LiRo Engineers, Inc.
A LiRo Group Company
690 Delaware Avenue, Buffalo, NY 14209 Telephone 716.882.5476 Facsimile 716.882.9640

July 29, 2020

TRANSMITTED BY EMAIL

Megan Kuczka
Environmental Program Specialist 1, Division of Environmental Remediation
New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, New York 14203

Re: Port-Greenbelt Shoreline Improvement Project Site – Corrective Measures Work Plan
NYSDEC Site No. B-00149-9

Dear Ms. Kuczka:

Pursuant to our June 10, 2020 site inspection, LiRo Engineers, Inc. (LiRo) is submitting this Corrective Measures Work Plan on behalf of the Erie Canal Harbor Development Corporation (ECHDC). The Corrective Measures are required to address the lake-side boundary of the existing Site cover system which has been damaged due to shoreline erosion.

Background

The Port- Greenbelt Shoreline Improvement Project Site (Greenbelt) Site is a linear bike trail which runs parallel to the Lake Erie shoreline from the Buffalo Harbor Slip to the Terminal B building (Figure 1). During the late fall and winter of 2019-2020, several extreme seiche events resulted in elevated lake levels which combined with high waves to cause significant erosion into the Lake Erie shoreline. As a result, the western (Lakeside) margin of the Greenbelt cover system was damaged in numerous places. The attached Figure 2 shows the general locations where damage to the cover system was observed. LiRo and ECHDC coordinated a meeting with NYSDEC to inspect the damaged areas and discuss the approach to restore the cover system. The proposed corrective actions are described below.

Cover System and Shoreline Restoration Approach

Eroded areas will be cut back as needed to provide a uniform edge. In areas where the filter fabric is intact but has been displaced, the fabric will be laid out flat to its original extents. In areas where the filter fabric is missing or deteriorated, new filter fabric will be placed. New filter fabric shall meet the specs of Mirafi 600X geotextile. A manufacturer cut sheet is provided in appendix A.

Following placement of the filter fabric a Medium and Light Stone Fill will be placed to the extent of the erosion. The Medium Stone Fill on the shoreline slope will be placed up to the limit of erosion. Along the edge of erosion light stone fill will be placed within the Medium Stone Fill. All transitions between Medium Stone Fill and Light Stone Fill shall be made to provide a uniform slope over the length of the fill placement. The fill placement will build up the revetment to match or slightly exceed the height of the slope at the limit of erosion. The stone placed along the slope break will take the force of the wave action and help prevent further erosion of the bank. Prior to import of material to the site, The Request to Import/Reuse Fill or Soil Form (Appendix B) will be submitted to NYSDEC for approval.

Placement of the Medium and Light stone will be above the water line and no excavation, soil removal or stone fill placement will impact the water.

Top Soil and Seed will be provided adjacent to the fill placement to tie in the adjacent turf to the stone fill.

Typical photos of the erosion damage along with the proposed repair cross-sections are provide on Figures 3-11. The photo location and direction along with the cross-sections are keyed to the damaged areas on Figure 2 for reference.

The proposed repair work will occur at or above the former demarcation (Filter Fabric layer) and disturbance of potentially contaminated subsurface soils is not anticipated. Cap material removed to provide a uniform edge for the repairs will be utilized to reestablish the turf or will be properly disposed of off-site. Due to the minimal disturbances of soils materials, implementation of a Community Air Monitoring Plan (CAMP) is not proposed for this work.

Work will be performed in accordance with the requirements of the Port-GreenBelt Shoreline Improvement Project Site Management Plan (NYSDEC Site No, B-00149.9) Prepared by URS and Dated August 2011.

ECHDC is in the process of retaining a contractor to perform the repair work.

Permits

The work will not include any excavation or fill below the mean high water level for Lake Erie, which is 573.40 feet above mean sea level. Therefore, a NYSDEC Protection of Waters permit is not required for this project.

LiRo has contacted the US Army Corps of Engineer (USACE) Buffalo District Regulatory Branch to determine if a permit would be required for this work. Because the work will take place above the 573.40 level, the USACE stated that they do not have jurisdiction and a permit will not be required.

Schedule

It is anticipated that the corrective measures will be implemented in the summer of 2020, pending approval of this work plan (projected early September t 2020 start date). The work will progress until complete and should take approximately one month to complete.

Reporting

Following completion of the restoration work, LiRo will prepare a letter report to summarize the field activities. The report will include construction plan and section details as well as photographs showing the restored work areas.

If you should have any questions concerning this scope of work, feel free to contact us at (716) 882-5476 ext 438.

Sincerely,
LiRo Engineers, Inc.

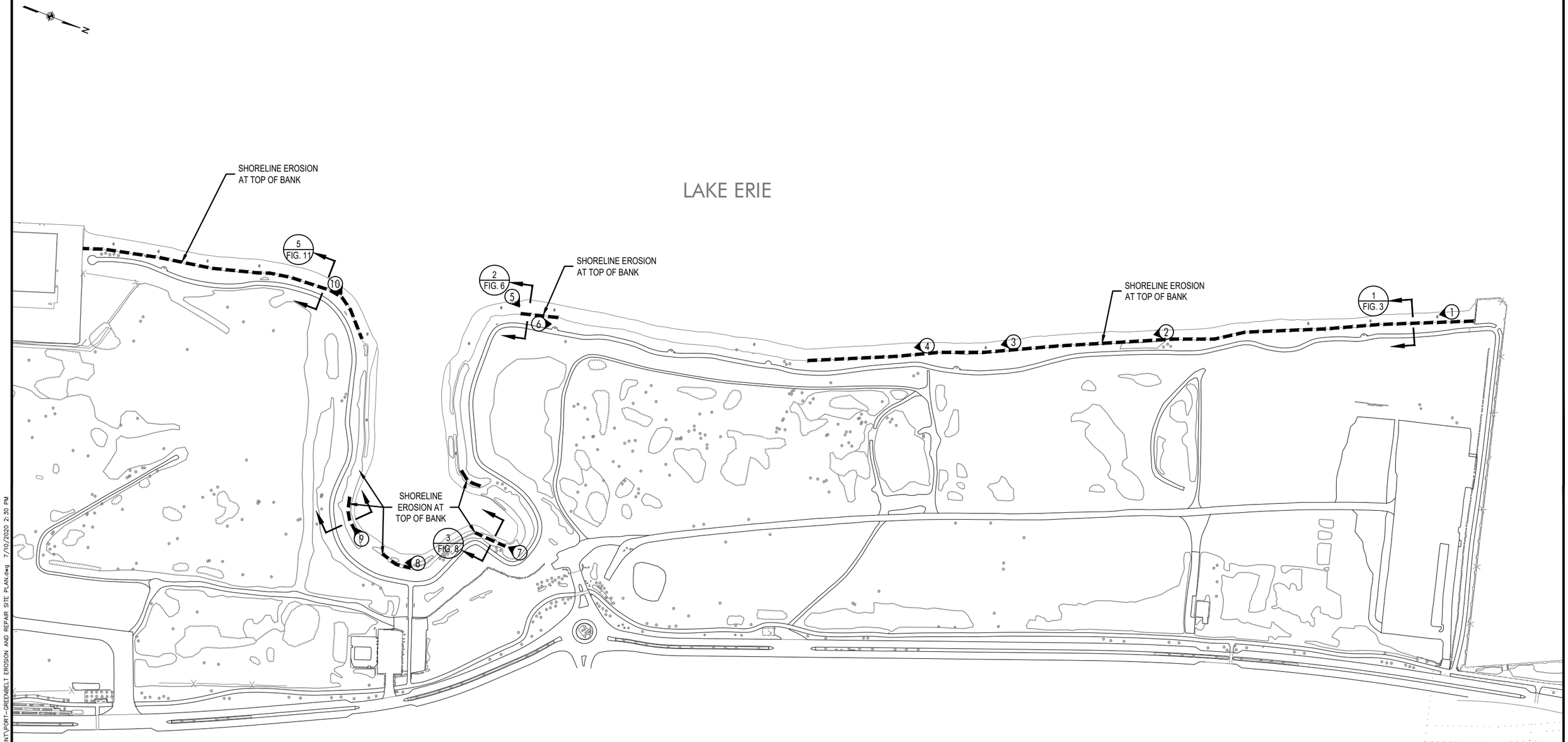
Martin Wesolowski, PE, CCM
Project Manager

V:\ECHDC\18-015-0132 - 2018 Outer Harbor\Design\TASK 4 - WILKENSON POINT\GREENBELT PRR SITE LOC MAP.AI

LiRo-Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

PORT-GREENBELT SHORELINE IMPROVEMENT PROJECT SITE LOCATION MAP

1



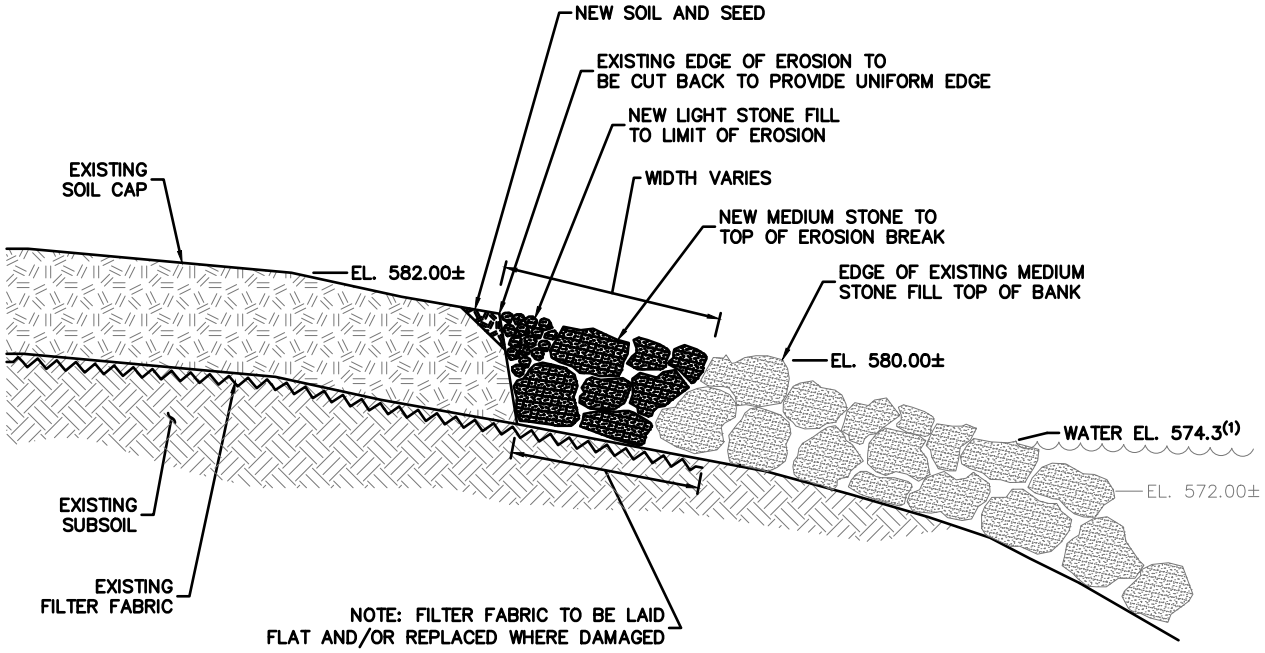
NO.	DATE	DESCRIPTION
		REVISIONS

LiRo Engineers, Inc.
690 Delaware Avenue
Buffalo, New York

PROJ. ENG.:	
DESIGNED BY:	
CHECKED BY:	
DRAWN BY:	A.M.K.
CLIENT:	BUFFALO OUTER HARBOR ENVIRONMENTAL COMPLIANCE TASKS
DATE:	6/2020
SCALE:	AS SHOWN
JOB TITLE AND LOCATION:	BUFFALO WATERFRONT - BUFFALO OUTER HARBOR PORT-GREENBELT SHORELINE EROSION AND REPAIR
DRAWING TITLE:	SITE PLAN
LIRO JOB NO.:	18-015-0152
SHEET OF	2 7
FIGURE NO.	2

REV-1

PHOTO 1



(1) WATER ELEVATION BASED ON ARMY CORPS OF ENGINEERS WEEKLY GREAT LAKES WATER LEVEL UPDATE FOR JULY 10, 2020

V:\ECHDC\18-015-0132 - 2018 Outer Harbor\Design\TASK 4 - WILKENSON POINT\FIGURE 3.dwg 7/13/2020 8:41 AM

LiRo Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

PORT-GREENBELT SHORELINE EROSION AND REPAIR SECTION 1

FIGURE NO.

3

REV-1

PHOTO 2

PHOTO 3

LiRo Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

PORT-GREENBELT SHORELINE EROSION AND REPAIR
PHOTOS 2 & 3

FIGURE NO.

4

REV-1

PHOTO 4

V:\ECHDC\18-015-0132 - 2018 Outer Harbor\Design\TASK 4 - WILKENSON POINT\FIGURE 5.dwg 7/10/2020 2:55 PM

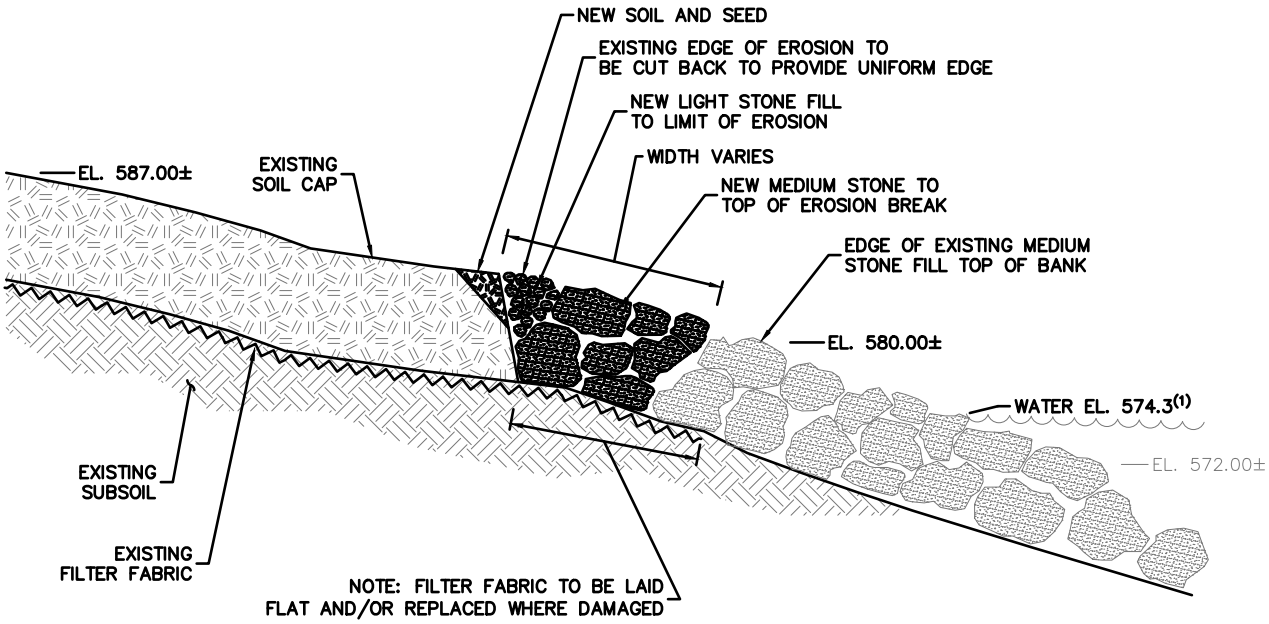
LiRo Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

PORT-GREENBELT SHORELINE EROSION AND REPAIR
PHOTO 4

FIGURE NO.
5

REV-1

PHOTO 5



(1) WATER ELEVATION BASED ON ARMY CORPS OF ENGINEERS WEEKLY GREAT LAKES WATER LEVEL UPDATE FOR JULY 10, 2020

LiRo Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

PORT-GREENBELT SHORELINE EROSION AND REPAIR SECTION 2

FIGURE NO. 6

REV-1

PHOTO 6

V:\ECHDC\18-015-0132 - 2018 Outer Harbor\Design\TASK 4 - WILKENSON POINT\FIGURE 7.dwg 7/10/2020 2:57 PM

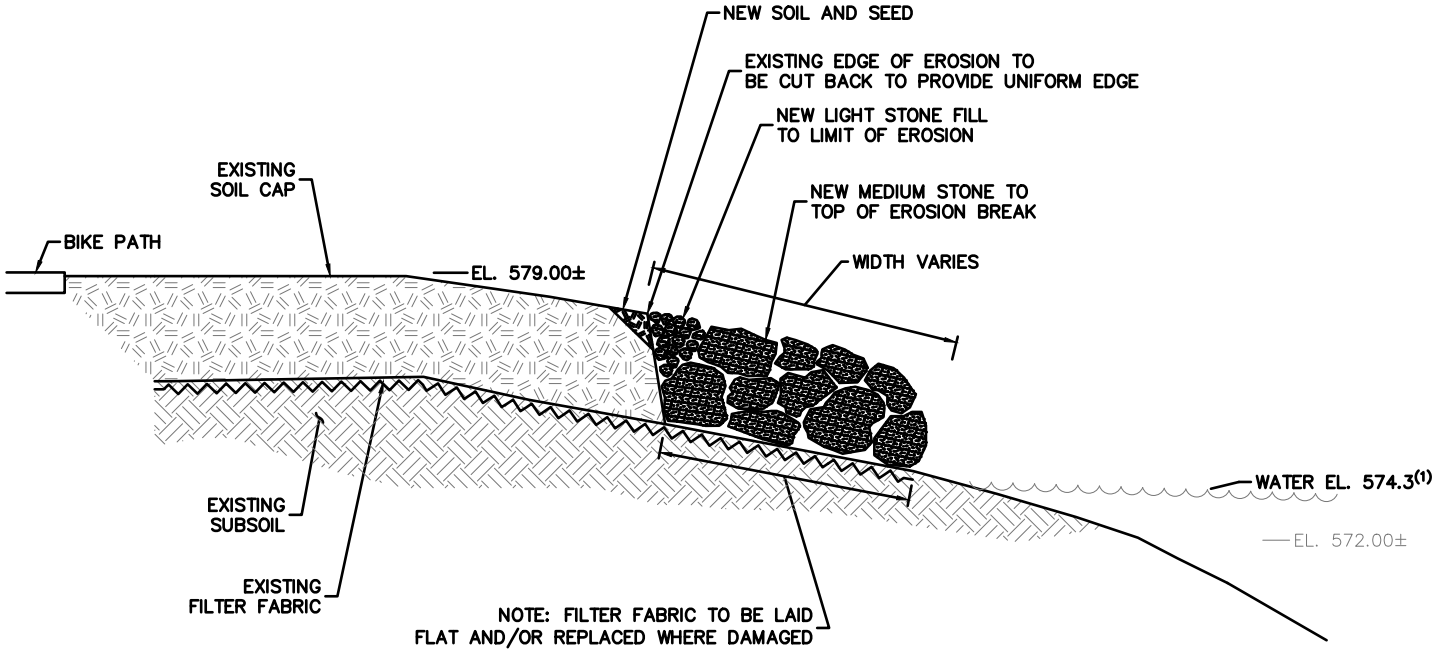
LiRo Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

PORT-GREENBELT SHORELINE EROSION AND REPAIR
PHOTO 6

FIGURE NO.
7

REV-1

PHOTO 7



(1) WATER ELEVATION BASED ON ARMY CORPS OF ENGINEERS WEEKLY GREAT LAKES WATER LEVEL UPDATE FOR JULY 10, 2020

LiRo Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

PORT-GREENBELT SHORELINE EROSION AND REPAIR SECTION 3

FIGURE NO.

8

REV-1

PHOTO 8

V:\ECHDC\18-015-0132 - 2018 Outer Harbor\Design\TASK 4 - WILKENSON POINT\FIGURE 9.dwg 7/10/2020 2:59 PM

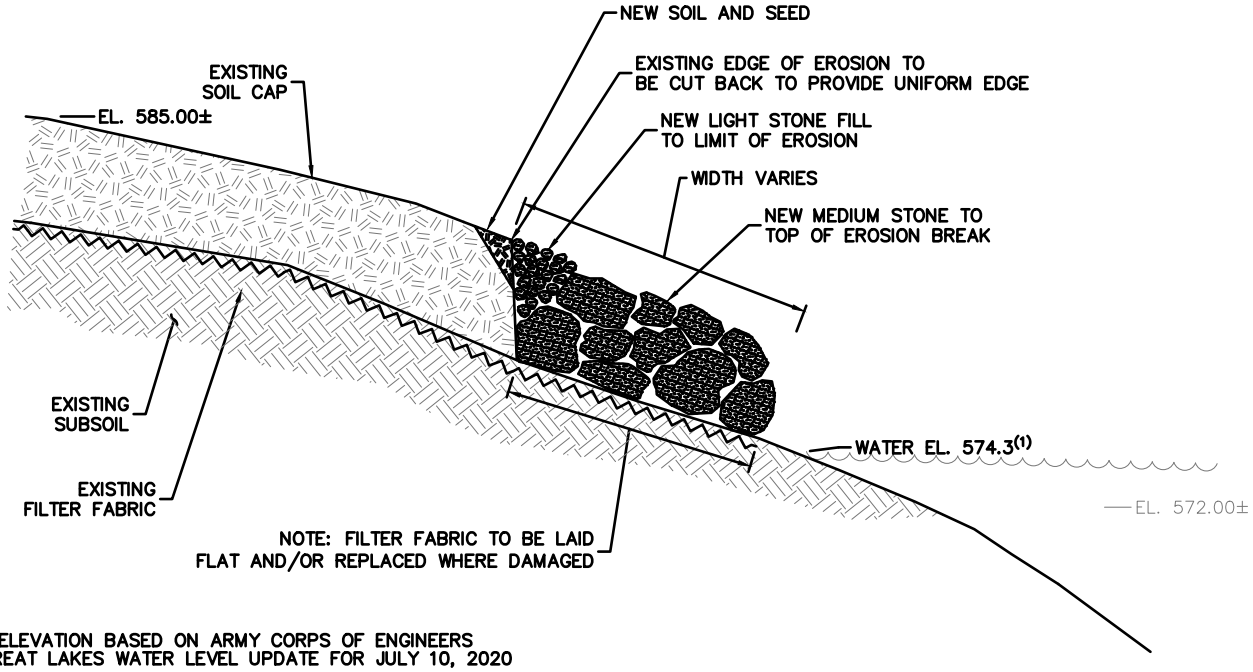
LiRo Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

PORT-GREENBELT SHORELINE EROSION AND REPAIR
PHOTO 8

FIGURE NO.
9

REV-1

PHOTO 9



(1) WATER ELEVATION BASED ON ARMY CORPS OF ENGINEERS WEEKLY GREAT LAKES WATER LEVEL UPDATE FOR JULY 10, 2020

V:\ECHDC\18-015-0132 - 2018 Outer Harbor\Design\TASK 4 - WILKENSON POINT\FIGURE 10.dwg 7/13/2020 8:38 AM

LiRo Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

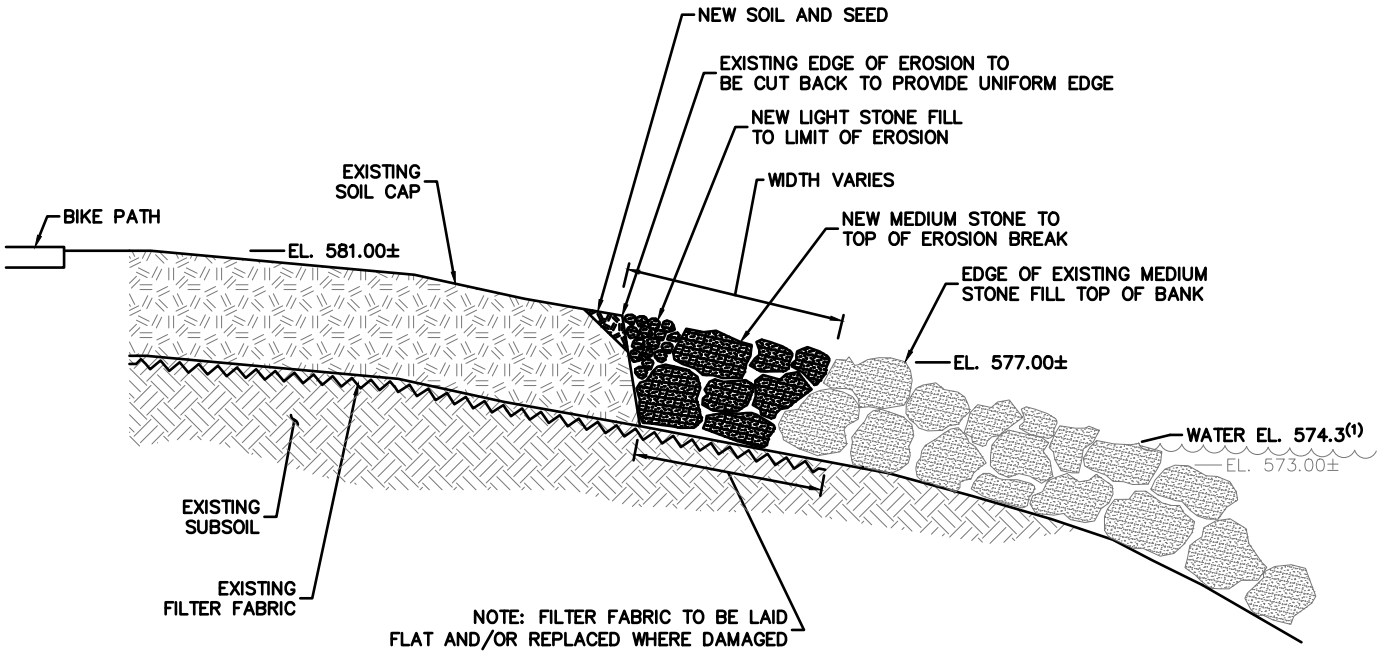
PORT-GREENBELT SHORELINE EROSION AND REPAIR SECTION 4

FIGURE NO.

10

REV-1

PHOTO 10



(1) WATER ELEVATION BASED ON ARMY CORPS OF ENGINEERS WEEKLY GREAT LAKES WATER LEVEL UPDATE FOR JULY 10, 2020

V:\ECHDC\18-015-0132 - 2018 Outer Harbor\Design\TASK 4 - WILKENSON POINT\FIGURE 11.dwg 7/13/2020 8:38 AM

LiRo Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

PORT-GREENBELT SHORELINE EROSION AND REPAIR SECTION 5

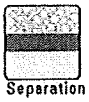
FIGURE NO.

11

Appendix A

Mirafi 600X Fabric

TENCATE
Mirafi®



Mirafi® 600X geotextile is composed of high-tenacity polypropylene yarns, which are woven into a stable network such that the yarns retain their relative position. Mirafi® 600X geotextile is inert to biological degradation and resistant to naturally encountered chemicals, alkalis, and acids.

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	315 (1402)	315 (1402)
Grab Tensile Elongation	ASTM D4632	%	12	
Trapezoid Tear Strength	ASTM D4533	lbs (N)	113 (503)	113 (503)
CBR Puncture Strength	ASTM D6241	lbs (N)	900 (4005)	
Apparent Opening Size (AOS)[1]	ASTM D4751	U.S. Sieve (mm)	40 (0.43)	
Permittivity	ASTM D4491	sec^{-1}	0.05	
Flow Rate	ASTM D4491	$gal/min/ft^2$ ($l/min/m^2$)	4.0 (163)	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	

[1] ASTM D4751, AOS is a Maximum Opening Diameter Value

Physical Properties	Test Method	Unit	Typical Value		
Weight	ASTM D5261	oz/yd^2 (g/m^2)	6.0 (203)		
Thickness	ASTM D5199	mils (mm)	25 (0.6)		
Roll Dimensions (width x length)	--	ft (m)	12.5x360 (3.8x110)	15x300 (4.6x91)	17.5x258 (5.3x78.7)
Roll Area	--	yd^2 (m^2)	500 (418)		
Estimated Roll Weight	--	lb (kg)	240 (109)		

TENCATE
materials that make a difference

Appendix B

Request to Import/Reuse Fill or Soil Form

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Request to Import/Reuse Fill or Soil

This form is based on the information required by DER-10, Section 5.4(e). Use of this form is not a substitute for reading the applicable Technical Guidance document.

SECTION 1 – SITE BACKGROUND

The allowable site use is: Choose an item

Have Ecological Resources been identified? Choose an item

Is this soil originating from the site? Choose an item

How many cubic yards of soil will be imported/reused? Choose an item

If greater than 1000 cubic yards will be imported, enter volume to be imported:

SECTION 2 – MATERIAL OTHER THAN SOIL

Is the material to be imported gravel, rock or stone? Choose an item

Does it contain less than 10%, by weight, material that would pass a size 80 sieve? Choose an item

Is this virgin material from a permitted mine or quarry? Choose an item

Is this material recycled concrete or brick from a DEC registered processing facility? Choose an item

SECTION 3 - SAMPLING

Provide a brief description of the number and type of samples collected in the space below:

Example Text: 5 discrete samples were collected and analyzed for VOCs. 2 composite samples were collected and analyzed for SVOCs, Inorganics & PCBs/Pesticides.

If the material meets requirements of DER-10 section 5.5 (other material), no chemical testing needed.

SECTION 3 CONT'D - SAMPLING

Provide a brief written summary of the sampling results or attach evaluation tables (compare to DER-10, Appendix 5):

Example Text: Arsenic was detected up to 17 ppm in 1 (of 5) samples; the allowable level is 16 ppm.

If Ecological Resources have been identified use the "If Ecological Resources are Present" column in Appendix 5.

SECTION 4 – SOURCE OF FILL

Name of person providing fill and relationship to the source:

Location where fill was obtained:

Identification of any state or local approvals as a fill source:

If no approvals are available, provide a brief history of the use of the property that is the fill source:

Provide a list of supporting documentation included with this request:

The information provided on this form is accurate and complete.

_____ _____

Signature Date

_____

Print Name

_____

Firm

Revised August 2014