



August 13, 2014

New York City Office of Environmental Remediation
City Voluntary Cleanup Program
c/o Shaminder Chawla
100 Gold Street, 2nd Floor
New York, NY 10038

Re: VCP # 14CVCP227K
E-Designation # 14EH-N226K
882 Fulton Street
Remedial Action Work Plan (RAWP)
Stipulation List

Dear Mr. Chawla:

CA Rich Consultants, Inc. hereby submits a Remedial Action Work Plan (RAWP) Stipulation List for the Site to the New York City Office of Environmental Remediation (OER) on behalf of 500 Waverly Property Owner LLC. This letter serves as an addendum to the RAWP to stipulate additional content, requirements, and procedures that will be followed during the site remediation. The contents of this list are added to the RAWP and will supersede the content in the RAWP where there is a conflict in purpose or intent. The additional requirements/procedures include the following Stipulation List below:

1. The criterion attached in **Appendix 1** will be utilized if additional petroleum containing tank or vessel is identified during the remedial action or subsequent redevelopment excavation activities. All petroleum spills will be reported to the NYSDEC hotline as required by applicable laws and regulations. This contingency plan is designed for heating oil tanks and other small or moderately sized storage vessels. If larger tanks, such as gasoline storage tanks are identified, OER will be notified before this criterion is utilized.
2. A pre-construction meeting is required prior to start of remedial excavation work at the site. A pre-construction meeting will be held at the site and will be attended by OER, the developer or developer representative, the consultant, excavation/general contractor, and if applicable, the soil broker.
3. A pre-approval letter from all disposal facilities will be provided to OER prior to any soil/fill material removal from the site. Documentation specified in the RAWP - Appendix 3 - Section 1.6 "Materials Disposal Off-Site" will be provided to OER. If a

different disposal facility for the soil/fill material is selected, OER will be notified immediately.

4. Signage for the project will include a sturdy placard mounted in a publically accessible right of way to building and other permits signage will consist of the NYC VCP Information Sheet (attached **Appendix 2**) announcing the remedial action. The Information sheet will be laminated and permanently affixed to the placard.
5. In the event that hazardous waste is identified during the remedial action or subsequent redevelopment excavation activities at this NYC VCP project, and removal and transportation of hazardous waste becomes necessary, the project may be subject to the New York State Department of Environmental Conservation's Special Assessment Tax (ECL 27-0923) and Hazardous Waste Regulatory Fees (ECL 72-00402). See DEC's website for more information: <http://www.dec.ny.gov/chemical/9099.html>.
6. Collection and analysis of four end-point samples from the bottom of the excavation will be collected to evaluate the performance of the remedy with respect to attainment of Track 1 Unrestricted Use Soil Cleanup Objectives. A map indicating end-point sampling locations is attached in **Appendix 3**. Samples will be analyzed for full parameters (VOCs, SVOCs, PCBs, pesticides, and metals).
7. OER requires parties seeking City Brownfield Incentive Grants to carry insurance. For a cleanup grant, both the excavator and the trucking firm(s) that handle removal of soil must carry or be covered under a commercial general liability (CGL) policy that provides \$1 million per claim in coverage. OER recommends that excavators and truckers also carry contractors pollution liability (CPL) coverage, also providing \$1 million per claim in coverage. The CGL policy, and the CPL policy if obtained, must name the City of New York, the NYC Economic Development Corporation, and Brownfield Redevelopment Solutions as additional insured. For an investigation grant, an environmental consultant must be a qualified vendor in the BIG program and carry \$1 million of professional liability (PL) coverage. A fact sheet regarding insurance is attached as **Appendix 4**.
8. Daily reports will be provided during active excavation work. If no work is performed for extended time period, daily report frequency will be reduced to weekly basis. Daily report template is attached in **Appendix 5**.

9. A 20-mil vapor barrier will be installed beneath the structure's slab and along foundation sidewalls. The barrier chosen for this project is the Stego®Wrap 20-mil Vapor Barrier manufactured by Stego® Industries, LLC. **Appendix 6** provides manufactures specifications and PE/RA certified building plans with the extent of the vapor barrier installation details (penetrations, joints, etc.) with respect to the proposed foundation, footings, etc.

Sincerely,



Jason T. Cooper, CPG
Project Environmental Scientist

Cc: Shana Holberton, NYCOER

Appendix 1
Generic Procedures for Management of Underground Storage Tanks
Identified under the NYC VCP

Prior to Tank removal, the following procedures should be followed:

- Remove all fluid to its lowest draw-off point.
- Drain and flush piping into the tank.
- Vacuum out the “tank bottom” consisting of water product and sludge.
- Dig down to the top of the tank and expose the upper half.
- Remove the fill tube and disconnect the fill, gauge, product, vent lines and pumps. Cap and plug open ends of lines.
- Temporarily plug all tank openings, complete the excavation, remove the tank and place it in a secure location.
- Render the tank safe and check the tank atmosphere to ensure that petroleum vapors have been satisfactorily purged from the tank.
- Clean tank or remove to storage yard for cleaning.
- If the tank is to be moved, it must be transported by licensed waste transporter. Plug and cap all holes prior to transport leaving a 1/8 inch vent hole located at the top of the tank during transport.
- After cleaning, the tank must be made acceptable for disposal at a scrap yard, cleaning the tanks interior with a high pressure rinse and cutting the tank in several pieces.

During the tank and pipe line removal, the following field observations should be made and recorded:

- A description and photographic documentation of the tank and pipe line condition (pitting, holes, staining, leak points, evidence of repairs, etc.).
- Examination of the excavation floor and sidewalls for physical evidence of contamination (odor, staining, sheen, etc.).
- Periodic field screening (through bucket return) of the floor and sidewalls of the excavation, with a calibrated photoionization detector (PID).

Impacted Soil Excavation Methods

The excavation of the impacted soil will be performed following the removal of the existing tanks. Soil excavation will be performed in accordance with the procedures described under Section 5.5 of Draft DER-10 as follows:

- A description and photographic documentation of the excavation.
- Examination of the excavation floor and sidewalls for physical evidence of contamination (odor, staining, sheen, etc.).
- Periodic field screening (through bucket return) of the floor and sidewalls of the excavation, with calibrated photoionization detector (PID).

Final excavation depth, length, and width will be determined in the field, and will depend on the horizontal and vertical extent of contaminated soils as indentified through physical examination (PID response, odor, staining, etc.). Collection of verification samples will be performed to evaluate the success of the removal action as specified in this document.

The following procedure will be used for the excavation of impacted soil (as necessary and appropriate):

- Wear appropriate health and safety equipment as outlined in the Health and Safety Plan.

- Prior to excavation, ensure that the area is clear of utility lines or other obstructions. Lay plastic sheeting on the ground next to the area to be excavated.
- Using a rubber-tired backhoe or track mounted excavator, remove overburden soils and stockpile, or dispose of, separate from the impacted soil.
- If additional UST's are discovered, the NYSDEC will be notified and the best course of action to remove the structure should be determined in the field. This may involve the continued trenching around the perimeter to minimize its disturbance.
- If physically contaminated soil is present (e.g., staining, odors, sheen, PID response, etc.) an attempt will be made to remove it, to the extent not limited by the site boundaries or the bedrock surface. If possible, physically impacted soil will be removed using the backhoe or excavator, segregated from clean soils and overburden, and staged on separated dedicated plastic sheeting or live loaded into trucks from the disposal facility. Removal of the impacted soils will continue until visibly clean material is encountered and monitoring instruments indicate that no contaminants are present.
- Excavated soils which are temporarily stockpiled on-site will be covered with tarp material while disposal options are determined. Tarp will be checked on a daily basis and replaced, repaired or adjusted as needed to provide full coverage. The sheeting will be shaped and secured in such a manner as to drain runoff and direct it toward the interior of the property.

Once the site representative and regulatory personnel are satisfied with the removal effort, verification of confirmatory samples will be collected from the excavation in accordance with DER-10.

Appendix 2
NYC VCP Signage



NYC Voluntary Cleanup Program

882 Fulton Street
Site #: 14CVCP227K

This property is enrolled in the New York City Voluntary Cleanup Program for environmental remediation. This is a voluntary program administered by the NYC Office of Environmental Remediation.

Or scan with smart phone:



For more information,
log on to: www.nyc.gov/oer

If you have questions or would like more information,
please contact:

Shaminder Chawla at (212) 442-3007
or email us at brownfields@cityhall.nyc.gov

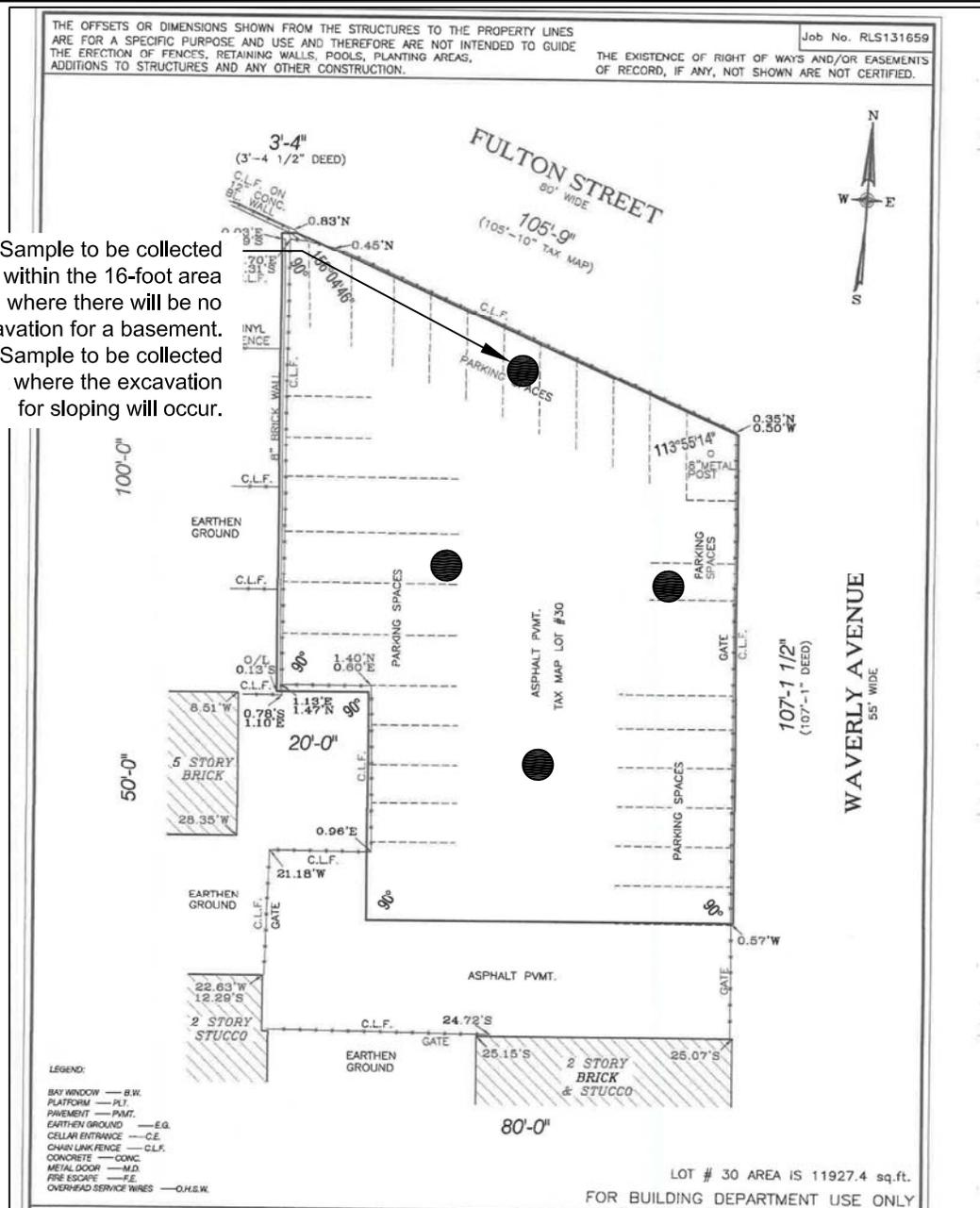
Appendix 3
End-Point Sampling Map

THE OFFSETS OR DIMENSIONS SHOWN FROM THE STRUCTURES TO THE PROPERTY LINES ARE FOR A SPECIFIC PURPOSE AND USE AND THEREFORE ARE NOT INTENDED TO GUIDE THE ERECTION OF FENCES, RETAINING WALLS, POOLS, PLANTING AREAS, ADDITIONS TO STRUCTURES AND ANY OTHER CONSTRUCTION.

Job No. RLS131659

THE EXISTENCE OF RIGHT OF WAYS AND/OR EASEMENTS OF RECORD, IF ANY, NOT SHOWN ARE NOT CERTIFIED.

Sample to be collected within the 16-foot area where there will be no excavation for a basement. Sample to be collected where the excavation for sloping will occur.



SURVEY OF: *Described Property*
 LOCATED AT:
 882 Fulton Street, Brooklyn
 County of Kings
 City and State of New York
 TAX DESIG: Block 2011 Lot 30
 CERTIFIED TO:
 Nathaniel G White

ROGUSKI
 LAND SURVEYING, P.C.

TITLE - ARCHITECTURAL - BOUNDARY - CONSTRUCTION

87-20 WOODHAVEN BLVD, WOODHAVEN, N.Y. 11421
 Tel. • (718) 480-3761 • Cell • (917) 561-0579 •
 Fax • (718) 480-3762 •

SZCZEPAN H. ROGUSKI
 PROFESSIONAL LAND SURVEYOR

DATE: January 7, 2013
 SCALE: 1"=25'



UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY IS A VIOLATION OF SECTION 7209 OF THE NEW YORK STATE EDUCATION LAW. COPIES OF THIS SURVEY MAP NOT BEARING THE LAND SURVEYOR'S INKED SEAL OR EMBOSSED SEAL SHALL NOT BE CONSIDERED TO BE A VALID TRUE COPY.

CERTIFICATION INDICATED HEREON SHALL RUN ONLY TO THE PERSON FOR WHOM THE SURVEY IS PREPARED, AND ON HIS BEHALF, TO THE TITLE COMPANY, GOVERNMENTAL AGENCY AND LENDING INSTITUTION LISTED HEREON, AND TO THE ASSIGNEES OF THE LENDING INSTITUTION. CERTIFICATIONS ARE NOT TRANSFERABLE TO ADDITIONAL INSTITUTIONS OR SUBSEQUENT OWNERS.

LEGEND

● Proposed Endpoint Sample Location

CA RICH CONSULTANTS, INC.

Environmental Specialists Since 1982
 17 Dupont Street, Plainview, New York 11803

TITLE: Proposed Endpoint Sample Location Map		DATE: 3/27/14
FIGURE: 5		SCALE: Not To Scale
DRAWING NO: 2014-5	DRAWN BY: J.T.C.	
		APPR. BY: E.A.W.

Appendix 4
BIG Program Insurance Fact Sheet

FACT SHEET – BIG PROGRAM INSURANCE REQUIREMENTS

Investigation Grants – for a developer or site owner to be eligible for a BIG investigation grant, its environmental consultant(s) must be:

- a Qualified Vendor in the BIG Program; and
- maintain Professional Liability (PL) insurance of \$1M per claim and annual aggregate.

Cleanup Grants – for a developer or site owner to be eligible for a BIG cleanup grant:

- Its general contractor or excavation/foundation contractor hired to perform remedial work must maintain Commercial General Liability (CGL) insurance of at least \$1M per occurrence and \$2M in the general aggregate. It is recommended that the general contractor or excavation/foundation contractor also maintain a Contractors Pollution Liability policy (CPL) of at least \$1M per occurrence.
- Its subcontractors who are hired by the general contractor etc. to perform remedial work at a site, including soil brokers and truckers, must also maintain a CGL policy in the amount and with the terms set forth above. It is recommended that subcontractors also maintain a CPL policy in the amount and with the terms set forth above.

The CGL policy, and the CPL policy if in force, must list the city, EDC and BRS as additional insureds, include completed operations coverage and be primary and non-contributory to any other insurance the additional insureds may have.

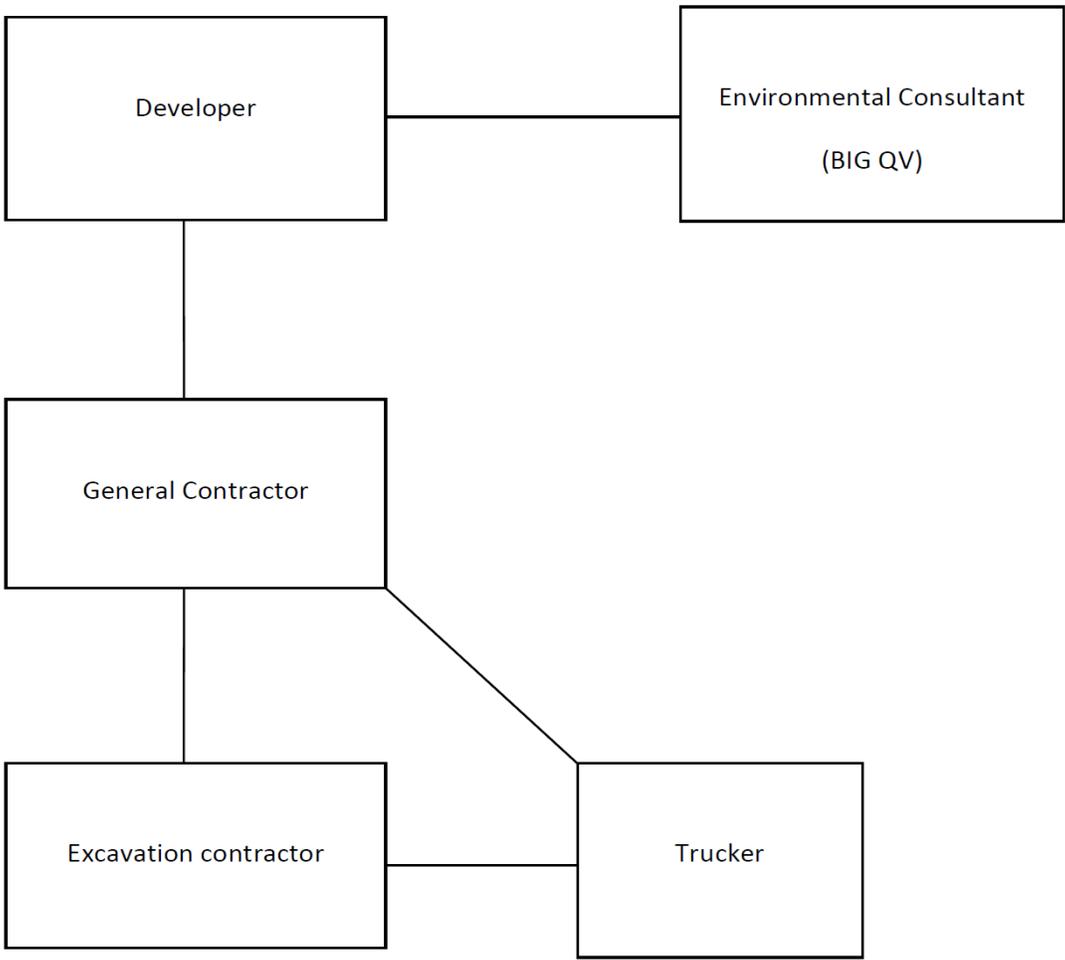
- Its environmental consultant(s) hired to oversee the cleanup must be:
 - a. a BIG Qualified Vendor; and
 - b. maintain Professional Liability (PL) insurance of \$1M per claim and annual aggregate.

If, in the alternative, the developer hires its environmental consultant to perform the cleanup, the environmental consultant must maintain CGL insurance in the amount and with the terms set forth above. It is recommended that the environmental consultant also maintain CPL coverage in the amount and with the terms set forth in the first two bulleted items listed above.

A schematic presenting the contractual relationships described above appears on page 2. Parties who must be named as Additional Insureds on Cleanup Grant insurance policies (CGL and CPL) are presented on page 3.

Example of Contractual Relationships for Cleanup Work

The Office of Environmental Remediation’s Voluntary Cleanup Plan program requires applicants to identify the parties who are engaged in active remediation of their sites including: the General Contractor hired to remediate and/or the excavation contractor hired to excavate soil from the site and the trucking firm(s) that remove soil from the site for disposal at approved facilit(ies).



The chart above shows contractual relationships that typically exist for projects that are enrolled in the Voluntary Cleanup Program.

BIG Program Additional Insureds

The full names and addresses of the additional insureds required under the Required CGL Policy and recommended CPL Policy are as follows:

“City and its officials and employees”

New York City Mayor’s Office of Environmental Remediation
253 Broadway, 14th Floor
New York, NY 10007

“NYC EDC and its officials and employees”

New York City Economic Development Corporation
110 William Street
New York, NY 10038

“BIG Grant Administrator and its officials and employees”

Brownfield Redevelopment Solutions, Inc.
739 Stokes Road, Units A & B
Medford, NJ 08055

Appendix 5
Daily Report Template

Generic Template for Daily Status Report

Instructions

The Daily Status Report submitted to OER should adhere to the following conventions:

- Remove this cover sheet prior to editing.
- Remove all the **red text** and replace with site-specific information.
- Submit the final version as a Word or PDF file.

Daily Status Reports

Daily status reports providing a general summary of activities for each day of *active remedial work* will be emailed to the OER Project Manager by the end of the following day. Those reports will include:

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

The frequency of the reporting period may be revised in consultation with OER project manager based on planned project tasks. Daily email reports are not intended to be the primary mode of communication for notification to OER of emergencies (accidents, spills), requests for changes to the RAWP or other sensitive or time critical information. However, such information will be included in the daily reports. Emergency conditions and changes to the RAWP will be communicated directly to the OER project manager by personal communication. Daily reports will be included as an Appendix in the Remedial Action Report.

DAILY STATUS REPORT

Prepared By: Enter Your Name Here

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

VCP Project No.:	14CVCP000M	E-Number Project No.:	14EHAN000M	Date:	01/01/2014
Project Name:	Name or Address				

Consultant: Person(s) Name and Company Name	Safety Officer: Person(s) Name and Company Name
General Contractor: Person(s) Name and Company Name	Site Manager/ Supervisor: Person(s) Name and Company Name

Work Activities Performed (Since Last Report):
Provide details about the work activities performed.

Working In Grid #: A1, B1, C1

Samples Collected (Since Last Report):
No samples collected or provide details

Air Monitoring (Since Last Report):
No air monitoring performed or provide details

Problems Encountered:
No problems encountered or provide details

Planned Activities for the Next Day/ Week:
Provide details about the work activities planned for the next day/ week.

									Example:	
Facility # Name/ Location Type of Waste Solid <u>Or</u> Liquid	Facility # Name Location Type of Waste Solid <u>Or</u> Liquid		##### Clean Earth Carteret, NJ petroleum soils Solid							
(Trucks, Cu.Yds. <u>Or</u> Gallons)	Trucks	Cu. Yds. <u>Or</u> Gallons	Trucks	Cu. Yds.						
Today									5	120
Total									25	600

NYC Clean Soil Bank		Receiving Facility: Name/ Address (Approved by OER)			
Tracking No.:	13CCSB000				
Today	Trucks 5	Cu. Yds. 25	Total	Trucks 120	Cu. Yds. 600

Site Grid Map
 Insert the site grid map here

Photo Log

Photo 1 – provide a caption	Insert Photo Here – Photo of the entire site
Photo 2 – provide a caption	Insert Photo Here – Photo of the work activities performed
Photo 3 – provide a caption	Insert Photo Here – Photo of the work activities performed

Appendix 6
Vapor Barrier Specifications and Installation Details

**502 Waverly Avenue,
Brooklyn, NY 11238
A.K.A. 882 Fulton Street**

OWNER
500 Waverly Property Owner L.L.C.
c/o Orange Management Inc.
350 Seventh Avenue, Suite 1604
New York, NY 10001
Tel: 212-431-5900

ARCHITECT
Gerner Kronick + Valcarcel
443 Park Avenue South, 2nd Floor
New York, NY 10016
Tel: 212-679-6362

CONSTRUCTION MANAGER
Ryder Construction Incorporated
519 Eighth Avenue
New York, NY 10018
Tel: 212-465-8700

EXPEDITOR
Doman Consulting Inc
226 East Merrick Road
Valley Stream, NY 11580
Tel: 516-256-0317

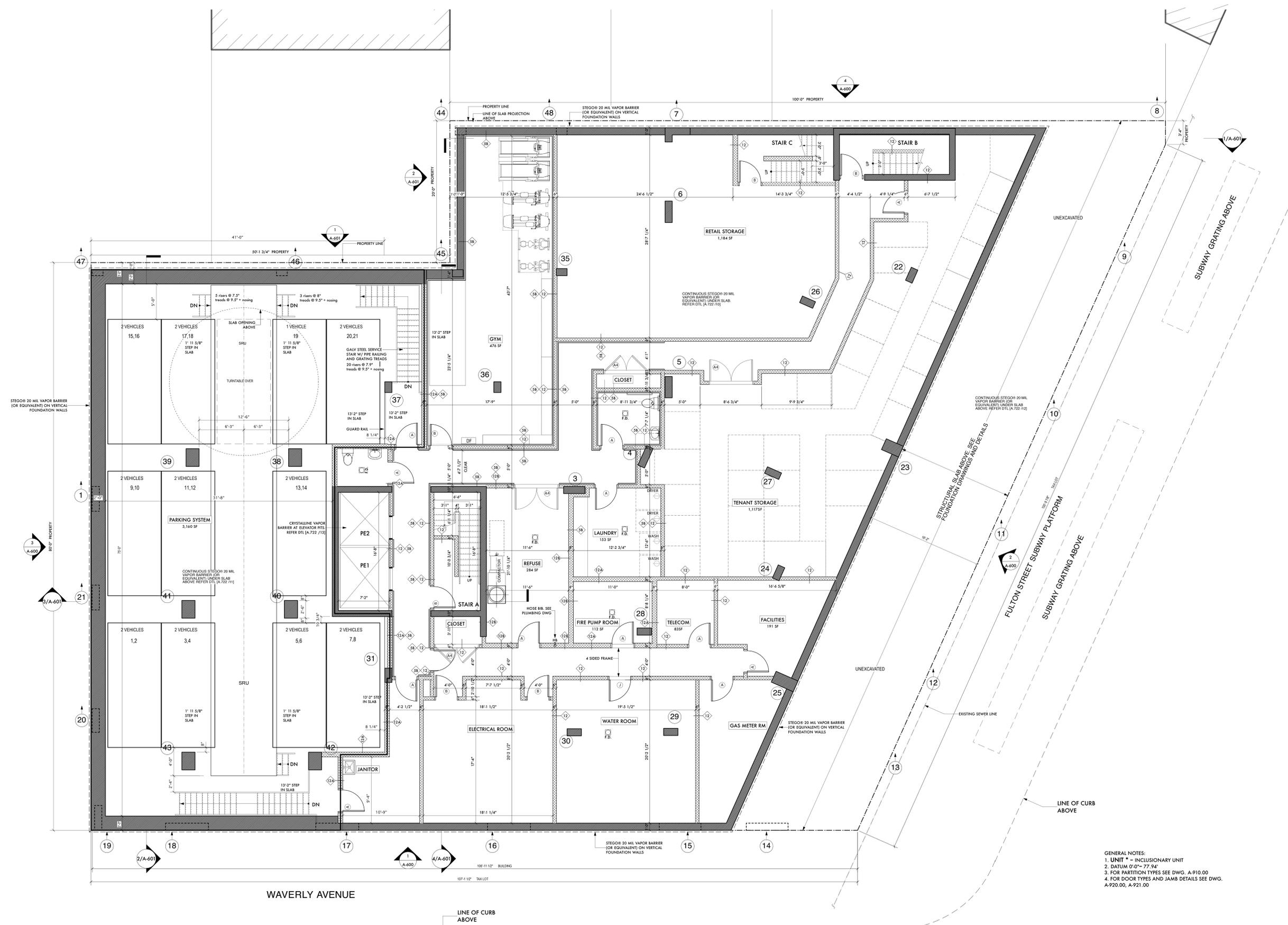
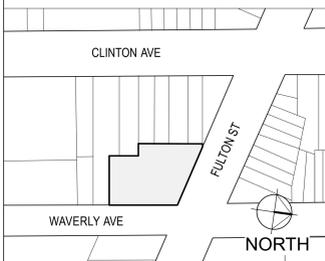
STRUCTURAL ENGINEER
WSP
228 East 45th Street, 3rd Floor
New York, NY 10017
Tel: 212-687-9888

MEP ENGINEER
GEA Consulting Engineers
545 8th Avenue
New York, NY 10018
Tel: 212-643-8006

SOE ENGINEER
FNA Associates
670 Bergen Boulevard
Ridgefield, NJ 07657
Tel: 201-241-2444

GEOTECHNICAL ENGINEER
Langan Engineering
21 Penn Plaza
360 West 31st Street, 8th Floor
New York, NY 10001
Tel: 212-479-5400

LOW VOLTAGE ENGINEER
Engineering Plus
9018 Heritage Parkway-Suite 1000
Woodridge, IL 60517
Tel: 630-786-4200



GENERAL NOTES:
1. UNIT * = INCLUSIONARY UNIT
2. DATUM 010'-77.94'
3. FOR PARTITION TYPES SEE DWG. A-910.00
4. FOR DOOR TYPES AND JAMB DETAILS SEE DWG. A-920.00, A-921.00

Revisions	
No.	Issue Date
5.	50% CD ISSUED FOR REVIEW 06/16/14
4.	ISSUE FOR FILING 06/16/14
3.	ISSUE FOR HPD REVIEW 06/03/14
2.	ISSUE FOR D.D. 05/07/14
1.	25% ISSUE FOR PRICING 03/31/14



GKV Project 1062-01
Scale: 1/4" = 1'-0"
Drawing Title: **CELLAR FLOOR
CONSTRUCTION PLAN**

Drawing No. **A-100.00**

Sheet No:

**502 Waverly Avenue,
Brooklyn, NY 11238
A.K.A. 882 Fulton Street**

OWNER
500 Waverly Property Owner L.L.C.
c/o Orange Management Inc.
350 Seventh Avenue, Suite 1604
New York, NY 10001
Tel: 212-431-5900

ARCHITECT
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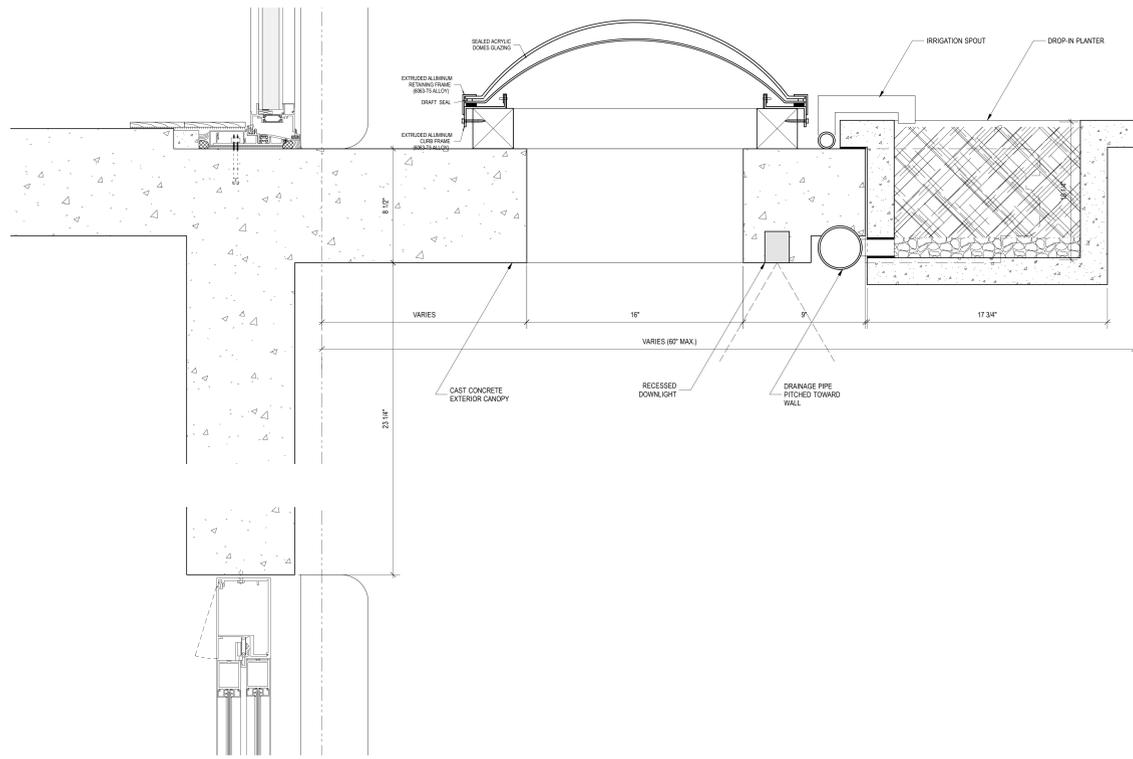
STRUCTURAL ENGINEER
WSP
228 East 45th Street
New York, NY 10017
Tel: 212-687-9888

MEP ENGINEER
GEA Consulting Engineers
545 8th Avenue
New York, NY 10018
Tel: 212-643-8006

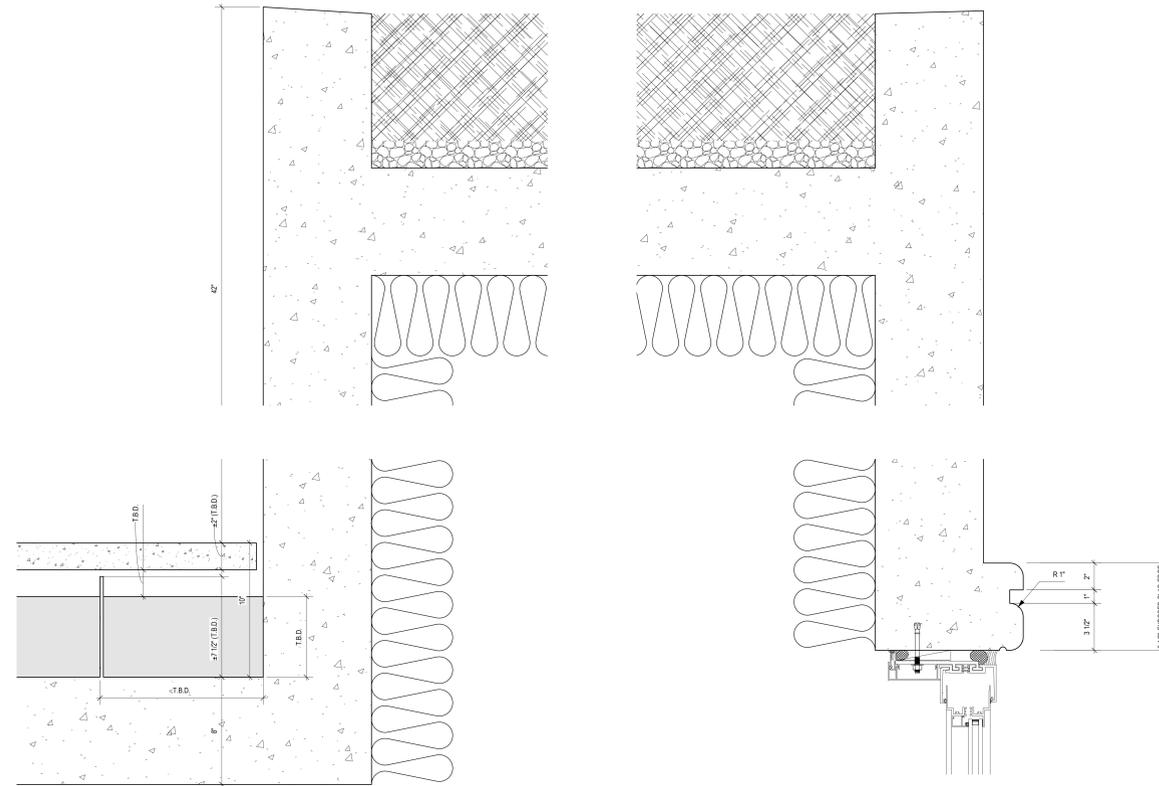
SOE ENGINEER
FNA Associates
165 Passaic Avenue, Suite 306
Fairfield, NJ 07004
Tel: 201-241-2444

GEOTECHNICAL ENGINEER
Langan Engineering
21 Penn Plaza
360 West 31st Street, 8th Floor
New York, NY 10001
Tel: 212-479-5400

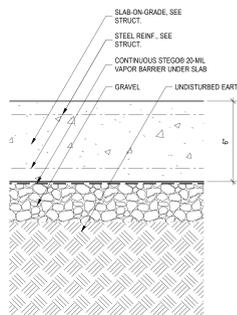
LOW VOLTAGE ENGINEER
Engineering Plus
9018 Heritage Parkway-Suite 1000
Woodridge, IL 60517
Tel: 630-786-4200



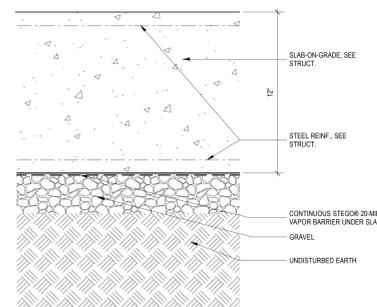
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Scale: 3" = 1'-0"



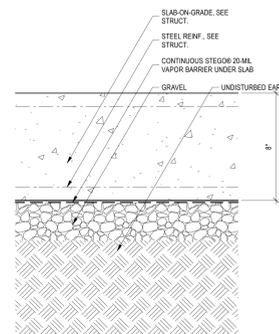
2 ROOF TERRACE PLANTER SECTIONS
Scale: 3" = 1'-0"



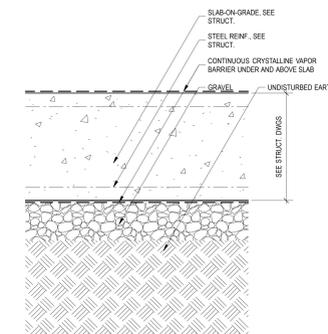
10 SECTION OF SLAB-ON-GRADE @ CELLAR LEVEL
Scale: 3" = 1'-0"



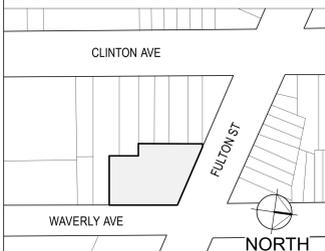
11 SECTION OF SLAB-ON-GRADE @ CELLAR PARKING LEVEL (AND PARKING TRENCH)
Scale: 3" = 1'-0"



12 SECTION OF SLAB-ON-GRADE @ 1ST FLOOR LEVEL
Scale: 3" = 1'-0"



13 SECTION OF SLAB-ON-GRADE @ ELEVATOR PIT
Scale: 3" = 1'-0"



Revisions



5. 50% CD ISSUED FOR REVIEW	06/16/14
4. ISSUE FOR FILING	06/16/14
3. ISSUE FOR HPD REVIEW	06/03/14
2. ISSUE FOR D.D.	05/07/14
1. 25% ISSUE FOR PRICING	03/31/14
No.	Issue Date

GKV Project 1062-01

Scale:

Drawing Title:
**ROOF PLANTERS, ENTRANCE
CANOPY DETAILS**

Drawing No. **A-722.00**

Sheet No:



Stego® Wrap 20-Mil Vapor Barrier

STEGO INDUSTRIES, LLC



Vapor Retarders
07 26 00, 03 30 00

1. Product Name

Stego Wrap 20-Mil Vapor Barrier

2. Manufacturer

Stego Industries, LLC
216 Avenida Fabricante, Suite 101
San Clemente, CA 92672
Sales, Technical Assistance
Ph: (877) 464-7834
Fx: (949) 257-4113
www.stegoindustries.com

3. Product Description

USES: Stego Wrap 20-Mil Vapor Barrier is used as a below-slab vapor barrier, and as a protection course for below grade waterproofing applications.

COMPOSITION: Stego Wrap 20-Mil Vapor Barrier is a multi-layer plastic extrusion manufactured with only the highest grade of prime, virgin, polyolefin resins.

ENVIRONMENTAL FACTORS:

Stego Wrap 20-Mil Vapor Barrier can be used in systems for the control of soil gases (radon, methane), soil poisons (oil by-products) and sulfates.

5. Installation

UNDER SLAB: Unroll Stego Wrap 20-Mil Vapor Barrier over an aggregate, sand or tamped earth base. Overlap all seams a minimum of six inches and tape using Stego Tape or Crete Claw® Tape. All penetrations must be sealed using a combination of Stego Wrap and Stego accessories.

For additional information, please refer to Stego's complete installation instructions.

6. Availability & Cost

Stego Wrap 20-Mil Vapor Barrier is available nationally via building supply distributors. For current cost information, contact your local Stego Wrap distributor or Stego Industries' sales department.

7. Warranty

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are

accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided and disclaims all liability from any loss or damage. No warranty, express or implied, is given as to the merchantability, fitness for a particular purpose, or otherwise with respect to the products referred to.

8. Maintenance

None required.

9. Technical Services

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries' technical assistance department or via the website.

4. Technical Data

TABLE 1: PHYSICAL PROPERTIES OF STEGO WRAP 20-MIL VAPOR BARRIER

PROPERTY	TEST	RESULTS
Under Slab Vapor Retarders	ASTM E 1745 Class A, B & C – Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs	Exceeds Class A, B & C
Water Vapor Permeance	ASTM F 1249 – Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor	0.0071 perms
Puncture Resistance	ASTM D 1709 – Test Methods for Impact Resistance of Plastic Film by Free-Falling Dart Method	3500+ grams*
Tensile Strength	ASTM D 882 – Test Method for Tensile Properties of Thin Plastic Sheeting	97.7 lbf/in.
Permeance After Conditioning (ASTM E 1745 Sections 7.1.2 - 7.1.5)	ASTM E 154 Section 8, F 1249 – Permeance after wetting, drying, and soaking ASTM E 154 Section 11, F 1249 – Permeance after heat conditioning ASTM E 154 Section 12, F 1249 – Permeance after low temperature conditioning ASTM E 154 Section 13, F 1249 – Permeance after soil organism exposure	0.0088 perms 0.0081 perms 0.0084 perms 0.0077 perms
Thickness	ACI 302.1R-04 – Minimum Thickness (10 mils)	20 mils
Roll Dimensions		14 ft. wide x 105 ft. long or 1,470 ft ²
Roll Weight		140 lbs.

Note: perm unit = grains/(ft² *hr* in.Hg)

* The material maxed out the testing equipment and did not fail at 3746 grams.



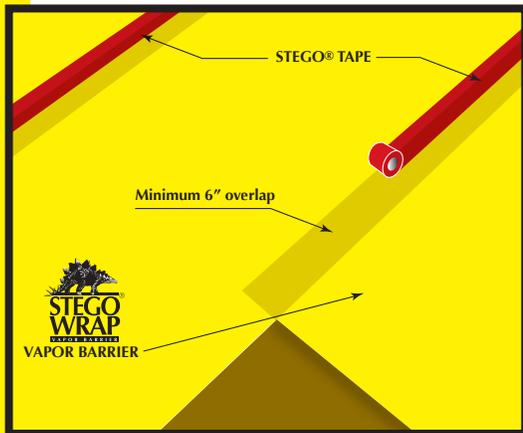
PART 1

STEGO WRAP VAPOR BARRIER/RETARDER INSTALLATION INSTRUCTIONS



IMPORTANT: Please read these installation instructions completely, prior to beginning any Stego Wrap installation. The following installation instructions are based on ASTM E 1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs. If project specifications call for compliance with ASTM E 1643, then be sure to review the specific installation sections outlined in the standard along with the techniques referenced in these instructions.

FIGURE 1: UNDER-SLAB INSTALLATION



UNDER-SLAB INSTRUCTIONS:

1. Stego Wrap can be installed over an aggregate, sand, or tamped earth base. It is not necessary to have a cushion layer or sand base, as Stego Wrap is tough enough to withstand rugged construction environments.
2. Unroll Stego Wrap over the area where the slab is to be placed. Stego Wrap should completely cover the concrete placement area. All joints/seams both lateral and butt should be overlapped a minimum of six inches and taped using Stego Tape.

NOTE: The area of adhesion should be free from dust, dirt, moisture, and frost to allow maximum adhesion of the pressure-sensitive tape.

3. ASTM E 1643 requires sealing the perimeter of the slab. *Extend vapor retarder over footings and seal to foundation wall, grade beam, or slab at an elevation consistent with the top of the slab or terminate at impediments such as waterstops or dowels.* Consult the structural engineer of record before proceeding.

SEAL TO SLAB AT PERIMETER:*

NOTE: Clean the surface of Stego Wrap to ensure that the area of adhesion is free from dust, dirt, moisture, and frost to allow maximum adhesion of the pressure-sensitive adhesive.

- a. Install Crete Claw® on the entire perimeter edge of Stego Wrap.
- b. Prior to the placement of concrete, ensure that the top of Crete Claw is free of dirt, debris, or mud to maximize the bond to the concrete.

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This method not only complies with ASTM E 1643, but it also:

- reduces labor compared to other perimeter sealing techniques.
- can be used even without an existing wall or footing, unlike alternatives.

FIGURE 2a: SEAL TO SLAB AT PERIMETER

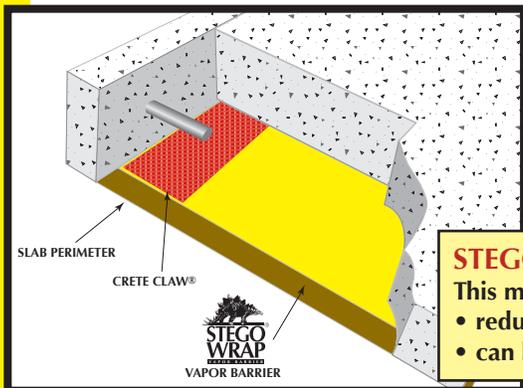


FIGURE 2b: SEAL TO PERIMETER WALL

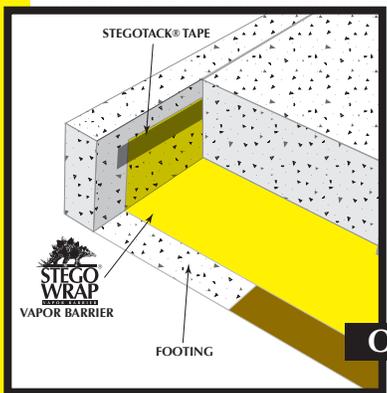
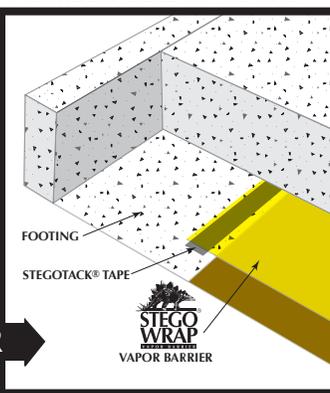


FIGURE 2c: SEAL TO FOOTING



OR SEAL TO PERIMETER WALL OR FOOTING WITH STEGOTACK® TAPE:*

- a. Make sure area of adhesion is free of dust, dirt, debris, moisture, and frost to allow maximum adhesion.
- b. Remove release liner on one side and stick to desired surface.
- c. When ready to apply Stego Wrap, remove the exposed release liner and press Stego Wrap firmly against StegoTack Tape to secure.

* If ASTM E 1643 is specified, consult with project architect and structural engineer to determine which perimeter seal technique should be employed for the project.

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- In the event that Stego Wrap is damaged during or after installation, repairs must be made. Stego Tape can be used to repair small holes in the material. For larger holes, cut a piece of Stego Wrap to a size and shape that covers any damage by a minimum overlap of six inches in all directions. Clean all adhesion areas of dust, dirt, moisture, and frost. Tape down all edges using Stego Tape (see figure 3, Sealing Damaged Areas).

FIGURE 3: SEALING DAMAGED AREAS



- IMPORTANT: ALL PENETRATIONS MUST BE SEALED.** All pipe, ducting, rebar, wire penetrations and block outs should be sealed using Stego Wrap, Stego Tape and/or Stego Mastic (see figure 4a, Pipe Penetration Sealing).

FIGURE 4a: PIPE PENETRATION SEALING



STEGO WRAP PIPE PENETRATION REPAIR DETAIL:

- 1: Install Stego Wrap around pipe penetrations by slitting/cutting material as needed. Try to minimize the void space created.
- 2: If Stego Wrap is close to pipe and void space is minimized then seal around pipe penetration with Stego Tape and/or Stego Mastic. **[See Figure 4a]**
- 3: If detail patch is needed to minimize void space around penetration, then cut a detail patch to a size and shape that creates a six inch overlap on all edges around the void space at the base of the pipe. Stego Pre-Cut Pipe Boots are also available to speed up the installation.
- 4: Cut an "X" the size of the pipe diameter in the center of the pipe boot and slide tightly over pipe.
- 5: Tape down all sides of the pipe boot with Stego Tape.
- 6: Seal around the base of the pipe using Stego Tape and/or Stego Mastic. **[See Figure 4b]**

FIGURE 4b: DETAIL PATCH FOR PIPE PENETRATION SEALING

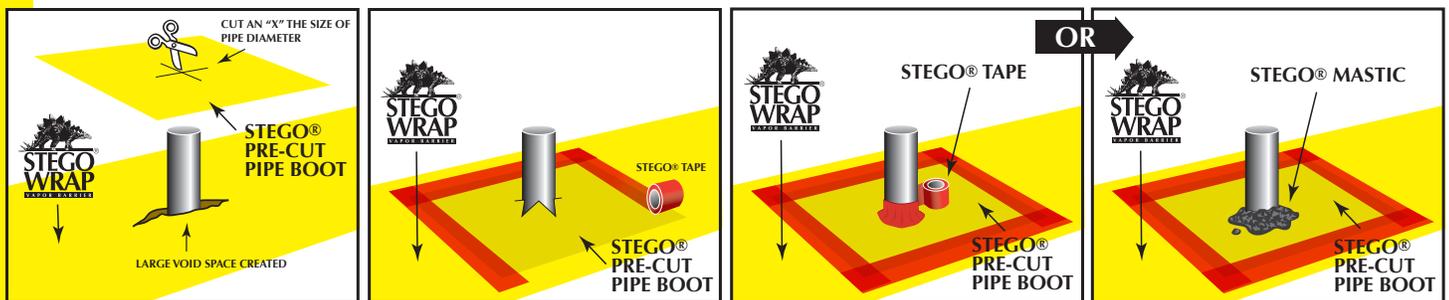


FIGURE 5: MULTIPLE PIPE PENETRATION SEALING



MULTIPLE PIPE PENETRATION SEALING:

Multiple pipe penetrations in close proximity and very small pipes may be sealed using Stego Wrap and Stego Mastic for ease of installation (see figure 5, Multiple Pipe Penetration Sealing).

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PART 2

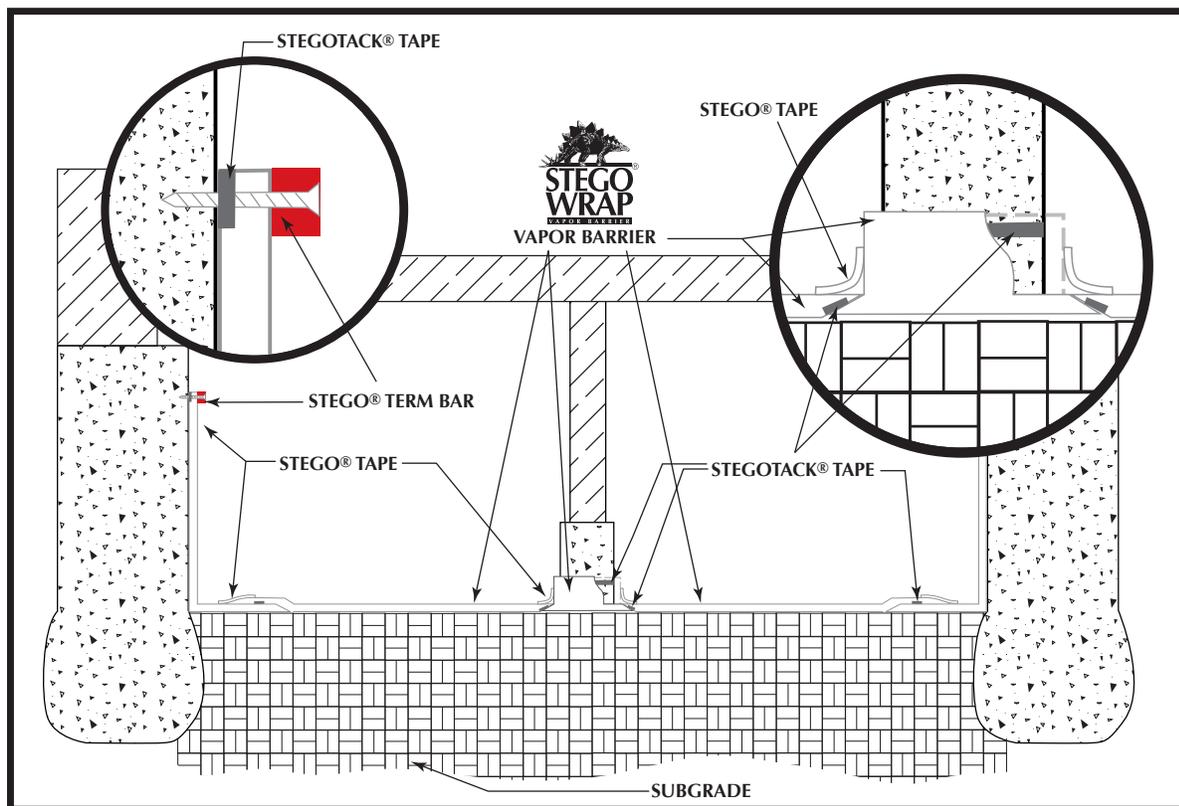
STEGO WRAP VAPOR BARRIER/RETARDER INSTALLATION INSTRUCTIONS



CRAWL SPACE INSTALLATION INSTRUCTIONS:

1. Turn Stego Wrap up the foundation wall to a minimum height of six inches above the outside/exterior grade or in compliance with local building codes and terminate with Stego Term Bar. To form a complete seal, apply StegoTack Tape or a layer of Stego Mastic to the foundation wall prior to installing Stego Term Bar. Allow one hour for Stego Mastic to cure prior to installing Stego Term Bar.
2. Seal Stego Wrap around all penetrations and columns using Stego Tape, StegoTack Tape, and/or Stego Mastic.
3. Place Stego Wrap directly over the crawl space floor. If rigid insulation is to be used, install Stego Wrap prior to insulation (under insulation and between the foundation wall and insulation).
4. Overlap seams a minimum of six inches and seal with Stego Tape. Some codes require a minimum of a twelve inch overlap. Check appropriate codes prior to installation.

FIGURE 6: CRAWL SPACE INSTALLATION



NOTE: Stego Wrap Vapor Barrier and Stego Tape are both available in white (as shown in illustration above).

INSTALLATION TIP:

1. For a cleaner look and to prevent against tenting of Stego Wrap at the foundation wall/foundation floor intersection, consider mechanically fastening Stego Wrap to base of foundation wall in addition to the above mentioned wall termination.

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