

Project:	Phase 4 Pile Remediation North Cove Marina	Date:	May 22, 2015
Engineer:	McLaren Engineering Group	RE:	Addendum #1
		# of Pages:	16

The following revisions and/or clarifications are to be made to the proposal documents for Phase 4 Pile Remediation North Cove Marina". They are a result of issues discussed at the pre-proposal conference held on May 13, 2015 and any questions received by close of business of same date May 18, 2015.

Clarifications:

- 1. The attached scope of work should be an ADD/ALTERNATE for this project.**
- 2. The new proposal due date is Wednesday June 3, 2015 at 3pm**
- 3. The pre award meetings will be held Friday June 5 from 9am-1pm**

By signing the line below, I am acknowledging that all pages of the addendum have been received reviewed and understood, and will be incorporated into the bid price submitted. This document must be attached to the proposal for consideration.

_____	_____	_____
Print Name	Signature	Date
Number of pages received: _____ <fill in>		

Distributed to: All present and all prospective Proposers

Caisson Repair Scope of Work

This Add/Alternate seeks bids for the performance of repairs to existing underwater caissons (the “Caissons”) located in the area of the Esplanade Plaza in Battery Park City. The selected Proposer shall provide BPCA with all labor, equipment, tools, and materials necessary to inspect and repair the damaged caissons in the four (4) locations specified in the drawings attached to this addenda (the “Project”).

In 2014, McLaren Engineering Group (“Engineer”) performed a visual inspection of the Caissons at the request of BPCA. It was discovered that certain Caissons were exhibiting moderate to heavy corrosion within the tidal zones. Severe corrosion resulting in holes in the steel sheeting was observed in four (4) areas, allowing supporting fill material to be depleted and voids to be created. The Project includes the repair of the holes within the Caissons and the filling of the voids.

The selected Proposer shall perform all repairs as necessary for the completion of the Project, including but not limited to the following items:

1. The selected Proposer shall inspect the area of corrosion and confirm the location of holes within each Caisson, as well as the dimensions of the holes, and submit this information to BPCA and Engineer for review.
2. The selected Proposer shall clean the area up to one foot outside the perimeter of each hole with 4,000 psi pressure washer.
3. The selected Proposer shall re-inspect the holes after cleaning to ensure that additional holes were not created due to the pressure washing.
4. The selected Proposer shall verify that the sheeting around each hole is thick enough for welding. If so, the selected Proposer shall perform the following:
 - a. Weld a steel cover plate with a minimum thickness of 3/8” and of sufficient size to completely cover the hole onto the steel sheeting surrounding the hole. The material of the cover plate should match the existing steel sheeting material.
 - b. Coat the cover plate, except the welded surfaces, with cold tar epoxy.
 - c. The cover plate should have a pump port, capable of pumping cementitious grout into the voids. Grout should be submitted to BPCA and Engineer for approval and have a minimum compressive strength of 5,000 psi, with specific formulation for pumping and curing underwater.
 - d. Install Splashzone around the perimeter of the cover plate.
 - e. Pump grout into voids until back pressure is realized at the hose end.
5. If the selected Proposer verifies that the sheeting is not thick enough for welding, and/or the knuckles interfere with the installation of the plates, then the selected Proposer shall:
 - a. Weld a steel cover plate of sufficient size to completely cover the hole onto an accessible area and extend plate up and down the sheet to anchor. The material of the cover plate should match the existing steel sheeting material.
 - b. Cover plate should be a minimum of 3/8” thick. Use thicker plates to extend steel out enough to get over knuckles.
 - c. To span a knuckle, weld an additional plate over the two adjacent plates. Seal weld as much as possible, then seal all areas with Splashzone.
 - d. Coat the cover plate, except for welded surfaces, with cold tar epoxy.
 - e. The cover plate should have a pump port, capable of pumping cementitious grout into the voids. Grout should be submitted to BPCA and Engineer for approval and have a minimum compressive strength of 5,000 psi, with specific formulation for pumping and curing underwater.
 - f. Install Splashzone around the perimeter of the cover plate.

- g. Pump grout into voids until backpressure is realized at hose end.
- 6. The selected Proposer shall remove valve ports and install a layer of Splashzone after the grout has cured.



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surveying
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December 1, 2014

Battery Park City Authority
One World Financial Center, 24th Floor
New York, NY 10281

Attn: Ken Windman

Email: kenneth.windman@batteryparkcity.org

Re: Area 2 Repair Condition Inspection
Battery Park City, New York
MEG File No. 130870
Phase 10

Dear Ken:

As Requested by the Battery Park City Authority (BPCA), the McLaren Engineering Group (MEG) performed a limited Condition Inspection of the concrete piles, expansion joints and cellular sheet pile bulkhead supporting the waterfront esplanade at Battery Park City. The inspection took place from November 3rd through 5th, 2014. The inspection limits extended from Bents 80 to 94 within Area 2 located at the South West Corner of North Cove.

As discussed, BPCA has had growing concerns for the development of subsidence and sinkholes within the garden grasses adjacent to the retaining wall structure near the southeast corner of the volleyball court on the esplanade within what is known as 'Area 2' on the 2007 Pile Remediation Drawings. The scope of our inspection addressed within this report consists of a visual inspection of the expansion joints along the property line to determine if deficient joints are contributing to the development of sinkholes along the inboard edge of the bulkhead. Though inspection of the bulkhead was not explicitly

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part of the inspection scope, MEG performed a brief visual inspection in an attempt to determine the source of the observed sinkholes. Findings and recommendations regarding the completion status of Phase I repairs to the precast pre-stressed concrete support piles is addressed under a separate letter.

INSPECTION METHODOLOGY AND TERMINOLOGY

MEG mobilized commercial diving operations from a dive van. Access to the esplanade was coordinated by obtaining vehicular access permits through the BPCA prior to the inspections. There are two intake tunnels for the WTC Pumping Station that are located within the inspection limits. The tunnels are positioned adjacent to each other and the influent flow presented a potential hazard to the inspector divers. MEG coordinated shutdown and lock-out tag-out with the PANY&NJ and onsite personnel from Cushman & Wakefield.

The dive operation consisted of a three-person team composed of a Professional Engineer Diver/Team Leader, Commercially Trained Diver, and a Tender. The Diver conducted the inspection using surface supplied air and continuous two-way hardwire communication. The Diver conducted either a visual (swim-by) and/or hands on (tactile) inspection of the piles. The Team Leader recorded the observed information and directed the sequence of the inspection. The Tender maintained the on-going dive operations by providing support to the Divers. All dives are clearly marked using both recreational and international dive flags.

The dive operation and topside support at all times conformed to recognized standards as set forth by OSHA, the USCG, the Association of Diving Contractors Consensus of Standards, and the M.G. McLaren "Safe Diving Manual".

The New York City Economic Development Corporation (EDC) "Waterfront Facilities Maintenance Management System, Inspection Guidelines Manual" dated October 1999 was referenced during the inspection and during the preparation of this report.

SITE DESCRIPTION

Area 2 is located between the southeast corner of North Cove and the northeast corner of South Cove. The inspection area is located at the north end of the Area 2 platform,



limited to the southwest corner of North Cove underneath the esplanade. The structure inspected consists of a high level platform founded on precast pre-stressed concrete piles that support precast pre-stressed concrete pile caps and deck planks. The platform abuts to a cellular steel sheet pile bulkhead retaining structure that is soffitted to the back beam of the platform by a cast-in-place deck soffit. Due to the presence of large sized riprap, the cellular bulkhead was accessed in localized areas during low water conditions to assess the general condition of the steel sheets and concrete soffit.

INSPECTION FINDINGS & RECOMMENDATIONS:

Expansion Joints:

The expansion joints were generally found to be in good condition. There were localized areas where water infiltration was visible; however, there was no indication of escaping fill or major deficiency. The Joint between the back beam and the steel sheet pile bulkhead was soffitted with timber forms and braces, which remain in place.

MEG recommends regular inspection of the expansion Joints, but no further action needs to be taken at this time.

Bulkhead:

Though the inspection of the bulkhead was not explicitly part of the scope, MEG performed a brief visual inspection in an attempt to determine the source of the observed sinkholes. The area of concern was identified by BPCA as two sinkholes and an area of masonry retaining wall exhibiting settlement at the southeast corner of the esplanade near the bottom of the steps south of the volleyball court (see Photos 1 and 2). Typically, the steel sheet pile exhibits moderate to heavy corrosion within the tidal zone. Severe corrosion resulting in holes penetrating the sheeting was noted in the following four (4) locations:

1. Bent 81 – Hole in sheeting 2.4' above the riprap, 8"H x 3"W located directly behind the pile bent at the first sheet north of the concrete bulkhead. (see Photo 3)
2. Bent 81 – Hole in sheeting 2.8' above the riprap, 1'H x 8"W located at 3rd sheet north of the concrete bulkhead.

3. Bent 85 – Hole in the sheeting approximately 3' above the riprap, 3"H x 1"W located directly behind the pile bent.
4. Bent 87 – Hole in sheeting approximately 2' above the riprap 9"H x 5"W with a void 2' +/- deep caused by active fill loss. This hole is located roughly 5' north of the bent centerline. (see Photo 4)

Of the four observed holes, subsidence was observed in the plantings in the immediate vicinity of holes 1 and 2. There was no visible subsidence evident in the vicinity of holes 3 or 4; however, these areas are paved above the bulkhead and it is possible that the slabs and pavers are bridging over any voids that are present. (see Photo 5)

MEG recommends contacting a marine contractor to patch the observed holes in the steel sheeting. The holes may be patched with plate steel of equivalent thickness to the nominal section of the steel sheet pile (currently unknown; the available as-built drawings do not specify). The plates would be welded to the exterior face of the sheeting and then coated with a marine grade epoxy (Splash zone) to protect the weld. Additionally, grout should be pumped under pressure into the voids to prevent or mitigate additional or future subsidence.

In general, the cellular steel sheet pile bulkhead was observed to be in fair condition. It is recommended that the entire length of the cellular bulkhead be inspected to assess the overall condition and identify additional repair needs. This inspection should take place within the next year to prepare for future maintenance needs. In the meantime, holes 1 through 4 should be repaired with urgency to arrest fill loss.

Should you have any questions, please do not hesitate to contact me at our office.

Very truly yours,

The Office of
M.G. McLAREN, P.C.
d/b/a McLaren Engineering Group



Matthew J. Daniels, P.E.
Senior Marine Engineer



Attachments:

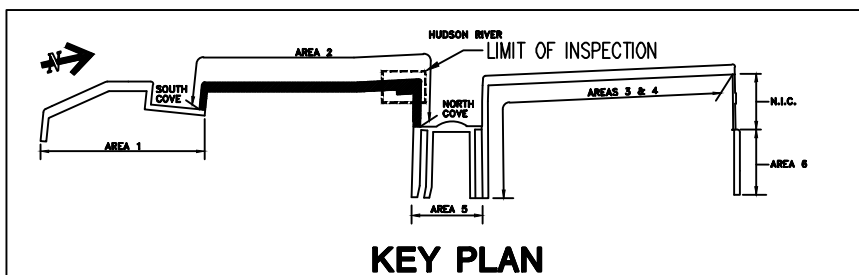
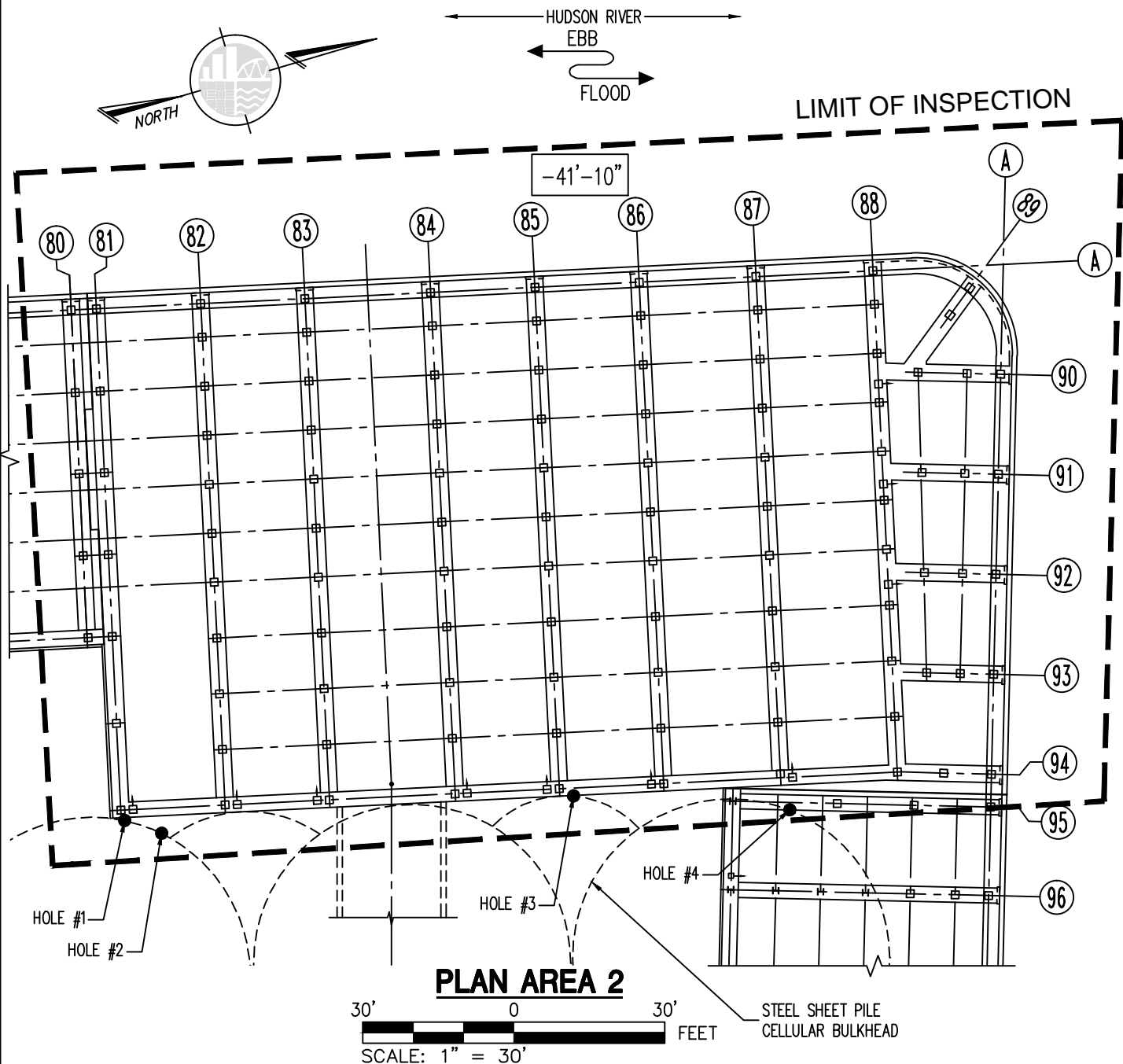
Appendix A – Backwall Inspection Plan
Appendix B – Inspection Notes
Appendix C - Photographs

MJD/RJM/bes

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APPENDIX A:
AREA 2 – BACKWALL INSPECTION PLAN

FILE NAME: P:\Proj\30\130870\10_Dwgs\CADD\Area Inspection Areas 1 to 6.dwg PLOT TIME: Wed, 26 Nov 2014 - 3:28pm LAST SAVE: Wed, 26 Nov 2014 - 3:24pm BY: ADragos



ELEVATIONS SHOWN HEREON REFER TO THE BOROUGH PRESIDENT OF MANHATTAN (MBD) VERTICAL DATUM WHICH IS 2.75 FT ABOVE NGVD 1929 (UNITED STATES COASTAL AND GEODETIC SURVEY, MEAN SEA LEVEL, SANDY HOOK NEW JERSEY).

LEGEND

- HOLE IN SHEET PILE CELLULAR BULKHEADS
- 20" x 20" SQUARE PRESTRESSED CONCRETE PILE
- ⊞ 20" x 20" SQUARE PRESTRESSED CONCRETE BATTER PILE
- H HP14 STEEL PILE
- 41'-0" MUDLINE ELEVATION



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SHEET TITLE
**BACKWALL INSPECTION PLAN
AREA-2**

PROJECT
**BATTERY PARK CITY AUTHORITY
AREA 2 EXPANSION JOINT & BACKWALL INSPECTION
NEW YORK, NEW YORK**

PROJ. NO.	130870
SCALE	AS NOTED
DATE	11-21-14
DRAWN BY	EHC
CHECKED BY	RJM

DRAWING NO.

SK-1

1 OF 1 SHTS

APPENDIX B:
INSPECTION NOTES



Battery Park City Authority
 2014 Pile Remediation Design & Engineering Services
 Area 2 Expansion Joint and Backwall Inspection

Appendix B

MEG Inspection Notes:

Bent	Element	Inspection Findings
81	All	Grate on the north side of the bent, from the bottom of the pile cap down 6'. Grate is attached to the piles. Typically hardware on piles is loose. Marine growth heavy coverage on the piles and jackets.
80/81	Expansion Joint	Active water infiltration visible at the 'A' pile. Flotsam debris (white paper) visible within the joint roughly 8' east of the backwall. Joint is 5" wide. no visible deterioration of the joint, no efflorescence detectable, concrete overpour extends down 6" +/- from the underdeck elevation, 6' west of 'D' there is void in the concrete overpour with exposed reinforcing, no visible fill loss within joint. Active water infiltration.
81	Backwall	Holes (2) in steel sheet pile. (1) 1st sheet from the south, 2.4' above the mudline 0.7'H x 3"W. (2) 3rd sheet from the south, .28' above the mudline 1'H x 8"W x 4"D penetration
85	Backwall	Minor corrosion in the tidal zone, blistering. Large riprap at toe of wall 3' to 5' in diameter.
85	Backwall	Hole in sheeting 3' above riprap. 3"H x 1"W located directly behind the pile bent.
87	Backwall	Hole in sheeting 2' above riprap. 9"H x 5"W with a void 2' ± deep caused by active fill loss. Hole is roughly 5' north of the bent line.

APPENDIX C:
PHOTOGRAPHS



Photo 1 - Esplanade above Bents 80-81. Area of concern identified by BPCA.



Photo 2 - Esplanade above Bents 80-81. Note settlement of wall and sinkhole (see arrow).



Photo 3 – Holes #1 & 2 in sheeting at Bent 81. Note additional corrosion of steel above hole.



Photo 4 - Hole #4 in sheeting at Bent 87, void with fill loss visible during inspection.



Photo 5 - View of paved esplanade above the joint between the platform and bulkhead.
Note: Minor separation of pavers, no visible subsidence. Photo taken from Bent 81 looking north.