REMEDIAL ACTION WORK PLAN

Springfield Avenue Lots
Providence, Rhode Island

April 2, 1999
Revised May 3, 1999
Second Revision May 9, 1999

Prepared For:

Mr. Mal A. Salvadore
Sondler Salvadore and Associates
400 Reservoir Avenue
Providence, Rhode Island 02907

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SPRINGFIELD AVENUE LOTS
PROVIDENCE, RHODE ISLAND

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INTRODUCTION

Pursuant to Section 9.00 of the *Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (DEM-DSR-01-93)*, hereinafter the *Remediation Regulations,* ATC Associates Inc. submits this Remedial Action Work Plan. This plan outlines the steps and procedures required to remediate the contiguous lots depicted on the Providence Tax Assessor's Plat Map Number 115. These lots are located between Killingly Street, Springfield Street, and Hartford Avenue and are denoted as the Springfield Avenue Lots within this report (also referred to as the "site" or "subject property"). Physically, these lots are currently undeveloped and cleared of vegetation.

The City of Providence is planning to construct three schools at the site: one 400-pupil elementary school and two 400-pupil middle schools. The middle schools will be housed within one building complex with separate wings.

As part of the City's due diligence assessment of the site, ATC was retained to perform a Phase I Environmental Site Assessment[1]. A significant finding of this study was that the site received solid waste from 1965 to approximately 1975.

ATC performed a site investigation to evaluate the chemical characteristics of the fill vis-à-vis risks to human health and the environment. This evaluation consisted of the collection and analysis of 20 soil samples taken from 20 test pit locations, 23 groundwater samples from 23 groundwater monitoring points, and 12 soil gas samples collected from 12 soil gas monitoring points. Seven near surface soil samples were also collected in the southern portion of the site where fill material was not identified. The results of the sample analysis were presented in a Site Investigation Report that was submitted to the Rhode Island Department of Environmental Management on March 26, 1999.

The findings of this limited subsurface assessment revealed concentrations of lead, arsenic and total petroleum hydrocarbons at concentrations exceeding the Method 1 Residential Direct Exposure Criteria in certain soil samples collected in test pit locations where fill was encountered. These constituents were also identified in 6 of the 7 near surface soil samples. No constituents of concern were identified at concentrations exceeding the Method 1 GB groundwater criteria in the groundwater samples analyzed. Although the RIDEM has not established concentration thresholds for soil gas, the soil gas concentrations detected do not

[1] ATC's Phase I Environmental Site Assessment was performed in accordance with the scope and limitations of ASTM Practice E1527.

appear to represent a threat to human health (based on standards developed by the Connecticut Department of Environmental Protection).

Based on the results of the Site Investigation, ATC conducted a remedial alternatives analysis that identified the following preferred option:

1. Cover the non-building areas of the site with two feet of clean fill. A pervious "indicator" barrier that will rest on top of the ground surface will underlie the clean fill. In certain areas of the site less than two feet of clean fill will be placed as a cover. In these areas, in addition to the indicator barrier, a geotextile fabric will be placed over the ground surface prior to the placement of clean fill. Where the cover will be less than two feet, pavement will be the final surface.

2. Remove solid waste that underlies the elementary and middle school buildings. Additional solid waste will be generated to prepare the site area and the southern parking lot for construction. Solid waste that is excavated during site activities will be brought to a staging area on site and processed through a rotating screener. Bulky waste that does not pass through the 7/8-inch screen will be hauled to the Rhode Island Solid Waste Management Corporation's landfill in Johnston, Rhode Island. Screened material will be disposed at a licensed disposal facility. Arrangements are currently being made to dispose of this material. To date, approximately 8,000 cubic yards of waste have been removed from beneath the elementary school building and an additional 10,000 cubic yards of waste have been removed from the other areas of the site - primarily from beneath the middle school building.

3. Install a soil gas collection system under the middle school and elementary school buildings.

This Remedial Action Work Plan presents the details regarding the installation of these measures.

1.00 REMEDIAL OBJECTIVES

Specific remedial objectives have been developed for the each of the affected media present at the site – soil, groundwater, and soil gas. The objectives were developed to conform to the provisions of Section 8.0 of the *Remediation Regulations.*

1.10 Groundwater Objectives

The remedial objective for groundwater is the Method 1 GB Groundwater Quality Objectives as specified in Section 8.03 A., ii. of the Remediation Regulations. The basis of these objectives is to prevent potential volatile organic compounds from volatilizing from the groundwater and migrating to indoor air. ATC believes the application of this standard is appropriate considering the following:

- The extent and nature of the groundwater contamination does not pose a substantial likelihood of exceeding a surrounding GA Groundwater Objective. Sampling at the site has indicated that napthalene and dichlorodifluoromethane are present in one of the five-groundwater samples collected from the site. These constituents were not included in the analysis performed on-site using an on-site gas chromatograph that was used to analyze all 23 groundwater samples collected from the site. The affected sample was collected in the northeast corner of the site (GW-22) at a depth within the fill material. Based on water level measurements measured during the well point installation and deeper geotechnical borings, the groundwater located within the waste material appears to be perched. The nearest GA Groundwater classification area is 500 feet to the south of the site and to the south of Killingly Street. Groundwater monitoring analytical results collected from the southern portion of the site did not identify these compounds (GW-9) and it is unlikely that the contaminants would impact the southerly located GA Groundwater Classification area.

- The extent and nature of the groundwater contamination does not pose a substantial likelihood of adversely affecting current uses of groundwater, surface water resources or surrounding properties as they exist at the time that the site investigation work is conducted. The site area is not used for a supply of drinking water, as City of Providence Water lines are located along streets surrounding the site area (Springfield Avenue, Hartford Avenue, and Killingly Street). No surface water bodies are located in the immediate vicinity of the site. The nearest surface water body, the Woonasquatucket River, is located approximately 0.4 miles to the north of the site. Based on the concentrations detected and the relative distance of the River from the site, it is unlikely that the site would impact water quality in the Woonasquatucket River.

- Groundwater is not located within a designated buffer zone around a licensed solid waste management facility.

- The groundwater of concern does not pose a significant threat to the classification and/or actual and potential uses of the surface water bodies in the vicinity of the contaminated-site consistent with the policies and regulations of the Division of Water Resources or to human health and the environment. Since the site groundwater is not used as a supply for drinking water and the proposed remediation of the site includes the installation of a soil gas collection system, it is unlikely that the application of this standard would pose a significant threat to the groundwater use in the site vicinity.

Based on the application of the GB Groundwater Quality Standard, remediation of the groundwater at the site is not warranted.

1.20 Surface Water and Sediment Objectives

Based on the concentrations of contaminants found on site and the distance to the nearest surface water body, it is unlikely that surface water or sediments would be impacted at the site or in the site vicinity.

1.30 Soil Objectives

Lead, arsenic and TPH have been detected throughout the fill area at concentrations exceeding the Method 1 Residential direct exposure criteria. ATC estimates that up to 200,000 cubic yards of solid waste material has been placed at the site. Given the enormous expense associated with removing the waste material and the inherent hazards associated with handling a large volume of this material, the remedial action work plan does not call for the removal of the waste but rather specifies that a soil cover will be placed on site. In placing the cover over the site, direct exposure will be substantially eliminated. It should be noted, however that some solid waste material will need to be excavated to facilitate site development. Excavation will occur in three areas:

1. Beneath and around the elementary school,
2. Within the southern parking lot, and
3. Beneath the middle school.

The volume of the excavated material is anticipated to be approximately 20,000 cubic yards.

The soil objectives for this remedial action work plan will be the Method 1 Residential Direct Exposure Criteria to be evaluated from the top of the cover to a point immediately above the current ground surface.

1.40 Air Objectives

For the purposes of this remedial action work plan, the air quality objective will be to conform to the requirements of Rhode Island's Air Pollution Control Regulations. Accordingly, the control of air emissions is two-fold. First, soil gas concentration will need to be controlled to prevent migration of same into the occupied spaces of the buildings. The second component of the control of air emissions is mitigating emissions relative to the air pollution control regulations.

During the site investigation, soil gas concentrations were measured for volatile organic compounds with an on-site gas chromatograph at 12 locations in the general vicinity of the proposed middle school location. The results of this analysis indicated that a volatile organic substance is present in the soil gas. The substance and the concentration could not be identified through the on-site analysis. Four samples, collected from locations corresponding to the highest peaks detected in the gas chromatographic analysis were submitted to the laboratory for analysis via EPA Method TO-14 (volatile organic compounds). The results of this confirmatory analysis indicated the presence of several chlorofluorocarbons, halogenated volatile organic compounds, and aromatic volatile organic compounds. The concentration of these constituents were predominately below one part per million, except for two chlorofluorocarbons detected in two of the four samples.

ATC calculated potential soil gas emissions using an estimated air extraction flow rate of 150 cubic feet per minute and the average volatile organic compound concentrations across the site area (refer to **Appendix A**). While the calculations indicate that an air pollution control permit is not required, ATC proposes to attach an air pollution control devise to mitigate any potential air emissions. The device will be capable of removing 95 percent or more of the already low predicted flow of volatile organic compounds. The air pollution control device must be registered with the Rhode Island Department of Environmental Management and will not require a permit under that program.

ATC also monitored for the presence of typical landfill gas parameters such as methane and carbon dioxide. Methane was detected in one of the 12 sample locations at a low concentration (0.2%). Similarly, carbon dioxide concentrations were also minimal. However, despite these results, ATC has factored in the potential for these gases and others (including hydrogen sulfide and carbon monoxide) to form in the future. Accordingly, the sub-slab ventilation system will be adaptable to other end of the pipe control devises such as lime soda vessels for carbon dioxide adsorption and hypocalite for carbon monoxide treatment. An impregnated carbon canister will be used to capture hydrogen sulfide and volatile organic compounds.

2.0 Proposed Remedy

In consideration of the above objectives, ATC proposes the following remedy:

1. In areas not covered by the school buildings, two feet of clean fill will be placed over the site. An indicator barrier, the function of which will be to signal the pre-cover ground surface, will underlie the clean fill. Certain areas of the site will be covered with less than two feet of fill material. For these areas, a geotextile fabric will lay beneath the cover.

2. To accommodate site grading contours and post-cover drainage surfaces, a limited volume of waste material will be removed and disposed off-site. This includes approximately 8,000 cubic yards of waste material that lies under the proposed elementary school building and 12,000 cubic yards that will be excavated from the foundation of the middle school and the southeastern parking lot.

3. Beneath the middle and elementary school buildings a soil gas collection system will be installed. The system will extract soil gas and discharge same in accordance with applicable air pollution control requirements. It is anticipated that both systems will be operational for 24-hours per day. However, pre-design studies will need to be performed to determine optimal operational periods.

   Monitoring, which is critical to the operation of the systems, will occur at two levels. First, the system will be continuously monitored through automated devises and gauges. The manufacturer of the system equipment or its authorized representatives will train maintenance personnel in the rudimentary operations of the system, including what to do in the event an automated alarm or signaling device is engaged. Maintenance staff will be trained in minor trouble shooting and procedures for shutting the system down. In the event that the system would be required to be shut down, maintenance personnel will be directed to notify appropriate personnel, as indicated in the long-term operations and maintenance plan (refer to Section 12.0).

   The second level of system monitoring will be quarterly operation analysis by a qualified consulting firm. Once per quarter the system components, including indoor monitoring devises, will be thoroughly evaluated to ensure proper working order. Additionally, influent and effluent sampling will be performed to assess the efficiency of the system. The results of the quarterly analysis, which would include maintenance logs and analytical results, will be compiled in an annual report that will be submitted to the Rhode Island Department of Environmental Management and the City Providence.

To supplement the system inspection, the air space within the building will be monitored continuously for methane gas and quarterly for other potential gases (volatile organic compounds, hydrogen sulfide, carbon monoxide and carbon dioxide).

3.0 Remediation of Impacted Groundwater

Groundwater samples analyzed as part of the Site Investigation did not contain volatile organic compounds at concentrations exceeding GB Groundwater Quality Objectives. Groundwater is not proposed to be treated under this remedial action work plan.

4.0 Limited Design Investigation

The sub-slab ventilation system will require an initial period of operation and monitoring to properly size the system components. This period of time, which is considered the post-construction/preoccupation phase will be used to perform the following activities.

- Air pumping tests will be performed to establish the radius of influence[2] of the system. These tests will be used to determine the optimal; flow rate to use to extract air from beneath the building and, consequently, to size the blower units.
- Once the blower units have been sized, the system will be run for a 24-hour period and monitored closely. All valves, gauges, piping, instrumentation, and monitors will be checked on a periodic basis to ensure proper working condition. Any adjustments to the system will be made at that time.
- After one week of operation, a sample will be collected of the influent and the effluent gas. These samples will be evaluated for methane, hydrogen sulfide, carbon monoxide, carbon dioxide and volatile organic compounds. The results will be used to establish baseline conditions. Although not anticipated[3], if the concentrations of any of these parameters exceed threshold values (refer to Section 12.0), end of pipe control devises will be ordered and attached to the system. At a minimum, however, an impregnated carbon vessel will be connected to the system until the baseline conditions have been established.
- All electrical and mechanical components will be tested in conjunction with the other electrical and mechanical components of the school buildings.

Once the system is operational, maintenance and system analysis will be performed in accordance with the operation and maintenance plan (refer to Section 12.0).

[2] Radius of influence is defined as the distance from the extraction pipes in which air flow is affected.
[3] Based on the soil gas sampling conducted as part of the Site Investigation, it is not anticipated that these parameters will be present to a significant degree.

5.0 Points of Compliance

Points of compliance for the soil objectives will be measured from the surface of the engineered cover to a depth immediately above the current ground surface. While the cover will be constructed from clean fill obtained from an off-site source, to measure compliance with the soil quality objectives, the material will be analyzed for the following:

- total metals (RCRA 8)
- volatile organic compounds (EPA Method 8260)
- total petroleum hydrocarbons (EPA Method 418.1), and
- pesticides (EPA Method 8080)

It is anticipated that one sample will be collected for every 2,500 cubic yards of like material that will be used on site. It is anticipated that the material will consist of approximately 15,000 cubic yards of sand and gravel and 5,000 cubic yards of loam.

The results of the analysis will be provided to the RIDEM Office of Waste Management for approval of the material for cover.

Points of compliance for the air objectives will be measured at the emission locations and within the occupied spaces of the building. To measure compliance with the air quality objectives sampling will be performed in accordance with the long-term operations and maintenance plan.

6.0 Proposed Schedule for Remediation

The remediation schedule is as follows:

Activity	Date of Installation
Remove and dispose waste material under the Elementary School Building	Completed with approval from the RIDEM
Install Soil Gas Collection System	July 1999
Install Soil Cover	July 1999

This schedule is highly dependent on the timing of the remedial action approval, and is subject to change.

7.0 Contractors and/or Consultants

The following is a directory of personnel involved in the remedial action:

General Contractor/Construction Manager

O. Ahlborg and Sons, Inc.
Steven Marsocci
48 Molter Street
Cranston, Rhode Island 02910
401-467-6300

Environmental Consultant/Soil Gas Collection System Installation

ATC Associates Inc.
Adam Sullivan
One Richmond Square
Providence, Rhode Island 02906

401-274-3955

8.0 Site Plan

The site plan prepared as part of the Site Investigation is attached as **Figure 2.** The location of remedial units and monitoring points is included in Appendix B.

9.0 Design Standards and Technical Specifications

Design plans and specifications are included in **Appendix B**. Part 1 provides information regarding the sub-slab ventilation system, and part 2 provides information regarding the cover. At this time it is not possible to provide final drawings of the sub-slab ventilation system. The reason for this is that the components that will comprise the system can not be specified until pilot studies are performed. Pilot studies can not be performed until the building foundations are completed. The piping for the system is scheduled to be installed in July 1999. At that time air pumping tests will be performed to adequately design the system. Once the system is sized, final design (as-built drawings) will be provided to the RIDEM. Additionally, ATC will provide a report to the RIDEM prior to finalizing the design documenting the results of the pilot studies.

10.0 Set-up Plans

Appendix B part 2 identifies the final grades, locations of structures, and the location of the fence line associated with the property. Part 1 provides the location of the components associated with the sub-slab ventilation system. It should be noted that the fence line will be entirely on property owned and under control of the City of Providence.

11.0 Effluent Disposal

Emissions from the soil gas collection system are the only foreseeable effluent generated at the site. Initially, air emissions will be controlled through the installation of impregnated carbon canisters. Carbon canisters are an effective control measure to minimize air emissions. As the system is operated, it will be monitored, and the results of the monitoring will be used to further develop control technologies suited for the efficient control of air emissions. At this time it is not anticipated that the collected soil gas will require treatment nor is it anticipated that the system will require an air permit from under Rhode Island's Air Pollution Control Regulations. The impregnated carbon canister will be installed initially as a precaution to control any unanticipated air discharges.

Other treatment devises identified for the gases of concern associated with the site are the following:

Gas	Devise
Carbon Monoxide	Hypocalite Vessels
Carbon Dioxide	Lime Soda Vessels
Methane	Self-Enclosed Flares

Prior to installing any such devise, approval from the RIDEM is required.

12.0 Contingency Plan

A Long-Term Operation and Maintenance Plan and Site Contingency Plan is included in **Appendix C**.

13.0 Operating Log

An operating log, as specified under Section 9.14 of the *Remediation Regulations,* is included in **Appendix C.** Additionally, ATC will provide to the RIDEM on a weekly basis a report documenting site activities.

14.0 Security Procedures

Security measures will be implemented during the non-operational hours. Excavations will be fenced off to prevent access to the subsurface. The local police frequently monitor the site area and an on-site security guard is posted during non-operational hours.

15.0 Shut-Down, Closure and Post-Closure Requirements

Post-closure operations at the site will include groundwater monitoring, soil gas monitoring, indoor air quality monitoring and cover inspection. The locations of groundwater and soil gas monitoring wells are presented in **Appendix B.**

As part of the closure, the property owner will enter into an Environmental Land Usage Agreement with the Rhode Island Department of Environmental Management.

A Narragansett Bay Commission Sewer Line transects the site. Notice will be given to this utility and other utilities that service the site regarding the waste material surrounding the sewer line. For the utilities that will be installed as part of this site development, trenches carrying the subsurface piping will be backfilled with clean fill to accommodate future repair of these pipes. For the existing Narragansett Bay Commission Line, areas surrounding manholes will be excavated to remove waste material. Clean fill will be backfilled around these structures.

16.0 Institutional Controls and Notices

The following institutional controls and public notices will be implemented under this remedial action:

- Environmental Land Use Restriction Agreement with the RIDEM
- Public meetings in accordance with the *Remediation Regulations*[4].

17.0 Compliance Determinations

Compliance with the *Remediation Regulations* will be measured as follows (specific details regarding the monitoring plan are presented in **Appendix C**):

[4] Several public meetings have been held with regard to this project (April 25, 1999 and May 3, 1999)

Monitoring Activity	Frequency
Indoor Air Quality	Assessed Quarterly for the first five years
Perimeter Gas Sampling	Well inspection and gas sampling conducted on a quarterly basis for the first five years
Groundwater Sampling	Monitored semi-annually for the first year and annually for years 2 through 5.
Sub-Slab Ventilation System Monitoring	Quarterly assessment for the first five years
Soil Cover Evaluation	Assessed quarterly

The results of the compliance monitoring will be compiled into an annual report that will be submitted to the RIDEM the City of Providence and the Providence School Board. Further details regarding the annual report are included in **Appendix C.**

18.0 Certification Requirements

Person Preparing the Site Investigation Report:

I, Adam D. Sullivan of ATC Associates Inc. certify that the information contained within this report is to the best of my knowledge complete and accurate.

Adam D. Sullivan
ATC Associates Inc.

I, Alan Sepe, Director of Public Property of the City of Providence certify to the best of my knowledge that this report is a complete and accurate representation of the site and contains all known facts surrounding the release.

Alan Sepe, Director of Public Property
City of Providence

APPENDIX A

SOIL GAS EMISSION CALCULATIONS

Soil Gas Emission Calculations

	Soil Gas Sampling Locations				Average	Flow	Pounds	Minimum
Analyte	sg7	sg8	sg10	sg12	Conc.	m3/min	per Hour	Quantities
Dichlorodifluoromethane	8283	4200	4055	28400	11235	4.3	0.00637670	Not Established
1,2-Dichlorotetrafluoroethane	2990	1290	1250	18900	6108	4.3	0.00346662	Not Established
Vinyl Chloride	1	1	1	1	1	4.3	0.00000068	Not Established
Trichlorofluoromethane	273	122	946	834	544	4.3	0.00030863	Not Established
Methylene Chloride	2	3	2	2	2	4.3	0.00000119	0.1000
1,1,2-Trichlorotrifluoroethane	107	175	4	4	73	4.3	0.00004115	0.3000
Methyl tert Butyl-Ether	144	169	112	148	143	4.3	0.00008131	Not Established
Chloroform	3	34	8	3	12	4.3	0.00000674	0.0020
1,1,1 Trichloroethane	6	52	229	600	222	4.3	0.00012587	Not Established
Benzene	10	14	12	11	12	4.3	0.00000666	0.0050
Carbon Tetrachloride	5	31	3	3	11	4.3	0.00000599	0.0020
1,2 Dichloropropane	3	3	3	3	3	4.3	0.00000155	Not Established
Trichloroethene	5	9	3	3	5	4.3	0.00000263	0.0200
Toluene	64	124	72	117	94	4.3	0.00005350	1.1400
Tetrachloroethene	27	50	24	33	34	4.3	0.00001901	0.0020
Ethylbenzene	24	37	19	23	26	4.3	0.00001462	Not Established
M/P Xylene	96	130	78	96	100	4.3	0.00005676	1.1400
O-Xylene	33	48	24	32	34	4.3	0.00001944	1.1400
1,3,5 Trimethylbenzene	14	19	9	13	14	4.3	0.00000785	Not Established
				Total pounds per hour			0.01059688	

1. Soil gas samples collected on March 19, 1999
2. Flow rate based on 150 cubic feet per minute flow rate
3. Minimum quantities are based on Appendix A in the Air Pollution Control Regulation Number 9

PRELIMINARY DESIGN
FOR
PROPOSED SUB-SLAB VENTILATION SYSTEMS

PROVIDENCE ELEMENTARY & MIDDLE SCHOOLS
PROVIDENCE, R.I.

Prepared for

O. AHLBORG & SONS, INC.
48 MOLTER STREET
CRANSTON, R.I. 02910

Prepared by

ATC ASSOCIATES INC.
8989 Herrmann Drive
Columbia, Maryland 21045

April 30, 1999

ATC ASSOCIATES INC.

8989 Herrmann Driv
Suite 30
Columbia, Maryland 21045-471
410.381.023
Fax 410.381.890

April 30, 1999

Mr. Glenn Ahlborg
O. Ahlborg & Sons, Inc.
48 Molter Street
Cranston, R.I. 02910

Re: Preliminary Design for Sub-Slab Ventilation Systems
Proposed Providence Elementary & Middle Schools
Providence, R.I.

Dear Mr. Ahlborg:

ATC Associates, Inc. (ATC) has prepared this preliminary design for the proposed sub-slab ventilation systems (systems) at the above referenced site. ATC has prepared this preliminary design based on the building plans provided by O. Ahlborg & Sons, Inc.. ATC assumes that it will be informed of any variations in or changes to the building plans used to design the systems. ATC also assumes that the specifications included in this document will be used for the installation of a pilot sub-slab ventilation system at the site. Based on the results of the pilot study, ATC will provide final design specifications for the installation of the systems. ATC further assumes that an ATC representative will be present during the installation of the systems.

If you have any questions regarding the information contained in this document, please contact our Columbia, Maryland office at (410) 381-0232.

Sincerely,

Matthew J. Eberl
Staff Scientist/Engineer

for:
Jeffery S. Stein, P.G.
Senior Project Manager

cc: Project File

Table of Contents

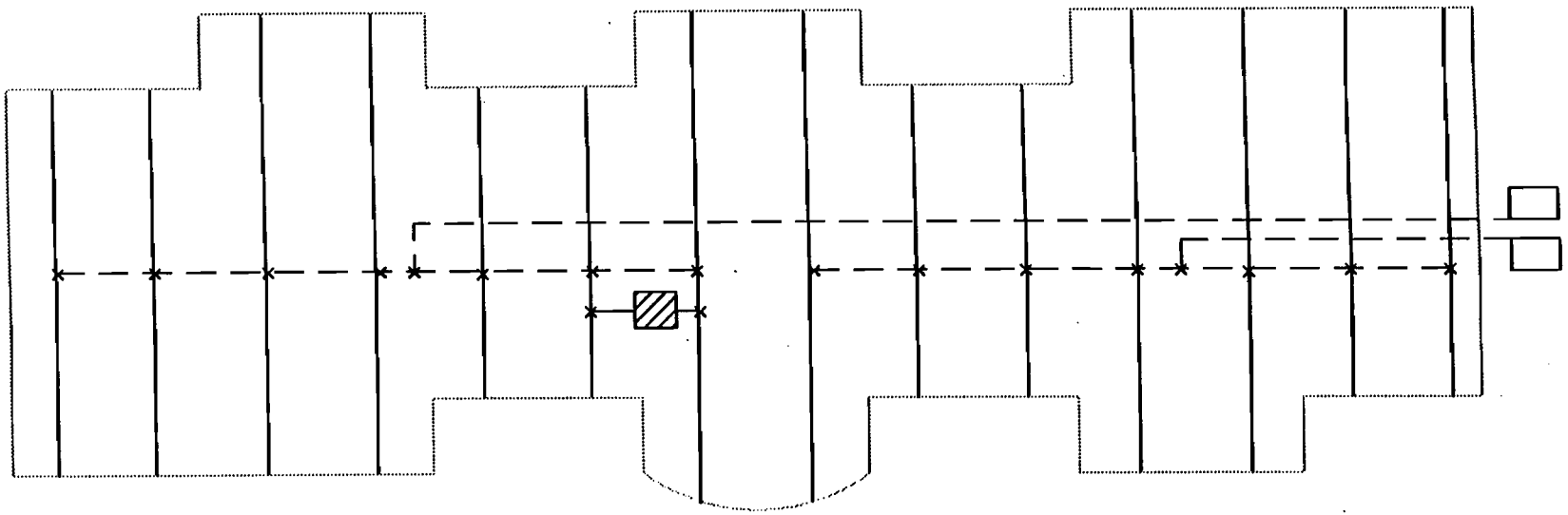
SECTION 1

PRELIMINARY DESIGN OF SUB-SLAB

VENTILATION SYSTEM FOR ELEMENTARY SCHOOL

ATTACHMENT A

PRELIMINARY PIPING DESIGN



Scale: 0' 50'

KEY:

- □ – Blower
- — — — 4" PVC Pipe
- ——— 2" Slotted PVC Pipe
- × – Piping connection points
- ▨ – Elevator Pit

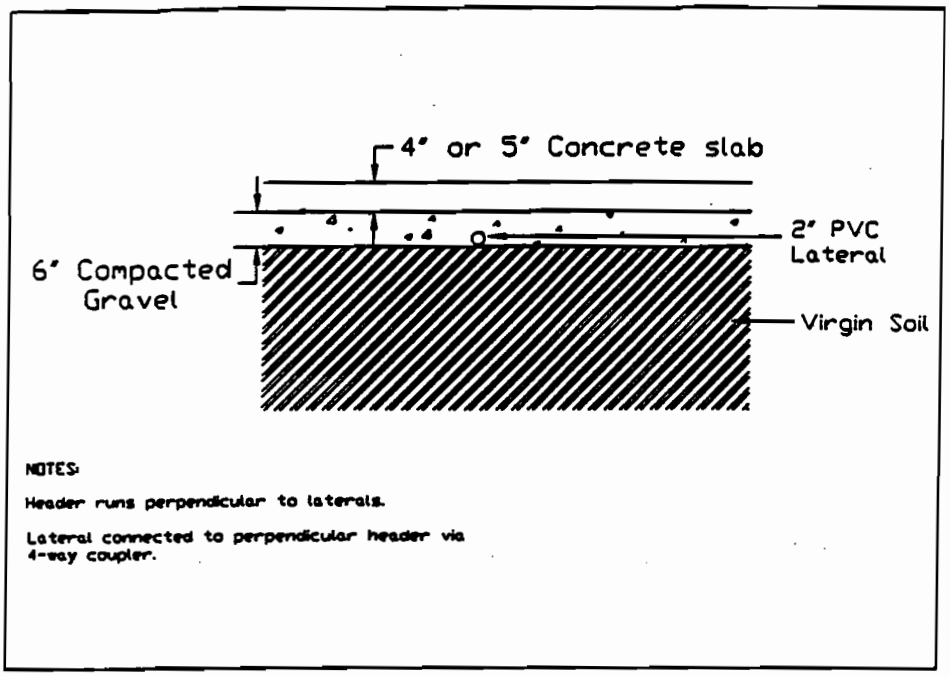
Sub-Slab Ventilation System
Piping Design
Elementary School, Providence, RI

Scale as Shown	ATC ASSOCIATES INC.
April 26, 1999	8989 HERRMANN DRIVE-STE 30(COLUMBIA, MARYLAND 21045 (410) 381-0232

ATTACHMENT B

CROSS SECTION & PLAN VIEW OF PIPING NETWORK

Cross Section



NOTES:

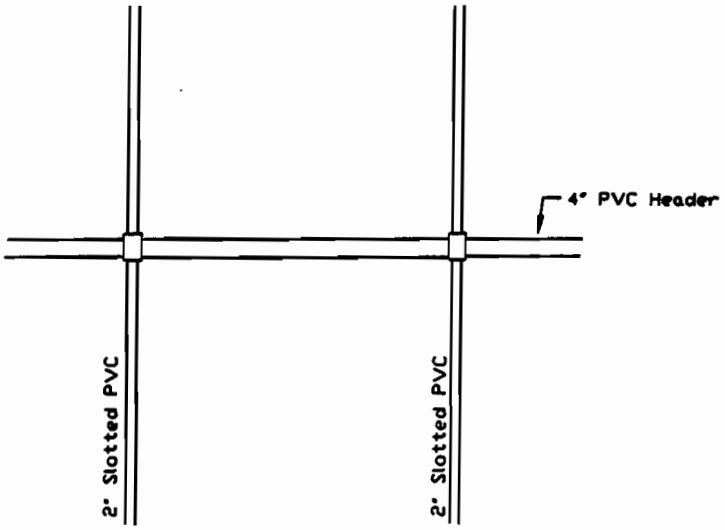
Header runs perpendicular to laterals.

Lateral connected to perpendicular header via 4-way coupler.

Plan View

NOTES:

Piping locatd directly below concrete slab.



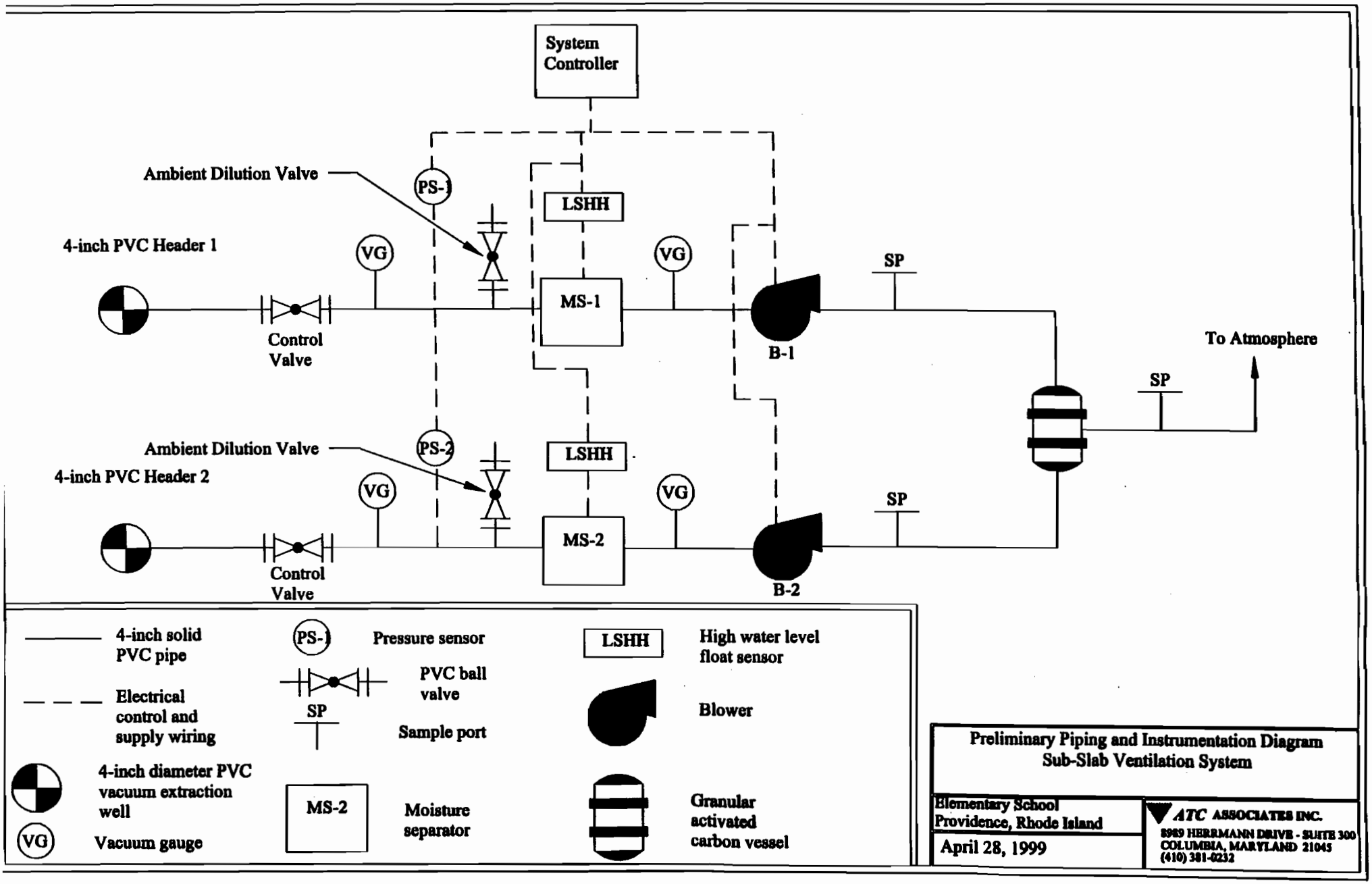
Sub-Slab Ventilation System
Piping Design
Elementary School, Povidence, RI
April 30, 1999
Not to Scale

ATC ASSOCIATES INC.

8989 HERRMANN DRIVE - SUITE 300
COLUMBIA, MARYLAND 21045
(410) 381-0232

ATTACHMENT C

PRELIMINARY PIPING AND INSTRUMENTATION DIAGRAM



Preliminary Piping and Instrumentation Diagram
Sub-Slab Ventilation System

Elementary School
Providence, Rhode Island

April 28, 1999

ATC ASSOCIATES INC.
8969 HERRMANN DRIVE - SUITE 300
COLUMBIA, MARYLAND 21045
(410) 381-0232

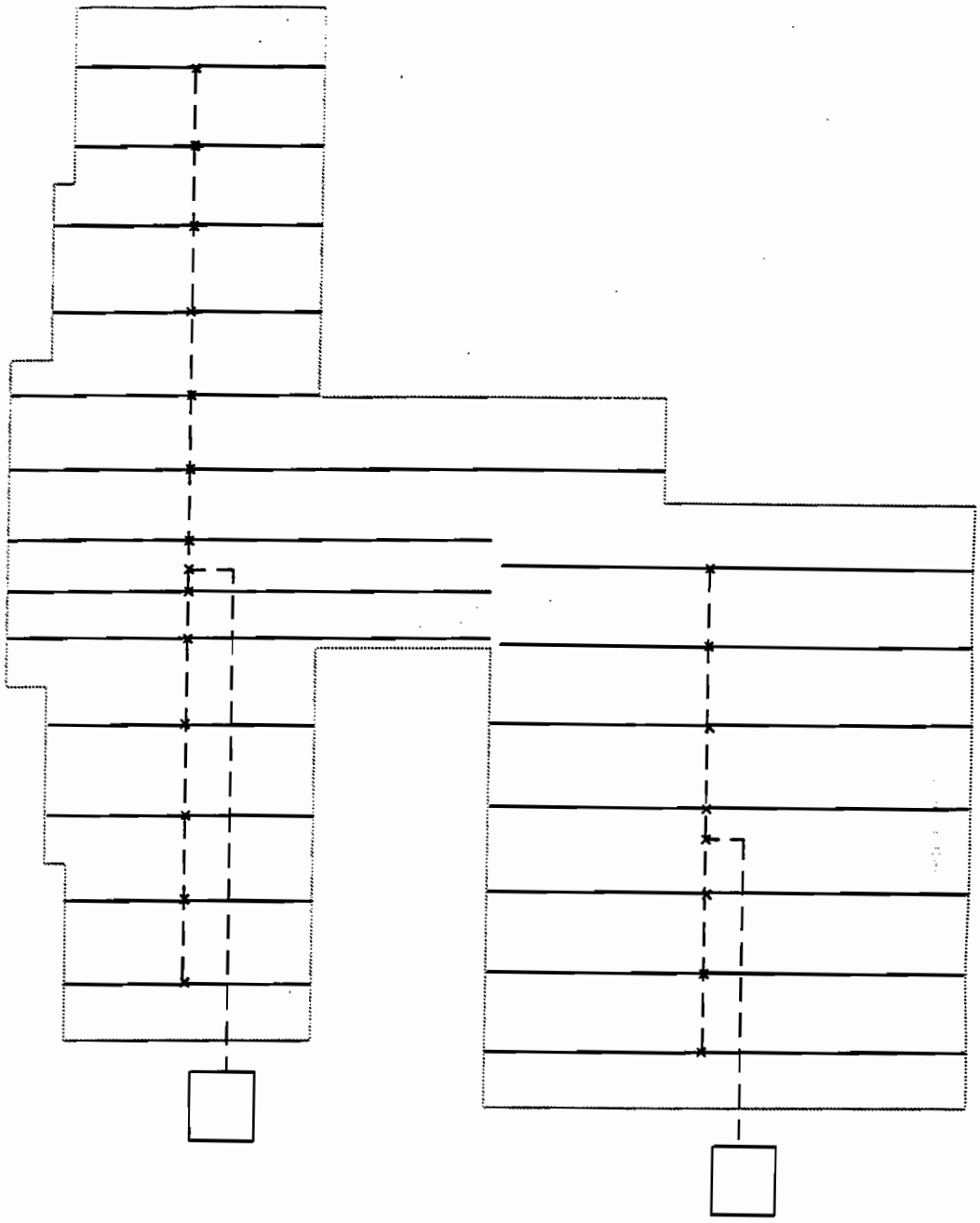
SECTION 2

PRELIMINARY DESIGN OF SUB-SLAB

VENTILATION SYSTEM FOR MIDDLE SCHOOL

ATTACHMENT A

PRELIMINARY PIPING DESIGN



KEY:

□ – Blower

– – – – 4" PVC Pipe

——— 2" Slotted PVC Pipe

× – Piping connection points

Scale: 0' 50'

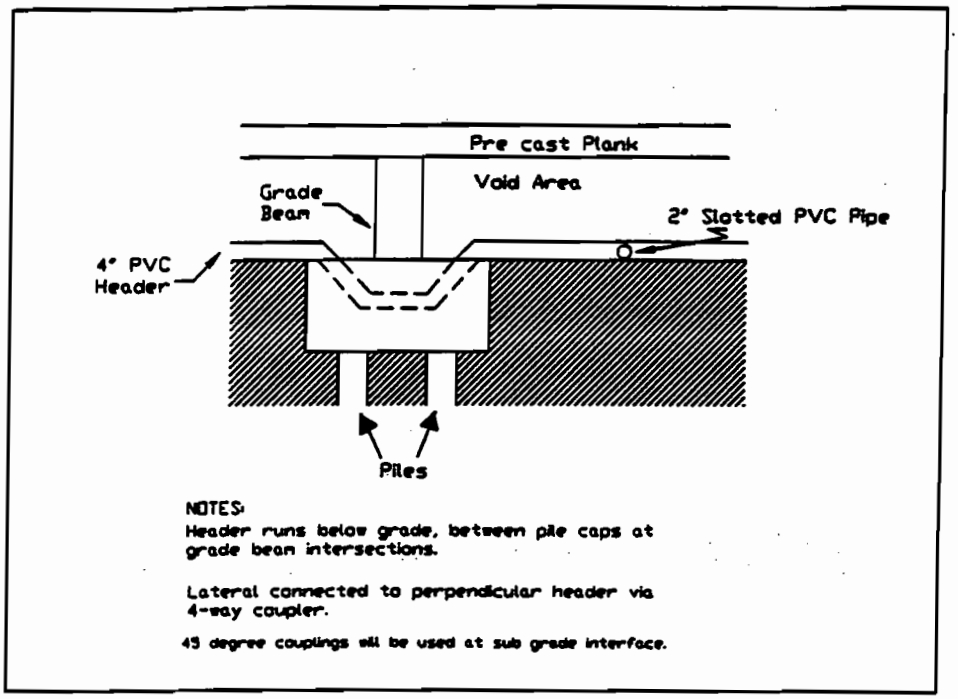
Sub-Slab Ventilation Sysstem
Piping Design
Middle School, Providence, RI
April 26, 1999

ATC ASSOCIATES INC.
8989 HERRMANN DRIVE – SUITE 300
COLUMBIA, MARYLAND 21045
(410) 381-0232

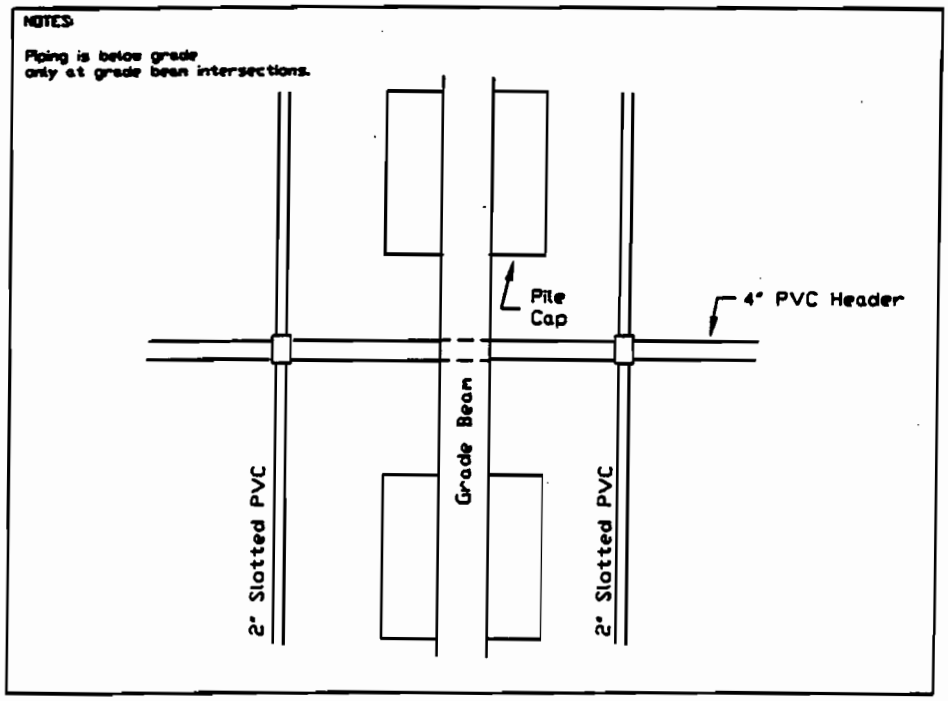
ATTACHMENT B

CROSS SECTION & PLAN VIEW OF PIPING NETWORK

Cross Section



Plan View

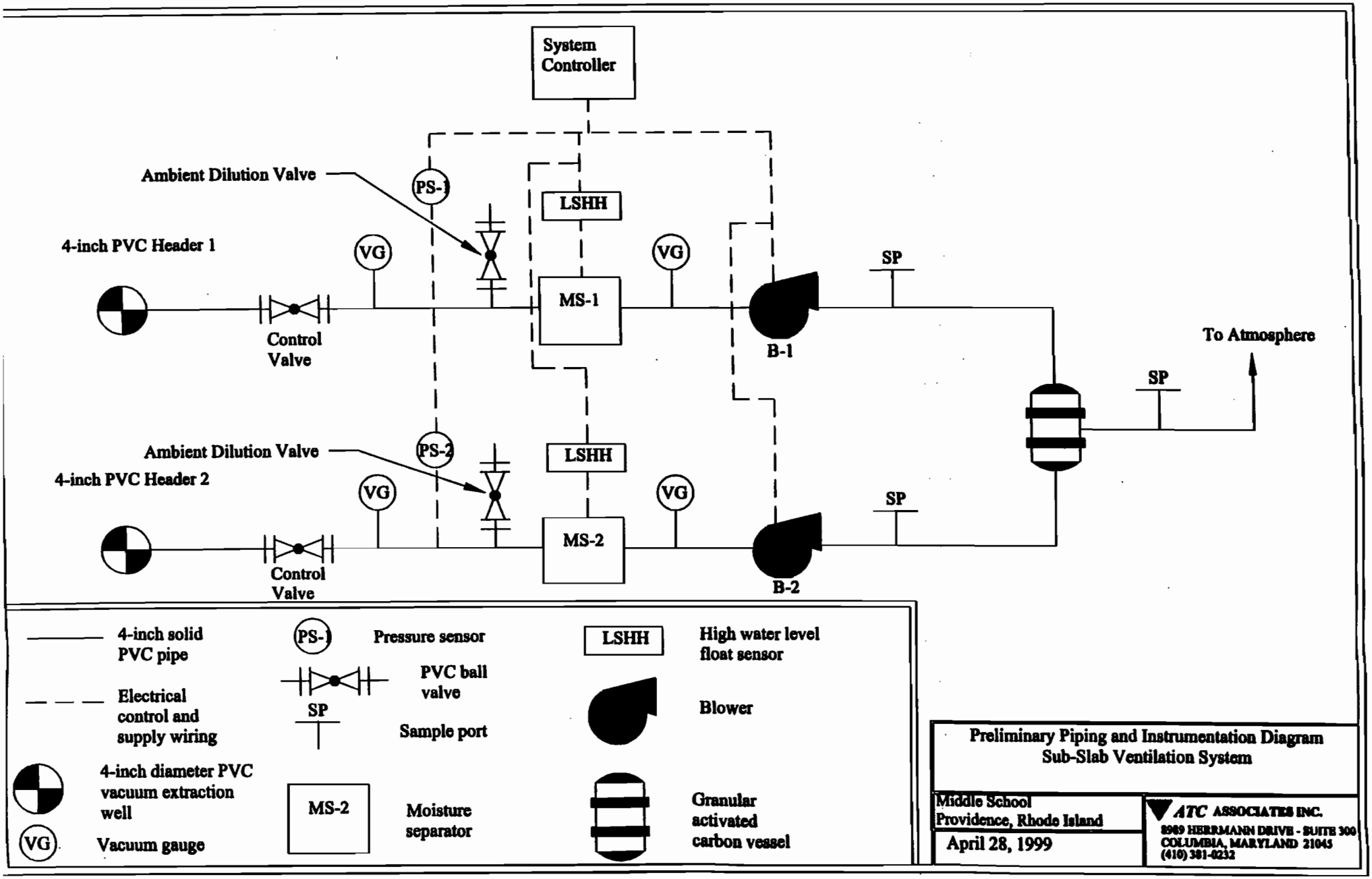


Sub-Slab Ventilation System
Piping Design
Middle School, Providence, RI
April 30, 1999
Not to Scale

ATC ASSOCIATES INC.
8989 HERRMANN DRIVE - SUITE 300
COLUMBIA, MARYLAND 21045
(410) 381-0232

ATTACHMENT C

PRELIMINARY PIPING AND INSTRUMENTATION DIAGRAM


System Controller
Ambient Dilution Valve
PS-1
LSHH
4-inch PVC Header 1
VG
VG
SP
MS-1
Control Valve
B-1
To Atmosphere
SP
Ambient Dilution Valve
PS-2
LSHH
4-inch PVC Header 2
VG
VG
SP
MS-2
Control Valve
B-2
4-inch solid PVC pipe
Pressure sensor
High water level float sensor
Electrical control and supply wiring
PVC ball valve
Blower
SP
Sample port
4-inch diameter PVC vacuum extraction well
MS-2
Moisture separator
Granular activated carbon vessel
VG
Vacuum gauge
Preliminary Piping and Instrumentation Diagram
Sub-Slab Ventilation System
Middle School
Providence, Rhode Island
April 28, 1999
ATC ASSOCIATES INC.
8969 HERRMANN DRIVE - SUITE 300
COLUMBIA, MARYLAND 21045
(410) 381-0232

SECTION 3

EXAMPLES OF TYPICAL EQUIPMENT REQUIREMENTS

ATTACHMENT A

TYPICAL BLOWER

DR S85
Regenerative Blower

FEATURES

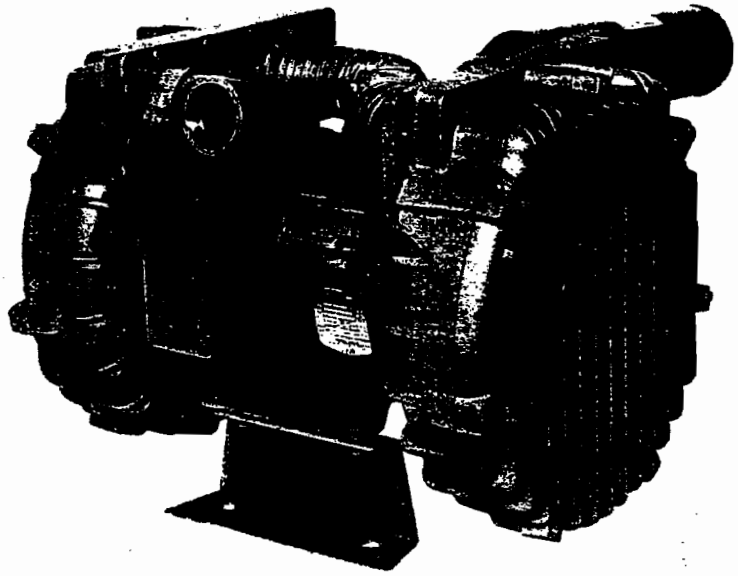
- Manufactured in the USA
- Maximum flow 330 SCFM
- Maximum pressure 164″ WG
- Maximum vacuum 9.1″ Hg
- 15 HP ODP motor standard
- Blower construction — cast aluminum housing, impeller and cover
- Motor construction — permanently sealed ball bearings
- Quiet operation within OSHA standards when properly piped or muffled — 1 inlet muffler included
- Shipping weight 386 lbs (175 Kg)

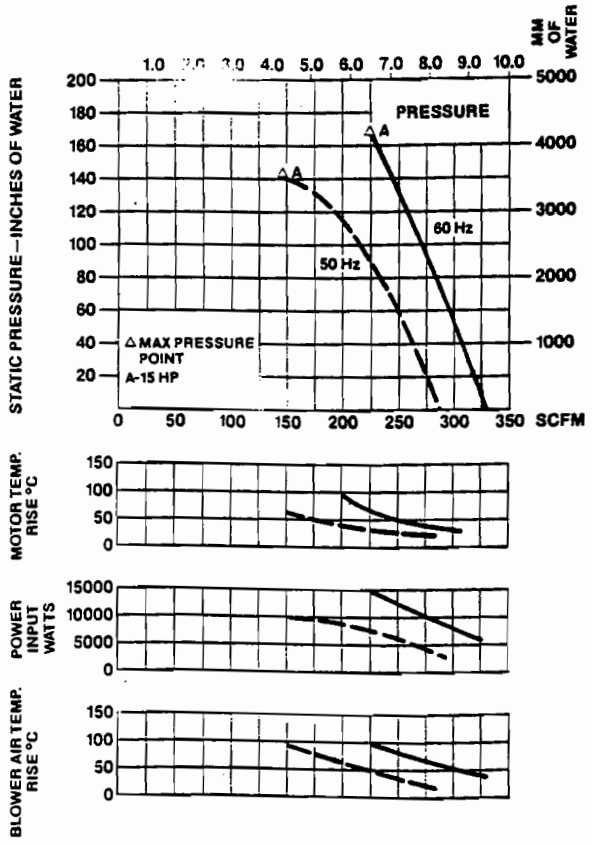
ACCESSORIES

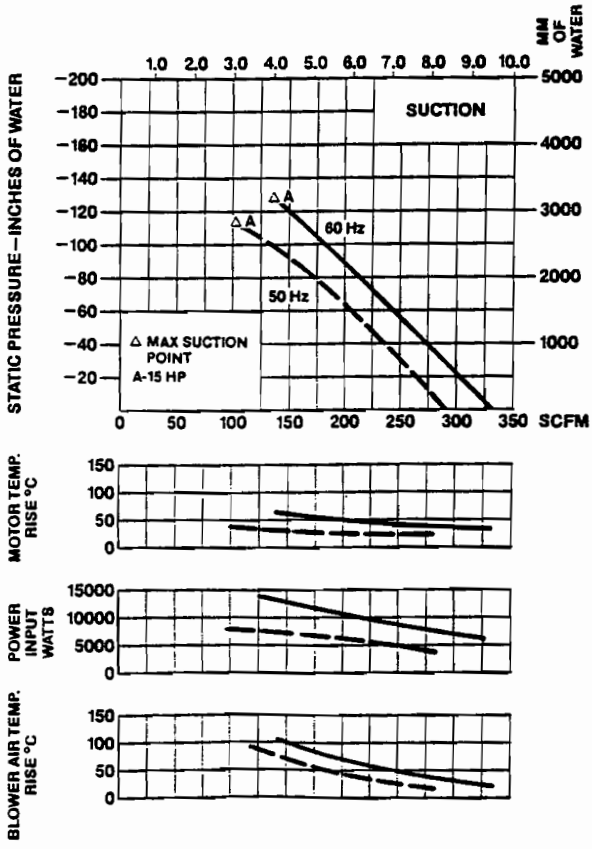
- Additional inlet/outlet silencers
- Intake and/or inline filters
- For details see Accessories Section

OPTIONS

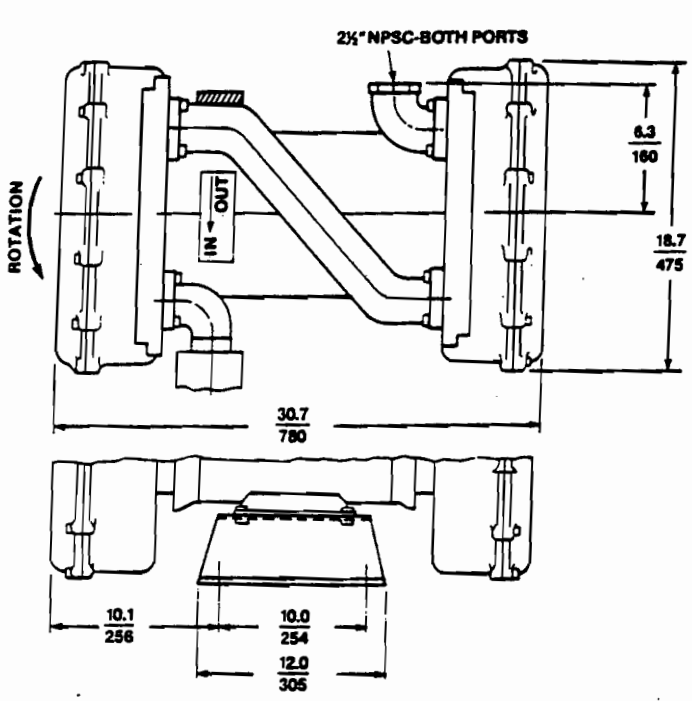
- Smaller HP motors
- 575-volt motors
- Surface treatment or plating



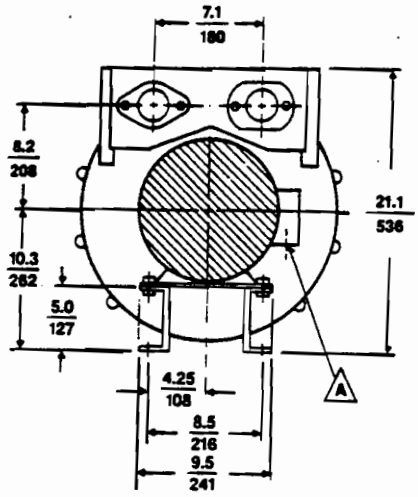




DR S85
Regenerative Blower



CUT OFF SIDE VIEW SHOWING MTG. DIM.



END SECTION VIEW

DIMENSIONS: IN / MM
TOLERANCE: .XX ±.1 / 2.5

A 1.06 IN DIA. TERM BOX CONNECTOR HOLE

Specifications Subject To Change Without Notice.

CIFICATIONS

ODEL	DRS85BL72	DRS85BL86
rt No.	037172	037175
otor Enclosure Type	ODP	ODP
otor Horsepower	15	15
ltage[1]	230/460	575
ase	3	3
equency[1] (Hz)	60	60
sulation Class[2]	F	F
EMA Rated Motor Amps	34/17	13.7
rvice Factor	1.15	1.15
cked Rotor Amps	252/126	100
ax. Blower Amps	56/28	22.4
ecommended NEMA Starter Size	2/2	2
ipping Weight lbs (Kg)	386 (175)	386 (175)

OWER LIMITATIONS FOR 60 Hz (50 Hz)

ax. Pressure — In. of water	164 (140)	164
ax. Suction — In. of water	124 (115)	124
in. Flow — Pressure — SCFM	225 (150)	225
in. Flow — Suction — SCFM	145 (90)	145

ual voltage 3 phase motors are factory tested and certified to operate on 200-230/400-460 VAC-3 ph-60 Hz and 220-240/380-415 VAC-3 ph-50 Hz. All dual ge 1 phase motors are factory tested and certified to operate on 110-120/200-230 VAC-1 ph-60 Hz and 220-240 VAC-1 ph-50 Hz.
mum operating temperatures: Motor winding temperature (winding rise plus ambient) should not exceed 140°C for Class F insulation or 120°C for Class B ... Blower outlet air temperature should not exceed 140°C (air temperature rise plus ambient).

ATTACHMENT B

TYPICAL METHANE MONITOR

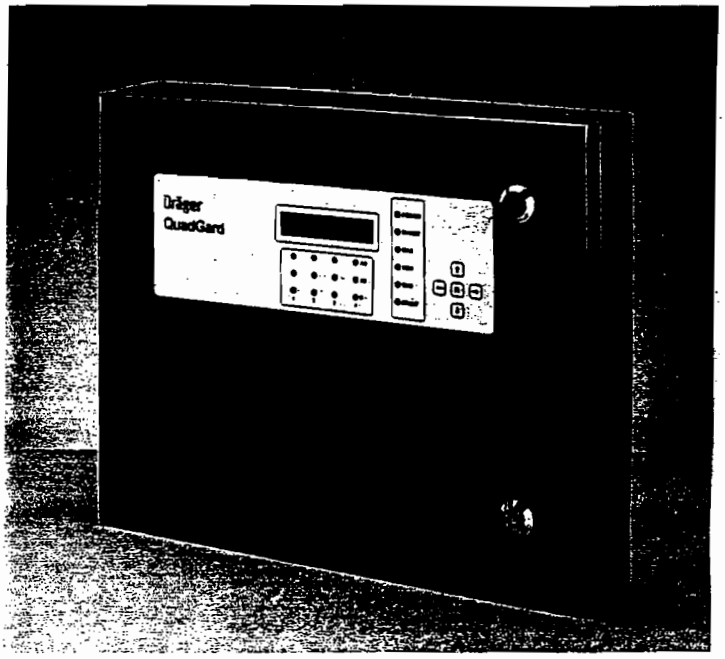
Dräger

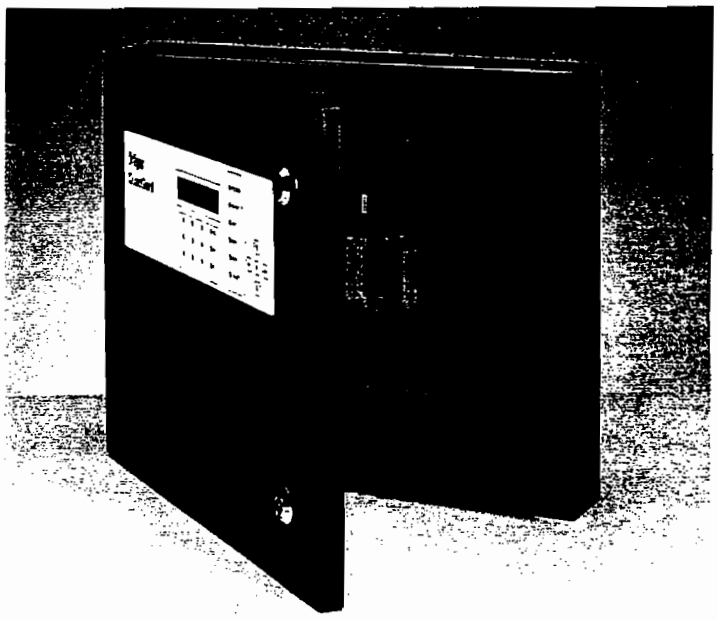
QuadGard

Modular 1– 4 Channel Gas Detection Control Unit

Features:

- 1 - 4 Channel capability
- Extremely simple operation
- Fully configurable
- Continuous readout and self test facilities
- Password protected
- Complete control system in one enclosure





National Draeger, Inc.
P.O. Box 120
Pittsburgh, PA 15230-0120
Tel: 412-787-8383
Customer Service: 800-922-5518
Fax: 800-922-5519

Distributed by:

QuadGard 1-4 Channel Gas Detection Control Unit

System specifications

Format	Slim wall-mounting cabinet
Dimensions	15.75"W x 13.8"H x 3.54"D
Enclosure	NEMA 4 (blue) steel (IP65)
Weight	22 lbs. approx.
Display	20 character x 2 line backlit LCD shows gas levels, alarm status & configuration options
Controls	Reset ⇑ ⇓ ⇐ ⇒ push buttons Power, Inhibit, Master alarms (MA1, MA2 & MA3) & Fault LEDs A1, A2 & Fault LEDs per channel

Alarm outputs

Power supply board	4 master alarm relays (fault + 3 common or voted alarms)
Channel boards	3 alarm relays (A1, A2 + configurable fault, A1, A2, or A1/A2
Alarm options	Manual reset or auto reset Latching or non-latching Normally energized or energize on alarm
Terminals	Phoenix SMKDSP screw terminals
Maximum wire size	16 ga.
Cable entries	22 pre-formed .787" knock-outs (11 top and bottom)
24V unswitched output	Maximum 500mA

Relays

Type	SPDT
Contact material	Silver alloy
Nominal swiching capacity	5A 250VAC, 5A 30V DC
Max. switching power	1250VA, 150W
Max. switching voltage	250VAC, 100V DC
Max. switching current	5A
Min. switching voltage	10 V
Min. switching current	100mA

Audible output

Piezo electric buzzer	>70dBA (door closed) >90dBA (door open)

Analog output

Outputs	4-20mA or 0-20mA
Maximum load	500 Ω
Resolution	0.4% of full scale

Resolution & repeatability

Signal resolution	0.1% of full scale
Display resolution	Depends on range: minimum1% of full scale
Repeatability	1% of full scale

Gas ranges, units & names

Measurement ranges	0-1, 0-2, 0-3, 0-4, 0-5, 0-10, 0-20, 0-25, 0-30, 0-50, 0-100, 0-200, 0-250, 0-300, 0-500, 0-1000, 0-3000, 0-9999 + 1 user-definable
Measurement units	%LEL, %vol, %v/v, ppm, ppb, °C, %RH, %UEG, %LIE +1 user-definable
Gas names	CH_4, H_2S, CO, O_2, Cl_2, SO_2, NO, NO_2, NH_3, O_3, CO_2, ClO_2, HCN, HCl, HBr, HF, H_2, Br_2, H_2O_2, EO, AsH_3, PH_3, B_2H_6, SiH_4 + 1 user-definable

Supply voltage

240VAC ± 10%, 50-60Hz
120VAC ± 10%, 50-60%Hz
18-30V DC

Power consumption

(AC)	50W typical, 100W maximum Current consumption
(DC)	1.5A typical, 3A maximum

4-20mA input channel board

Head supply voltage	24 VDC ± 10%
Head supply current	250mA (max.)

Pellistor head channel board

Head current	100-400mA
Head supply voltage	9VDC (max.)
Max. cable resistance	10 Ω per core @ 280mA

Input & output connections

Power supply board	AC input, master alarm relays (4), 24 VDC input/output and remote reset facility
Channel boards	Measuring head input, alarm relays (3), 4-20mA output

Operating conditions

Temperature	-5 to +40 °C, 23° to 104°F
Humidity	0-90% RH, non-condensing

For more information about the QuadGard or any of our Gas Detection and Respiratory Protection products, please contact National Draeger or an authorized Draeger representative.

National Draeger is continuously involved in product improvement; therefore, we reserve the right to change specifications without notice.

9035220_05-071 QuadGard DS 11/05 REV.0 5M Printed in the U.S

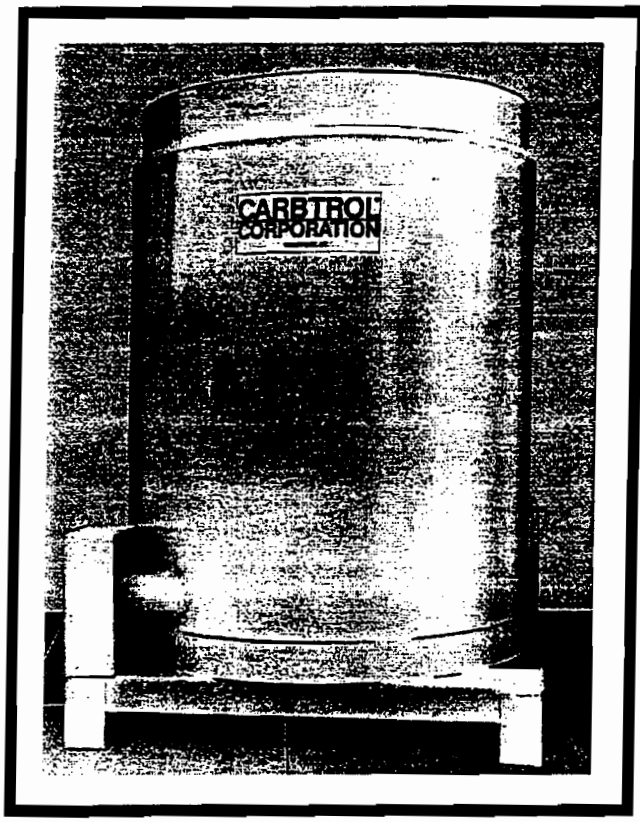
ATTACHMENT C

TYPICAL AIR PURIFICATION ADSORBER

CARBTROL®

AIR PURIFICATION ADSORBERS
1,000 - 3,000 LB. ACTIVATED CARBON

MODELS
G-4
G-6
G-9



FEATURES

- Low pressure drop.
- Epoxy lined mild steel construction.
- High activity carbon.
- Fork lift fittings for easy handling.
- 4"Ø slotted inlet distributor.
- DOT rated. Acceptable for transport of hazardous spent carbon.

OPTIONS

- Plastisol (PVC) lining.
- Interconnecting piping.

SPECIFICATIONS

MODEL G-4

CARBON:	1,000 lbs.
DIMENSIONS:	45-1/2" Ø x 64" H
SHIPPING WT:	1,500 lbs. Dry

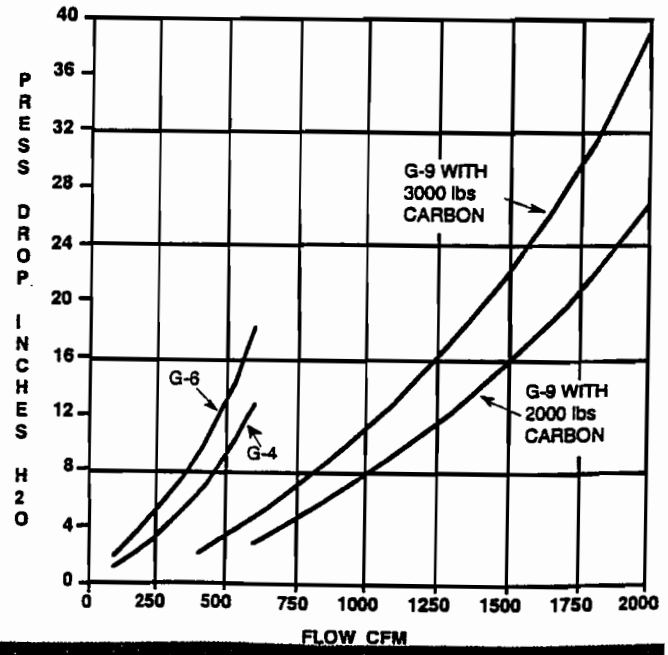
MODEL G-6

CARBON:	1,800 lbs. *
DIMENSIONS:	45-1/2" Ø x 88" H
SHIPPING WT:	2,500 lbs. Dry

MODEL G-9

CARBON:	3,000 lbs. *
DIMENSIONS:	60" Ø x 93" H
SHIPPING WT:	3,500 lbs. Dry

* 2,000 lbs. option available



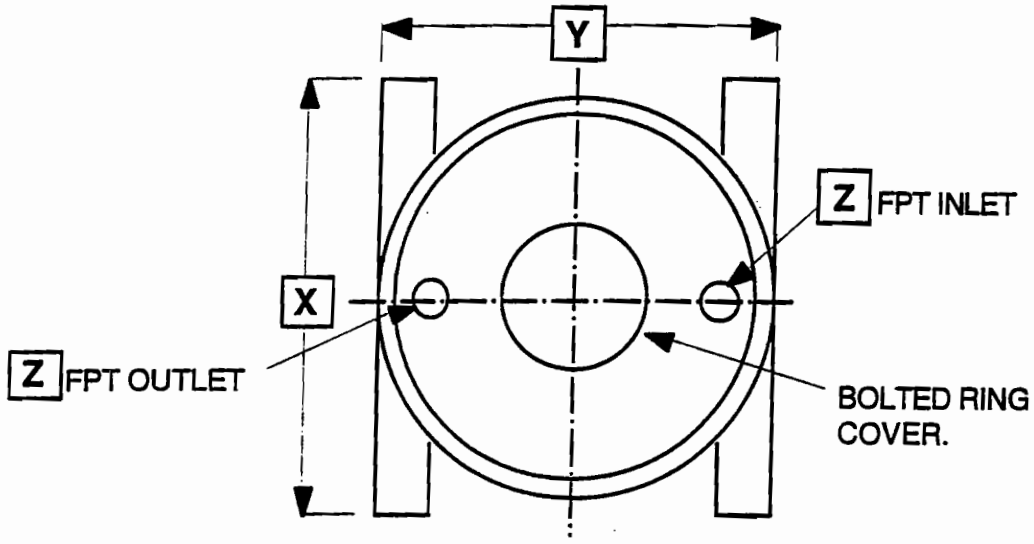
CARBTROL® CORPORATION

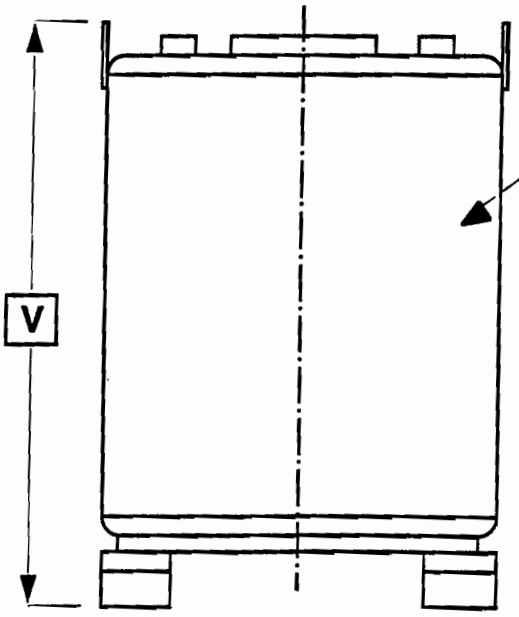
51 Riverside Avenue, Westport, CT 06880 • 1-800-242-1150 • (203) 226-56

AIR PURIFICATION ADSORBERS

1,000 - 3,000 LB. ACTIVATED CARBON

MODELS
G-4
G-6
G-9





UNIT	DIM. V	X	Y	Z
G-4	5'-2"	4'-0"	3'-8"	4"
G-6	7'-4"	4'-0"	3'-8"	4"
G-9	7'-7"	5'-0"	5'-0"	10"

SECTION 4

PRELIMINARY DESIGN OF PERIMETER

MONITORING/EXTRACTION WELL SYSTEM

ATTACHMENT A

PRELIMINARY WELL LOCATION MAP

ATC Associates, Inc.

Proposed Locations for Perimeter Monitoring Wells

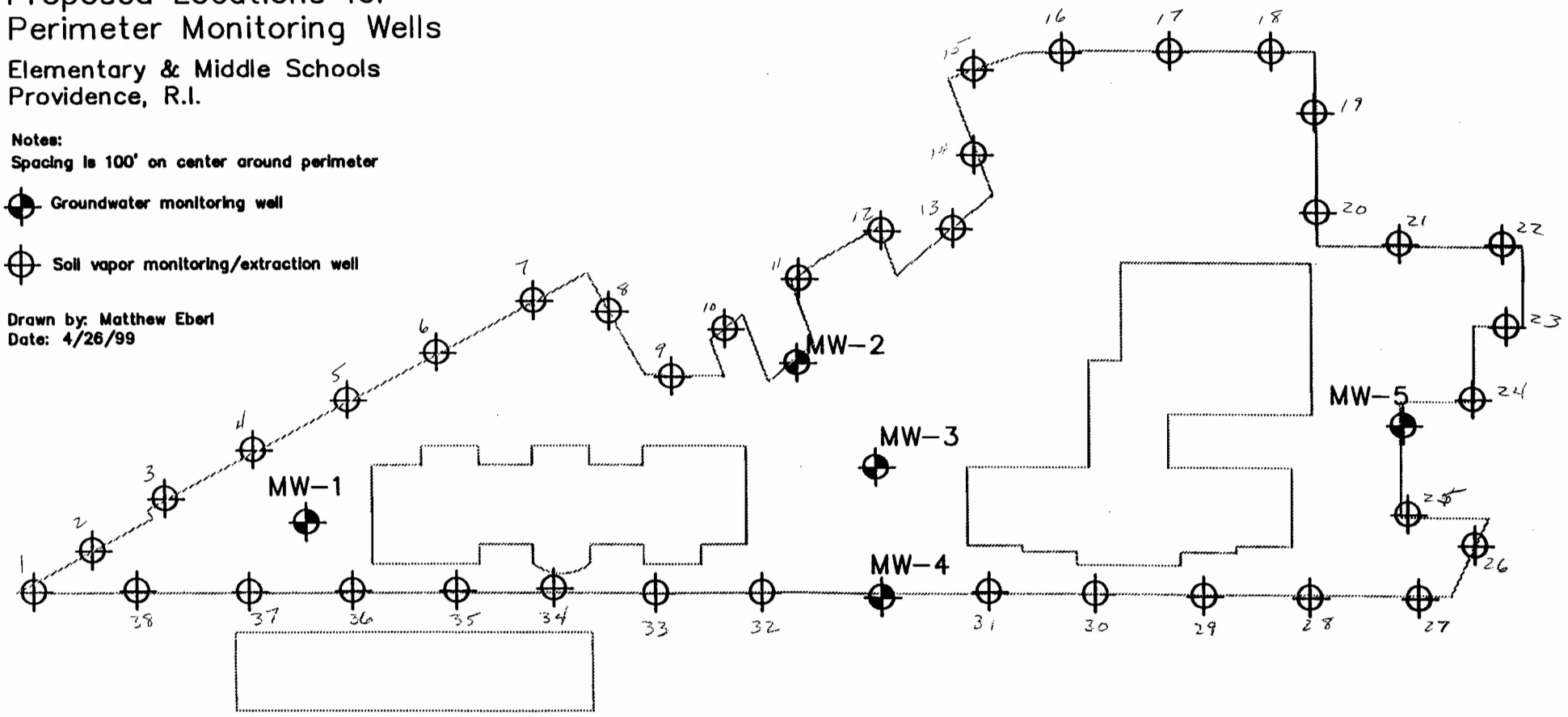
Elementary & Middle Schools
Providence, R.I.

Notes:
Spacing is 100' on center around perimeter

Groundwater monitoring well

Soil vapor monitoring/extraction well

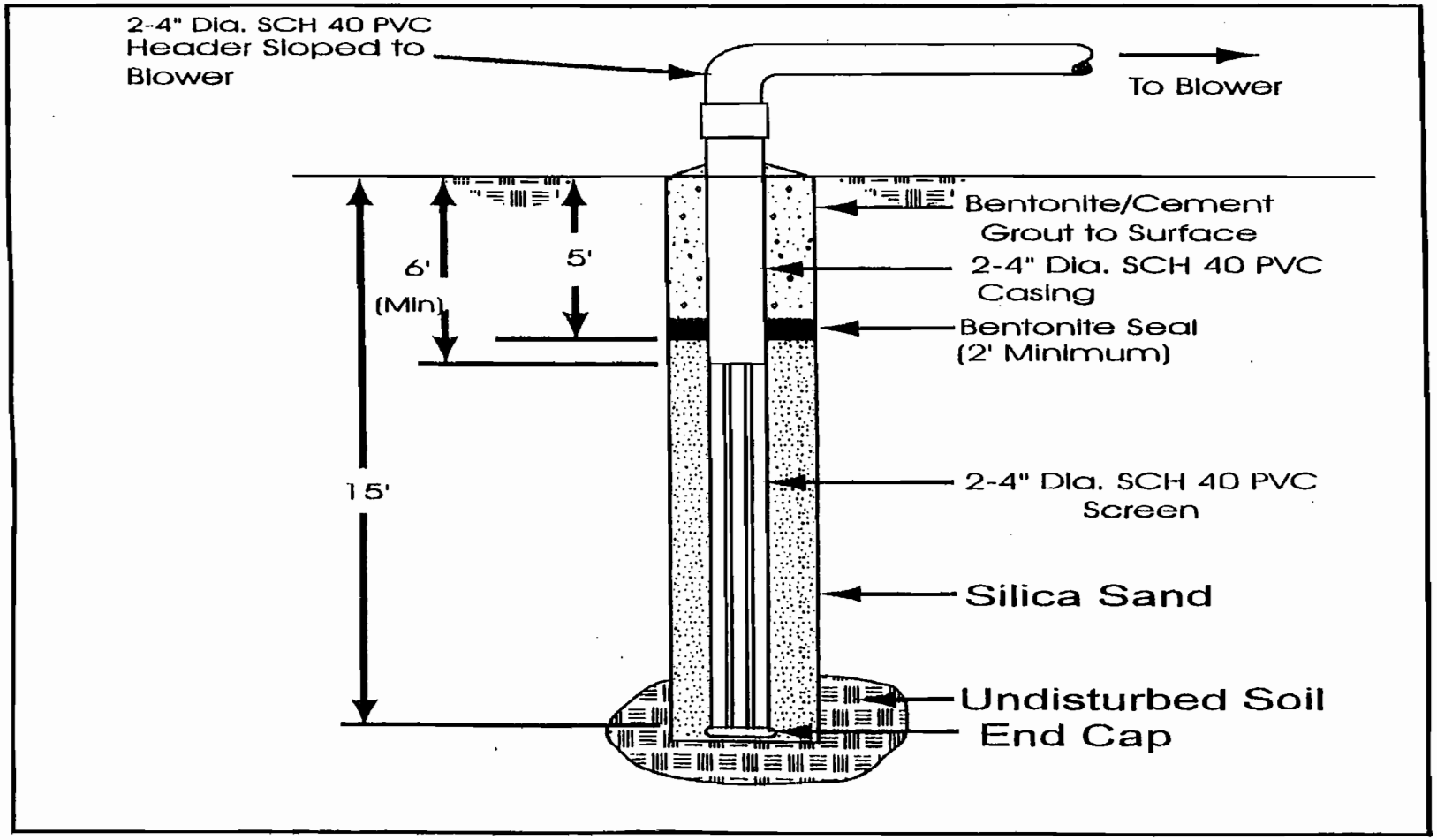
Drawn by: Matthew Eberl
Date: 4/26/99

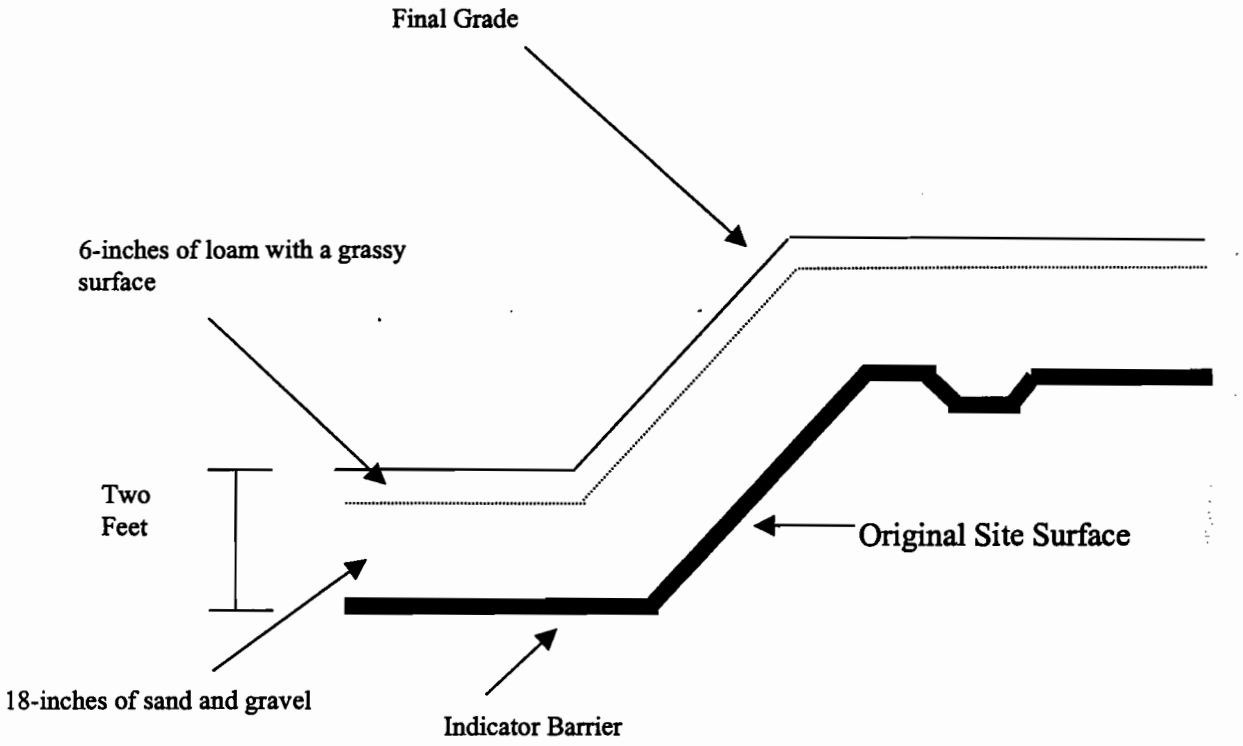


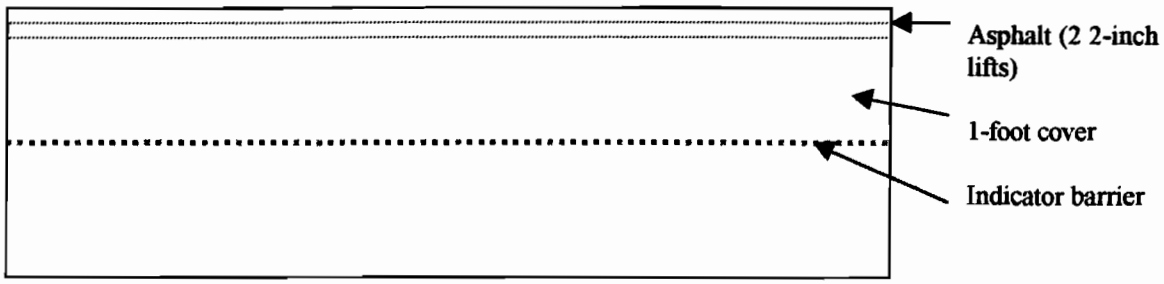
ATTACHMENT B

TYPICAL VAPOR EXTRACTION WELL DIAGRAM

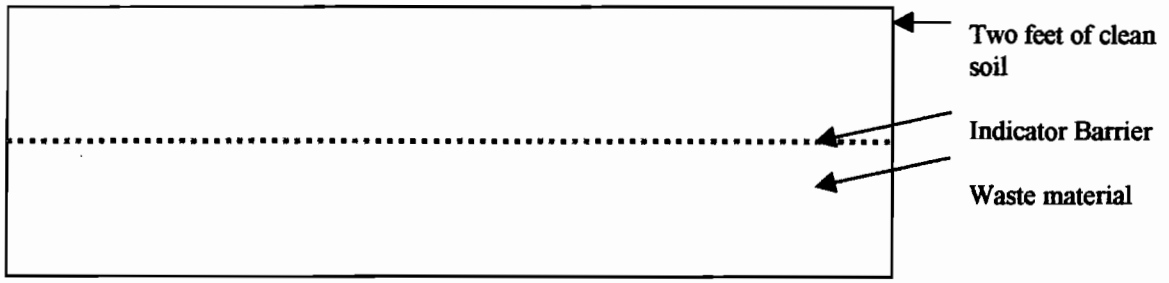
ATC Associates, Inc.
Typical Vapor Extraction Well
Providence Schools, RI



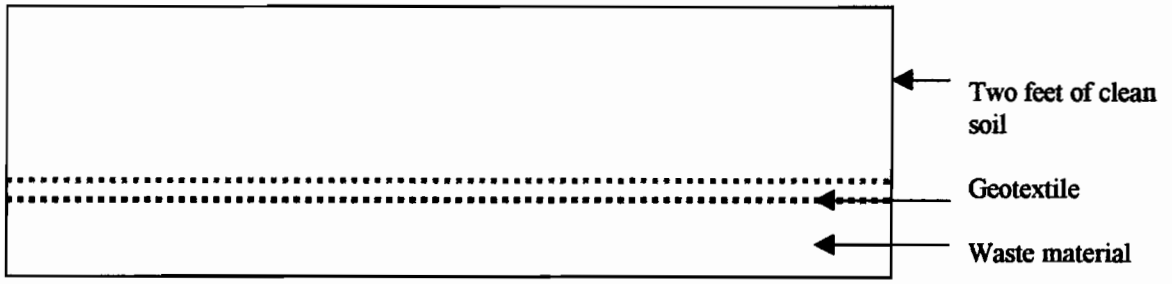

Final Grade
6-inches of loam with a grassy surface
Two Feet
Original Site Surface
18-inches of sand and gravel
Indicator Barrier



Final Asphalt Areas - Parking and Walkways



Playground area, baseball field, soccer field, grass and landscape areas.



Playground area, baseball field, soccer field, grass and landscape areas that will be covered with less than 2-feet of clean fill.

FIGURE NUMBER:	**Cross Sectional Views**	NORTH:	
SOURCE:	Providence School Sites Springfield Street Providence, Rhode Island	SCALE: Not to Scale	DATE: April 20, 1999

APPENDIX C

CONTINGENCY PLAN

Long-Term Operation and Maintenance Plan

and

Site Contingency Plan

Springfield Avenue Lots
Providence, Rhode Island

May 9, 1999

Prepared For:

Mr. Mal A. Salvadore
Sondler Salvadore and Associates
400 Reservoir Avenue
Providence, Rhode Island 02907

Long-Term Operation and Maintenance Plan
and
Site Contingency Plan

Springfield Avenue Lots
Providence, Rhode Island

1.0 Introduction

This Long-Term Operations and Maintenance Plan and Contingency Plan ("Plan") has been prepared in conjunction with the Remedial Action Work Plan ("RAWP") for the proposed elementary and middle school site located along Springfield Street in Providence, Rhode Island. The purpose of this plan is two-fold. First, the plan identifies the long-term operation and maintenance requirements associated with the remedial and monitoring components specified in the Remedial Action Work Plan. Second, the plan identifies contingent actions to be followed under certain foreseeable situations. Since the long-term operation and maintenance of the remedial and monitoring systems and the contingent actions that may be required are closely related, one unified plan is presented to fulfill both purposes.

1.1 Project Description

In response to a growing population of elementary and middle school children, the City of Providence has proposed to construct a school complex at an undeveloped parcel of land generally located between Springfield Street, Hartford Avenue and Killingly Street in Providence, Rhode Island. The proposal calls for the construction of one 400-pupil elementary school and one 800-pupil middle school complex (two schools will be housed in one building.

In February 1999, ATC Associates Inc. conducted a Phase I Environmental Site Assessment of the parcel. The significant finding of the assessment was that the site was formerly used as a landfill during the late 1960's and early 1970's. Subsequent environmental testing identified the presence of approximately 200,000 cubic yards of solid waste primarily located in the northern portion of the site. Analytical results obtained from 20 subsurface soil samples, 7 surface soil samples, 12 soil gas samples, and 23 groundwater samples indicated that three constituents were of primary concern: lead, arsenic, and total petroleum hydrocarbons. The concentrations of these constituents were found to be above the Method 1 Residential Direct Exposure Criteria established under the Remediation Regulations.

To address potential exposure to the constituents of concern in the soil samples and the potential for future migration of landfill-type gas into the two schools, ATC developed three remedial alternatives. The preferred remedy included the installation of a soil cover coupled with the installation and operation of a sub-slab ventilation system under each school. This plan outline how these components will be maintained, operated, and monitored. Additionally, this plan will outline steps that will be taken under certain situations that may arise in the future.

1.2 Remedial Action Work Plan Reference

The "Plan" is integrated within the RAWP as **Appendix C.** For a more detailed understanding of site conditions refer to ATC's Site Investigation Report[1] and the RAWP.

1.3 Organization

This plan is organized to identify the components of the remedial systems, identify the operational and maintenance requirements associated with each system and then to identify response actions under certain situations that have the potential to occur in the future.

2.0 System Components

The remedial systems at the site include the soil cover, the sub-slab ventilation system, and the environmental monitoring components. The components of these systems are identified in the following sections.

2.1 Soil Cover

The soil cover will generally consist of at least an 18-inch thick layer of sand and gravel overlain by a 6-inch thick layer of loam. The loam will be seeded to prevent erosion. Below the soil cover, bright-orange snow fencing will be lain over the existing grade and will act as an indicator barrier.

In certain areas of the site, the cover will be less than two feet thick to accommodate surface drainage or to establish parking areas. These areas will be constructed as follows:

Areas of Cover Less Than Two-Feet Thick and Not Paved

The cover construction will be essentially the same as outlined above, except a geotextile fabric will be placed below the snow fencing.

Areas of Cover Less Than Two-Feet Thick and Not Paved

The cover construction for these areas will incorporate the geotextile fabric and snow fencing as indicated above. The asphalt will be placed in two two-inch lifts.

[1] "Site Investigation Report, Springfield Avenue Sites, Providence, Rhode Island", March 25, 1999, prepared by ATC Associates Inc.

2.2 Sub-Slab Ventilation System

The sub-slab ventilation system generally consists of a series of interconnected PVC pipes attached to a blower and air pollution control devises. The following intermediate instrumentation will be incorporated into the design:

- Control Valves,
- Vapor gauges,
- Pressure Sensors,
- Ambient Dilution Valves,
- Moisture Separators equipped with high water level float sensors,
- Blowers,
- Sampling ports, and
- Air pollution control devises

The gauges, sensors and blowers will be connected to a system controller, which functions as the control center of the system.

2.3 Environmental Monitoring Components

The environmental monitoring components will be installed to evaluate subsurface conditions at the site. Forty-one soil gas monitoring probes will be installed at the perimeter of the site and five groundwater monitoring wells will be installed at various locations throughout the site (refer to Appendix B of the RAWP for the well locations).

3.0 Operation and Maintenance Requirements

3.1 Remedial Systems

Monitoring of the remedial systems is a critical component of the remedial design for the site. Each of the systems, will be monitored on a quarterly basis for a five year period. After this five year period, an evaluation of future monitoring requirements will be discussed with the RIDEM. In the following sections procedures for implementing the remedial system monitoring is explained.

3.1.1 Soil Cover

The soil cover can be inspected on a continuous basis by personnel using and working at the site, but at a minimum will be thoroughly inspected quarterly for a five year period. The inspection will consist of visually inspecting the entire site area for the presence of

the bright orange snow fence. If the bright orange snow fence is identified on-site, a breach of the soil cover will be signaled. In this event, the following should happen:

1. If the snow fencing is identified by persons at the site, maintenance personnel should immediately notify the principal of the school or her designee. The principal or her designee must then immediately notify the inspection firm responsible for on-site monitoring.

2. It is anticipated, given normal use and activities at a school that the breach of the cover will be minimal in extent (that is, less that one square foot in size). If so, maintenance personnel may temporarily repair the cover by filling the hole with sand. Every effort should be made to prevent children from coming into contact with the area surrounding the hole.

3. The inspection firm will then effect a permanent repair to the cap by replacing the snow fence material in the hole and reestablishing the vegetative or asphalt cover. One composite soil sample will be collected from locations near the hole to identify if any waste material had been brought to the ground surface. The results of this analysis will dictate further action.

As a preventative maintenance measure, a healthy grassy surface should be maintained. If evidence of erosion of the cover surface is noticed during the inspections or at any other time, the monitoring consultant should be notified.

3.1.2 Sub-Slab Ventilation System

The sub-slab ventilation system will require monitoring at two levels. The first level will occur on a daily basis and will consist of the following:

- The system manufacturers or authorized representatives will provide training to the maintenance staff regarding general operation of the system, including what to do in the event of a system malfunction and how to shut the system down in the event of an emergency. Maintenance staff will also have emergency phone numbers available in the principal offices of both schools.

- The system will be thoroughly monitored on a quarterly basis by a qualified consultant. During this inspection the following will occur

    1. All gauges, valves, and sensors will be check and repaired if needed.

    2. The blowers will be tested and evaluated to ensure proper working order.

3. One sample will be collected of the influent and effluent gas. The gases will be evaluated for methane, carbon monoxide, carbon dioxide, hydrogen sulfide, and volatile organic compounds. The results of the analysis will be evaluated to assess the efficiency of the pollution control equipment. If additional end-of-pipe control measures are required, RIDEM would need to approve the devise prior to installation.

4. Moisture separators will be checked and drained if required. The water contained in the vessel will be containerized and disposed in accordance with applicable regulations.

3.1.3 Monitoring Systems

The monitoring systems such as soil gas monitoring wells, groundwater monitoring wells, indoor methane monitors, and indoor air quality will be sampled and inspected on a quarterly basis for the first five years of operation.

The soil gas monitoring well will be sampled as follows:

1. The physical condition of the soil gas monitoring well will be assessed. If repairs to the well are required a notation will be made on the field sampling log, and arrangements will be made to repair the well.

2. An air pump will be used to evacuate air from the well. The evacuation of the air will induce soil gas flow towards the well. A portable monitor (s) will be used to assess the presence of hydrogen sulfide, carbon monoxide, carbon dioxide, methane and volatile organic compounds. At two sample locations a tedlar bag sample will be obtained for laboratory analysis of the above.

3. The sampling port of the well will be closed after sampling.

The groundwater monitoring wells will be sampled as follows:

1. The physical condition of the groundwater monitoring well will be assessed. If repairs to the well are required a notation will be made on the field-sampling log, and arrangements will be made to repair the well.

2. The depth to groundwater will be measured in each groundwater monitoring well. These measurements will be used to assess the volume of water in each well. Approximately three to five volumes of water will be removed from the well prior to sampling. After each volume of water is removed the pH, temperature, and specific conductivity will be measured. If these parameter values are not consistent (within 10%) then additional volumes of water may need to be removed.

3. One sample will be obtained from the well and submitted for analysis for volatile organic compounds (EPA Method 8260) following chain-of-custody and sample preservation protocols.

The methane monitors will be inspected on a quarterly basis. The inspection will be in accordance with manufacturer specifications, but will generally consist of checking the electrical source and the general functionality of the monitors.

The indoor air quality assessment will consist of monitoring the air space of the buildings for the gases of potential concern: hydrogen sulfide, carbon monoxide, carbon dioxide, methane, and volatile organic compounds. The monitoring will be performed on a quarterly basis using direct read instrumentation. Refer to Section 4.0 for threshold values that will prompt action

4.0 Contingency Plan

This contingency plan presents the actions that will be taken under certain conditions that may arise during the long-term operations and maintenance plan.

4.1 Soil Cover

Condition: Breach of the soil cover.

Response: Immediate repair. The long-term monitoring consultant will be notified in the event of a breach of the soil cover. After the cover is repaired, one composite soil sample will be collected for analysis for lead, arsenic and total petroleum hydrocarbons

4.2 Sub-Slab Ventilation System

Condition: Methane monitor alarm is triggered.

Response: In the event that the methane alarms are triggered, the principal or her designee will notify the Providence Fire Department, the long-term monitoring consultant, and the RIDEM. The Providence Fire Department will be the lead agency in the initial response, but at a minimum the school should be evacuated. The long-term consultant will monitor indoor air quality and determine if the triggering of the alarm is due to the presence of methane or a defect in the system.

Condition: System malfunctions.

Response: Maintenance personnel at the site will be trained in the rudimentary operations of the system and may be able to troubleshoot certain problems with the system. However, if the problems are more serious in nature then the long-term monitoring consultant would be called in to repair the problem.

4.3 Monitoring Systems

Condition: Soil gas concentrations exceed threshold values.

Response: The following table identifies the threshold values that will trigger additional assessment.

Parameter	Concentration	AP-42	PEL	IDL
Methane	5,000 ppm	50%		
Carbon Monoxide	9 ppm	309.32	50	1200
Hydrogen Sulfide	10 ppm	36	20	100
Carbon Dioxide	1,000 ppm	50%	5,000	40,0
Volatile Organic Compounds	5 ppm			

If these concentrations are exceeded during the soil gas sampling, a more thorough assessment will be performed. The more thorough assessment will include the installation of additional soil gas monitoring wells. If elevated concentration still exist the soil gas monitoring wells will have the capacity to be converted to soil vapor extraction wells.

Condition: Groundwater concentrations exceed Method 1 GB Groundwater Quality Standards

Response: Further assessment will be performed to identify the extent and degree of the impacted groundwater. Depending on the further assessment remediation may need to be performed.

Condition: Indoor air quality concentrations exceed threshold values.

Response: The following table identifies the threshold values that will trigger additional assessment.

Parameter	Concentration
Methane	500 ppm
Carbon Monoxide	9 ppm
Hydrogen Sulfide	5 ppm

Carbon Dioxide	1,000 ppm
Volatile Organic Compounds	5 ppm

If these concentrations are exceeded during the soil gas sampling, a more thorough assessment will be performed. The more thorough assessment will include extensive sampling to further define the extent and degree of the gas impacts. If elevated concentrations are still prevalent remedial measures within the building will be explored.

5.0 Emergency Phone Numbers

Providence Fire Department:	
Emergency Phone Number	911
Routine Number	421-8290
Rhode Island Department of Environmental Management	222-4700
Monitoring Consultant	To be Determined
City of Providence	421-7740

APPENDIX D

OPERATING LOGS

OPERATING LOG

Springfield Avenue Lots
Providence, Rhode Island

Date: _____ Field Inspector: _____

Site Activities: _____

_____

_____

Contractor's On-site: _____

_____

_____

Soil Gas Collection System	Soil Cover Operation:

Site Sketch/Notes: