



# Mueser Rutledge Consulting Engineers

14 Penn Plaza · 225 West 34<sup>th</sup> Street · New York, NY 10122  
Tel: (917) 339-9300 · Fax: (917) 339-9400  
www.mrce.com

David M. Cacoilo  
Peter W. Deming  
Roderic A. Ellman, Jr.  
Francis J. Arland  
David R. Good  
Walter E. Kaeck  
*Partners*

Tony D. Canale  
Jan Cermak  
Sitotaw Y. Fantaye  
*Associate Partners*

Alfred H. Brand  
James L. Kaufman  
Hugh S. Lacy  
Joel Moskowitz  
George J. Tamaro  
Elmer A. Richards  
John W. Fowler  
*Consultants*

Domenic D'Argenzio  
Robert K. Radske  
Ketan H. Trivedi  
Hiren J. Shah  
Alice Arana  
Joel L. Volterra  
Sissy Nikolaou  
Anthony DeVito  
Frederick C. Rhyner  
*Senior Associates*

Douglas W. Christie  
Gregg V. Piazza  
Pablo V. Lopez  
Steven R. Lowe  
James M. Tantalla  
Andrew R. Tognon  
T. C. Michael Law  
Andrew Pontecorvo  
Renzo D. Verastegui  
Alex Krutovskiy  
Srinivas Yenamandra  
*Associates*

Joseph N. Courtade  
*Director of Finance  
and Administration*

Martha J. Huguet  
*Director of Marketing*

March 20, 2015

Beatty Development Group, LLC  
1300 Thames Street, Suite 10  
Baltimore, MD 21231

Attention: Mr. Jonathan Flesher

Re: Certification  
Raising S-B Barrier at Wills St.  
Exelon Office Tower, Trading Floor Garage, and Central Plaza Garage  
Former Allied-Signal, Inc. Baltimore Works (new Harbor Point)  
Baltimore, Maryland  
MRCE File 11896

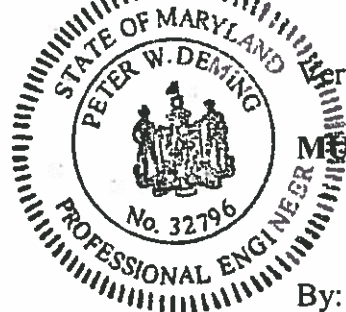
I, Peter Deming, a licensed professional Engineer in the State of Maryland, working as Partner of the firm Mueser Rutledge Consulting Engineers, certify that to the best of my knowledge and in my professional opinion, the design revision set forth in the attached April 3, 2015 details for Raising of SB Barrier Pipe Piles in S-B Barrier meets the Consent Decree requirements as stated below.

### Certification

Pursuant to the Consent Decree by and between the United States Environmental Protection Agency, the Maryland Department of the Environment and Allied-Signal Baltimore Works, as amended, Article V, Paragraph 16, I certify on behalf of Harbor Point Development LLC that the improvements shown in the enclosed Detailed Design Plan documents will not: a) Interfere with the efficacy of the corrective measures or Honeywell's ability to comply with the Performance Standards, the Groundwater Gradient Monitoring Plan, the Surface Water Monitoring Plan, the Environmental Media Monitoring Plan, and the Surface Soil Monitoring Plan, or any other monitoring plan in effect. b) Increase risks to health or the environment from the conditions at the site.

Very truly yours,

**MUESER RUTLEDGE CONSULTING ENGINEERS**



By: \_\_\_\_\_

*Peter Deming*  
Peter W. Deming, PE

GS:PWD:F:\118\11896\DDP Certification Letter S-B Barrier Raising

# Submittal Transmittal

Detailed, Grouped by Each Number with Spec Section

**Exelon Tower-Base Building**  
1000 Wills Street  
Baltimore, MD 21231

**Project # 11-232-1**  
Tel: 667-303-3537 Fax:

**AHP Construction, LLC**

**Date:** 3/26/2015

**Reference Number:** 1078

**Transmitted To:** Paul DeMillo  
Beatty, Harvey, Coco Architects LLP  
1300 Thames St., Ste. 10  
Baltimore, MD 21231  
Tel: 410-752-2759  
Fax: 410-752-4647

**Transmitted By:** Jayme Antolik  
AHP Construction, LLC  
1000 Wills St.  
Baltimore, MD 21202  
Tel: 667-303-3537  
Fax: 667-303-3542

Qty	Submittal Package No	Description	Due Date	Package Action
1	0414 - 02050 - 00	Work Plan for SB Barrier Closure	4/9/2015	Pending

**Transmitted For** \_\_\_\_\_ **Delivered Via** E-Mail **Tracking Number** \_\_\_\_\_

Items	Qty	Rev No	Spec Section	Sub Spec	Description	Notes	Item Action
0001	1	0	02050		Work Plan for SB Barrier Closure		Pending

**Cc:** **Company Name** \_\_\_\_\_ **Contact Name** \_\_\_\_\_ **Copies** \_\_\_\_\_ **Notes** \_\_\_\_\_

## Remarks

**Notes:**

- Expanded on description of blending/mixing requirements and added Attachment B that describes sampling and testing as requested by EPA/MDE during Environmental Progress Meeting on March 29, 2015.
- 2015-04-03: Added revised typical section. Typical section indicates termination points for each synthetic layer as requested by EPA/MDE during Environmental Progress Meeting on April 3, 2015.
- Attachment A pertains to Air Monitoring prepared by Environmental Resources

**MUESER RUTLEDGE  
CONSULTING ENGINEERS**

- APPROVED**  
 **APPROVED AS NOTED**  
 **REVISE AND RESUBMIT**  
 **REJECTED**
- BY:** Adam M. Dyer  
**DATE:** 04/03/2015

**Notes:**

See notes at left and on  
the following pages.

\_\_\_\_\_  
**Signature**

\_\_\_\_\_  
**Signed Date**

ARMADA/HOFFLER CONSTRUCTION COMPANY

## Submittal Review Cover Sheet

11-232 Exelon

---

SUBCONTRACTOR: EWMI (107649-051)

SPEC SECTION: 02050 Sub Section:

SUBMITTAL NO: 0414-02050-00 Item: 1

- APPROVED
- APPROVED AS NOTED
- REVISE & RESUBMIT

**Subcontractor/vendor is responsible for all quantities and compliance with contract documents.**

BY: Jayme Antolik

DATE: 03/26/2015

SUBMITTAL: Work Plan for SB Barrier Closure

---

COMMENTS:



PHIL REINSMITH  
 14 BRICK KILN COURT  
 NORTHAMPTON, PA 18067-9784  
 (484) 275-6940 – DIRECT  
 (484) 788-5733 – CELL  
 (484) 275-6970 – FAX  
 E-MAIL ADDRESS: PREINSMITH@EWTMI.COM

# SUBMITTAL No. 107649-051

<b>To:</b>	Armada Hoffer Construction Co., Inc. <b>Mr. Jeff Ayers</b> 1300 Thames Street Suite 30 Baltimore, MD 21202	<b>From:</b>	Environmental Waste Minimization, Inc. <b>Phil Reinsmith</b> 14 Brick Kiln Court Northampton, PA 18067
<b>Phone:</b>	(410) 727-2929	<b>Pages:</b>	4 (Four, including Cover Sheet)
<b>Fax:</b>	(410) 727-8988	<b>Date:</b>	Wednesday, March 25, 2015
<b>Re:</b>	Wills Street Soil-Bentonite Barrier Closure Work Plan	<b>CC:</b>	Tom Sidloski, Lamar Gilbert, Steve Maxwell – EWTMI Jayme Antolik – Armada Hoffer
<b>Page 1</b>	<b>Submittal Cover Sheet</b>	<b>PO#</b>	<b>N/A</b>
<b>Pages</b> <b>2 - 4</b>	Work Plan	<b>Project</b>	Exelon Office Building & Parking Garage
		<b>Location</b>	1000 Dock & Wills Street Baltimore, MD 21231 USA

**Urgent**  **For Review**  **Please Comment**  **Please Reply**  **Hand Delivered**

**E-Mailed**  **Check Attached**  **FedEx/Overnight**  **Drawings Attached**  **USPS/Standard** • **Comments:**

Attach Label Below (if applicable)

Mr. Ayers,

EWMI hereby submits the following **SB Barrier Closure Work Plan** for implementation during the Wills St. barrier wall closure and restoration. Please let me know if you have any questions or require further information.

Thank You, Phil Reinsmith



14 Brick Kiln Court  
Northampton, PA 18067  
Ph: (484) 275-6900  
Fax: (484) 275-6970  
www.ewmi-info.com

Mr. Jeff Ayers  
Armada Hoffler Construction Co., Inc.  
1300 Thames Street  
Suite 30  
Baltimore, MD 21202

REFERENCE: WORK PLAN – Wills St. Soil-Bentonite Barrier Closure  
Contract #11-232-02

Dear Mr. Ayers:

In accordance with your request for a comprehensive work plan outlining the soil-bentonite barrier closure on Wills St., Environmental Waste Minimization, Inc. (EWMI) is pleased to provide *Armada Hoffler Properties - Construction, LLC (AHP)* with this detailed scope of work.

### WILLS ST. SOIL-BENTONITE BARRIER CLOSURE

- In preparation for mixing of soil-bentonite backfill (SB) and final closure of the Wills Street barrier, EWMI will obtain all required materials, supplies and equipment. The starting point of restoration will be determined by AHCC personnel based on site conditions and other trades' work.
- The Takeuchi TB285 excavator will be lowered into the Wills St. Barrier Wall excavation using the East tower crane #2. An alternate method of entering the excavation will be to track the machine down an earthen ramp, depending on location and logistics. Mixing of the new SB backfill will be performed in 15 linear feet, North to South, sections and will be 18" wide on both East and West sides of the installed sheet pile wall. Upon entering the trench with the excavator a test pit will be performed on the West side of the sheet piles within the current 15' work area. The test pit will expose the existing SB material and will allow measurement of the depth of cover soil at each section. From this measurement, calculations will be performed to determine the required volume of bentonite to achieve a mix of 4% by weight. Lab permeability testing will be used to confirm thinning to specified mix design of 3% by weight.
- The small amount of grading fill that will be displaced by the addition of bentonite and slurry will be removed with the TB285 excavator, placed in the bucket of the 350 excavator on Wills St., transferred into the loader bucket and will be transported to the roll-off for disposal.  
Mixing will be performed using the excavator by removing buckets of material from the trench until the dry bentonite and soil are fully blended. This process will continue until visual confirmation that all clumps and clods of dry bentonite have been broken up and well distributed throughout the profile.
- Upon completion and verification of the mix design quantities with MRCE, the required amount of dry WyoBen SW-101 bentonite will be added to each side of the sheet pile wall and will be mixed thoroughly with the excavator. The dry bentonite will be measured using buckets of known volume and weight and will be placed into the excavation using the 350 excavator from atop Wills Street.
- Concurrently, a 1,000 gallon water blending tank with pump will be used to perform the bentonite slurry mixing. Water will be added to the tank to a known volume from the provided 2" water line within Wills St. Dry powdered bentonite will then be added according to the mix design, provided by MRCE, of about 5% bentonite by weight. Buckets of known volume and weight will be used to measure and introduce the dry bentonite into the water tank. The water and bentonite mixture will be continuously

blended within the tank using the 2" attached trash pump equipped with 1" discharge hose to provide high shear movement of the water and bentonite. The mixing and placement of the material will be performed on Wills St. adjacent to the active trench section.

- The slurry will be added to the excavation through a hose extending from the water tank on Wills St. The excavator within the Wills St. trench will continue to blend the soil, slurry and bentonite mixture within the current parcel while the slurry is introduced.  
*Mixing will continue until visual confirmation that all clumps and clods of soil have been broken up and well distributed throughout the profile and the mixture has a uniform consistency.*
  - The new SB backfill will be keyed into the existing SB barrier by using the excavator bucket to blend the new material at least 6" into the existing. The mixture will continue to be blended and additional slurry added, if needed, until at the optimum consistency. As determined by MRCE, a slump of about 2" is acceptable for this application. Others to perform slump testing of batches and permeability testing as required. Testing will be performed in accordance with the requirements specified on Attachment B.
  - SB backfill will be placed up to the LLDPE liner elevation and will be a minimum of 6" above the elevation of the cut off sheet piles. A 6' wide section of geogrid material will be placed over the SB backfill to allow work on the area during MMC restoration.
  - EWMI anticipates being able to mix and place about 15 LF of trench per day in the Northern area where the depth of grading fill is about 5'-6'. Increased production is anticipated as the backfilling moves South and the volumes decrease.
  - At both the North and South ends of the sheet pile wall, an end closure wedge of SB backfill will be installed. The wedge of SB backfill will extend a minimum of 24" past the last sheet at each end and will be a minimum of 36" wide. It will also be toed into the existing SB material a minimum of 6". Mixing and placement will be performed in the same manner specified above.
  - ~~• The geotextile, geosynthetic clay liner (GCL), geomembrane and drainage net will then be restored across the SB barrier. The cushion geotextile will be restored up to the West edge of the placed SB backfill. The GCL will extend across the top of the placed SB backfill to create the contact closure. Finally, the geomembrane and drainage net will be restored to the existing elevation across the open trench excavation.~~
- Restore synthetics as shown on attached typical section using overlaps shown on F Series drawings.*
- Air monitoring will be conducted during implementation of the work described herein; the air monitoring requirements are presented in Attachment A

Respectfully,



Philip J Reinsmith  
Project Manager

Cc:

Thomas P. Sidloski Jr.  
David J. Pohwat  
Lamar Gilbert  
Steve Maxwell

## ATTACHMENT A

### Air Monitoring Requirements for Raising the Soil-Bentonite Hydraulic Barrier along Wills Street

Air monitoring will be performed during excavation and in-place soil-bentonite mixing to raise the soil-bentonite hydraulic barrier along Wills Street. Construction activities will be performed as described within the Work Plan. Air monitoring activities will be conducted during excavation and/or in-place mixing as described below:

- One (1) work zone (mobile) air monitor will be placed at grade within 50 feet downwind of the excavation area but not within the trench.
- If the wind is in a north or south direction along the trench, the work zone air monitor will be located within 50 feet of the work area at the closest downwind edge of the trench. The monitor will be located at-grade and not within the trench.
- Misting and other best management practices will be used, as required, to suppress dust generation.
- Fixed station perimeter and off-site monitoring will continue during the work.

## ATTACHMENT B

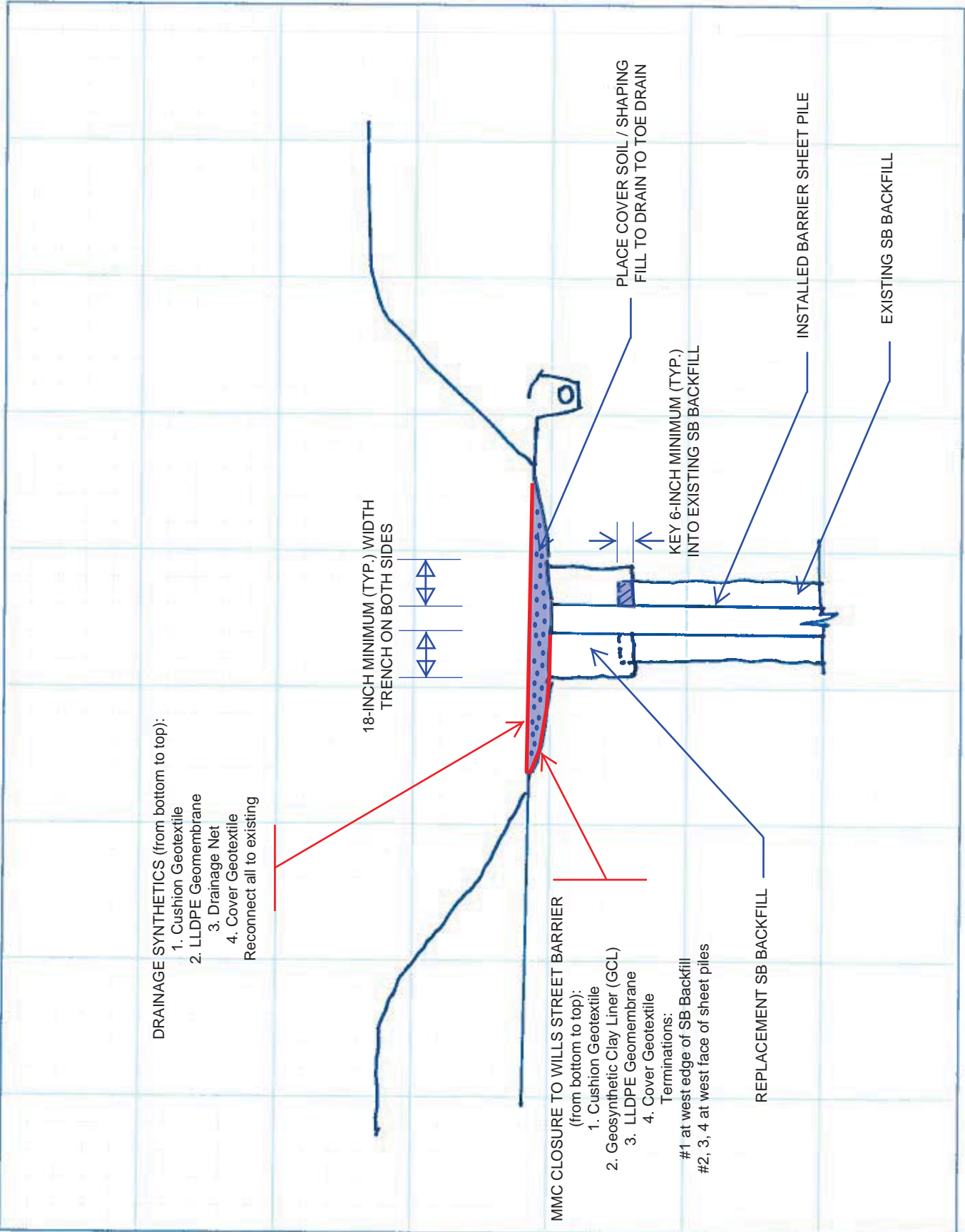
### Laboratory Testing for Raising the Soil-Bentonite Hydraulic Barrier along Wills Street

Sampling of soil-bentonite backfill will be performed during excavation and in-place soil-bentonite mixing to raise the soil-bentonite hydraulic barrier along Wills Street. Select laboratory testing will be conducted by Mueser Rutledge Consulting Engineers (MRCE) on samples collected from the mixing described in EWMI Work Plan. Sampling and testing will be conducted as described below:

- Collect grab samples from three (3) locations spaced evenly within the length of the Wills Street Sheet Pile Alignment of soil to be mixed. Ship samples and perform grain size analysis (ASTM D422) testing on each sample.
- Collect approximately 10 pound samples of mixed soil-bentonite at a frequency of twice on first day of mixing and once daily thereafter.
- Ship two samples from first day of mixing and one sample for each 50 cubic yards mixed thereafter and perform hydraulic conductivity testing (ASTM D5084 Method C) testing on each sample shipped.
- Store all samples not shipped onsite for review or additional testing if necessary.



SUBJECT MMC Closure to Wills St. Barrier



DRAINAGE SYNTHETICS (from bottom to top):  
 1. Cushion Geotextile  
 2. LLDPE Geomembrane  
 3. Drainage Net  
 4. Cover Geotextile  
 Reconnect all to existing

18-INCH MINIMUM (TYP.) WIDTH  
 TRENCH ON BOTH SIDES

MMC CLOSURE TO WILLS STREET BARRIER  
 (from bottom to top):  
 1. Cushion Geotextile  
 2. Geosynthetic Clay Liner (GCL)  
 3. LLDPE Geomembrane  
 4. Cover Geotextile  
 Terminations:  
 #1 at west edge of SB Backfill  
 #2, 3, 4 at west face of sheet piles

PLACE COVER SOIL / SHAPING  
 FILL TO DRAIN TO TOE DRAIN

KEY 6-INCH MINIMUM (TYP.)  
 INTO EXISTING SB BACKFILL

REPLACEMENT SB BACKFILL

INSTALLLED BARRIER SHEET PILE

EXISTING SB BACKFILL