0.16 bar) 1.75 to 7 psig (0.12 to 0.52 bar) 4 to 10 psig (0.28 to 0.69 bar)	1B536527052 1B536627052 1B536827052 1B536927052	10 psig (0.69 bar)	25 psig (1.7 bar)
1	289HH	45 to 75 psig (3.1 to 5.2 bar)	1D745527142	75 psig (5.2 bar)	100 psig (6.9 bar)

1. With highest spring range available.
2. Maximum relief pressure setting plus buildup.

Installation

The 289 Series relief valves may be installed in any position. However, the outlet connection must be protected against the entrance of rain, snow, insects, or any other foreign material that may plug the outlet or affect the opening and closing of the valve (see figure 5). If it is necessary to pipe away the outlet, remove the outlet screen (if one is present).

Flow through the valve must be as indicated by the flow direction arrow on the body (inlet connection is marked on some sizes).

The spring case vent on the 2-inch Type 289H is tapped and plugged. This vent opening must remain plugged to allow the pitot tube booster to function.

Overpressure

Overpressure conditions in a regulating system may cause personal injury or equipment damage due to bursting of pressure-containing parts or explosion of

accumulated gas. Check the system for damage if any of the maximum allowable relief (inlet) pressure ratings in table 1 are exceeded.

Ordering Information

When ordering, specify:

1. Type number and size
2. Relief pressure range and setting desired
3. Type of gas (natural gas, air, etc.); list any factors such as impurities in the gas that may affect compatibility of the gas with valve trim parts
4. Temperature and specific gravity of the gas
5. Maximum relief (inlet) pressure and flow rate desired
6. Line size and end connection size of adjacent piping
7. For Types 289H and 289HH, specify material of diaphragm and O-ring seat; for 2-inch Type 289H, specify material of orifice and pitot tube
8. Options desired, if any

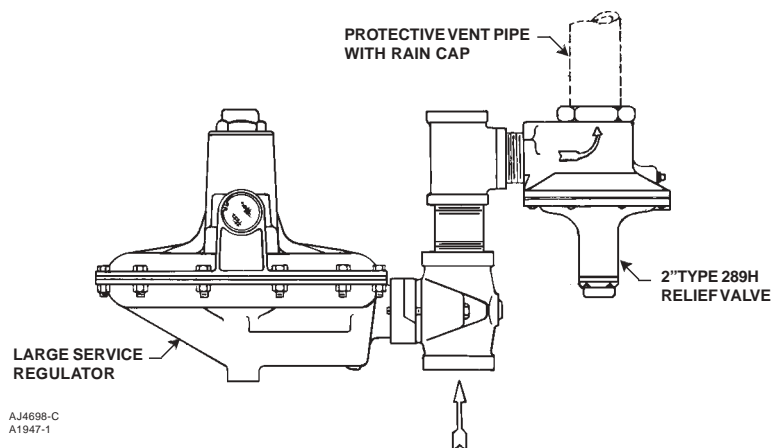


Figure 5. Typical Installation of a 289 Series Relief Valve

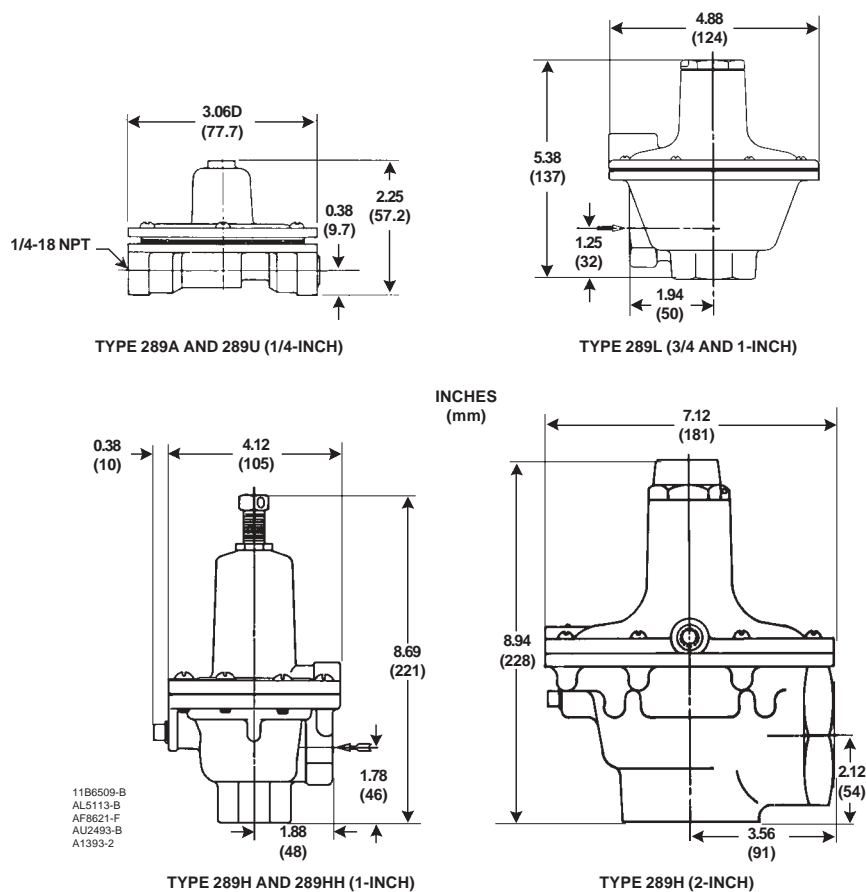


Figure 6. Dimensions

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28320 Gallardon, France
Sao Paulo 05424 Brazil
Singapore 128461



J. E. GASHO & ASSOCIATES, INC.

Authorized Manufacturer's Representative

Air / Gas Moving Equipment

460 W. GAY STREET

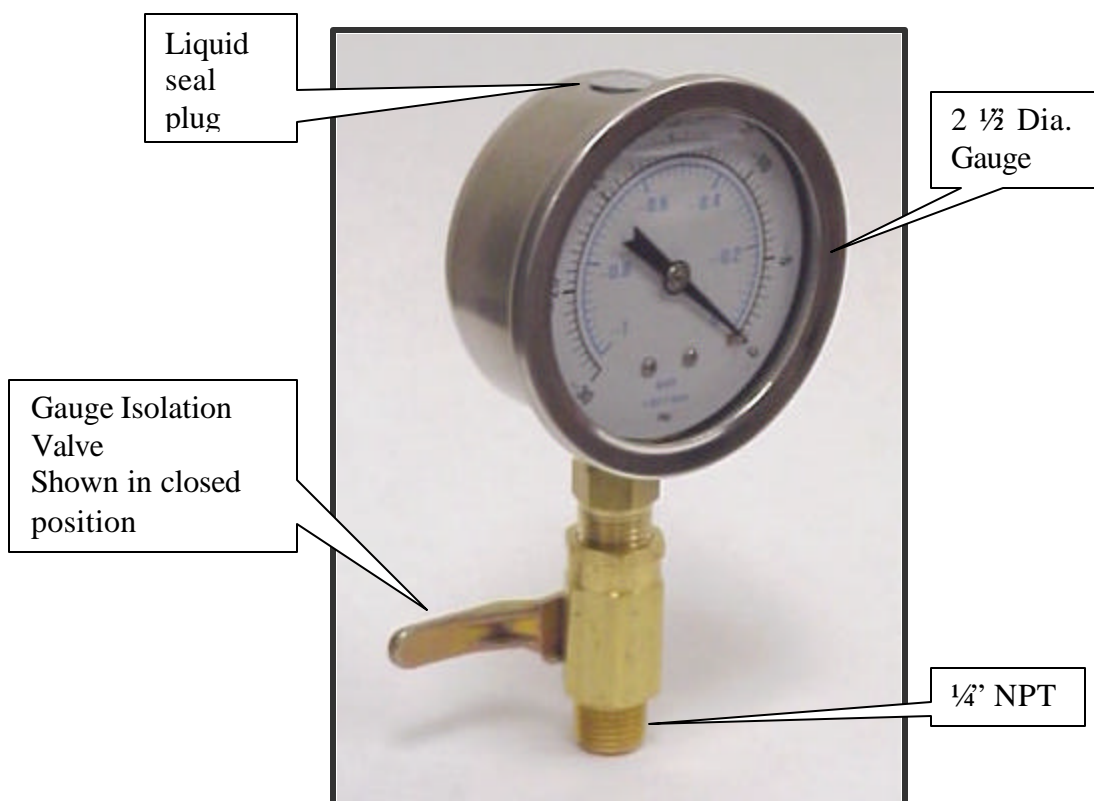
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PHONE: 610-692-5650 FAX: 610-692-5837

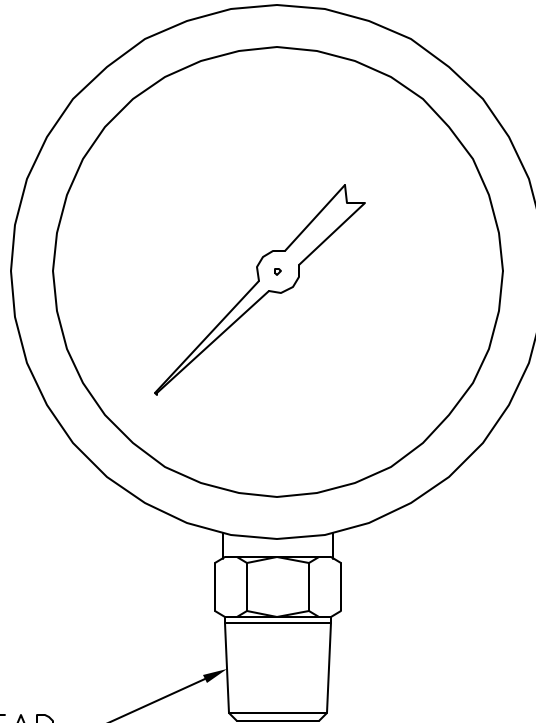
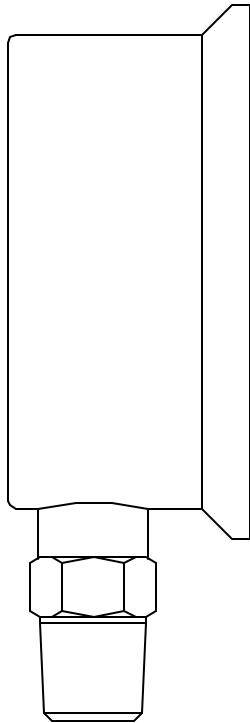
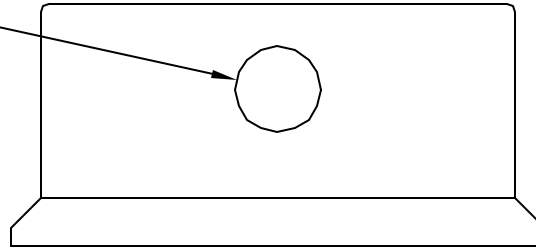
Pressure and Vacuum Gauges

We use both standard gauges and liquid filled gauges from a variety of manufacturers. Gauges are installed on our packages with gauge isolation valves (gauge cocks) part number BRS-VA-025-4F4M-BT. The gauge isolation valve can be used as a snubber while reading the gauge by opening it slightly. To protect gauges from damage due to shocks or pulsations in the system, gauge isolation valves should be closed except when the gauge is being read.

Liquid filled gauges may display incorrect readings due to variations in atmospheric pressure. To determine if a gauge is subject to this condition, the liquid filled cavity should be temporarily vented to atmosphere. Most liquid filled gauges have a seal plug in the liquid filled cavity. Remove this plug to allow the cavity to be vented to atmosphere. In some instances the case can be lightly squeezed to burp it. Replace the plug.



VENT PLUG
LIQUID FILLED ONLY



1/4" NPT THREAD

NOMINAL SIZE

> 25 = 2.5in
> 40 = 4.0 in.

TYPE

> 0 = NON-FILLED
> 1 = LIQUID FILLED

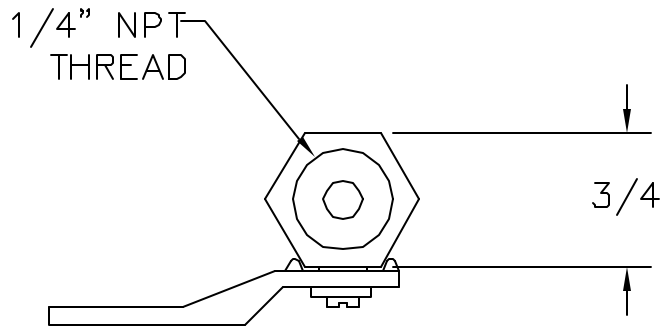
RANGE

25.0.015PSI

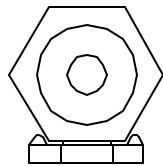
NOTES:

1. WE USE BOTH STANDARD GAUGES & LIQUID FILLED GAUGES FROM A VARIETY OF MANUFACTURERS
2. STANDARD RANGES:
 > PRESSURE: 0-6 PSI & 0-160 IWC
 0-15 PSI
 0-30 PSI
 > VACUUM: 0-12 IN. HG. & 0-160 IWC
 0-30 IN., HG.

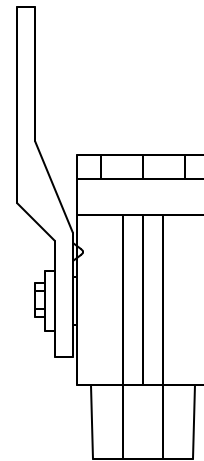
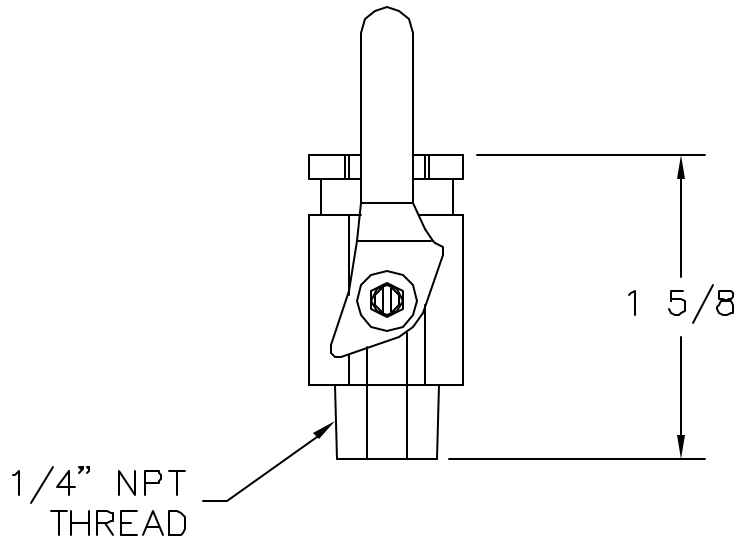
			DRAWN BY: M. WITTE	DATE 8-18-00	J. E. GASHO & Assoc., Inc. 460 W. GAY ST. WEST CHESTER, PENNSYLVANIA 19380		
			APPROVED BY:	DATE			
			DIMENSIONS IN INCHES			PRESSURE GAUGE NUMBERING SYSTEM	
			SCALE				
			TOLERANCE	ANGULAR TOLERANCE			
			MATERIAL	WEIGHT			
REV.	DATE	DESCRIPTION	SHEET 1 OF 1				—



PLAN VIEW – CLOSED



PLAN VIEW – OPEN



			DRAWN BY: M. WITTE	DATE 8-17-00	J. E. GASHO & Assoc., Inc. 460 W. GAY ST. WEST CHESTER, PENNSYLVANIA 19380	
			APPROVED BY:	DATE		
			DIMENSIONS IN INCHES			GAUGE ISOLATION VALVE SMC VA BRS 025-4F4M-BT
			SCALE			
			TOLERANCE	ANGULAR TOLERANCE		
			MATERIAL	WEIGHT		
REV.	DATE	DESCRIPTION	SHEET 1 OF 1			—



Maximum Operating Pressure - 500 psi
 Maximum Operating Temperature - 180 Degrees F
 Ball Through Hole Diameter - .218

025 SERIES BALL VALVE

025 One-Way Ball Valve Design Considerations

The 025 Series One-Way Ball Valve compact design promotes multiple configurations to fit the exact end use application. The 025 Ball Valve Series is rated to 500 psi and will support flow and pressure only in the flow direction. The 025 Series has a one-piece body construction, stamped with directional flow arrows, to cover 1/4" NPT end configuration applications. The Zinc Die Cast Lever Handle is standard. Handles can be ordered Reversed - to lie over the outlet when the valve is in the open position. UL configurations are available and rated to 250 psi. UR configurations are available and rated to 500 psi.

Example:	<u>Inlet End</u>	<u>Outlet End</u>	<u>Seal</u>	<u>Handle</u>	<u>Plating</u>
	1/4 FNPT	1/4 MNPT	Buna-N	Steel	ENP
SMC Part Number: 025-4F4M-B,SH,ENP					

The handle will lie over the Inlet port when the valve is in the open position. SMC Part Numbers are a description of the valve as read left to right, Inlet to Outlet.

Example: 025-4F4M-B,SH,ENP = 1/4 FNPT Inlet x 1/4 MNPT Outlet

025 Series Options

Material Options Brass Body, Nickel Plated Brass Ball, Teflon® Seats, Stainless Handle Screw

Seal Options Buna-N, Ethylene Propylene, Fluoroelastomer (Viton®), Neoprene

Body Options	1/4 Female x 1/4 Female NPT	1/4 Female x 11/16-16 Male
	1/4 Female x 1/4 Male NPT	1/4 Female x 7/16-24 Female
	1/4 Female x 1/8 Female NPT	1/4 Female x 1/4 Female Flare
	1/4 Female x 1/8 Male NPT	1/4 Female x 3/8 Compression
	1/4 Female x 1/4 Hose Barb	

Handle Options Zinc Die Cast Lever (Standard), Zinc Die Cast Lever with Red Vinyl Sleeve, Steel Lever, Steel Lever, Round Handle, Steel Lever, Steel Lever with Red Vinyl Sleeve, Round Zinc Die Cast Handle, Black Nylon T-Handle, Blue Nylon Knob, .312 x 1" Stem, Screw Slot Headed Ball

Plating Options Electroless Nickel, Black Zinc

SMC will quote alternate materials or customize our standard products when quantities ensure competitive pricing.
Contact Customer Service at (651) 653-0599, FAX - (651) 653-0989, E-Mail - info@specialtymfg.com

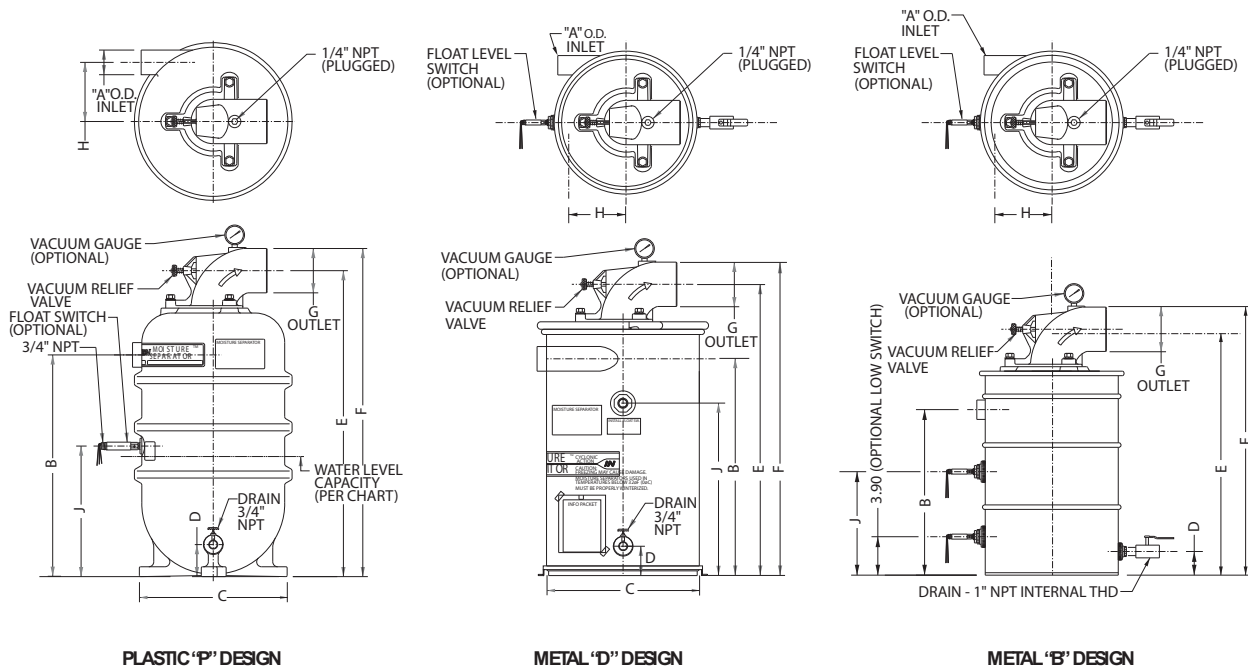
Accessories

Filtration - Moisture Separator

ROTRON®

By separating and containing entrained liquids, ROTRON'S™ moisture separator helps protect our regenerative blowers and the end treatment system from corrosion and mineralization damage. Recommended for all soil vacuum extraction applications.

SPECIFICATIONS:
 SEPARATION METHOD – High Efficiency Cyclonic
 RELIEF VALVE MATERIAL – Brass & Stainless Steel
 FLOAT MATERIAL – Copper
 FLOAT SWITCH – SPDT, Explosion-proof
 NEMA 7&9, 5 Amp max.



Models without float switch available. Metal MS200/300DS models are not the standard stocked, but are available.



Specification	Units	Part/Model Number							
		MS200PS	MS300PS	MS200DS	MS300DS	MS350BS	MS500BS	MS600BS	MS1000BS
		038519	038520	080086	080087	038357	080660	080659	038914
Dimension A	Inches	2.38	2.88	2.00	2.50	3.25	3.25	4.00	6.00
	mm	60.5	73.2	50.8	63.5	82.6	82.6	101.6	152.4
CFM Max.	CFM	200	300	200	300	350	500	600	1000
	m3/hr	340	510	340	510	595	850	1020	1700
Dimension B	Inches	22.46	22.46	22.12	22.12	28.00	28.00	27.00	31.00
	mm	570.5	570.5	561.8	561.8	711.2	711.2	685.8	787.4
Dimension C	Inches	16.00	16.00	16.75	16.75	23.00	23.00	23.00	27.00
	mm	406.4	406.4	425.5	425.5	584.2	584.2	584.2	685.8
Dimension D	Inches	3.25	3.25	2.75	2.75	4.00	4.00	4.00	4.00
	mm	82.6	82.6	69.9	69.9	101.6	101.6	101.6	101.6
Dimension E	Inches	31.05	31.05	27.92	27.92	37.25	37.37	37.37	47.32
	mm	788.7	788.7	709.2	709.2	946.2	949.2	949.2	1201.9
Dimension F	Inches	33.30	33.30	30.17	30.17	39.50	54.50	54.50	51.70
	mm	845.8	845.8	766.3	766.3	1003.3	1384.3	1384.3	1313.2
Dimension H	Inches	6	6.00	6.56	6.81	9.75	9.75	9.25	10.00
	mm	152.4	152.4	166.6	173	247.7	247.7	235	254
Dimension G	Inches	4.50 OD	4.50 D	4.50 D	4.50 OD	4.50 OD	6.63 ID	6.63 ID	8.62 OD
	mm	114.3	114.3	114.3	114.3	114.3	168.4	168.4	218.9
Dimension J	Inches	13.25	13.25	12.62	12.62	17.50	17.50	17.50	19.88
	mm	336.6	336.6	320.5	320.5	444.5	444.5	444.5	505
Drain Internal Thd	-	3/4	3/4	3/4	3/4	1	1	1	1
Shipping Weight	Lbs	42	42	42	42	82	95	96	150
	Kg	19.1	19.1	19.1	19.1	37.2	43.1	43.5	68

This document is for informational purposes only and should not be considered as a binding description of the products or their performance in all applications. The performance data on this page depicts typical performance under controlled laboratory conditions. AMETEK is not responsible for blowers driven beyond factory specified speed, temperature, pressure, flow or without proper alignment. Actual performance will vary depending on the operating environment and application. AMETEK products are not designed for and should not be used in medical life support applications. AMETEK reserves the right to revise its products without notification. The above characteristics represent standard products. For product designed to meet specific applications, contact AMETEK Technical & Industrial Products Sales department.

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 Customer Service Fax: +1 215.256.1338
www.ametektip.com

2.0 Moisture Separator™ Specifications

2.1 Duty

The moisture separator shall be designed for use in a soil vapor extraction system capable of continuous operation with a pressure drop of less than six inches of water at the rated flow of _____ SCFM. The separator shall be capable of operation under various inlet conditions ranging from a fine mist to slugs of water with high efficiency.

2.2 Principle of Operation

The moisture separator shall incorporate cyclonic separation to remove entrained water. The separator must protect against an overflow by fail safe mechanical means. An electrical switch or contact(s) alone is not an acceptable means of protection against overflow, but is a good backup.

2.3 Construction

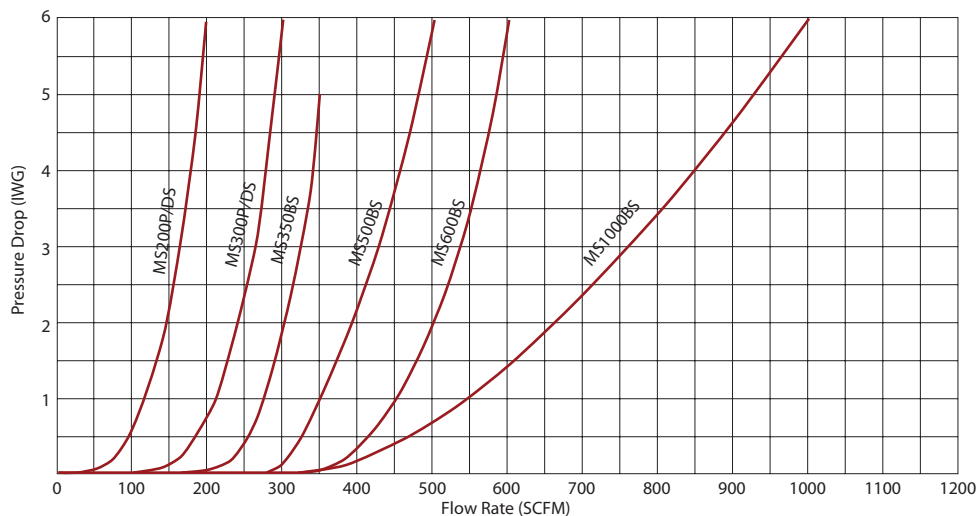
The body of the moisture separator shall be constructed of heavy wall plastic or heavy gauge cold rolled steel. The steel interior and exterior shall be epoxy (powder) coated to resist abrasion, corrosion, and chipping that might expose the surface. The inlet shall be tangentially located and welded to the body. The outlet port shall be constructed of PVC or cast aluminum alloy, flanged and sealed to the center of the top of the separator. The separator shall incorporate a non-sparking copper float ball and an adjustable relief valve to protect against overflow and overheating the blower.

For DR/EN/CP Blower Model	Selector Moisture Separator Model	Liquid- holding Capacity (gallons)	Inlet (OD)	Outlet	Max Vacuum Allow (IHG)
404 454 505 513 523 555 633 833	MS200PS	7	2.38	4.5 OD	12
523 555 633 833	MS200DS	10	2.0		22
656 6 757	MS300PS	7	2.88		12
757 808	MS300DS	10	2.5		22
808	MS350BS	40	3.25	6.63 ID	
858 1233	MS500BS		4.0		
909	MS600BS				
979 14	MS1000BS	65	6.0	8.62 OD	

2.4 Capacity and Dimension

The moisture separator must have a liquid capacity of _____ gallons. The inlet shall be _____ inch OD slip-on type. The outlet shall be _____ inch OD slip-on type.

2.5 Pressure Drop



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SERVICE AND PARTS MANUAL FOR MOISTURE SEPARATORS



Technical & Industrial Products

627 Lake Street, Kent, Ohio 44240 U.S.A.
Telephone: 330-673-3452 Fax: 330-677-3306
e-mail: rotronindustrial@ametec.com
internet: www.ametektip.com



Your Choice. Our Commitment.™

OPERATION & MAINTENANCE MANUAL



Technical & Industrial Products

627 Lake Street, Kent, Ohio 44240 U.S.A.

Telephone: 330-673-3452 Fax: 330-677-3306

Rotron Moisture Separator

Thank you for purchasing an AMETEK Rotron MS series moisture separator. When matched with the correct Rotron blower, and properly installed and maintained, this separator will effectively and efficiently remove moisture from the air stream. To ensure good results, please take the time to read these instructions before starting the installation of your moisture separator.

Sizing for Optimal Efficiency

Separator	Max. CFM	Max. Vac	Capacity	Blowers – DR, EN & CP
MS200P(S)	200	12* IHg	7 gal.	101-555, 513, 523, 623
MS200D(S)	200	22 IHg	10 gal.	101-555, 513, 523, 623
MS300P(S)	300	12* IHg	7 gal.	606, 6, 707, 823
MS300D(S)	300	22 IHg	10 gal.	606, 6, 707, 823
MS350B(S)	350	22 IHg	40 gal.	808, 1223
MS500B(S)	500	22 IHg	40 gal.	858
MS600B(S)	600	22 IHg	40 gal.	909
MS1000B(S)	1000	22 IHg	65 gal.	14

Note: "S" suffix denotes presence of XP high level switch.

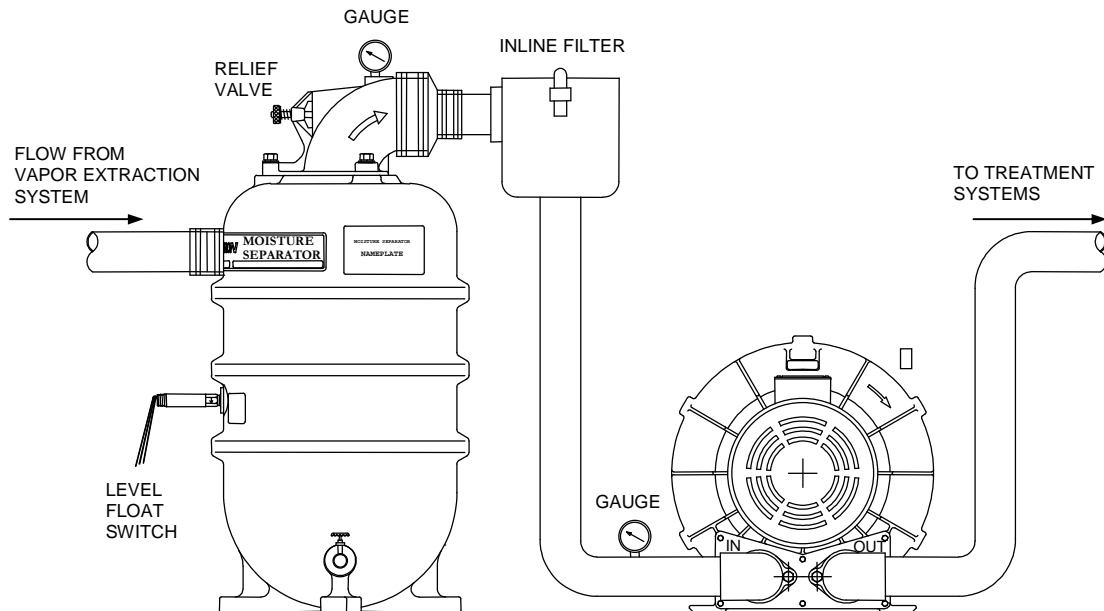
* Special Construction with 20 IHg capability available.

Installation

1. **Unpacking** - For MS200/300, remove drain valve taped to packing material and box containing liquid level switch, if so equipped. For MS350/500/600, remove box containing valve hardware as well as box containing liquid level switch (if so equipped) and remove internal cardboard packaging and cable ties from screen assembly.
2. **Bolt Down** (w/ feet included) - For MS200/300 models, built-in feet or a mounting ring is included. It is recommended that these units be bolted in place. All models will only work in an upright position.
3. **Piping** - Attach to system piping with flexible couplings to minimize stress incurred by rigid system piping. The connections should be airtight but not sealed with an adhesive for ease of disassembly during routine maintenance. Install drain valve, using teflon tape on threads.
4. **Installation and Wiring of Liquid Level Switch** - Remove plug from the bulkhead fitting. Thread the switch by hand until snug with index arrow pointing down. Wire in accordance with the nameplate wiring schematic. Typically, the wiring is connected back to the starter to shut down the system but can be used for other purposes.
5. **Install/Adjust Relief Valve** - For MS500/600, first install the relief valve with teflon tape on threads. Use a wrench, but tighten only enough to prevent leakage. Next step for all MS units, back off the relief valve adjuster relaxing spring pressure. Then block the moisture separator inlet while measuring the motor current. Adjust the valve until the motor current is 90% of the max. nameplate blower amps.
6. **Continuous Service** - For cold weather service, appropriate steps should be taken to prevent freezing. Also, the maximum vacuum ratings are based on 115°F maximum. Consult factory for higher potential ambients.

Note: A moisture separator is not a substitute for an inline air filter. A Rotron inline filter should be used to remove particles that pass through the separator.

Typical Vapor Extraction System



Operation

Moisture-laden air enters the separator through the tangential inlet. Cyclonic action removes free moisture from the air stream and allows the air to discharge through the top of the separator. When the separator is full, the float valve shuts off the air flow through the separator, and the relief valve opens to limit the vacuum of the blower.

To drain the separator, turn off the blower and open the drain valve at the bottom of the separator. Caution: The liquid contained in the separator should be analyzed before it is released back into the environment. It may be considered hazardous waste in certain geographical areas and require special treatment/disposal. Once the liquid is drained, the unit can be reset by turning the blower back on.

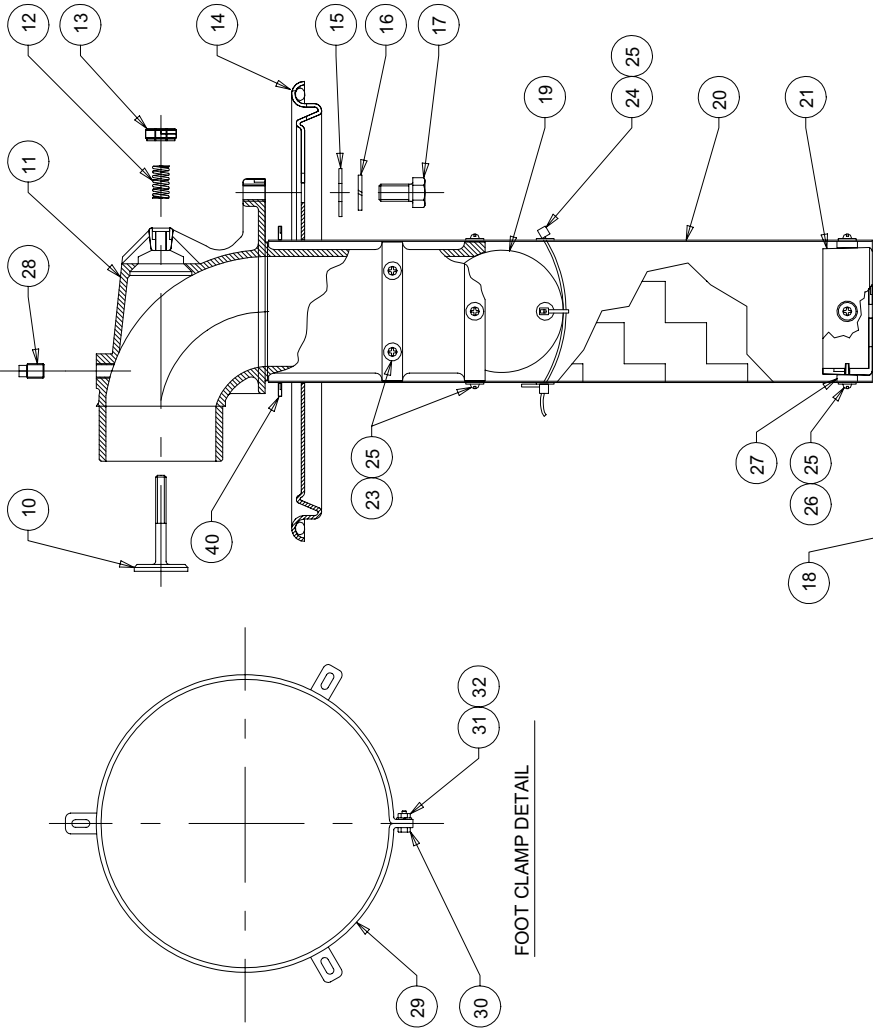
Automatic draining options are at the discretion of the customer.

Maintenance

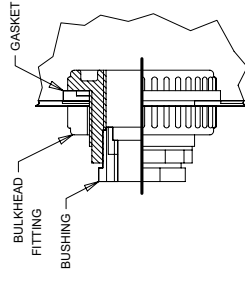
This MS series moisture separator has been designed to require minimal maintenance. During normal operation a layer of sludge may build up on the bottom of the separator. As necessary, the top assembly of the moisture separator should be removed and the inside cleaned out with water. Keeping the inside clean will prevent the valve from becoming clogged with sediment. The relief valve should be inspected upon emptying the separator and readjusted (per installation instruction 5) upon restart.

If you have any questions regarding this product, contact your local sales representative or our Application Engineering Department at the factory.

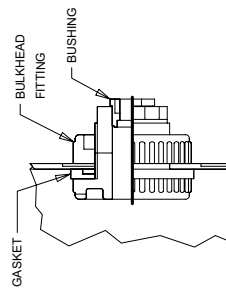
AMETEK ROTRON MOISTURE SEPERATOR



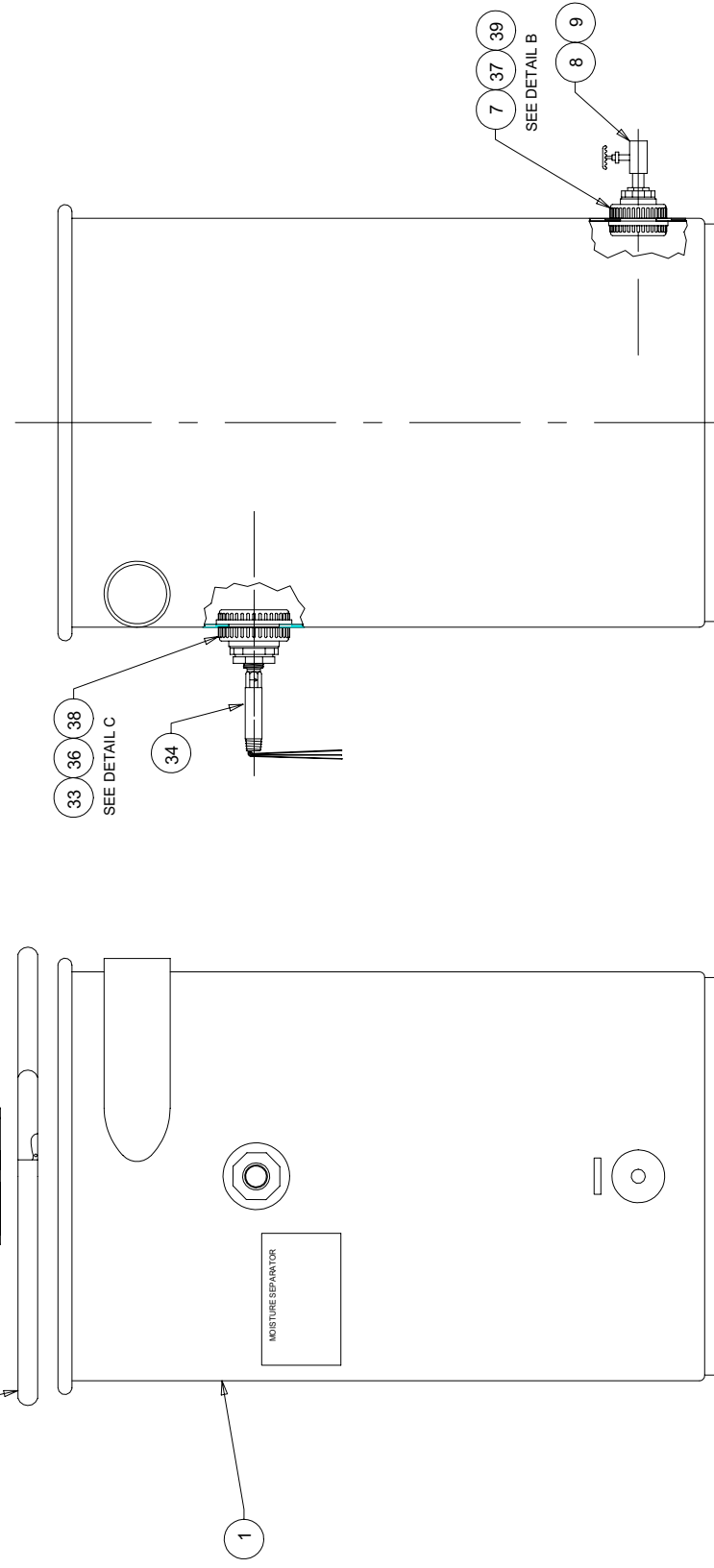
FOOT CLAMP DETAIL



DETAIL C
BULKHEAD FITTING ASSY



DETAIL B
BULKHEAD FITTING ASSY



Moisture Separator
Service and Parts Manual

Model:
Part No.:

Parts Breakdown			
MS200/300D -		MS350B -	MS200/300P -
038355		038277	038517
038356		038357	038518
038275			038003
038276			038075
080086			080657
080087			080658
			080659
			080660
			080661
			080662
			OBSOLETE
			MS1000
			038914
			038916
			080019

Item No.	Qty.	Description	See Next Page	See Next Page	See Next Page	See Next Page
1	1	Drum Assembly	See Next Page	See Next Page	See Next Page	See Next Page
7	1	Bulkhead Fitting Drain	529830	529830	Not Used	529830
8	1	Drain Valve	523374	523374	523407	523407
9	1	Pipe Nipple Drain	551140	523406	155416	523406
10	1	Relief Valve Stem	529318	529318	529318	Not Used
11	1	Outlet	529323	529323	See Outlet Assy #42 Below	550621
12	1	Spring - Relief Valve	155339	155339	155339	Not Used
13	1	Nut-Knurled Relief Valve	155342	155342	Not Used	155476
14	1	Lid	550674	523403	Not Used	155471
	1	Gasket for lid	Not Used	551102	Not Used	523404
15	3	Washer, Flat, Lid/Outlet	155159	155159	155091	551102
16	3	Washer, Lock, Lid/Outlet	120338	120338	251787	Not Used
17	3	Bolt, Lid/Outlet	155343	155343	120255	Not Used
18	1	Lock Ring - Lid	See Next Page	528926	Not Used	155343
19	1	Float Ball	528803	528803	528956	550652
20	1	Cage, Float	551138	528957	529887	550569
21	1	Endcap	529884	529884	529854	550678
23	6	Screws Cage	251645	251645	251645	(9 pcs) 251645
24	4	Tie Cable *	155276	155276	Not Used	(11 pcs) 251645
25	13	Washer Cage - Various Places	155115	155115	(9 pcs) 155115	155276
26	3	Screws Endcap	155415	155415	155415	(16 pcs) 155115
27	3	Spacer Endcap	155417	155417	155417	(3 pcs) 251645
28	1	Pipe Plug - Outlet	155344	155344	Not Used	Not Used
29	1	Foot Clamp	See Next Page	Not Used	Not Used	Not Used
30	1	Bolt, Foot Clamp	120325	Not Used	Not Used	Not Used
31	1	Nut, Foot Clamp	155049	Not Used	Not Used	Not Used
32	1	Lockwasher, Foot Clamp	120203	Not Used	Not Used	Not Used
33	1	Bulkhead Fitting Float Switch	See Next Page	See Next Page	Not Used	Not Used
34	1	Float Switch	See Next Page	See Next Page	See Next Page	See Next Page
36	1	Bushing, Float Switch	See Next Page	See Next Page	Not Used	See Next Page
37	1	Gasket, Bulkhead Fitting - Drain Spigot	529831	529831	Not Used	529831
38	1	Gasket, Bulkhead Fitting	See Next Page	See Next Page	See Next Page	See Next Page
39	1	Bushing, Drain Valve	529849	Not Used	Not Used	Not Used
40		Gasket, Outlet	529514	529514	529514	Not Used
41		Pipe Plug, Float Switch	Not Used	Not Used	Not Used	550653
42		Outlet Assembly (consists of one each of the following)		See Next Page	Not Used	Not Used
			Tee - 523402			
			Pipe - 116135			
			Seat Float - 528955			
			Reducer, Relief Valve - 528959			
			Bushing, Relief Valve - 551639			
43		Relief Valve Complete	Not Used	Not Used	523230	Not Used

*As Needed **Viewed looking at inlet/outlet ports

Model	Model Part No.	Item No.	Item Part #	Model	Model Part No.	Item No.	Item Part #
MS200DS	038355	1	529463	MS200PS	038519	1	529435
		14	529006			34	529461
		18	529004			41	Not Used
		29*	529367			1	529668
		33	529841			34	Not Used
MS300P		34	529461	MS300P	038518	41	155405
		36	552634			1	529435
		38	529842			34	Not Used
		1	529464			41	155405
		14	529006			1	529465
MS300DS	038356	18	529004	MS500B	038354 (Obsolete)	33	529841
		29*	529367			34	529461
		33	529841			36	552634
		34	529461			38	529842
		36	552634			1	529466
MS200D	038275	38	529842	MS600BS	038353 (Obsolete)	33	529841
		1	523362			34	529461
		14	529006			36	552634
		18	529004			38	529842
		29*	529367			1	523399
MS300D	038276	33	Not Used	MS500B	038075(Obsolete)	33	Not Used
		34	Not Used			34	Not Used
		36	Not Used			36	Not Used
		38	Not Used			38	Not Used
		1	551141			1	551143
MS350BS	038357	14	529006	MS600B	038003 (Obsolete)	33	Not Used
		18	529004			34	Not Used
		29	529367			36	Not Used
		33	Not Used			38	Not Used
		34	Not Used			1	550561
MS350B	038277	36	Not Used	MS1000BS	038914	33	529841
		38	Not Used			34	529461
		1	529465			36	552634
		33	529841			38	529842
		34	529461			1	550672
MS300PS	038520	36	552634	MS300DS	080087	18	523296
		38	529842			29	550688
		1	523399			33	529841
		33	Not Used			34	529461
		34	Not Used			36	552634
MS1000B	038916	36	Not Used	MS200DS	080086	38	529842
		38	Not Used			1	550669
		1	550560			18	523296
		33,34,36,38	Not Used			29	550688
		1	550566			33	529841
MS1000B2S	080019	18	Not Used	MS500B2S	080662	34	529461
		33	(2 pcs)			36	552634
		34	(2 pcs)			38	529842
		36	(2 pcs)			1	550650
		38	(2 pcs)			33	529841

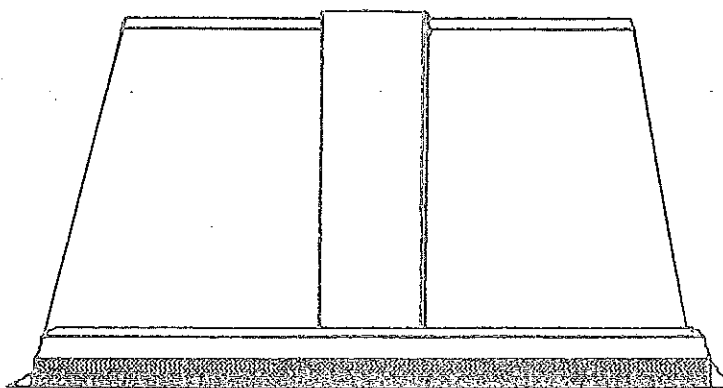
*As Needed **Viewed looking at inlet/outlet ports

FEATURES

One-piece Molded
Fiberglass

- Polyurethane Foam Insulation
- Polycross Link 3½ x 3½ Hinges Non-corrosive
- Nylon Bolts and Nuts
- 7" Cast Aluminum Handle
- 30 lb. Spring Loaded Latch
- Molded Fiber-glass Base
- Nest for Shipping
- Easy Access
- Light Weight

TYPICAL MOLDED COVER



SIZES AVAILABLE

D-207-48:	63"l, 44"w, 48"h
D-207:	60"l, 41"w, 38"h
D-101:	63"l, 36"w, 40"h
D-106:	50"l, 40"w, 42"h
D-100:	43"l, 30"w, 36"h
D-105:	47"l, 23"w, 26"h
D-102:	27"l, 20"w, 29"h

SPECIFICATIONS: The molded fiberglass enclosure shall be constructed with rigid thixotropic resin and 30% glass chopped in 2" random pattern 3/32" to 3/16". Exterior finish to be white orthophthalic polyester gel-coat .02" to .04". Inside surface to be insulated with 2 lb. density sprayed-on polyurethane foam ½" to 1½". Fiberglass base is hinged using polycross link 3½" x 3½" non-corrosive hinges. Thirty pound spring loaded latch hooks to 7" cast aluminum-handle. All hardware is attached with nylon bolts and nuts.

FIBERGLASS MODULAR ENCLOSURE

FEATURES

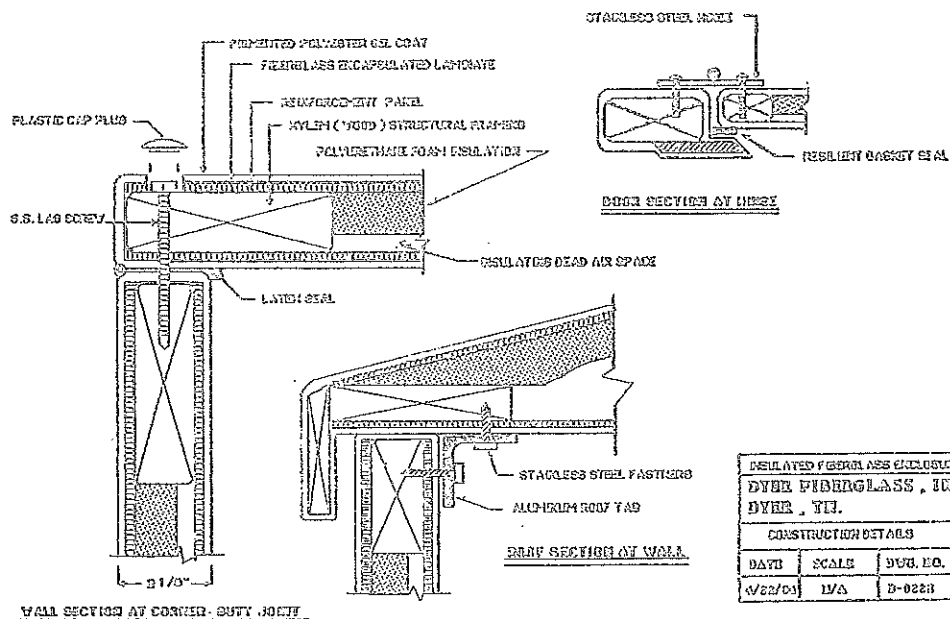
Variation in Size & Design

- 2" or 4" Wall Construction
- Corrosion Resistant Fiberglass Encapsulation
- Polyurethane Foam Insulation
- Quick Installation
- Standard White Color
- Removable Walls & Roof
- Hinged or Lift-Off Doors
- Stainless Steel Fasteners
- Door Seal Gasket
- No Painting
- Easily Assembled or Disassembled
- Shipped Knocked Down
- Non-Corrosive Hardware

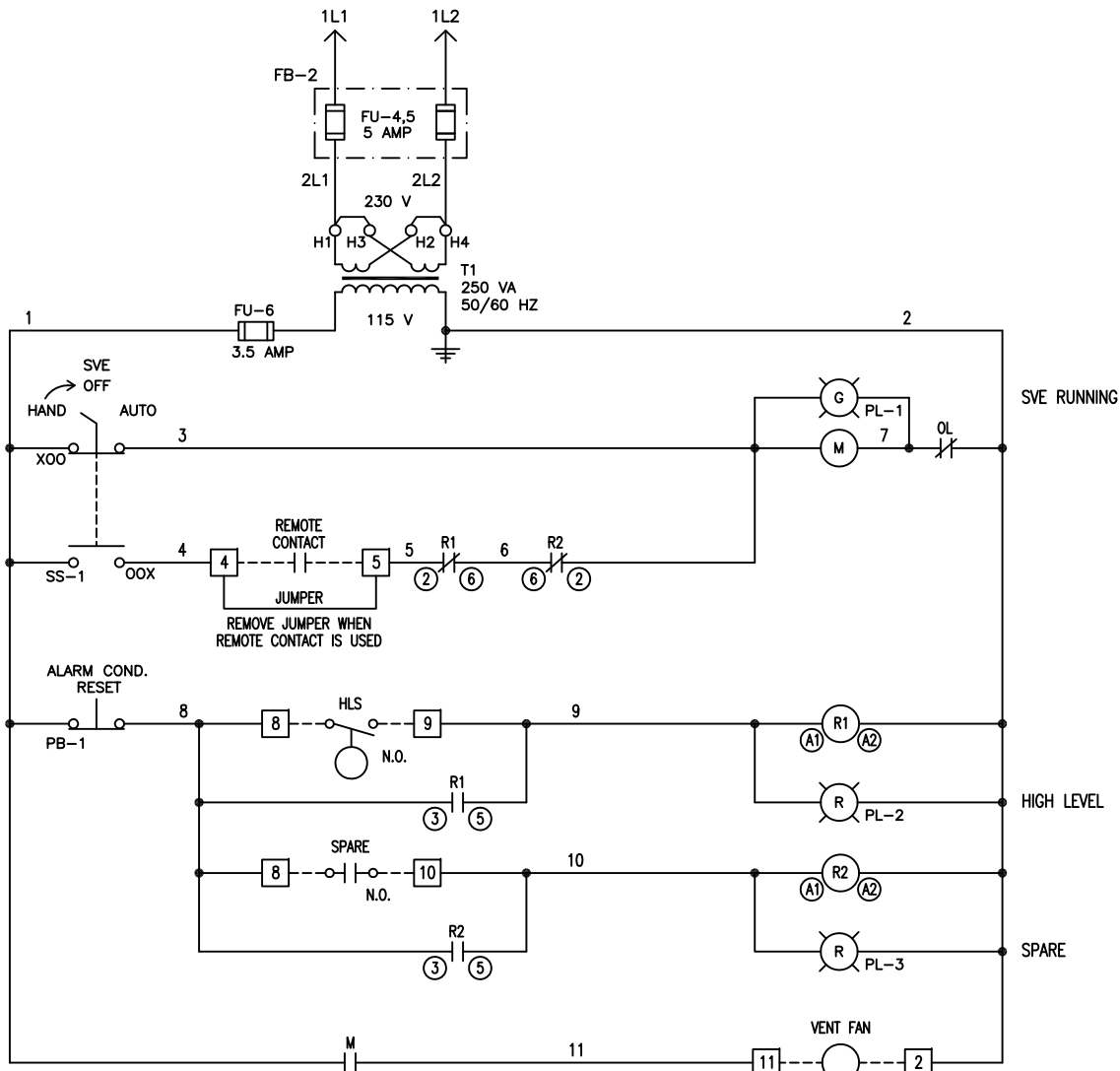
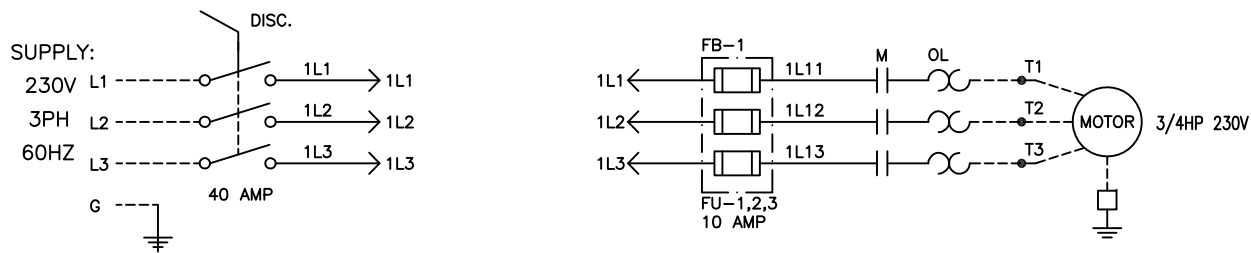
OPTIONS

- Louvered Vent
- Exhaust Fan
- Thermostat for Fan
- Electrical Package
- Plexiglass Door Window
- Various Colors Available
- Stainless Steel Handle
- Stainless Steel Slip-Joint Hinges
- Lifting Eyes
- Fiberglass Vent Hood

TYPICAL 2" WALL CONSTRUCTION



GENERAL SPECIFICATIONS: The enclosure shall be constructed of a durable xylem frame coated with rigid thixotropic resin and 30% glass chopped in 2" random pattern 3/32" to 3/16". Exterior finish to be white isophthalic polyester gel-coat .02" to .04" with ultra-violet inhibitors. The interior of the wall is insulated with 2 lb. density sprayed-on polyurethane foam ½" to 1½". Interior and exterior surfaces are reinforced with 3/32" to 1/8" chopped fiberglass. The interior of the enclosure shall be accessible by door(s) of the same composite construction as the walls and roof. Each door(s) shall have stainless steel hinges and shall have a locking type handle. Integral fiberglass flanges hold the roof to the walls and the walls to the floor. The enclosure shall be designed and constructed so that all side walls, doors and roof can be removed if required.



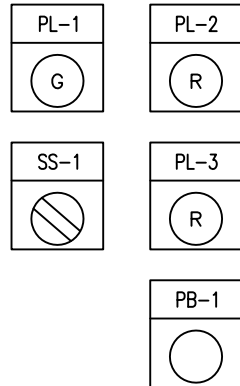
REVISIONS				
REV.	DATE	BY	CHKD.	DESCRIPTION

NOTES:

- INDICATES TERMINAL BLOCK
- INDICATES COMPONENT TERMINAL POINT
- USE COPPER WIRE ONLY
- REPLACE WITH LIKE FUSES ONLY
- ALL CONTACTS SHOWN WITH POWER OFF

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PO# 1208140-2651					
ICP S.O.# XXX					
HP	<u>3/4</u>	TITLE SVE CONTROL PANEL			
VOLTAGE	<u>230</u>	DATE 8/30/12	PAGE 1 OF 2	DWG NO. GASH075	INTERNATIONAL CONTROL PRODUCTS, INC.

DOOR LAYOUT



PL-1 SVE RUNNING
 PL-2 HIGH LEVEL
 PL-3 SPARE 1
 SS-1 HAND-OFF-AUTO
 PB-1 ALARM COND. RESET

BILL OF MATERIALS

ITEM	QTY	ITEM LABEL	MFG.	DESCRIPTION	PART NUMBER
1	1	ENCL	RITTAL	20x16x8 NEMA 4 ENCLOSURE	AE1045.500
2	2	ENCL	RITTAL	SCREWDRIVER INSERT	SZ2464
3	4	ENCL	RITTAL	WALL MOUNTING BRACKET	SZ2503.000
4	1	DISC.	ABB	40A 3P NON-FUSED DISC. SWITCH	OT40F3
5	1	DISC.	ABB	NEMA 4 DISCONNECT HANDLE	OHB65L6
6	1	DISC.	ABB	DISCONNECT SHAFT	OXp6x180
7	1	FB-1	MERSEN	3P 30A CLASS CC FUSE BLOCK	30323R
8	3	FU1,2,3	MERSEN	10 AMP CLASS CC FUSE	ATDR-10
9	1	M	BENSHAW	9 AMP IEC CONTACTOR	RSC-9-6AC120
10	1	OL	BENSHAW	OVERLOAD RELAY (2.5-4 FLA)	SPO-22-3A3
11	1	SS-1	ABB	3 POS. S.S. SPRG. RET. L TO C (2 N.O.)	M3SS7-30B-20
12	1	PL-1	ABB	GREEN F.V. PILOT LIGHT - 120V	CL-100G
13	2	PL-2,3	ABB	RED F.V. PILOT LIGHT - 120V	CL-100R
14	1	PB-1	ABB	BLACK FLUSH P.B. (1 N.C.)	MP1-30B-01
15	1	T1	SIEMENS	250 VA CONTROL TRANSFORMER	MT0250A
16	1	FB-2	MERSEN	2P 30A CLASS CC FUSE BLOCK	30322R
17	2	FU-4,5	MERSEN	5 AMP CLASS CC FUSE	ATDR-5
18	1	FU-6	MERSEN	3 1/2 AMP TIME DELAY FUSE	TRM-3 1/2
19	2	R1,2	FINDER	2 POLE RELAY - 120V	56.32.8.120.0040
20	2	R1,2	FINDER	2 POLE RELAY SOCKET	96.72
21	10	T.B.'S	PHOENIX	TERMINAL BLOCK	3004362
22	1	T.B.'S	PHOENIX	TERMINAL BLOCK END COVER	3003020
23	2	T.B.'S	PHOENIX	DIN RAIL END RETAINER	0800886
24	2	GROUND	BURNDY	14-2 AWG GROUND LUG	DLA2
25					

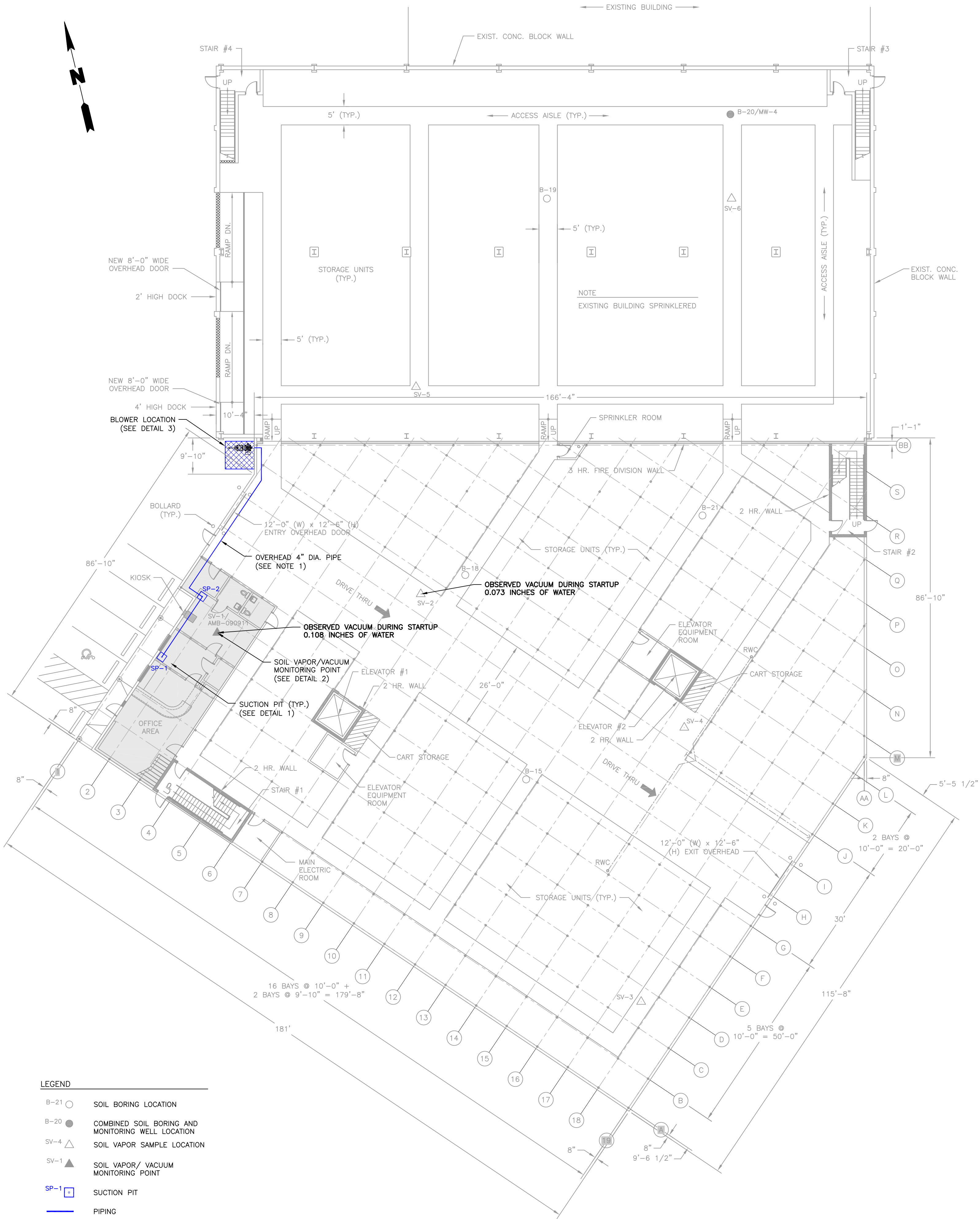
NOTES:

1. ☐ INDICATES TERMINAL BLOCK
2. ☐ INDICATES COMPONENT TERMINAL POINT
3. USE COPPER WIRE ONLY
4. REPLACE WITH LIKE FUSES ONLY
5. ALL CONTACTS SHOWN WITH POWER OFF

REVISIONS				
REV.	DATE	BY	CHKD.	DESCRIPTION

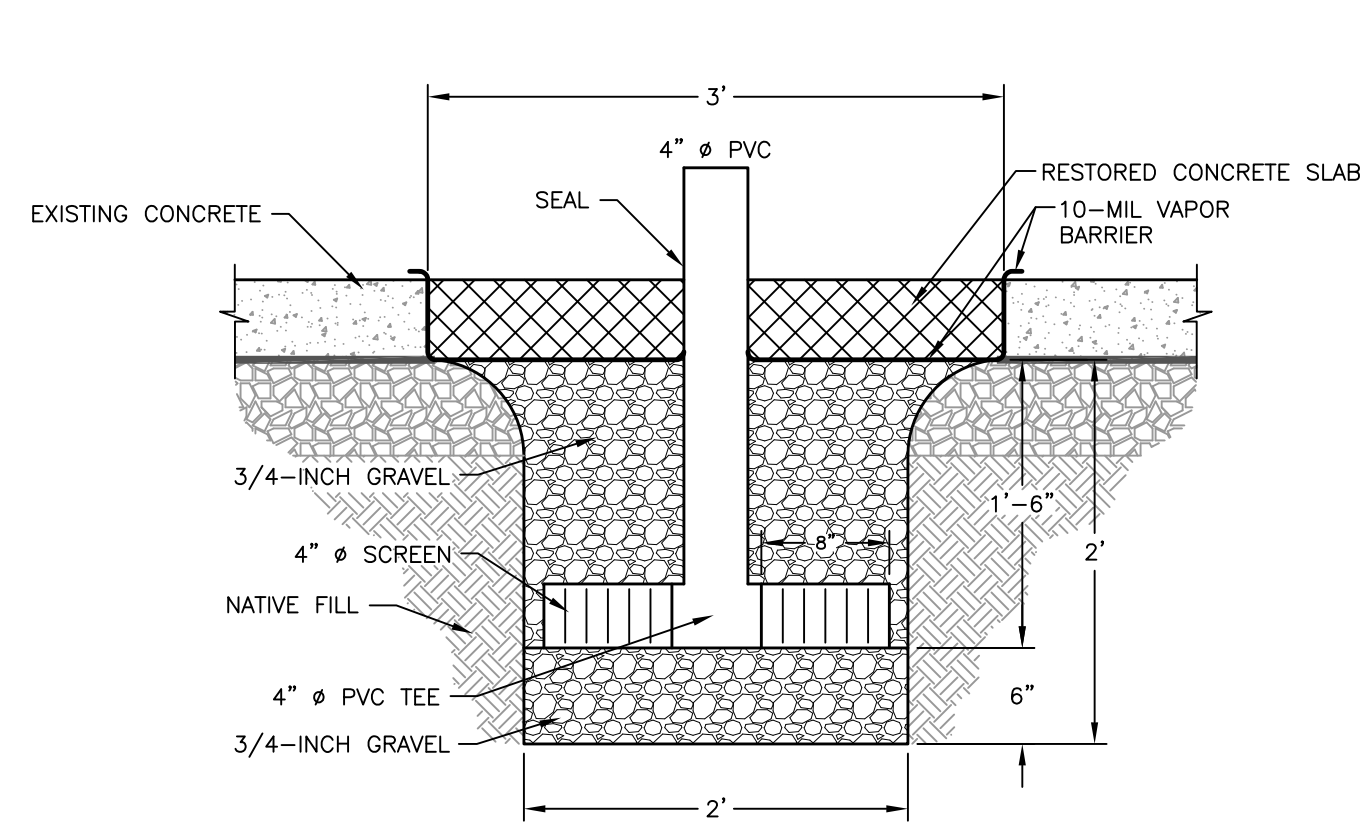
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ICP S.O.# XXX		TITLE SVE CONTROL PANEL			
HP	3/4	DATE	PAGE	DWG NO.	INTERNATIONAL CONTROL PRODUCTS, INC.
VOLTAGE	230	8/30/12	2 OF 2	GASHO75	

1. Sub Slab Depressurization System

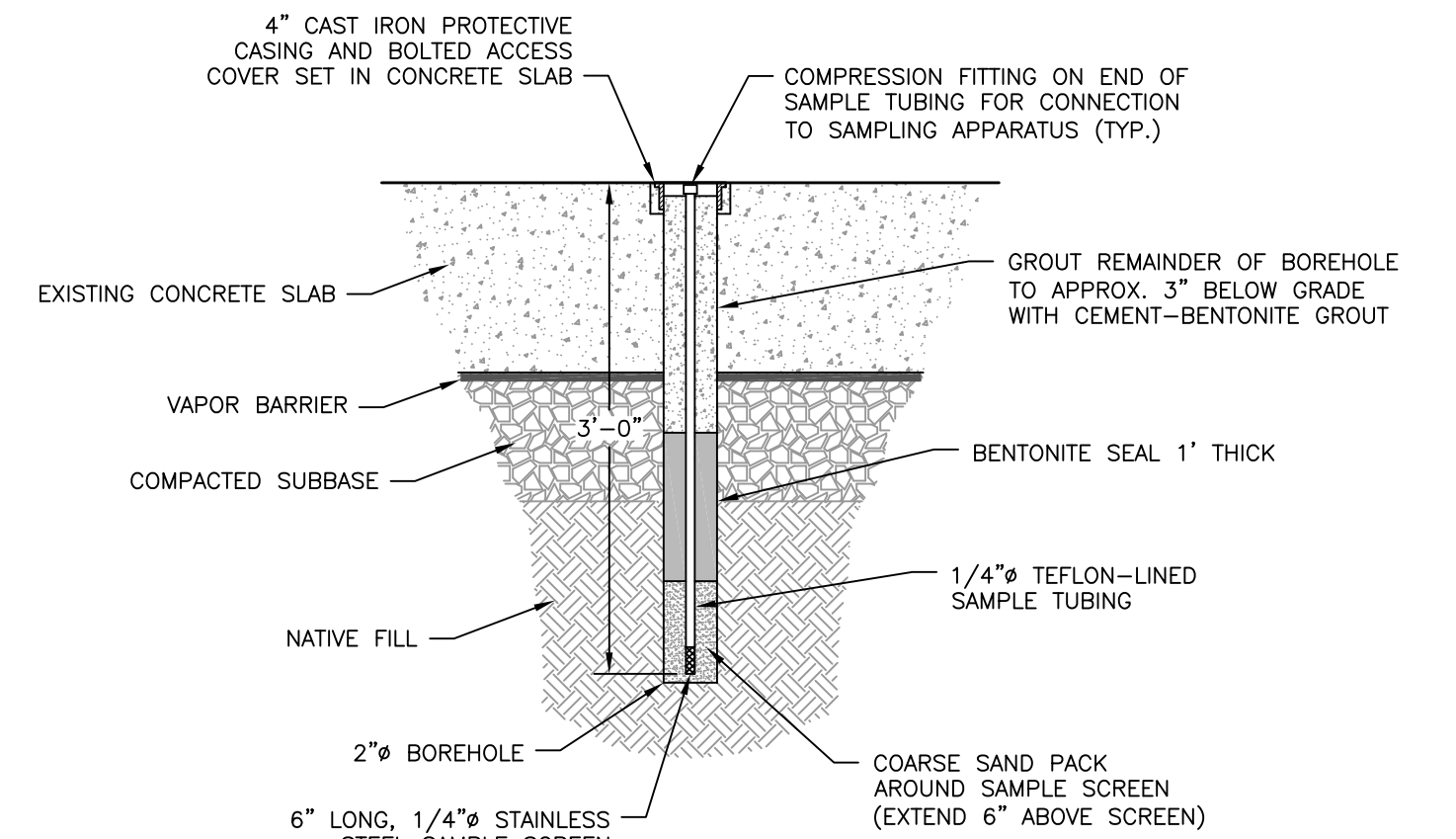


SSDS LAYOUT INTERIOR FIRST FLOOR PLAN
SCALE: 1/16"=1'-0"

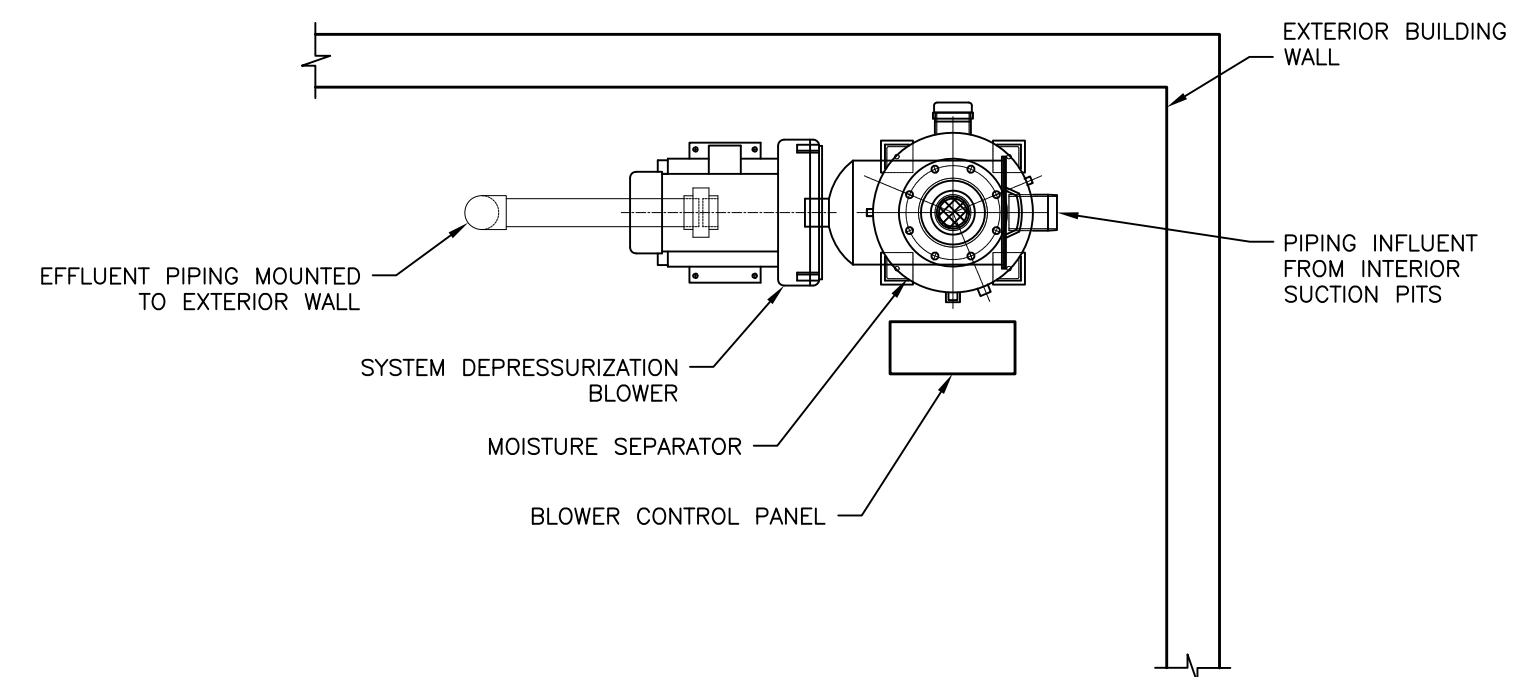
- LEGEND**
- B-21 ○ SOIL BORING LOCATION
 - B-20 ● COMBINED SOIL BORING AND MONITORING WELL LOCATION
 - SV-4 △ SOIL VAPOR SAMPLE LOCATION
 - SV-1 ▲ SOIL VAPOR/ VACUUM MONITORING POINT
 - SP-1 □ SUCTION PIT
 - PIPING
 - OFFICE AREA



1 SUCTION PIT DETAIL (TYP.)
SCALE: 1"=1'



2 VACUUM MONITORING POINT DETAIL
SCALE: NOT TO SCALE



3 BLOWER AND MOISTURE SEPARATOR DETAIL
SCALE: 1/2" = 1'-0"

NOTES

1. BLOWER MODEL DR353BR72M MANUFACTURED BY AMETEK ROTRON, SKID MOUNTED WITH INTERCONNECTING PIPING, FITTINGS, ETC.
2. THE BLOWER IS ENCLOSED IN A DYER MOLDED ENCLOSURE D-100HSL.
3. PIPING CONNECTIONS, VALVES, INSTRUMENTATION/CONTROLS ARE NOT SHOWN FOR CLARITY REASONS.

SOURCE

RM ARCHITECTURE, INC., DRAWING A-1 (APPENDIX A)

Title:

SUB-SLAB DEPRESSURIZATION SYSTEM

DEVON #87 STATEN ISLAND
3131 RICHMOND TERRACE
STATEN ISLAND, NEW YORK 1303

Prepared For:

DEVON SELF STORAGE HOLDINGS, LLC

ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting
and Management

Compiled by: W.S.	Date: 29MAR13	PLATE 1
Prepared by: J.A.D.	Scale: AS SHOWN	
Project Mgr: J.L.	Project: 2077.0001Y000	
File: 2077.0001Y107.03.DWG		