## JOHN E. OSBORN P.C.

JOHN E. OSBORN

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APR 1, 3, 2009



WESTCHESTER OFFICE

115 Stevens Avenue Valhalia , New York 10595

TELEPHONE 914.741.9870 FAX 914.741.9875

New Jersey Office

11 COMMERCE DRIVE, CRANFORD CRANFORD, NEW JERSEY 06016

> TELEPHONE 908-931-1100 FAX 908-276-6220

April 10, 2009

### **VIA OVERNIGHT MAIL**

William Ottoway Division of Remediation New York State Department of Environmental Conservation 625 Broadway Albany, New York 12233-7014

Re: West 19<sup>th</sup> Street Development Site

NYSDEC BCP Site No. C231017

Certification of Institutional Controls/Engineering Controls

Dear Mr. Ottoway:

As indicated in my e-mail to you of today's date, I enclose the original certification signatures. Please call me if there are any questions. Thank you for your ongoing attention to this matter.

Sincerely,

Mark C. Pennington

### **CONTROL CERTIFICATIONS** SITE NO. C231017

Box 5

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE certify that all information and statements in Boxes 2 & 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.	
1 CHRISTIAN BETAN (print name) IAC 555 W. 1874 STREET, Nawyork, NY	100 M
(print business address), am certifying as	
(Owner or Owner's Designated Site Representative (if the site consists of multiple properties, I have been	
authorized and designated by all site owners to sign this certification) for the Site named in the Site Details	
section of this form.	
Signature of Site Owner or Representative Rendering Certification  Date	
Box 6  QUALIFIED ENVIRONMENTAL PROFESSIONAL (QEP) SIGNATURE  Sertify that all information and statements in Box 4 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.  P. W. GROSSER CONSULTING  I PAUL K. BOYCE (print name), 630 JOHNSON AVE, SUITE 7, BUHEN  ( print business address), am certifying as a Qualified Environmental Professional for the	IA, N
(Owner of Owner's Representative) for the Site named in the Site Details section of	
Signature of Qualified Environmental Professional, for Stamp (if Required)  Date	
the Owner or the Owner's Representative, Rendering Certification	

## JOHN E. OSBORN P.C.

John E. Osborn

Robert J. Egielski<sup>1</sup> Christopher J. Platt Daniel H. Crow<sup>1</sup>

\_\_\_OF COUNSEL \_\_\_\_
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February 27, 2009

### **VIA OVERNIGHT MAIL**

William Ottoway
Division of Remediation
New York State Department of
Environmental Conservation
625 Broadway
Albany, New York 12233-7014

Re:

West 19<sup>th</sup> Street Development Site NYSDEC BCP Site No. C231017 Certification of Institutional Controls/Engineering Controls

Dear Mr. Ottoway:

Enclosed please find the annual certification package for the above-referenced Brownfield Cleanup Program site. Enclosed with this letter are:

- 1. The Institutional and Engineering Controls Certification Form;
- 2. Letter from Craig Puerta of Environmental Liability Management, LLC dated February 24, 2009;
- 3. "Walkthrough Inspection and Repair Observation" Report by Simpson Gumpertz & Heger dated February 18, 2009;

William Ottoway February 27, 2009 Page 2

4. Report on Testing and Balancing at the West 19<sup>th</sup> Street Development Site by Independent Testing and Balancing, dated January 21, 2009.

As discussed with Craig Puerta of ELM, the signature page to the certification form and the signed P.E. certification will be sent upon completion of the recommended repairs. Please call me if there are any questions. Thank you for your ongoing attention and assistance with this matter.

Sincerely,

Mark C. Pennington

Cc: Christian Bryan, IAC

Peter Zimmermann, Environmental Liability Management, LLC

Joseph Rose, Georgetown

Mark Chertok, Sive Paget & Reisel

## **INDEPENDENT TESTING AND BALANCING**

254 North Main Street, New City, NY 10956 / Phone: (845) 634-8554 Fax: (845) 634-8541

**REPORT** 

ON

**TESTING AND BALANCING** 

THE

## WEST 19TH STREET DEVELOPMENT SITE

ΑT

WEST 19TH STREET NEW YORK, NY CELLAR

PREPARED FOR:

ENVIROMENTAL LIABILITY MANAGEMENT OF NEW YORK, LLC 250 WEST 57TH STREET SUITE 2421 NEW YORK, NY 10107 212.581.8023

IT&B Project 7163

Wednesday, January 21, 2009

**Fan Test Sheet** 

254 North Main Street, New City, NY 10956 / (845) 634-8554 Fax: (845) 634-8541

Project:	West 19th Street Development Site			,	Number:	7163
System:	GSF-C-1	Location:	Garage		Date:	01/13/2009
Tech:	Anthony Famularo	IA No:	831927			

Fan Make: LOREN COOK
Fan Size: 365 CPS

Motor HP:20.00Motor RPM:1,745Voltage Rated:200Voltage Actual:214Amperage Rated:57.00Amperage Actual:42.00

Static Pressure:

Suction: -.58 IN. W.G.

Discharge: +1.77 IN. W.G.

Fan RPM: Reqd 960 Actual 901
System CFM: Reqd Actual 24,810

### **Duct Traverse Sheet**

254 North Main Street, New City, NY 10956 / Phone: (845) 634-8554 Fax: (845) 634-8541

Project:	West 19th Street Develop	ment Site		Number:	7163	
System:	GSF-C-1		<b>TP:</b> 1	Location: Garage	Date:	01/13/2009
Tech:	Anthony Famularo		IA No: 8	31927		

## **Design Data**

Duct Type	Main	Hgt/Diam (in.)	24.00	Serves Outlets
Duct Shape	Square	Width (in.)	70.00	Air Flow Temp °F
Insulation Type	Internal	Area (sq. ft.)	11.67	

## **Test Data**

Point	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A	2,540	2,340	2,394	1,383	2,350	2,139	1,681								
В	1,587	2,578	2,458	2,013	2,300	2,343	2,025								
C	1,333	1,995	2,346	2,231	2,437	2,381	1,792								

Design CFM	Total FPM	Num of Readings	Average FPM	Area (sq. ft.)	Total CFM
0.00	44,646.00	21	2,126.00	11.67	24,810.42
% of Design	Static Pre	essure, in w.g.			
0.00		0.07			

**Fan Test Sheet** 

254 North Main Street, New City, NY 10956 / (845) 634-8554 Fax: (845) 634-8541

Project:	West 19th Street Development Site			Number:	7163
System:	GEF-C-1	Location	: Cellar	Date:	01/13/2009
Tech:	Anthony Famularo	IA No:	831927		

Fan Make: Loren Cook
Fan Size: 402 CPS

Motor HP:20.00Motor RPM:1,765Voltage Rated:200Voltage Actual:208Amperage Rated:54.30Amperage Actual:39.00

Suction: -1.12 IN. W.G.

Discharge: +.62 IN. W.G.

 Fan RPM:
 Reqd
 785
 Actual
 800

 System CFM:
 Reqd
 Actual
 24,106

### **Duct Traverse Sheet**

254 North Main Street, New City, NY 10956 / Phone: (845) 634-8554 Fax: (845) 634-8541

Project:	West 19th Street Development Site		Number:	7163	
System:	GEF-C-1	<b>TP:</b> 1	Location: Cellar	Date:	01/13/2009
Tech:	Anthony Famularo	IA No: 8	331927		

## **Design Data**

Duct Type	Main	Hgt/Diam (in.)	24.00	Serves Outlets
Duct Shape	Square	Width (in.)	96.00	Air Flow Temp °F
Insulation Type	Internal	Area (sq. ft.)	16.00	

## **Test Data**

Point	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A	1,248	1,517	2,179	2,446	2,448	2,165	2,203	300							
В	898	341	1,978	2,225	2,303	1,567	2,511	631							
C	545	229	1,258	1,641	1,851	1,235	2,440	0							

Design CFM	Total FPM	Num of Readings	Average FPM	Area (sq. ft.)	Total CFM
0.00	36,159.00	24	1,506.63	16.00	24,106.00
% of Design	Static Pre	ssure, in w.g.			
0.00	-	0.79			

Fan Test Sheet

254 North Main Street, New City, NY 10956 / (845) 634-8554 Fax: (845) 634-8541

Project:	West 19th Street Development Site			Number:	7163
System:	GEF-C-2	Location:	Cellar	Date:	01/13/2009
Tech:	Anthony Famularo	IA No:	831927		

Fan Make:	Loren Cook
Fan Size:	150 SONH
	_

Motor HP:	0.50	Motor RPM:	1,725
Voltage Rated:	200	Voltage Actual:	215
Amperage Rated:	2.50	Amperage Actual:	2.60

Static Pressure:

Suction: -.20 IN. W.G.

Discharge: +.30 IN. W.G.

Fan RPM: Reqd 1407 Actual System CFM: Reqd Actual 820

### **Duct Traverse Sheet**

254 North Main Street, New City, NY 10956 / Phone: (845) 634-8554 Fax: (845) 634-8541

Project:	West 19th Street Development Site	Vest 19th Street Development Site Number:					
System:	GEF-C-2	EF-C-2 TP: 1 Location: Cellar Date:					
Tech:	Anthony Famularo	IA No: 831927					

## **Design Data**

<b>Duct Type</b>	Main	Hgt/Diam (in.)	8.00	Serves Outlets
Duct Shape	Square	Width (in.)	20.00	Air Flow Temp °F
Insulation Type	Internal	Area (sq. ft.)	1.11	

## **Test Data**

Point	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A	810	956	485												
В	883	1,000	299												

Design CFM	Total FPM	Num of Readings	Average FPM	Area (sq. ft.)	Total CFM
0.00	4,433.00	6	738.83	1.11	820.11
% of Design	% of Design Static Pressure, in w.g.				
0.00	-0.17				

**Fan Test Sheet** 

254 North Main Street, New City, NY 10956 / (845) 634-8554 Fax: (845) 634-8541

Project:	West 19th Street Development Site			Number:	7163
System:	GEF-C-4	Location:	Cellar	Date:	01/13/2009
Tech:	Anthony Famularo	IA No:	831927		

Fan Make: Loren Cook
Fan Size: 135 SONH

Motor HP:0.50Motor RPM:1,725Voltage Rated:200Voltage Actual:214Amperage Rated:2.50Amperage Actual:2.50

Static Pressure:

Suction: -.68 IN. W.G.

Discharge: +.19 IN. W.G.

Fan RPM: Reqd 1492 Actual

System CFM: Reqd Actual 991

## **Duct Traverse Sheet**

254 North Main Street, New City, NY 10956 / Phone: (845) 634-8554 Fax: (845) 634-8541

Project:	West 19th Street Developmen	Vest 19th Street Development Site Number				
System:	GEF-C-4	<b>TP:</b> 1	Location: Cellar	Date:	01/13/2009	
Tech:	Anthony Famularo	IA No: 831927				

## Design Data

Duct Type	Main	Hgt/Diam (in.)	20.00	Serves Outlets
<b>Duct Shape</b>	Square	Width (in.)	10.00	Air Flow Temp °F
Insulation Type	Internal	Area (sq. ft.)	1.39	

## **Test Data**

Point	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A	668	678	748												
В	6 <b>8</b> 6	708	790	_											

Design CFM	Total FPM	Num of Readings	Average FPM	Area (sq. ft.)	Total CFM
0.00	4,278.00	6	713.00	1.39	991.07
% of Design Static Pressure, in w.g.					
0.00	-0.68				

Fan Test Sheet

254 North Main Street, New City, NY 10956 / (845) 634-8554 Fax: (845) 634-8541

Project:	West 19th Street Development Site			Number:	7163
System:	GEF-C-5	Location:	Cellar	Date:	01/13/2009
Tech:	Anthony Famularo	IA No:	831927		

Fan Make: Loren Cook
Fan Size: 100 SON

Motor HP:0.50Motor RPM:1,725Voltage Rated:200Voltage Actual:214Amperage Rated:2.50Amperage Actual:2.60

Static Pressure:

Suction: -.65 IN. W.G.
Discharge: +.20 IN. W.G.

Fan RPM: Reqd 2186 Actual
System CFM: Reqd Actual 1,003

## **Duct Traverse Sheet**

254 North Main Street, New City, NY 10956 / Phone: (845) 634-8554 Fax: (845) 634-8541

Project:	West 19th Street Development Site	Number:	7163		
System:	GEF-C-5	<b>TP:</b> 1	Location: Cellar	Date:	01/13/2009
Tech:	Anthony Famularo	IA No: 83	31927		

## **Design Data**

Duct Type	Main	Hgt/Diam (in.)	8.00	Serves Outlets
Duct Shape	Square	Width (in.)	20.00	Air Flow Temp °F
Insulation Type		Area (sq. ft.)	1.11	

## **Test Data**

Point	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A	963	989	934												
В	842	825	873												

Design CFM	Total FPM	Num of Readings	Average FPM	Area (sq. ft.)	Total CFM	
0.00	5,426.00 6		904.33	1.11	1,003.81	
% of Design	Static Pre	ssure, in w.g.				
0.00	-	0.49				



# ENCLOSURE 1 NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION INSTITUTIONAL AND ENGINEERING CONTROLS CERTIFICATION FORM



4	INSTITUTIO	NAL AND ENGINEERING CONTROLS CERTIFICATI	ON FO	PRM	$\overline{z}$
			1		
	SITE NO.	C231017			
	SITE NAME	19th Street Development Site			
	SITE ADDRESS:	80 11th Avenue ZIP CODE: 10011			
	CITY/TOWN:	New York			
	COUNTY:	New York			
	CURRENT USE:	Commercial Office Building			
		VERIFICATION OF SITE DETAILS		Box 2	
			YES	NO	N/A
1.	Are the SITE DETAIL	S above, correct?	_x_		
	If NO, are changes ha				
2.	Has some or all of the undergone a tax map		_x_		
	If YES, is document previously submitted				
3.	Have any federal, statistics issued for or at the p		_x		
	If YES, is document previously submitted				
4.	Has a change-of-use	occurred since the initial/last certification?		_X	
		tation or evidence that documentation has been included with this certification?			
5.	made in the qualitativ	tion come to your attention to indicate that assumptions e exposure assessment for offsite contamination are no o non-significant threat sites subject to ECL 27-1415.7(c))?			_x_
		ormation or evidence that new information has been included with this certification?			
6.	Are the assumptions	in the qualitative exposure Assessment still valid (must be			

Certified every five years for non-significant threat sites subject

If NO, are changes in the assessment included with this certification?

to ECL 27-1415.7(c))?

Description of Institutional/Engineering Control

Control Certification
YES NO

Responsive Realty, LLC
527 West 18th Street
Block 690 Lots 12 and 54
Environmental Easement
Landuse Restriction
Subsurface Barriers
Vapor Mitigation

SITE NO. C231017

Box 3

Control Certification
YES NO

X

SUBSURFICE

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### Box 4

### CONTROL CERTIFICATION STATEMENT

For each institutional or engineering control listed above, I certify by checking "Yes" that all of the following statements are true:

- (a) the institutional control and/or engineering control employed at this site is unchanged from the date the control was put in-place, or last approved by the Department;
- (b) nothing has occurred that would impair the ability of such control to protect public health and the environment:
- (c) nothing has occurred that would constitute a violation or failure to comply with any Site Management Plan for this control; and
- (d) access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control.
- (e) if a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for their intended purpose under the document



### ENVIRONMENTAL LIABILITY MANAGEMENT, LLC

267 Broadway, 5th Floor New York, NY 10007 Tel: (212) 962-4301 Fax: (212) 962-4302

February 24, 2009

Mr. William Ottoway New York State Department of Environmental Conservation Remedial Bureau C, 11th Floor 625 Broadway Albany, NY 12233-7014

RE: ANNUAL CERTIFICATION - 19TH STREET DEVELOPMENT SITE - NEW YORK STATE

DEPARTMENT OF ENVIRONMENTAL CONSERVATION BROWNFIELDS CLEANUP PROGRAM

**SITE No. C231017** 

Dear Mr. Ottoway:

Environmental Liability Management, LLC (ELM) has been retained by IAC (IAC) to manage and oversee the annual certification requirements as required by the New York State Department of Environmental Conservation (NYSDEC). ELM would like to present the following information to you for your use while reviewing the annual certification for the IAC site.

As stated in the transmittal of the 2008 Annual Certification for this site, ELM did not collect photo ionization detector (PID) readings. This approach was based on the conclusion that the PID readings would not provide reliable information to identify potential vapor infiltration. The rationale supporting this conclusion is as follows:

- Ambient conditions would have interfered with PID monitoring. This would include potential interference with vapor concentration measurement stemming from motor vehicle exhaust in the operational parking garage; chemical storage throughout the basement of the building in the non-garage areas and fresh paint fumes from construction activities within the basement space;
- 2. The potential need for monitoring was eliminated by use of a conservative approach to crack repair. Specifically, ELM and the structural consultant Simpson Gumphertz & Hager (SGH) recommended expedited repair of cracks in accordance with best management practices, even though most observed cracks did not require repair for structural reasons;
- Independent Testing and Balancing (HVAC Consultant) determined the HVAC system was in good operating condition meeting manufacturer's specifications, and thus the requirements of the SMP. As such, it was reasonable to conclude that any ambient vapors, regardless of their source, are being effectively managed and vented.

**ELM PROJECT NO: 206149** 

ELM has determined that the PID monitoring does not provide reliable information and potential vapor intrusion is best managed by prompt repair of the structural components and continuous operation of the HVAC system.

The SGH structural report identifies five locations at the site where structural repairs per the SMP are recommended. The five locations will be repaired per the protocols of the SMP at the earliest opportunity. This ongoing practice of detection and prompt repair ensures the integrity of the barrier system for its intended purpose. The NYSDEC will be notified prior to the start of repairs and an updated report will be provided upon completion of the work. At this time, we anticipate the repairs to be completed within the next 60 days. Upon satisfactory completion of the repairs, an executed certification signature page will be provided to NYSDEC.

ELM would be happy to further discuss any aspects of the annual certification at your convenience.

Sincerely,

ENVIRONMENTAL LIABILITY MANAGEMENT, LLC

Craig Puerta Project Manager

Cc: IAC Certification Team



## Walkthrough Inspection of Barrier Layer Engineering Control

528 West 19th Street New York, NY 18 February 2009

SGH Project 090024.00



### PREPARED FOR:

Mr. Craig Puerta ENVIRONMENTAL LIABILITY MANAGEMENT, LLC 267 Broadway, Fifth Floor New York, NY 10007

### PREPARED BY:

Simpson Gumpertz & Heger Inc. 19 W. 34th Street, Suite 1000 New York, NY 10001

Tel: 212.271.7000 Fax: 212.271.0111

> Boston Los Angeles New York San Francisco Washington, DC

Design, Investigate, and Rehabilitate

www.sgh.com



18 February 2009

Engineering of Structures and Building Enclosures

Mr. Craig Puerta Project Manager ENVIRONMENTAL LIABILITY MANAGEMENT, LLC 267 Broadway, Fifth Floor New York, NY 10007

Project 090024 – Walkthrough Inspection of Barrier Layer Engineering Control

West 19th Street Development Site, 528 West 19th Street, New York, NY

Dear Mr. Puerta:

You asked us to perform a visual inspection of the basement of the above-named building. The purpose of this annual inspection was to identify cracks and visible signs of water infiltration into the space, per the inspection requirements set forth in the Monitoring Plan Section 3.2, developed as part of the New York State Department of Conservation brownfield clean-up program.

Rebecca A. Melton and Kirk M. Stauffer of Simpson, Gumpertz & Heger Inc. (SGH) performed a visual inspection on 9 January 2009. We noted isolated visual evidence of active (wet areas) or past water infiltration (stained areas), as well as isolated cracks and other penetrations in the basement slab and foundation walls. We did not perform any tests to identify or measure actual vapor infiltration into the basement space, as this was beyond the agreed scope of our work and expertise. However, signs of water infiltration and visible cracking can be used as indicators of breaches with potential for vapor infiltration, when the groundwater table is lower than a potential breach (e.g. cracks). Therefore, we recommend injection repairs for areas where we observed active or past water infiltration, in accordance with best maintenance practices and the Operation and Maintenance Plan (OMP). We did not make any probes or perform tests to evaluate or observe the components of the barrier-layer system behind the foundation walls or below the basement slab.

This report summarizes our observations and our recommendations.

### BACKGROUND

### 1.1 Description of the Site

The West 19th Street Development Site is an office building located on one of the numerous parcels used as a former manufactured-gas plant (Photo 1). The building is a mid-rise structure with an undulating glass curtain-wall facade. The building has one below-grade level that includes a concrete pressure slab and cast-in-place concrete foundation walls. The foundation slab is supported on piles. The below-grade area is used for parking, for housing mechanical equipment, and for storage space.

Baston

The approximately 0.7-acre site is located on Block 690, Lots 12 and 54, between West 18th and West 19th Street and Tenth and Eleventh Avenues in the Borough of Manhattan, New York. It is our understanding that contamination on the site was remediated concurrently with construction for the current office building. Furthermore, we understand that remediation was conducted pursuant to a Brownfield Cleanup Agreement with New York State Department of Environmental Conservation (NYSDEC), effective 14 July 2004 (Index No. W2-1012-04-07, Site No. C231017). The remediation on the site was documented in a Final Engineering Report, prepared by Roux Associates, Inc., and dated 17 August 2006. A Certificate of Completion was issued for the site remediation dated 31 August 2006.

In accordance with the NYSDEC-approved remediation and the environmental easement established pursuant to the site's Brownfield Cleanup Agreement, we understand that the following engineering controls are in place on the site:

- Watertight, corrugated metal sheeting and jet grouting around the perimeter of the site.
- A barrier-layer system. The designed barrier-layer system consists of the following components:
  - Mud slab
  - Waterproofing/vapor barrier membrane, manufactured by Grace Construction Products
  - Structural concrete slab or foundation walls
  - Subsequent to the construction, grout injection at the foundation walls and slabs was employed at areas of former and suspected leaks.
- An active venting system in the cellar of the building.

### 1.2 Description and Purpose of the Barrier-Layer Monitoring Program

The Site Management Plan (SMP) states that, "the interior face of the perimeter foundation walls and foundation slab shall be inspected once a year or in the event of a severe weather event (e.g. flooding) or other event that might compromise the foundation integrity." The purpose of the visual inspection is to identify "the presence and density of cracks and/or evidence of water infiltration."

Visible conditions identified as allowing or potentially allowing vapor infiltration shall be either repaired per the Operations and Maintenance Plan, or monitored with a photoionization detector (or other monitoring equipment) and telltales. The repair outlined in the OMP involves chemical grout injection with Hydro Active Sealfoam, a grout manufactured by DeNeef. For additional information on the chemical grout, see Appendix A of this report.

Furthermore, "the visual inspection shall note any evidence of water infiltration; which could indicate that the vapor membrane adhered to the exterior side of the wall may have been breached. If it is determined by the qualified structural engineer that water is discharging through the crack(s) or in the area of the crack(s), then:

1. The source of the water infiltration will be determined and addressed; and

2. The most practicable means of repair to the vapor membrane and/or other barrier layer system components should be determined and implemented per the guidance provided in the OMP."

The SMP states that, "the structural engineer shall include in the final report any additional information as to the cause of the crack(s) and/or vapor membrane breach and how further such breaches will be avoided in the future."

### 1.3 Review of Previous Reports

Environmental Liability Management, LLC (ELM) provided SGH with the following relevant documents:

- Waterproofing Recommendation letter by Remedial Engineering, P.C. Environmental Engineers, dated 4 February 2005. This letter describes revisions to the Site Operations Plan (SOP), dated 24 June 2004. The revisions to the SOP include substitution of the Grace products, as listed above, in lieu of a Liquid Boot membrane as the waterproofing/vapor barrier.
- Site Management Plan for West 19th Street Development Site, dated 18 July 2006 and approved by the New York State Department of Environmental Conservation (NYS DEC) on 10 August 2006. This document outlined SGH's scope of work for the inspection of the basement space for signs of water infiltration through the barrierlayer. The pertinent sections of this report are included in Appendix A.
- Limited Structural Evaluation Letter by Rand Engineering and Architects (Rand) dated 9 January 2007. The survey performed by Rand was conducted on 8 December 2006 when the construction was nearing completion. Remediation on the project site was documented in a Final Engineering Report, prepared by Roux Associates, Inc. and dated 17 August 2006.
- Certificate of Completion from NYSDEC, dated 31 August 2006.

In preparation for this year's inspection, we also reviewed our previous report, issued after the last year's inspection:

 Walkthrough Inspection and Repair Observation, Barrier Layer Engineering Control letter, dated 5 September 2007, and updated 24 March 2008.

### 2. OBSERVATIONS

On 9 January 2009, representatives of SGH met with representatives of ELM and IAC to walk through the below-grade level to conduct a visual survey. At the time of our inspection, the below-grade level of the building was being used for car parking, storage, and as mechanical rooms. The building was operational at the time of our inspection, and cars were parked in the garage at the below-grade level. Some of the storage and mechanical rooms contained objects, which prohibited us from viewing the entire surface of the perimeter foundation walls and the foundation slab in some areas. We inspected the unobstructed concrete floor slab and foundation walls for visible cracks and/or any evidence of water infiltration as well as looked for

areas of water staining. In addition, our scope included a focus on inspection of our 2008 findings.

The survey was conducted two days after a significant rainfall (Appendix C). During the visit, we observed evidence of previous repairs, shrinkage cracks and ungrouted cracks. We also observed several locations of active water infiltration.

A summary of our observations from our 9 January 2009 site visit follow. Please refer to the Engineering Control Checklist – Cracking, in Appendix C, and an annotated plan in Appendix D for a graphical representation of our surveys. In Appendix D, an X-Y coordinate system is shown. In our observations below, we use this coordinate system to help locate where our observations were made.

### 2.1 Previous Repairs Observations

SGH observed numerous grout injection ports at all four of the foundation walls and within the building interior. We primarily observed grout injection ports at the foundation walls and wall-to-slab interface, but we also observed some grout injection ports in the interior walls and slab. We also observed the grout injection ports installed on 16 and 24 January 2008 by Starbrite Waterproofing under our observation. No new grout injection ports were installed at the site to our knowledge since our last inspection in January 2008.

### 2.2 Foundation Slab Observations

A traffic-deck coating is applied in the parking-lot portion of the basement, as well as in the mechanical and storage rooms at the north and east perimeter walls. The traffic-deck coating prevents us from determining if there are small-width cracks in the concrete slab. However, we did not observe cracks through the traffic-deck coating. The traffic deck coating was not applied in the storage rooms along the west foundation wall (X=60, Y=140) and (X=115, Y= 35). In these storage rooms, we observed what appeared to be isolated shrinkage cracks in a raised concrete topping slab. These shrinkage cracks showed no evidence of past or current water infiltration (Appendix D).

### 2.3 Foundation Wall Observations

As described fully in the paragraphs that follow, we observed isolated active water infiltration, evidence of previous water infiltration, and cracks in the foundation walls.

### 2.3.1 Active Water Infiltration Observations

- We observed active water infiltration above the bolt penetration for the railing in the gas-meter room (X=170, Y=200). We also observed nearby grout injection ports and grout staining on the wall near the railing's termination. This area was injection grouted in January 2008 (Photo 2).
- We observed active water infiltration at the foundation wall-to-slab interface (joint) in the corner of the telephone room (X=180, Y=200). We noted that the pool of water contained sandy sediment mixed with the water (Photo 3).

- We found active water infiltration at the far northeast corner of the building in the water meter room (X=40, Y=200). We removed the vinyl baseboard and felt that the foundation wall-to-slab interface was wet along both the west and north elevations. We observed previous grout injection ports in the surrounding area (Photo 4).
- We observed active water infiltration and standing water on the foundation slab along the west foundation wall in the car parking area. We noted that the water infiltration occurred at the foundation floor-to-wall interface and extended intermittently over approximately 25 ft from (X=80, Y=90) to (X=90, Y=70). We observed previous grout injection ports in the surrounding area (Photo 5).
- At the fan room at the east side of the building, we noted active water entry at the foundation slab-to-wall interface. The leak occurred along the north wall (X=240, Y=100) (Photos 6 and 7).

### 2.3.2 Evidence of Previous Water Infiltration and Cracking Observations

- In the fuel tank room, at the east foundation wall (X=200, Y=180), we noted a crack with assumed water staining running down from it. At the crack, which was located about 10 ft above the slab, we observed no nearby grout injection ports (Photo 8).
- We observed a crack with efflorescence and staining in the north foundation wall of the mechanical room (X=130, Y=200). The crack was located about 5ft above the slab and there were no grout injection ports in the vicinity (Photo 9).

### 3. DISCUSSION AND RECOMMENDATIONS

Below is a summary of our discussion and recommendations for repairs to the barrier as part of the Operations and Maintenance Plan (OMP).

### 3.1 Previous Repairs

The previous repairs appear to be effective in terms of preventing water entry; we observed no signs of active leaks through the repaired cracks that would indicate further water entry. Even though we did observe signs of water entry in some areas adjacent to the previous repairs, we do not recommend any further action with regards to the previously repaired cracks that are not actively leaking.

### 3.2 Foundation Slab Recommendations

Consistent with last year's findings, the pattern and size of the cracks in the concrete topping slab inside of the storage rooms (X=60, Y=140) and (X=115, Y= 35) are indicative of concrete shrinkage cracks. These cracks are typically shallow in depth and would not allow water to penetrate through the slab. As such, we believe that they do not represent a breach or significant damage to the barrier-layer system. We recommended no remedial action be taken at this time.

### 3.3 Foundation Wall Recommendations

Per the OMP, only cracks where the water is discharging through the crack are required to be repaired; however, we recommend that wall cracks that show no active signs of water infiltration also be repaired as part of best maintenance practice. We recommend that all of the locations listed above in Sections 2.3.1 and 2.3.2 (including stained areas, leaks at slab-wall interface, and stained or wet areas adjacent to previous repairs) be repaired using the grout injection technique described in the OMP. We do not believe that any of the observed wall cracks represent a structural concern or distress.

### 4. SUMMARY AND CONCLUSIONS

We identified the following conditions that required repair or remediation:

- Active water infiltration in five separate locations.
- Two cracks showing evidence of previous water infiltration, such as staining, with no grout injection ports nearby.

We recommend that these repairs be implemented in accordance with the grout injection technique described in OMP. Per your request, we will visit the building during the implementation of these recommended repairs, and again after the repairs are completed to observe the repair effectiveness.

The cracks we observed were generally narrow in width, likely a result of concrete shrinkage, and did not appear to be structurally significant; therefore, we did not attempt to determine the cause of the cracks observed.

We did not look for, or measure vapor infiltration; however, the signs of water infiltration can be used to estimate the likelihood of vapor infiltration because basement is reportedly below the groundwater table, especially during periods after heavy rains. To confirm continual effectiveness of the barrier layer, as described above, preventative maintenance should be performed on an ongoing basis in accordance with Section 3.0 of the Operations and Maintenance Plan.

Sincerely yours,

Rebecca A. Melton

Senior Staff I - Structures

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Milan Vatovec Principal



Photo 1

528 West 19th Street,
New York, NY, looking south



### Photo 2

Active water infiltration in the gas meter room.

Grout injection port

Wet area

Railing penetration



### Photo 3

Active water infiltration at the wall-to-slab interface in the telephone room. The wall at the left is the foundation wall, and the wall at the right is an interior partition wall.



### Photo 4

Active water infiltration at the wall-to-slab interface at the northwest corner of the building.

The paper in the foreground is water-finding paper, which turns magenta when wetted.



### Photo 5

Active water infiltration at the wall-to-slab interface along the west elevation of the garage.

The paper in the foreground is water-finding paper, which turns magenta when wetted.



### Photo 6

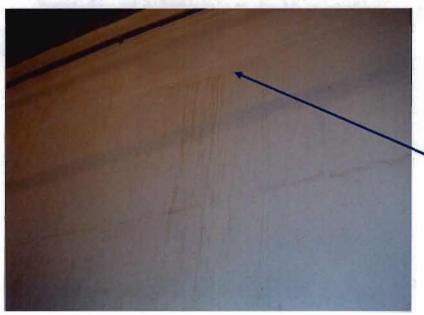
Active water infiltration in the fan room, located in the northeast corner of the site.

Hand points to blistered paint, which we show partially removed in Photo 7)



### Photo 7

Water behind the blistered paint shown in Photo 6.



### Photo 8

Horizontal crack in the east foundation wall of the fuel room.

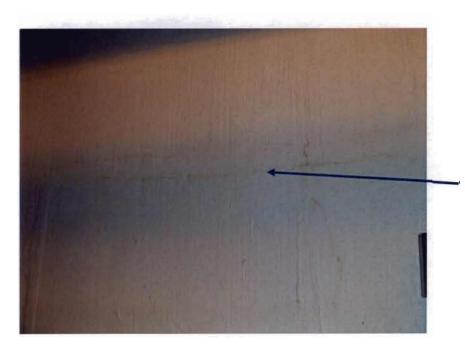


Photo 9

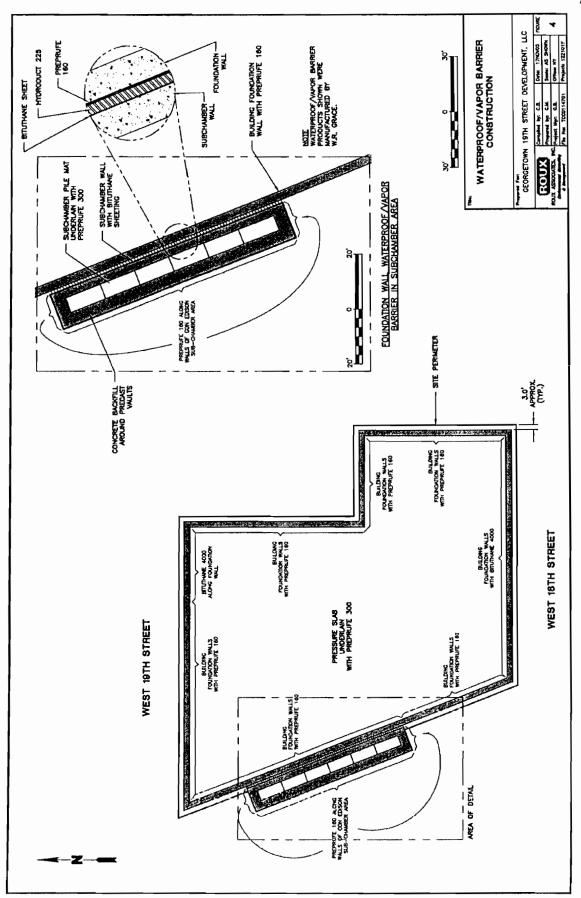
Horizontal crack in the north foundation wall inside the storage room.

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Site Management Plan

## Attachment C

Figure 4, Waterproof / Vapor Barrier Construction, reprinted from Roux Final Engineering Report, July 2006



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Monitoring Plan

industrial use only (not residential), restricts the use of groundwater at the site, grants NYS DEC/NYS DOH uncontrolled access to the site to inspect the engineering controls, requires that any breach of the barrier layer occur with NYS DEC notification and/or approval and in accordance with the Soil Management Plan. (Attachment G of the Site Management Plan), and requires annual certification of engineering controls.

On an annual basis, the Certification provided to the NYSDEC will state whether any modifications to the Environmental Easement have been filed with City of New York Register's Office for the Borough of Manhattan, Land Division.

### 3.2 Engineering Controls

### **Barrier Layer Monitoring**

The interior face of the perimeter foundation walls and the foundation slab shall be inspected once a year or in the event of a severe weather event (e.g., flooding) or other event that might compromise the foundation integrity.

The inspection shall investigate the entire surface of each element for conditions that could lead to vapor infiltration or indicate actual infiltration at the time of inspection, as described below. The inspection shall be performed by a qualified structural engineer(s) familiar with the barrier layer system. The initial stage will be a visual inspection to determine the presence and density of cracks and/or any evidence of water infiltration.

The aperture of individual cracks and/or degree of crack density in a particular area of the basement floor slab or wall requiring additional investigation and/or repair will be determined by the qualified structural engineer(s).

If a crack is observed and the aperture and/or density of more numerous yet smaller aperture cracks are determined to require immediate repair by the qualified structural engineer(s), the crack shall be repaired per the guidance provided in Section 4 of the Operations and Maintenance Plan (OMP). If the qualified structural engineer(s) determines that the crack(s) does not require immediate repair, the crack(s) will be monitored both with a photoionization detector (PID) and with telltales, as described below, prior to their repair in accordance with the guidance provided in Section 4 of the OMP.

Should it be determined that the crack(s) does not require immediate repair, two (2) monitoring activities will be undertaken:

 PID and/or other monitoring equipment recommended by a qualified professional will be used to detect if any vapors associated with the

July 2006

**Monitoring Plan** 

contamination surrounding the site is entering the building. The monitoring will be performed using methods provided by a qualified professional and using appropriately qualified technicians to avoid interference of ambient air from the basement parking garage operations. Readings will be recorded and attached to the inspection report. The reporting protocol will include a contingency plan for actions to be taken should the readings be interpreted by the qualified professional as indicating a breach of the barrier layer. The contingency plan will incorporate any community notification(s), as necessary.

• Monitoring telltales shall be installed in said observed cracks. Attachment C is an article from the National Park Service's Technical Preservation Services for Historic Buildings on Monitoring programs. It includes descriptions and a photo of a typical telltale. These telltales shall be checked for a period of time, as determined by the qualified structural engineer(s), to investigate if the crack is continuing to widen. If the crack is stable, the monitoring shall stop. If the crack continues to widen, then a more thorough investigation as to the cause of the movement shall be performed by the qualified structural engineer(s), and appropriate corrective action will be taken.

The visual inspection shall also note any evidence of water infiltration; which could indicate that the vapor membrane adhered to the exterior side of the wall may have been breached. If it is determined by the qualified structural engineer(s) that water is discharging through the crack(s) or in the area of the crack(s), then: (1) the source of the water infiltration will be determined and addressed, and (2) the most practicable means of repair to the vapor membrane and/or other barrier layer system components should be determined and implemented per the guidance provided in Section 4 of the OMP. In the event such condition is observed, alternate potential sources of water infiltration must also be considered in order to avoid unnecessary and impracticable response actions.

The barrier layer inspection will be documented in a report prepared for NYSDEC. The report will document the conditions of the observed crack(s) and the presence of moisture, the procedures that were followed for the monitoring of the crack(s), the actions taken to address sources of any observed water infiltration, and any repair of the vapor membrane and cracks. The report will also include any additional information as to the cause of the crack(s) and/or vapor membrane breach and how further such breaches will be avoided in the future.

If the aforementioned monitoring procedure is noted to have changed in any way during the annual inspection, an addendum will be issued to the Monitoring Plan,

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**Monitoring Plan** 

which will provide an updated protocol for the annual inspection and Certification and will detail any material changes from the previous protocol. Any such procedural changes will be noted in the annual Certification that is provided to NYS DEC and the Addendum to the Monitoring Plan will be included as an attachment to the Certification.

### **Ventilation System Monitoring**

The fans that exhaust the utility rooms and those that supply fresh air to the garage shall be inspected once a year. This inspection shall be performed by qualified HVAC professionals and/or mechanical engineers. The objective of the inspection will be to verify that the fans are in good operating condition and that the volume of air being either exhausted or supplied by the fans is in compliance with the design volumes and air changes specified.

 If the testing uncovers that the volumes are not as specified, then corrections would be performed in accordance with the guidance provided in Section 4 of the OMP:

If the aforementioned monitoring procedure is noted to have changed in any way during the annual inspection, an addendum will be issued to the Monitoring Plan, which will provide an updated protocol for the annual inspection and Certification and will detail any material changes from the previous protocol. Any such procedural changes will be noted in the annual Certification that is provided to NYS DEC and the Addendum to the Monitoring Plan will be included as an attachment to the Certification.

### 3.3 Future Modifications

Any actions that have the potential to involve disturbance of the barrier layer and/or soil beneath the barrier layer would require NYSDEC notification and approval and would be performed in accordance with the Soil Management Plan (SoMP), which is attached to the SMP.

### 4.0 Site Monitoring Report

The inspections outlined above shall be performed under the direction of a professional either licensed or certified in the State of New York. The Barrier Layer and Ventilation System inspections shall be incorporated into a report that documents the inspections. These reports shall be submitted to the NYSDEC for review. Additionally, on an annual basis, these reports will be accompanied by a certification that the respective system is functioning as originally designed.

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**Monitoring Plan** 

# Attachment A

**Engineering Control Checklist-Cracking** 

Monitoring Plan

Data Date:

# Engineering Control Checklist-Cracking

	_		Т-	Т	т-	Т	T-	т	Т	т-	T-	_	_	_	т-	_	т-	_	_	_	_	_	_	_	_	_
		Notes																								
restigation	Old	Infiltration Readings									† · ·					-								<b></b>		
Vapor In	Moisture	Infiltration																								
rvestigation	Repair	Monitored Performed																								
Structural Ir	Movement	Monitored																								
	Size	Length															-									-
	S	Width																								
		Location																								
	Crack	Identification																								

July 2006

**Operations and Maintenance Plan** 

The active venting system will be constructed as a part of the future commercial office building.

# 2.0 Site Description

The approximately 0.7-acre site is located on Block 690, Lots 12 and 54, between West 18th and West 19th Streets and Tenth and Eleventh Avenues in the Borough of Manhattan, New York City. The development site is one parcel of numerous parcels that comprised the former West 18th Street Gas Works Site, which is currently under a Voluntary Cleanup Agreement (VCA) between the NYSDEC and Con Edison, effective August 25, 2002. Remediation of this site was conducted pursuant to a Brownfield Cleanup Agreement with the NYSDEC, effective July 14, 2004 (Index No. W2-1012-04-07, Site No. C231017, the "BCA").

This BCA was entered into via an application for transition into the Brownfields Cleanup Program from the Voluntary Cleanup Program under which one of the volunteers, Georgetown 19<sup>th</sup> Street Development, LLC, had entered with the NYSDEC, effective March 13, 2003 (Index No. W2-0948-03-02, Site No. V-00624-2).

For more information on site remediation, please refer to Section 3.0 of the Site Management Plan, to which the MP and this plan are attached.

### 3.0 Operation and Maintenance Activities

This OMP includes a description of activities necessary to operate, maintain and repair (as required) the engineering controls (barrier layer and venting system) based upon the conditions observed during implementation of the Monitoring Plan.

### Barrier Layer

The barrier layer, which is comprised of a mud slab, waterproofing/vapor barrier membrane, and a structural concrete slab or foundation walls, must be maintained to ensure its continued effectiveness as a barrier to the intrusion of vapors into the building foundation. As such, any activities that would compromise the integrity of the barrier layer must be managed to effectively maintain the barrier layer over the long term.

The building management will instruct its management team to perform preventative maintenance of the barrier layer. The team should be instructed to be aware of actions observed during their daily activities, which have the

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**Operations and Maintenance Plan** 

potential to compromise the integrity of the barrier layer. Examples of such activities would include, but are not limited to:

- Movement or storage of heavy objects with the potential to affect the integrity of the barrier layer.
- Installation of floor drains, elevator pits or other building features that may compromise the barrier layer.
- Spilled liquid or chemicals in direct contact with the barrier layer.
- Activities (e.g., foundation construction) at adjacent properties.

The management team shall be instructed to look for and report to the Building Manager or designee any actions or conditions that have the potential to compromise the intended remedial function of the barrier layer. The Building Manager or designee will immediately contact a dedicated qualified professional to determine if these activities have impacted the integrity of the barrier layer and if the barrier layer requires repair. Any repair activities will be performed in accordance with Section 4 of this OMP.

## **Ventilation System**

The ventilation system is comprised of fans that exhaust the utility rooms and those that supply and exhaust air to the garage. The ventilation system shall be maintained to operate in accordance with its manufacturer's specifications. The building management will instruct their management team to be aware of the operating standards of the ventilation system and to make observations that may indicate that the system is not in compliance with its operation standards, including, but not limited to,

- persistent odors or exhaust in the cellar of the building
- fans are not operational

The management team shall be instructed to look for and report any actions or conditions that have the potential to compromise the intended function of the ventilation system to the Building Manager or designee. The Building Manager will immediately contact the dedicated qualified professional to determine if these activities have impacted the function of the ventilation system and if the ventilation system requires repair. Any repair activities will be performed in accordance with Section 4 of this OMP.

As necessary, preventative maintenance (e.g., replacing filters, cleaning lines, etc.) repairs and/or adjustments will be made to ensure the system's continued effectiveness.

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**Operations and Maintenance Plan** 

### 4.0 Contingency Plan

Resulting from the observations of either the annual inspections identified in the MP or from the daily maintenance operations outlined in Section 3.0 above, repairs may be required of either the barrier layer or the venting systems. The NYSDEC must be notified of the requirement of such necessary repairs and/or must approve the work prior to its completion.

All personnel involved with the repairs must follow the safety guidance offered by the attached Health and Safety Plan (HASP), the rules and regulations of the NYSDEC and NYSDOH, the rules and regulations of the Federal Occupation and Safety Health Administration (OSHA) and any other governing body.

The following offices can provide further assistance as required:

Consultant	Company	Telephone	Contact
	DeSimone Consulting Engineers		Stephen
Structural Consultant	PLLC	212-532-2211	DeSimone
	Cosentini Associates Consulting		
Mechanical Consultant	Engineers	212-615-3600	Douglas Mass
	Environmental Liability		Peter
Environmental Consultant	Management of NY, LLC	212-581-8023	Zimmerman
NYSDEC		518-402-9564	
NYSDOH		<u> </u>	

Repair guidelines for the barrier system are contained in Attachment A. They have been developed by WR Grace, the supplier of the vapor barrier component. These guidelines should be strictly followed and WR Grace must be contacted to provide technical assistance during the repair. This will ensure continued warranty coverage of the WR Grace product.

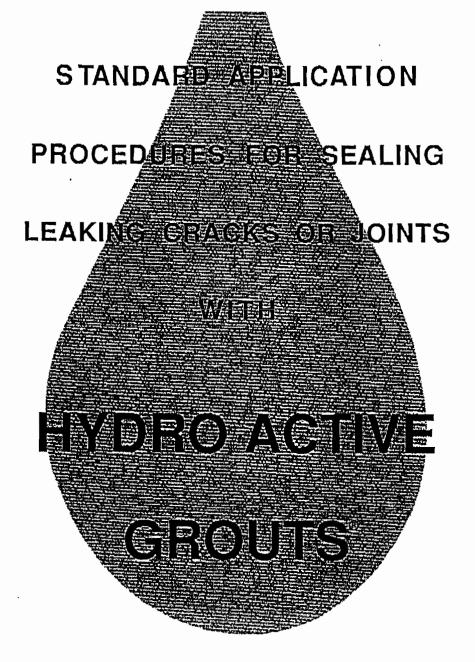
Repairs to the ventilation system could be as simple as belt replacement or as complicated as electrical component repair. A qualified repair professional must be retained and utilized to diagnose the problem and provide prompt repair. Replacement parts should be kept in stock (where feasible) so that prolonged outages are kept to a minimum. If prolonged outages are anticipated such as during a power failure, a qualified professional should be retained to set up an air-monitoring program. This program will validate that the first line of defense, the barrier layer, is functioning as designed.

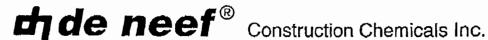
July 2006

Operation and Maintenance Plan

# Attachment A

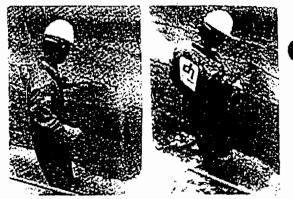
Barrier layer repair detail and procedure





# 1. Cleaning/Sealing Crack Surface

When crack is contaminated at outside, it will be necessary to clean the crack surface, so the crack can be exactly located. If it is a wide crack or high waterflows are encountered, it will be necessary to seal the surface of the crack with a surface sealing material; (example: hydraulic cement; epoxy gel; or oakum saturated with polyurethane grout). The surface sealing can be done before or after drilling the injection holes, (depending on the particular situation).



# 2. Drilling the Injection Holes

There are different diameter, depths, and angles of injection holes. The standard is a 1/2" or 5/8" diameter hole, the angle of drilling is 45° to the surface; and the depth of the hole will be 1/2 the thickness of the concrete. Spacing of the injection ports depends on the width of the crack, but normally varies from 6" to 36".

NOTE: Wall Thickness = Drilling distance from crack



# 3. Install Injection Ports or Packers

Place the packer in the drilled 1/2" or 5/8" hole so that the top of the sleeve is just below the concrete surface. Tighten by a ratchet, socket or open-end wrench by turning clockwise until firm and secure. Packers or injection ports are supplied with a one-way ball valve or check valve.

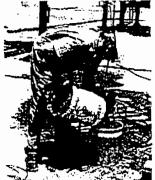




# 4. Prepare Injection Equipment

Two pumps, one for water and one for chemical grout is always highly suggested, must be flushed with Hydro-Active Washing Agent prior to injection. By flushing you eliminate the moisture in the pump and lubricate the system.





# 5. Flush Crack

It is always necessary to flush the crack with water to remove debris and drill dust out of the cracks. Flushing will tell you how the crack will behave during grout injection and the water will prime the crack for the chemical reaction to occur.

# 6. Injection of Hydro Active Grouts®

Depending on nature of the crack, different polyurethane grouts can be injected. Please review the technical data and MSDS.

- H.A. CUT for non-moving cracks and gushing water.
- H.A. FLEX or H.A. FLEX LV for moving cracks or expansion joints above or below grade.
- H.A. SEALFOAM or SEALFOAM NF for moving cracks in continuously moist/wet environments.

Remember, Always flush pump with Washing Agent before starting the grouting. Mix the predetermined accelerator dosage with the HYDRO ACTIVE GROUT. Remember, no reaction will occur until grout with accelerator comes into contact with water.

Begin the injection at the lowest packer on a vertical crack, or at the first packer flushed for a horizontal crack. During injection, you will notice that water is displaced from the crack by the HYDRO ACTIVE GROUT. Continue injecting until HYDRO ACTIVE GROUT. Appears at the adjacent packer. Disconnect and start injection at adjacent packer. After injecting a few packers, come back to the first packer and inject all the ports for the second time. Some of the ports may take some grout, which will fill up and further densify the crack, injection pressure will vary from 200 psi to 2,500 psi depending on the width of the crack, thickness of concrete and condition of concrete.

# 7. Re-Inject Water

When you re-inject water into the injector, you cure the resin left behind in the drill hole. After injection, the packers or injection ports can be cut flush with the concrete surface, or can be removed from the injection holes. Remember to let the HYDRO ACTIVE GROUT sotally cure before removing the packers.

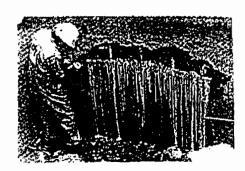






# 8. Surface Removal of Resin

Surface removal can be performed with a wire brush, scrappers or hand held grinders. Material will aggressively bond to concrete surfaces.



# 9. Equipment Cleaning

When the injection is finished, wash off all parts that have been in contact with the Grout. This should be done within 30 minutes after the injection. The washing can be easily performed by circulating DeNeer's Washing Agent through the injection pump for 10 to 20 minutes by connecting the inlet and outlet to a tank containing the Washing Agent. After recirculating the Washing Agent through the pump it is important to run the pump dry and to fill the pump and lines one more time with the fresh Washing Agent. Washing Agent is preferable since it is not flammable under normal conditions.



# **Equipment Required**

HYDRO ACTIVE GROUT® and Accelerator (Review Material Salety Data Sheet for Salety and Handling precautions). Drill and Bits Injection Ports and tools for installation Water Pump - Hand Pump or Electric/pneumatic Pump Resin Plastic pail for mixing Rubber gloves/Goggles/Salety Equipment Rags/Oakum for surface sealing of large leaks Washing Agent - to clean pump Hand Tools

# NOTE:

Our recommendations for use of the product are based upon tests believed to be reliable. Since field conditions vary widely, the user must determine the suitability of the product for the particular use and specific method(s) of application.

The following is made in lieu of all warrantles, express or implied, including implied warrantles of merchantability and fitness for a particular purpose. Seller's and manufacturer's only obligation shall be to replace such quantity of the product proved to be defective. Neither seller nor manufacturer shall be liable for loss or damage, direct, incidental or consequential, regardless of the legal theory asserted, including negligence and/or strict liability.



P.O. Box 1219 Waller, TX 77484 • Ph: 936-372-9185 • Fax: 936-372-9897 • www.deneef.com

### HYDRO ACTIVE® SEALFOAM

### Description

Hydro Active® Sealfoam is a low viscosity polyurethane injection resin designed to control water and seal moving non-structural cracks in concrete. Sealfoam is a hydrophilic resin which, when coming into contact with water, expands quickly to cure into a flexible closed-cell foam. After curing, it becomes an extremely tough and adhesive foam capable of withstanding extreme thermal cycles and crack movement. Other applications include using saturated oil-free Oakum or open-cell foams for expansion joints or annulus seals.

### **Physical Properties**

Uncured:

Solids 85% ASTM D2939 Viscosity 250-350 cps at 70°F ASTM D1638

Color Pale Yellow

 Density
 8.7 lbs/gal
 ASTM D1638

 Flashpoint
 75°F
 ASTM D93

Corrosiveness Non-corrosive

Reaction time 1/1 with water 20 sec

Cured:

 Tensile Strength
 380 psl
 ASTM D3574-86

 Elongation
 400%
 ASTM D3574-86

Bonding Strength 250-300 psi

Shrinkage <10% ASTM D1042

Toxicity Non-Toxic

### Storage and Handling

Sealfoam is sensitive to moisture and moderately sensitive to high storage temperatures, therefore, we recommend storage at 41°F - 60°F under dry conditions. Storage temperatures should not exceed 80°F. Once a pail has been opened, the useful life of the material is greatly reduced, and should be used as quickly as possible.

Sealfoam can be pumped using a single or plural component injection pump.

Due to the high risk of moisture contamination, Seatfoam should be removed from all application equipment immediately after use with De Neef Washing Agent.

# **Product Safety**

Hydro Active® Sealfoam contains acetone and should be used only in well ventilated areas. Care should be taken to avoid conditions which could cause ignition: e. g., cigarettes, sparks, open flame..... Avoid eye and repeated skin contact.

### **Availability**

Hydro Active® Sealfoam: 5 gal metal pail, close head with flexspout, filled and sealed under dry nitrogen.

# http://www.wunderground.com/history/airport/KNYC/2009/1/4/MonthlyHistory.html

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Monitoring Plan

**Engineering Control Checklist-Cracking** 

Data Date: 9 JAN 1407

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