



REQUEST FOR PROPOSALS

FOR

North Battery Park City Resiliency Project:

Design Services

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I. SUMMARY

Battery Park City Authority d/b/a Hugh L. Carey Battery Park City Authority (“BPCA”) hereby requests proposals (individually a “Proposal” and collectively the “Proposals”) from qualified engineering and/or architectural firms (individually a “Proposer” and collectively the “Proposers”) to provide BPCA with multidisciplinary design and engineering services in support of its North Battery Park City Resiliency Project (the “Project” or “Services”).

Since 2014, BPCA has been assessing and undertaking conceptual planning efforts to address the threats of damage and injury to BPC and its residents as a result of future severe storm activity, storm surge and sea level rise associated with global climate change. The Project is one of the following four (4) distinct projects, each of which has the goal of providing a resiliency system with stand-alone, independent utility at different locations of Battery Park City:

- (1) The South Battery Park City Resiliency Project,
- (2) The Ballfield and Community Center Resiliency Project,
- (3) The Western Perimeter Battery Park City Resiliency Project, and
- (4) The North Battery Park City Project, which is the Project that is the subject of this RFP.

The area associated with the Project represents a critical point of low elevation vulnerability for Battery Park City (“BPC”), as well as for other parts of Lower Manhattan. In order to adequately address the risks associated with this area, BPCA intends to create a barrier system (the “Barrier System”) that incorporates the northern limits of BPC and extends roughly from the North BPC Esplanade at the intersection of Chambers Street and River Terrace, east across New York State Route 9A (“Route 9A”) and along Chambers Street to a point of termination at roughly the northwest corner of the intersection of Chambers Street and West Broadway (collectively, the “North BPC Project Site”). The North BPC Project Site is further divided into a “Base Project Site” (including all portions of the North BPC Project Site west of Route 9A) and the “Add Alt Site” (including all portions of the North BPC Project Site east of the western right of way boundary of Route 9A). The Add Alt Site comprises property not owned or controlled by BPCA. The North BPC Plan envisions the creation of the Barrier System and the capability of the Barrier System to eventually tie into the Western Perimeter Battery Park City Resiliency Project and the New York City’s broader Lower Manhattan Coastal Resiliency (“LMCR”) project, assuming these projects are funded and built.

The North BPC Plan concept was derived from BPCA’s early resiliency assessment work and was further refined through a subsequent, more specific resiliency concept development performed by H2M Engineers + Architects. In order to document its assessment, H2M issued a report providing the framework for the North BPC Plan (the “North BPC Report”). A copy of the North BPC Report is attached to this RFP as Exhibit A-1. The Services will advance the North BPC Plan’s conceptual strategies and designs through detailed design and engineering, to final sets of construction documents suitable for contractor bidding, and will provide construction administration services for the construction of the final Project design. The Services will also include the formulation and implementation of an approved community outreach and engagement plan for the Project.

Proposers must ensure that they or, as applicable, their collective teams incorporate/include appropriate expertise in all disciplines required to perform the Project. The disciplines anticipated to be utilized on this Project include, but are not limited to:

- Environmental/Biological Science;
- Hydrological Engineering (Modeling);
- Civil Engineering;
- MEP Engineering;
- Structural Engineering;

- Geotechnical Engineering;
- Environmental Engineering;
- Marine Engineering;
- General Architectural Design;
- Landscape Design;
- Surveying;
- Environmental Regulations; and
- Cost Estimating and Value Engineering.

In addition to its engineering and design duties, the selected Proposer will also be required to participate in BPCA's community and stakeholder outreach efforts regarding the Project, including the development of a community outreach plan.

A detailed scope of work for which the selected Proposer will be responsible is attached as Exhibit A (the "Work").

Created in 1968, BPCA is a New York State public benefit corporation responsible for financing, developing, constructing, maintaining, and operating Battery Park City as a richly diversified mixed use community providing residential and commercial space, with related amenities such as parks, plazas, recreational areas, and a waterfront esplanade. A summary of BPCA's structure, mission, and history, as well as the Battery Park City project area, may be viewed at: <http://bpca.ny.gov/>. Public information regarding BPCA's finances, budget, internal controls, guidelines, and policies may be viewed at: <http://bpca.ny.gov/public-information/>. Information relating to the Battery Park City Parks Conservancy Corporation ("BPCPC"), BPCA's affiliate, may be viewed at: <http://bpcparks.org/>.

New York State-certified Minority-Owned Business Enterprises ("MBE"), Women-Owned Business Enterprises ("WBE") and Service-Disabled Veteran-Owned Business Enterprises ("SDVOB") are encouraged to submit Proposals.

II. GENERAL PROVISIONS

This request for Proposals, including attachments, exhibits, and any amendments or addenda (collectively, the "RFP") is subject to the rights reserved by BPCA, including, but not limited to, BPCA's right to:

- withdraw and/or cancel this RFP at any time before final award of the contract;
- request clarification and/or additional information from any or all Proposers;
- amend any term or requirement of this RFP at any time before award of a contract (Proposers may amend their Proposals, as directed by BPCA, if BPCA materially alters or amends the RFP after submission of Proposals);
- alter any key dates or deadlines related to this RFP;
- award the Work, in whole or in part, to one or more Proposers with or without interviews or negotiations;
- reject any Proposal that does not strictly conform to the requirements of this RFP;
- conduct one or more interviews, either in-person or by telephone, with any or all of the Proposers to aid the evaluation process;
- negotiate potential contract terms with any Proposer;

BPCA is not liable or responsible in any way for any expenses incurred in the preparation of a Proposal in response to this RFP. All information submitted in response to this RFP is subject to the Freedom of Information Law, Article 6 of the New York State Public Officers Law ("FOIL"), which requires public access to certain documents possessed by BPCA, unless a specific exemption applies. Proposers are responsible for identifying any information in their

respective Proposals considered to be confidential and exempt from FOIL. BPCA, however, is obligated to disclose information consistent with the requirements of FOIL, NYS Public Officers Law Section 87.

III. TIMETABLE & DESIGNATED CONTACT

A. *Key Dates*

Subject to change at BPCA's discretion, the following are key dates for this RFP:

- RFP issued: December 10, 2018
- Pre-proposal meeting: December 18, 2018 at 10:00 AM EST at BPCA offices, 200 Liberty Street, 24th Floor, New York, New York 10281
- Deadline to submit questions to BPCA: January 6, 2018 by 4:00 p.m. (by email only)

All questions regarding this RFP should be submitted in writing via email to the "Designated Contact": **Mr. Michael LaMancusa**, Contracts Administrator, Battery Park City Authority, at **Michael.LaMancusa@bpca.ny.gov**

- BPCA's response to substantive questions: January 1, 2019 (by email)
- PROPOSAL DUE DATE: January 28, 2019 by 3:00 p.m. (the "Due Date")
- Contract start date: To be determined.

B. *Anticipated Contract Term*

The anticipated term of the contract awarded pursuant to this RFP (the "Contract") will be thirty-three (33) months. BPCA reserves the right to terminate the Contract at any time, with or without cause, in accordance with the terms of the Contract. BPCA's sample form of contract is attached as Exhibit [C].

IV. GENERAL REQUIREMENTS

A. *Minimum Qualification Requirements*

The following are the minimum qualification requirements for this RFP. Proposals that fail to meet these requirements will be rejected.

- 1) The Proposer must have an office in New York State (a New York City office is preferred);
- 2) The Proposer or at least one of its team members must have at least five (5) years of experience performing civil, geotechnical, structural and marine engineering services and must have performed engineering design services for at least one urban flood resiliency project;
- 3) The Proposer or at least one of its team members must have at least five (5) years of experience performing architectural design services;
- 4) The Proposer or at least one of its team members must have at least five (5) years of experience performing landscape design of public parks and open spaces; and

- 5) The Proposer must be authorized to do business in the State of New York and, in the case of architects and engineers, be duly licensed to practice in the State of New York.

B. MBE/WBE/SDVOB Participation, Joint Ventures, and Sub-contracting Goals

Contractor requirements and procedures for business participation opportunities for New York State certified MBEs/WBEs/SDVOBs and equal employment opportunity requirements relating to minority group members and women are attached as Exhibit B. For questions relating to MBE/WBE/SDVOB participation, joint ventures and sub-contracting goals *only*, please contact the “MBE/WBE/SDVOB Designated Contact” Mr. Anthony Peterson at Anthony.peterson@bpca.ny.gov or 212-417-2337.

C. Restricted Period

New York State’s State Finance Law sections 139-j and 139-k apply to this RFP, restricting Proposers’ contacts with BPCA. Proposers are restricted from making any contact (defined as oral, written or electronic communications with BPCA under circumstances where a reasonable person would infer that a communication was intended to influence BPCA’s conduct or decision with respect to a procurement) relating to this RFP with anyone other than the Designated Contact, as specified in Section III.A., or MBE/WBE/SDVOB Designated Contact, as specified in Section IV.B., from the time of Proposer’s receipt of notice of this RFP through the date of the Final Award as defined in BPCA’s Procurement Guidelines (the “Restricted Period”). BPCA employees must record certain contacts during the Restricted Period, including, but not limited to, any oral or written communications that could reasonably be seen as intended to influence BPCA’s conduct or award of this RFP. Upon notice of an improper contact, BPCA shall make a determination regarding the Proposer’s eligibility to continue participating in this RFP.

D. Submission of Proposals

Proposals must be received by BPCA no later than 3:00 p.m. on January 28, 2019.

Each Proposer must submit seven (7) paper copies and a PDF version (via CD-ROM or flash drive) in a sealed package clearly marked “Proposal Enclosed - North Battery Park City Resiliency Design Services” to the Designated Contact by messenger, overnight courier or certified mail to the following address:

Michael LaMancusa
Battery Park City Authority
200 Liberty Street, 24th Floor
New York, NY 10281

BPCA is not responsible for late Proposals, no matter the cause. Proposals *must* arrive at the time and place specified herein and be time stamped by BPCA by the Due Date. Please leave ample time for building security. Late Proposals will NOT be accepted. Proposals submitted by fax or electronic transmission will NOT be accepted. A Proposer may, after submitting a Proposal, amend its Proposal by submitting an amended Proposal, clearly labeled “Amended Proposal - North Battery Park City Resiliency Design Services,” as long as the amended Proposal is submitted by the Due Date.

V. PROPOSAL FORMAT AND CONTENTS

A. Proposal Format

The Proposal must:

- Be printed on 8½” x 11” paper;
- Have numbered pages; and
- Be no longer than twenty-five (25) single-sided pages, exclusive of the Cover Letter, Cost Proposal, and Required Attachments.

B. Proposal Content

In addition to the separately sealed Cost Proposal, described in Section VIII below, each Proposal must include the following in the order listed:

- 1) Cover Letter, signed by a person within the firm who is authorized to bind the Proposer, which includes representations that:
 - (a) Except as disclosed in the Proposal, no officer or employee of the Proposer is directly or indirectly a party to or in any other manner interested financially or otherwise in this RFP;
 - (b) Proposer satisfies all of the minimum qualification requirements in Section IV.A; and
 - (c) Proposer has reviewed BPCA’s form of contract, attached as Exhibit [C] to this RFP, and either (i) has no objections or (ii) has detailed their objections in an appendix to their Proposal.
- 2) Executive Summary.
- 3) Responses to the Questions as well as all of the Information Required (Sections VI.A. and B.).
- 4) Required Attachments (Section VI. C.).

BPCA reserves the right to reject any Proposals that fail to include any required item described in this Section V.B., including Cover Letters that are unsigned or fail to include each of the above representations (including the attachment of the aforementioned appendix, if applicable).

VI. INFORMATION REQUIRED

A. Questions and Information Sought Relating to the Work

Note: Where appropriate, please respond with relevant Proposer, team member, and/or subconsultant information.

- 1) Describe your background, size, and history as they may be relevant to the Services, with an emphasis on your experience with the design of urban waterfront resiliency measures, site and right-of-way infrastructure, streetscapes, parks, and open public spaces.
- 2) Describe your experience with the design of flood resiliency projects in New York City, if any.
- 3) Describe your firm’s experience with the engineering and design of New York State roadways and New York City street infrastructure generally.
- 4) Describe your firm’s experience in working or coordinating with the City of New York, the NYS Department of Transportation (“NYSDOT”), and/or the New York City Department of Transportation (“NYCDOT”) on infrastructure and resiliency projects.

- 5) Describe in detail your firm's expertise in (a) landscape and base project site architecture design; (b) general architectural design; (c) civil engineering; (d) MEP engineering; (e) structural engineering; (f) geotechnical engineering; (g) surveying; (h) cost estimating and value engineering; and (i) hydrological engineering (modeling).
- 6) If your offices are located in more than one city, indicate which office will provide the services.
- 7) Describe in detail your firm's expertise and experience with storm and climate change resiliency design, especially with respect to waterfront properties in dense urban environments.
- 8) Provide examples, to the extent there are any, of your firm's designs being successfully employed to mitigate the risk of significant or catastrophic damage caused by storm and climate change-related events or conditions.
- 9) Describe your firm's overall approach to the Services and its specific tasks, indicating where and how efficiencies of time and/or cost may be achieved.
- 10) Describe your firm's approach to the community outreach and interface components of the Services specified in the Scope of Work.
- 11) Describe similarities or parallels between the Services, or specific elements or aspects of the Services, and other projects performed by your team.
- 12) Note any unique challenges associated with the Services and potential means for addressing those challenges.
- 13) Describe your firm's experience working with the New York City Public Design Commission ("NYCPDC").
- 14) List all employees you intend to assign to this engagement and the area(s) of specialization for each employee. Describe the role of each employee who will be assigned to this engagement.
- 15) Identify the Project Manager who will be the primary contact and lead personnel in providing the Services to BPCA, and who will be listed as a "key person" in any contract with BPCA.
- 16) Describe your proposed team's experience with similar work for other public agencies, authorities and entities, with a particular emphasis on New York State and/or New York City agencies, authorities, and entities.
- 17) Describe your firm's "backup plan" in the event one or more of the employees assigned to this engagement leaves the firm.
- 18) Clearly identify any information in your Proposal that you believe to be confidential and exempt from disclosure under FOIL, and state the reasons. Please note that this question is for informational purposes only, and BPCA will determine FOIL applicability in its sole discretion.
- 19) Identify any and all exceptions taken to BPCA's standard form of contract, attached as Exhibit C, explaining the reasons for such exceptions. Such exceptions must be detailed in an appendix to your Proposal labeled, "Appendix: Objections to BPCA Form of Contract." No exceptions to the Contract will be considered by BPCA after submission of the Proposals. BPCA maintains the right to reject Proposals based on non-conformance with the standard form of Contract.

- 20) Provide at least three (3) client references for whom your firm has performed similar work to that requested in this RFP. For each client, describe the project, the project's date, and services performed, and provide the name, address, and telephone number for a person at client's firm familiar with such work.
- 21) Please provide any additional information that would serve to distinguish your firm from other firms and that you believe may be relevant to this RFP and your capability to perform the services requested

B. Questions and Information Sought Relating to Proposer's Responsibility & Eligibility

- 1) Within the past three (3) years, have there been any significant developments in your firm such as changes in ownership or restructuring? Do you anticipate any significant changes in the near future? If so, please describe.
- 2) How does your firm identify and manage conflicts of interest?
- 3) Are there any potential conflict of interest issues posed by your firm's performance of the Work on behalf of BPCA?
- 4) Has your firm or have any of the firm's partners/employees been disciplined or censured by any regulatory body within the last five (5) years? If so, please describe the relevant facts.
- 5) Within the last five (5) years, has your firm, or a partner or employee in your firm, been involved in litigation or other legal proceedings relating to the provision of professional services? If so, please provide an explanation and the current status or disposition of the matter.
- 6) List any professional or personal relationships your firm's employees may have with BPCA's Board Members and/or employees. A list of which is attached as Exhibit [E].
- 7) If selected, will your firm assign any person to this engagement who was previously an employee of BPCA or BPCPC? If so, please: i) identify when (month and year) that person's employment at BPCA/BPCPC terminated, and ii) describe that person's involvement, if any, with matters related to this RFP during his/her employment at BPCA/BPCPC.
- 8) In the past five (5) years, have any public sector clients terminated their working relationship with your firm? If so, please provide a brief statement of the reasons. Provide the name of the client and provide a contact person, address and telephone number.

C. Required Attachments

- 1) Mandatory Forms:

Each Proposal must include a completed copy of all "Mandatory Forms" found at: <http://bpca.ny.gov/wp-content/uploads/2015/03/Vendor-ResponsibilityQuestionnaire.pdf>. The Mandatory Forms include the following:

- a) NYS Standard Vendor Responsibility Questionnaire, notarized and signed by the individual(s) authorized to contractually bind the Proposer, indicating the signer's title/position within the firm.*

- b) State Finance Law § 139 Form 1, signed by the individual(s) authorized to contractually bind the Proposer.*
- c) W-9 form.
- d) Statement of Non-Collusion.
- e) MBE/WBE/SDVOB Utilization Plans. Please note that these plans must be submitted even if Proposer is a MBE/WBE/SDVOB.

*In addition to the copy required to be included in each bound Proposal, Proposers must additionally provide one (1) unbound, completed original, with ink signatures, of the NYS Standard Vendor Responsibility Questionnaire and SFL 139 Form 1.

- 2) Response to the question regarding the use of New York State businesses set forth in Section XII.
- 3) Completed MBE/WBE and EEO Policy Statement and Diversity Practices Questionnaire (attached as part of Exhibit [B]).
- 4) Financial Statements:

Provide a copy of your firm's most recent Audited Financial Statements (within the last year). In the event you do not have audited financials you must provide a statement to that effect with your proposal, and summary financial information for the calendar year most recently ended.

- 5) Acknowledgement of Addenda:

Attach a completed and signed Acknowledgement of Addenda Form, attached as Exhibit [D], acknowledging receipt of all addenda to this RFP, if any, issued by BPCA before the Due Date. Addenda are posted by BPCA as necessary and can be found on the BPCA website at www.bpca.ny.gov. It is the responsibility of each Proposer to check the BPCA website for addenda and to review addenda prior to submitting any proposal in response to this RFP.

- 6) Appendices:

- a) Attach professional biographies for all Project Staff identified in your Proposal.
- b) Attach a project schedule showing completion dates for [key tasks, milestones, etc.] and final completion of all Work.

VII. INSURANCE REQUIREMENTS

A. General Requirements

The selected Proposer will be required to obtain and provide proof of the types and amounts of insurance listed below: (i) as a condition precedent to the award of the contract for the work; and (ii) continuing throughout the entire term of the Contract. The insurance policies listed below must also conform to the applicable terms of the Contract, as shown in BPCA's sample form of contract attached as Exhibit [C].

The total cost of the required insurance listed in paragraphs B and C below, must be incorporated into the Cost Proposal. The additional insured protection afforded BPCA, BPCPC, and the State of New York must be on a primary and non-contributory basis. All policies must include a waiver of subrogation in favor of

BPCA, BPCPC, and the State of New York, no policies may contain any limitations / exclusions for New York Labor Law claims, and cross liability coverage must be provided for BPCA, BPCPC, and the State of New York.

All of the carriers that provide the below required insurance must be rated "A-:VII" or better by A.M. Best and must provide direct written notice of cancellation or non-renewal to BPCA, BPCPC, and the State of New York at least 30 days before such cancellation or non-renewal is effective, except for cancellations due to non-payment of premium, in which case 10 days written notice is acceptable.

B. Insurance Requirements for the Selected Proposer

The selected Proposer will be required to obtain and provide proof of the types and amounts of insurance listed below and must maintain such coverage throughout the entire Term. The insurance policies listed below must also conform to the applicable terms of the Contract, as shown in BPCA's sample form of contract attached.

- **Commercial General Liability Insurance**, written on ISO Form CG 00 01 or its equivalent and with no modification to the contractual liability coverage provided therein, shall be provided on an occurrence basis and limits shall not be less than:

- \$1,000,000 per occurrence
- \$2,000,000 general aggregate which must apply on a per location / per project basis
- \$2,000,000 products/completed operations aggregate

BPCA, BPCPC, and the State of New York must be protected as additional insureds on ISO Form CG 2010 (11/85) or its equivalent on policies held by the selected Proposer and any of its subcontractors. Should the Proposer's work include construction activities of any kind then the Proposer must maintain Products / Completed Operations coverage for no less than three years after the construction work is completed, and continue to include Additional Insured protection for BPCA, BPCPC & The State of New York for the prescribed timeframe. When providing evidence of insurance the Proposer must include a completed Acord 855 NY form.

- **Automobile Liability Insurance** with a combined single limit of not less than \$1,000,000. Coverage must apply to the Proposer's owned, hired, and non-owned vehicles and protect BPCA, BPCPC, and the State of New York as additional insured.

- **Workers' Compensation, Employer's Liability, and Disability Benefits** shall not be less than statutory limits, including United States Longshore and Harbor Workers Act coverage as applicable to the operations of the Proposer.

- **Umbrella Liability Insurance** at a limit not less than \$5,000,000 per occurrence and in the aggregate. BPCA, BPCPC, and the State of New York must be protected as additional insureds on policies held by the selected Proposer and any of its subcontractors.

- **Professional Liability ("Errors & Omissions") Insurance** must be maintained at a limit of not less than \$5,000,000 each claim.

C. Insurance Requirements for all Subcontractors

Any subcontractor(s) utilized by the selected Proposer will be required to obtain the types and amounts of insurance listed below: (i) as a condition of commencing any Work; and (ii) continuing throughout the duration of the subcontractor's Work. The insurance policies listed below must also conform to the applicable terms of the Contract, as shown in BPCA's sample form of contract attached:

- **Commercial General Liability Insurance**, written on ISO Form CG 00 01 or its equivalent and with no modification to the contractual liability coverage provided therein, shall be provided on an occurrence basis and limits shall not be less than:

- \$1,000,000 per occurrence
- \$2,000,000 general aggregate which must apply on a per location / per project basis
- \$2,000,000 products/completed operations aggregate

BPCA, BPCPC, and the State of New York must be protected as additional insureds on ISO Form CG 2010 (11/85) or its equivalent on policies held by all subcontractors. Should the subcontractor's work include construction activities of any kind then the subcontractor must maintain Products / Completed Operations coverage for no less than three years after the construction work is completed and continue to include Additional Insured protection for BPCA, BPCPC & The State of New York for the prescribed timeframe. When providing evidence of insurance the subcontractor must include a completed Acord 855 NY form.

- **Automobile Liability Insurance** with a combined single limit of not less than \$1,000,000. Coverage must apply to the subcontractor's owned, hired, and non-owned vehicles and protect BPCA, BPCPC, and the State of New York as additional insured.

- **Workers' Compensation, Employer's Liability, and Disability Benefits** shall not be less than statutory limits, including United States Longshore and Harbor Workers Act coverage as applicable to the operations of the subcontractor.

- **Subcontractors will also be required to obtain all other insurances listed in Section (2) unless otherwise approved in writing by BPCA prior to commencement of any Subcontractor's work.**

VIII. COST PROPOSAL; FORMAT AND REQUIRED INCLUSIONS

Each Proposer must submit seven (7) copies of its Cost Proposal, which must include:

- 1) A total not-to-exceed fee for performance of all Services contemplated herein, assuming inclusion of only the Base Project Site;
- 2) A total not-to-exceed fee for performance of all Services contemplated herein, assuming inclusion of both the Base Project Site and the Add Alt Site;
- 3) A not-to-exceed fee for performance of each Task as delineated in Exhibit A including a separate not-to-exceed fee for performance of each Task included in the Add Alt Scope of Work as specified in Exhibit A When added together, the fees for each Task should equal the total fees for all Services as indicated in section 2) above.
- 4) Hourly billing rates for each personnel category Proposer proposes to employ for the completion of the Services; and
- 5) A not-to-exceed amount for all reimbursable costs associated with performance of the Services, including an allocation as appropriate of such costs between the Services associated with the Base Project Site and the Add Alt Site.

The Cost Proposal must be submitted in its own separate, sealed envelope within the sealed package containing all other Proposal documents. Please provide seven (7) copies of the Cost Proposal.

IX. SELECTION PROCESS

A. Evaluation

Each timely submitted Proposal will be reviewed for compliance with the form and content requirements of this RFP. A committee of BPCA employees selected by BPCA (the “Committee”) will then review and evaluate the Proposals in accordance with the evaluation criteria set forth below. While only Committee members will score the evaluation criteria, the Committee may consult an outside expert for advisement on the evaluation of matters requiring technical expertise. Before final selection, BPCA must determine that the proposed selected Proposer is responsible, in accordance with applicable law and BPCA’s Procurement Guidelines, which may be viewed at: <http://bpca.ny.gov/public-information/>.

B. Interviews

BPCA reserves the right to decide whether to interview any or all of the Proposers. The Committee may conduct interviews for many reasons, including to further assess a Proposer’s ability to perform the Work or provide specific services, or to seek information related to any other evaluation criteria. The proposed Lead PM, as well all other key personnel proposed to perform the Work, must be available to participate in the interview.

C. Evaluation Criteria for Selection

Selection will be based upon the following criteria:

1) Technical Evaluation:

- | | |
|--|-----|
| a) Expertise and experience in the design and engineering of coastal resiliency projects, including a variety of flood barrier technologies and approaches: | 35% |
| b) Expertise and experience in the design of site and right-of-way infrastructure, streetscapes, parks, public open spaces, and street/highway infrastructure: | 20% |
| c) Experience working/coordinating with NYSDOT, NYCDOT and NYCPDC | 10% |
| d) Approach to the provision of the Services, schedule, and staffing (including integration of adequate expertise and experience in all disciplines necessary to adequately perform the Services / Scope of Work, including but not limited to planning, design, coastal flooding resiliency design, specified engineering disciplines, surveying, community engagement, regulatory and legal elements). | 25% |
| e) Response to Diversity Practices Questionnaire | 10% |

2) Cost Proposal evaluation.

D. Basis for Contract Award

The Contract will be awarded to the highest technically rated Proposer whose Proposal is determined to be responsive and in the best interests of BPCA, subject to a determination that the Cost Proposal is fair, reasonable, and provides the best value to BPCA given the requirements of the Project. BPCA expects to notify the selected Proposer at the time of award of the Contract whether it has elected to include the Services for the Add Alt Site.

X. NON-COLLUSION

By submitting a Proposal, each Proposer warrants and represents that any ensuing Contract has not been solicited or secured directly or indirectly in a manner contrary to the laws of the State of New York, and that said laws have not been violated and shall not be violated as they relate to the procurement or the performance of the Contract by any conduct, including the paying or giving of any fee, commission, compensation, gift, or gratuity or consideration of any kind, directly or indirectly, to any member of the board of directors, employee, officer or official of BPCA.

XI. IRAN DIVESTMENT ACT

By submitting a Proposal or by assuming the responsibility of any Contract awarded hereunder, each Proposer certifies that it is not on the “Entities Determined To Be Non-Responsive Bidders/Offerers Pursuant to The New York State Iran Divestment Act of 2012” list (“Prohibited Entities List”) posted on the New York State Office of General Services website at: <http://www.ogs.ny.gov/about/regs/docs/ListofEntities.pdf> and further certifies that it will not utilize any subcontractor/consultant that is identified on the Prohibited Entities List on this Contract. The selected Proposer agrees that should it seek to renew or extend any Contract awarded hereunder, it must provide the same certification at the time the Contract is renewed or extended. The selected Proposer also agrees that any proposed assignee of the Contract will be required to certify that it is not on the Prohibited Entities List before BPCA may approve a request for assignment of the Contract.

During the term of any Contract awarded hereunder, should BPCA receive information that a person (as defined in State Finance Law §165-a) is in violation of the above-referenced certifications, BPCA will review such information and offer the person an opportunity to respond. If the person fails to demonstrate that it has ceased its engagement in the investment activity which is in violation of the New York State Iran Divestment Act of 2012 within 90 days after the determination of such violation, then BPCA shall take such action as may be appropriate and provided for by law, rule, or contract, including, but not limited to, seeking compliance, recovering damages, or declaring the selected Proposer in default of the awarded Contract.

BPCA reserves the right to reject any request for renewal, extension, or assignment for an entity that appears on the Prohibited Entities List prior to the renewal, extension, or assignment of the Contract, and to pursue a responsibility review with the selected Proposer should it appear on the Prohibited Entities List hereafter.

XII. ENCOURAGING USE OF NEW YORK STATE BUSINESSES IN CONTRACT PERFORMANCE

New York State businesses have a substantial presence in State contracts and strongly contribute to the economies of the state and the nation. In recognition of their economic activity and leadership in doing business in New York State, Proposers for this Contract for commodities, services or technology are strongly encouraged and expected to consider New York State businesses in the fulfillment of the requirements of the Contract. Such partnering may be as subcontractors, suppliers, protégés or other supporting roles.

Proposers are strongly encouraged, to the maximum extent practical and consistent with legal requirements, to use responsible and responsive New York State businesses in purchasing commodities that are of equal

quality and functionality and in utilizing services and technology. Furthermore, Proposers are reminded that they must continue to utilize small, minority and women-owned businesses, consistent with current State law.

Utilizing New York State businesses in State contracts will help create more private sector jobs, rebuild New York's infrastructure, and maximize economic activity to the mutual benefit of the contractor and its New York State business partners. New York State businesses will promote the contractor's optimal performance under the Contract, thereby fully benefiting the public sector programs that are supported by associated procurements.

Public procurements can drive and improve the State's economic engine through promotion of the use of New York businesses by its contractors. The State therefore expects bidders/proposers to provide maximum assistance to New York businesses in their contracts. The potential participation by all kinds of New York businesses will deliver great value to the State and its taxpayers.

Proposers can demonstrate their commitment to the use of New York State businesses by responding to the question below. Each proposer must include a response to this question with their proposal. Please note that a "yes" response requires supporting information. If yes, identify New York State businesses that will be used and attach identifying information.

Will New York State businesses be used in the performance of this contract? ☐ Yes ☐ No

EXHIBIT A

SCOPE OF WORK

I. Background and Summary

One of the two most seriously vulnerable points in Battery Park City for storm surge inundation and flooding (the other being the South Battery Park City Resiliency Project site), the North BPC Project Site area stretches from the Northern Esplanade abutting Stuyvesant High School, Stuyvesant Plaza, Route 9A just north of Chambers Street and the northerly side of Chambers Street to West Broadway. Much of the damage suffered by Battery Park City during Superstorm Sandy resulted from flooding that occurred after water from the Hudson River breached the low-lying land area that forms the North BPC Project Site. Flood waters were channeled at West Street and flowed southward creating the flow that ultimately damaged and/or destroyed major components of the Battery Park City Ballfield and Community Center. Water that entered at the North BPC Project Site also flooded other parts of Lower Manhattan, including portions of Tribeca and the World Trade Center site. Additional points within Battery Park City and areas east of West Street are at risk due to this particular point of vulnerability in the face of future, more severe storm events.

BPCA, which is responsible for planning and maintaining BPC, has both monitored and participated in collaborative discussions associated with the resiliency efforts initiated by the State of New York (through the Governor's Office of Storm Recovery) and the City of New York (through the Mayor's Office of Recovery and Resiliency), as well as other resiliency-focused efforts and organizations. The Lower Manhattan Coastal Resiliency Project ("LMCR") is the culmination of several of these early collaborations and is currently the City of New York's planning vehicle for a targeted system of flood barrier protection to extend from Montgomery Street on the Lower East Side, southward around the tip of Manhattan and up through BPC to a point just north of Chambers Street. The LMCR project, aside from design, is not yet funded. Given the urgency of the need, BPCA initiated its own resiliency assessment projects, aimed at evaluating BPC's peculiar vulnerabilities to storm-related flood damage and sea level rise. Through these resiliency assessment projects, BPCA has devised several distinct projects for the protection of BPC residents and assets that will function independently of each other and independently of other lower Manhattan resiliency measures that may be developed, and also afford a preferred means for the LMCR project, if it is built, to tie into BPC.

In follow up to its initial resiliency assessment, BPCA retained H2M Engineering + Architects to perform a more detailed conceptual assessment of the North BPC Project Site. The resulting North BPC Report, issued in 2018, identifies a preliminary conceptual placement, configuration and composition of a barrier system to provide the needed flood protection for the North BPC Project Site (the "North BPC Resiliency Concept"). The North BPC Report is attached to the RFP as Exhibit A-1. The North BPC Report provides evaluations and recommendations based on the Design Flood Elevation (DFE) of 16.5 feet (which reflects an event of greater magnitude than Superstorm Sandy), given by the North American Vertical Datum of 1988; however, it is important to note that the Project must be designed to an elevation of not less than the LMCR's DFE as it exists as the time of Contract award.

In order to provide a system with stand-alone, independent utility, the alignment for the Project must incorporate areas outside the Battery Park City boundary. In recognition of the additional property interests, the North BPC Project Site is further divided into a "Base Project Site" (including all portions of the North BPC Project Site west of Route 9A) and an "Add Alt Site" (including all portions of the North BPC Project Site east of the western right of way boundary of Route 9A). The Add Alt Site comprises property not owned or controlled by BPCA. The North BPC Plan envisions the creation of the Barrier System and the capability of the Barrier System to eventually tie into New York City's broader Lower Manhattan Coastal Resiliency ("LMCR") project, assuming one is funded and built.

II. Objectives and Overview

The Project incorporates two key objectives:

- (1) Advancing the North BPC Resiliency Concept through detailed design and engineering to final sets of construction documents suitable for contractor bidding; and
- (2) Providing construction administration services for the construction of the final Project design.

The final design must be adequate to independently protect the North BPC Project Site from floodwater inundation to an elevation of 16.5 feet NAVD, but in no event lower than the LMCR Design Flood Elevation.

The selected Proposer shall coordinate, as appropriate and as requested, with other entities or individuals that are either contracted by BPCA or identified by BPCA as having information relevant to, or an interest in, the Project. BPCA expects to procure and retain a Construction Manager in advance of the contractor procurement. The Construction Manager, outside legal counsel and other consultants shall participate in the provision of the Services through regularly scheduled meetings with the selected Proposer.

All General and Phase 1, 2 and 3 Requirements shall apply to the Work to be performed for the Base Project Site and, if elected by BPCA, for the Add Alt Site. Certain efficiencies and overlap may be achieved based upon the integration of both sites into the Project, and those efficiencies and instances of overlap should be considered by the selected Proposer in its overall Project scheduling and pricing. If the inclusion of the Add Alt Site is elected by BPCA, it is anticipated that the Work associated with each site will proceed in a roughly concurrent fashion, although the rates of progress on the sites may vary. Use of the term “Site” in any provision of the General Requirements shall be deemed to refer to either the Base Project Site or the Add Alt Site, as the case may be.

If the Add Alt Site is elected by BPCA, designs for the Add Alt Site will involve reviews and approvals by property owners and stakeholder entities over and above those directly involved in review and approval of the designs for the Base Project Site. These additional reviews and approvals should be taken into account by the Selected Proposer in developing its Project pricing and scheduling.

III. General Requirements

- a) Before commencement of any Services the selected Proposer shall:
 - i) Attend an introductory meeting with BPCA and its consultants to allow for an open exchange of information pertinent to the Services to date.
 - ii) Establish a detailed list of contacts for, and attend an initial meeting with, relevant and interested organizations, stakeholders, government entities, agencies and departments, community groups and boards, and adjacent businesses and property owners.
- b) For all Project tasks, the selected Proposer shall:
 - i) Establish a schedule for completion of Scope of Work milestones, subject to revision by and approval of BPCA;
 - ii) Attend regular progress meetings with BPCA;
 - iii) As needed, appropriate or requested by BPCA, attend periodic meetings or otherwise communicate with relevant agencies, government entities, regulatory bodies or other relevant stakeholders.
 - iv) Establish a detailed community outreach plan, subject to BPCA approval, appropriate to the particular Site, including opportunities for regular community updates and feedback, as well as periodic meetings and presentations.

- c) The selected Proposer shall provide each draft and final submission of drawings and/or specifications in paper and electronic (Adobe Reader and AutoCAD formats, as applicable) formats, and all photos, images, renderings, etc. in high resolution JPG format.
- d) Each Project task will require active collaboration and interface between the selected Proposer and BPCA staff, attorneys and/or consultants. The selected Proposer shall meet with BPCA staff regularly, no less than once every two weeks, throughout performance of the Services. The selected Proposer shall also meet with other relevant entities and organizations determined to be necessary or beneficial by the selected Proposer and/or BPCA.
- e) The target date for the Selected Proposer's production of bid documents for the Base Project Site shall be six to eight months following contract execution, with the target date for the production of biddable documents for the Add Alt Site (**IF INCLUDED**) being ten to twelve months following contract execution. It is possible that portions of the North BPC Resiliency construction project may be bid under separate contracts and at different stages in order to allow construction to begin at the earliest possible date. The selected Proposer, in consultation with BPCA, may propose alternate phasing plans and timeframes for the various tasks associated with the Project; however, the target date for completion of the Project shall remain thirty-three (33) months from execution of the selected Proposer's contract.

IV. Project Phases

Phase 1: Overall Project Objective Overview and Surveys

- a) The selected Proposer shall prepare topographic and utility surveys in accordance with commonly accepted industry standards of the Base Project Site, which, for purposes of this task, shall be expanded to include all areas West of Route 9A and North of Warren Street (to the water's edge). Also, if elected by BPCA, the selected Proposer shall prepare topographic and utility surveys in accordance with commonly accepted industry standards of the Add Alt Site, which for purposes of this task, shall be expanded to include all areas within the boundary formed by Route 9A, Warren Street West Broadway, and Reade Street (which shall include a line of projection back to Route 9A).
- b) The selected Proposer shall prepare topographic and utility surveys in accordance with commonly accepted industry standards of all roadways, sidewalks and waterfront areas (not otherwise included in the site descriptions above) that are south of Chambers Street and east of the west curb line of Route 9A.
- c) Based upon the results of the surveys, the selected Proposer shall perform coastal modeling to confirm the extent of potential protection afforded by, and any potential adjustments to, the conceptual alignment of the Barrier System (within the same general area of the identified segments) recommended for the purpose of providing improved protection, lessening of visual impacts, avoidance of impediments, and/or potential cost savings.

Phase 2: Design Development and Construction Documents

a) Community & Stakeholder Outreach

- i) The selected Proposer shall conduct preliminary meetings with the local community members, the Community Board and interested groups as directed by BPCA. At such meetings, the selected Proposer shall present the status and/or outcomes of Phase 1, as well as the status and plans for design development, and take under consideration all concerns and ideas expressed about the North BPC Resiliency Project. The selected Proposer shall submit to BPCA a summary documenting the minutes of each meeting and/or presentation. The selected Proposer shall document all attendees of the meetings and may distribute, upon BPCA's approval, copies of the meeting minutes to attendees.
- ii) Although it is not possible to specify the exact number of community and stakeholder-related meetings the North BPC Resiliency Project will require, as it will depend in part upon the number and complexity of specific issues that may arise during the course of the Project, as well as the number of presentations that BPCA determines would be advantageous to the Project. However, for purposes of the Proposals, Proposers should plan for two initial meetings **for each Project site (the Base Project Site and the Add Alt Site)** to include community and stakeholder constituents, along with an additional six meetings to follow through the design development phase, for a total of eight (8) community/stakeholder meetings **for each Project site (the Base Project Site and the Add Alt Site)**. If additional meetings are required for the Project, the additional cost associated with the additional meeting(s) will be addressed either through an allowance incorporated into or an amendment of the Contract.

b) Design Development

- i) Based on the input and comments obtained from BPCA, the community and interested

stakeholders, coupled with its analysis of required features and elements sufficient to achieve the desired degree of flood protection (approximately 16.5' NAVD, but in no event lower than the LMCR Design Flood Elevation), the selected Proposer shall prepare design plans that include details of site design, landscape design, street design, streetscape design, existing and proposed plans, elevations, cross-sections, lighting design and all other appropriate elements and details. The selected Proposer shall present the proposed treatments in a schematic plan view, together with typical cross-section views showing the interrelationship between the various elements, as well as the existing and proposed utilities. Illustrative streetscape views, including perspectives shall be shown as required to demonstrate the interrelationship of the distinctive design elements and the overall effect of the proposed improvements to the urban environment.

- ii) The selected Proposer shall incorporate the contents of the completed topographic and utility surveys into the design documents. The selected Proposer shall utilize as much information from these surveys as may be necessary to check design assumptions of the preliminary design and potential interference with substructures and/or abutting properties.
- iii) The selected Proposer shall provide a geotechnical survey of the Site, which survey shall be prepared in accordance with commonly accepted industry standards.
- iv) The selected Proposer shall further develop the plans and details, including but not limited to: preliminary foundation design, landscape design, utility impacts, and site impacts.
- v) The selected Proposer shall review the design development documents with BPCA as they are being developed.
- vi) Upon completion of the design development documents, or as otherwise deemed appropriate by BPCA, the selected Proposer shall submit plans (making presentations if requested by BPCA), applications and other related documents and materials, as required, to all interested agencies, entities, organizations and/or other parties that have jurisdiction over the area involved in this Services Phase, or that, in the opinion of BPCA, have a legal or otherwise legitimate interest in the Project, in order to obtain required approvals, permits, certifications, consents or franchises.
- vii) The selected Proposer shall revise, modify or correct, as appropriate, the design development documents in accordance with the comments received from the interested reviewing parties. The affected portions of the revised drawings shall be resubmitted, as necessary, to the interested parties for review and, where required, approval. The selected Proposer shall initiate all follow-up meetings, as necessary, to expeditiously resolve all questions and concerns and to obtain required approvals.
- viii) The selected Proposer shall provide services, as necessary, to obtain certification of the Federal Emergency Management Agency ("FEMA") for flood protection systems which must meet or exceed the requirements of Title 44, Chapter 1, Section 65.10 of the Code of Federal Regulations ("44 CFR 65.10").

c) Construction Documents

- i) The selected Proposer shall prepare contract documents for the purpose of contractor bidding and procurement. Drawings included in the contract documents shall be prepared with necessary construction details, fully dimensioned and with detailed specifications from which prospective bidders can make accurate and reliable estimates of the quantities, quality and character of the labor and materials required to complete the bid contract and to install any equipment therein.
- ii) The selected Proposer shall prepare all required contract documents in a manner and form that enables BPCA to award the necessary contract/s for construction. The contract documents shall include, but shall not be limited to final drawings and specifications for all

- elements of the Project.
- iii) The selected Proposer shall participate in a constructability review of the contract documents that shall be carried out by the Construction Manager and BPCA.
 - iv) The selected Proposer shall subsequently prepare, and revise as necessary, an interim and a final cost estimate for construction of the final design of the Site as reflected by the contract documents, which shall be prepared in a format approved by the Construction Manager and BPCA and shall evaluate and perform cost estimates for any proposed value engineering options.
 - v) The selected Proposer shall make progress submissions as requested by BPCA adhering to the following general guidelines:
 - 60% final design documents
 - 90% final design documents
 - Contract documents (for bidding and procurement)
 - vi) The selected Proposer shall develop construction phasing plans in consultation with BPCA, the Construction Manager and other consultants.

Phase 3: Bidding and Construction Administration

a) Bidding and Negotiation

- i) The selected Proposer shall assist with review of contractors' bids.
- ii) The selected Proposer shall prepare conformed documents to reflect the procured scope, if necessary, due to the incorporation of any proposed bid alternates.

b) Construction Administration

- i) The selected Proposer shall review and approve shop drawings, product data, samples and similar submittal materials of the contractors.
- ii) The selected Proposer shall visit the site periodically over the construction duration to determine whether the construction work is being performed in accordance with the requirements of the contract documents.
- iii) The selected Proposer shall participate in regular construction meetings during construction with BPCA and others and conduct site visits when needed or requested.
- iv) The selected Proposer shall periodically observe the status of the construction work to determine recommendations as to the dates of substantial completion and final completion and prepare and update punch lists as required to inform BPCA and the contractors of any deficiencies in the construction work.
- v) The selected Proposer shall develop and revise required cost estimates for change order work if requested.
- vi) The selected Proposer shall provide services in support of the closeout of the Project with the contractors and all authorities having jurisdiction. Such closeout services shall include completion of FEMA accreditation.

EXHIBIT A-1

(North BPC Report)

EXHIBIT B

CONTRACTOR REQUIREMENTS AND PROCEDURES FOR PARTICIPATION BY NEW YORK STATE-CERTIFIED MBEs/WBEs/SDVOBs AND EQUAL EMPLOYMENT OPPORTUNITIES FOR MINORITY GROUP MEMBERS AND WOMEN

NEW YORK STATE LAW

Pursuant to New York State Executive Law Article 15-A and Parts 140-145 of Title 5 of the New York Codes, Rules and Regulations BPCA is required to promote opportunities for the maximum feasible participation of New York State-certified MBEs/WBEs (collectively, “MWBE(s)”) and the employment of minority group members and women in the performance of BPCA contracts. Pursuant to New York State Executive Law Article 17-B and 9 NYCRR §252, BPCA recognizes its obligation under the law to promote opportunities for maximum feasible participation of certified SDVOBs.

Business Participation Opportunities for MWBEs

For purposes of this solicitation, BPCA hereby establishes the following MWBE participation goals, based on the current availability of MWBEs:

Overall goal for total MWBE participation: 30%

NYS-Certified Minority-Owned Business (“MBE”) Participation: 15%

NYS-Certified Women-Owned Business (“WBE”) Participation: 15%

A contractor (“Contractor”) on any contract resulting from this procurement (“Contract”) must document its good faith efforts to provide meaningful participation by MWBEs as subcontractors and suppliers in the performance of the Contract. To that end, by submitting a response to this RFP, the Proposer agrees that BPCA may withhold payment pursuant to any Contract awarded as a result of this RFP pending receipt of the required MWBE documentation. The directory of MWBEs can be viewed at: <https://ny.newnycontracts.com>. For guidance on how BPCA will evaluate a Contractor’s “good faith efforts,” refer to 5 NYCRR § 142.8.

The Proposer understands that only sums paid to MWBEs for the performance of a commercially useful function, as that term is defined in 5 NYCRR § 140.1, may be applied towards the achievement of the applicable MWBE participation goal. The portion of a contract with an MWBE serving as a broker that shall be deemed to represent the commercially useful function performed by the MWBE shall be 25 percent of the total value of the contract.

In accordance with 5 NYCRR § 142.13, the Proposer further acknowledges that if it is found to have willfully and intentionally failed to comply with the MWBE participation goals set forth in a Contract resulting from this RFP, such finding constitutes a breach of contract and BPCA may withhold payment as liquidated damages.

Such liquidated damages shall be calculated as an amount equaling the difference between: (1) all sums identified for payment to MWBEs had the Contractor achieved the contractual MWBE goals; and (2) all sums actually paid to MWBEs for work performed or materials supplied under the Contract.

By submitting a bid or proposal, a Proposer agrees to demonstrate its good faith efforts to achieve the applicable MWBE participation goals by submitting evidence thereof through the New York State Contract System (“NYSCS”), which can be viewed at <https://ny.newnycontracts.com>, provided, however, that a Proposer may arrange to provide such evidence via a non-electronic method by contacting Mr. Anthony Peterson at Anthony.peterson@bpca.ny.gov or 212-417-2337. Please note that the NYSCS is a one-stop solution for all of your MBE/WBE and Article 15-A contract requirements. For additional information on the use of the NYSCS to meet the Proposer’s MBE/WBE

requirements, please see the attached MBE/WBE guidance from the New York State Division of Minority and Women's Business Development, "Your MWBE Utilization and Reporting Responsibilities Under Article 15-A."

Additionally, a Proposer will be required to submit the following documents and information as evidence of compliance with the foregoing:

- A. An MWBE Utilization Plan with their bid or proposal. Any modifications or changes to an accepted MWBE Utilization Plan after the Contract award and during the term of the Contract must be reported on a revised MWBE Utilization Plan and submitted to BPCA for review and approval.
- B. BPCA will review the submitted MWBE Utilization Plan and advise the Proposer of BPCA acceptance or issue a notice of deficiency within 30 days of receipt.
- C. If a notice of deficiency is issued, the Proposer will be required to respond to the notice of deficiency within seven (7) business days of receipt by submitting to Mr. Anthony Peterson at BPCA, by email at Anthony.peterson@bpca.ny.gov, a written remedy in response to the notice of deficiency. If the written remedy that is submitted is not timely or is found by BPCA to be inadequate, BPCA shall notify the Proposer and direct the Proposer to submit, within five (5) business days, a request for a partial or total waiver of MWBE participation goals. Failure to file the waiver form in a timely manner may be grounds for disqualification of the bid or proposal.
- D. BPCA may disqualify a Proposer as being non-responsive under the following circumstances:
 - 1) If a Proposer fails to submit an MWBE Utilization Plan;
 - 2) If a Proposer fails to submit a written remedy to a notice of deficiency;
 - 3) If a Proposer fails to submit a request for waiver; or
 - 4) If BPCA determines that the Proposer has failed to document good faith efforts.

The successful Proposer will be required to attempt to utilize, in good faith, any MBE or WBE identified within its MWBE Utilization Plan, during the performance of the Contract. Requests for a partial or total waiver of established goal requirements made subsequent to Contract Award may be made at any time during the term of the Contract to BPCA, but must be made no later than prior to the submission of a request for final payment on the Contract.

The successful Proposer will be required to submit a quarterly M/WBE Contractor Compliance & Payment Report to BPCA, by the 10th day following each end of quarter over the term of the Contract documenting the progress made toward achievement of the MWBE goals of the Contract.

Business Participation Opportunities for SDVOBs

For purposes of this solicitation, BPCA hereby establishes an overall goal of 6% for SDVOB participation. A Proposer must document good faith efforts to provide meaningful participation by SDVOBs as subcontractors or suppliers in the performance of the Contract and Proposer agrees that BPCA may withhold payment pending receipt of the required SDVOB documentation. The directory of New York State Certified SDVOBs can be viewed at: http://www.ogs.ny.gov/Core/docs/CertifiedNYS_SDVOB.pdf. For guidance on how BPCA will determine a Contractor's "good faith efforts," refer to 9 NYCRR §252.2(f)(2).

In accordance with 9 NYCRR §252.2(s), the Proposer acknowledges that if it is found to have willfully and intentionally failed to comply with the SDVOB participation goals set forth in the Contract, such finding constitutes a breach of Contract and Contractor shall be liable for damages as specified in the Contract.

Such damages shall be calculated based on the actual cost incurred by BPCA related to BPCA's expenses for personnel, supplies and overhead related to establishing, monitoring and reviewing certified SDVOB programmatic goals.

- A. Additionally, a Proposer agrees to submit a Utilization Plan with their bid or Proposal as evidence of compliance with the foregoing. Any modifications or changes to the Utilization Plan after the Contract award and during the term of the Contract must be reported on a revised Utilization Plan and submitted to BPCA.
- B. BPCA will review the submitted Utilization Plan and advise the Proposer of BPCA's acceptance or issue a notice of deficiency within 30 days of receipt.
- C. If a notice of deficiency is issued, Proposer agrees that it shall respond to the notice of deficiency within seven (7) business days of receipt by submitting to Mr. Anthony Peterson at BPCA, by email at Anthony.peterson@bpca.ny.gov, a written remedy in response to the notice of deficiency. If the written remedy that is submitted is not timely or is found by BPCA to be inadequate, BPCA shall notify the Proposer and direct the Proposer to submit, within five (5) business days, a request for a partial or total waiver of SDVOB participation goals. Failure to file the waiver form in a timely manner may be grounds for disqualification of the bid or Proposal.
- D. BPCA may disqualify a Proposer as being non-responsive under the following circumstances:
 - 1) If a Proposer fails to submit a Utilization Plan;
 - 2) If a Proposer fails to submit a written remedy to a notice of deficiency;
 - 3) If a Proposer fails to submit a request for waiver; or
 - 4) If BPCA determines that the Proposer has failed to document good faith efforts.

The successful Proposer shall attempt to utilize, in good faith, any SDVOB identified within its Utilization Plan, during the performance of the Contract. Requests for a partial or total waiver of established goal requirements made subsequent to the Contract award may be made at any time during the term of the Contract to BPCA, but must be made no later than prior to the submission of a request for final payment on the Contract.

The successful Proposer is required to submit a Contractor's SDVOB Contractor Compliance & Payment Report to BPCA on a monthly basis over the term of the Contract documenting the progress made toward achievement of the SDVOB goals of the Contract.

Equal Employment Opportunity Requirements

By submission of a bid or proposal in response to this solicitation, the Proposer agrees with all of the terms and conditions of the attached MWBE Equal Employment Opportunity Policy Statement. The Proposer is required to ensure that it and any subcontractors awarded a subcontract for the construction, demolition, replacement, major repair, renovation, planning or design of real property and improvements thereon (the "Work"), except where the Work is for the beneficial use of the Proposer, undertake or continue programs to ensure that minority group members and women are afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability or marital status. For these purposes, equal opportunity shall apply in the areas of recruitment, employment, job assignment, promotion, upgrading, demotion, transfer, layoff, termination, and rates of pay or other forms of compensation. This requirement does not apply to: (i) work, goods, or services unrelated to the Contract; or (ii) employment outside New York State.

The Proposer will be required to submit a Minority and Women-owned Business Enterprise and Equal Employment Opportunity Policy Statement, Form # 4, to BPCA with its bid or proposal.

If awarded a Contract, Proposer shall submit a Workforce Utilization Report and shall require each of its Subcontractors to submit a Workforce Utilization Report, in such format as shall be required by BPCA on a monthly basis during the term of the Contract.

Pursuant to Executive Order #162, contractors and subcontractors will also be required to report the gross wages paid to each of their employees for the work performed by such employees on the contract utilizing the Workforce Utilization Report on a quarterly basis.

Further, pursuant to Article 15 of the Executive Law (the “Human Rights Law”), all other State and Federal statutory and constitutional non-discrimination provisions, the Contractor and sub-contractors will not discriminate against any employee or applicant for employment because of race, creed (religion), color, sex, national origin, sexual orientation, military status, age, disability, predisposing genetic characteristic, marital status or domestic violence victim status, and shall also follow the requirements of the Human Rights Law with regard to non-discrimination on the basis of prior criminal conviction and prior arrest.

Please Note: Failure to comply with the foregoing requirements may result in a finding of non-responsiveness, non-responsibility and/or a breach of the Contract, leading to the withholding of funds, suspension or termination of the Contract or such other actions or enforcement proceedings as allowed by the Contract.



Your MBE/WBE Utilization and Reporting Responsibilities Under Article 15-A

The New York State Contract System (“NYSCS”) is your one stop tool compliance with New York State’s MBE/WBE Program. It is also the platform New York State uses to monitor state contracts and MBE/WBE participation.

GETTING STARTED

To access the system, please login or create a user name and password at <https://ny.newnycontracts.com/FrontEnd/VendorSearchPublic.asp?TN=ny&XID=7562>. If you are uncertain whether you already have an account set up or still need to register, please send an email to the customer service contact listed on the Contact Us & Support page, or reach out to Mr. Anthony Peterson at Anthony.peterson@bpca.ny.gov or 212-417-2337. For verification, in the email, include your business name and contact information.

VENDOR RESPONSIBILITIES

As a vendor conducting business with New York State, you have a responsibility to utilize minority- and/or women-owned businesses in the execution of your contracts, per the MBE/WBE percentage goals stated in your solicitation, incentive proposal or contract documents. NYSCS is the tool that New York State uses to monitor MBE/WBE participation in state contracting. Through the NYSCS you will submit utilization plans, request subcontractors, record payments to subcontractors, and communicate with your project manager throughout the life of your awarded contracts.

There are several reference materials available to assist you in this process, but to access them, you need to first be registered within the NYSCS. Once you log onto the website, click on the **Help & Support** >> link on the lower left hand corner of the Menu Bar to find recorded trainings and manuals on all features of the NYSCS. You may also click on the **Help & Tools** icon at the top right of your screen to find videos tailored to primes and subcontractors. There are also opportunities available to join live trainings, read up on the “Knowledge Base” through the Forum link, and submit feedback to help improve future enhancements to the system. Technical assistance is always available through the **Contact Us & Support** link on the NYSCS website (<https://ny.newnycontracts.com/FrontEnd/VendorSearchPublic.asp?TN=ny&XID=7562>).

For more information, contact Mr. Anthony Peterson at Anthony.peterson@bpca.ny.gov or 212-417-2337.

MINORITY AND WOMEN-OWNED BUSINESS ENTERPRISES

EQUAL EMPLOYMENT OPPORTUNITY POLICY STATEMENT

MBE/WBE AND EEO POLICY STATEMENT

I, _____ (the "Contractor"), agree to adopt the following policies with respect to the project being developed at, or services rendered to, the Battery Park City Authority ("BPCA").

MBE/WBE

This organization will and will cause its contractors and subcontractors to take good faith actions to achieve the MBE/WBE contract participations goals set by the State for that area in which the State-funded project is located, by taking the following steps:

- (1) Actively and affirmatively soliciting bids for contracts and subcontracts from qualified State certified MBEs or WBEs, including solicitations to MBE/WBE contractor associations.
- (2) Requesting a list of State-certified MBEs/WBEs from BPCA and soliciting bids from these MBEs/WBEs directly.
- (3) Ensuring that plans, specifications, request for proposals and other documents used to secure bids will be made available in sufficient time for review by prospective MBEs/WBEs.
- (4) Where feasible, dividing the work into smaller portions to enhance participations by MBEs/WBEs and encourage the formation of joint venture and other partnerships among MBE/WBE contractors to enhance their participation.
- (5) Documenting and maintaining records of bid solicitation, including those to MBEs/WBEs and the results thereof. The Contractor will also maintain records of actions that its subcontractors have taken toward meeting MBE/WBE contract participation goals.
- (6) Ensuring that progress payments to MBEs/WBEs are made on a timely basis so that undue financial hardship is avoided, and that bonding and other credit requirements are waived or appropriate alternatives are developed to encourage MBE/WBE participation.

EEO

- (a) This organization will not discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, age, disability or marital status, will undertake or continue existing diversity programs to ensure that minority group members are afforded equal employment opportunities without discrimination, and shall make and document its conscientious and active efforts to employ and utilize minority group members and women in its work force on State contracts.
- (b) This organization shall state in all solicitation or advertisements for employees that in the performance of the State contract all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex disability or marital status.
- (c) At the request of BPCA, this organization shall request that each employment agency, labor union, or authorized representative will not discriminate on the basis of race, creed, color, national origin, sex, age, disability or marital status and that such union or representative will affirmatively cooperate in the implementation of this organization's obligations herein.
- (d) The Contractor shall comply with the provisions of the Human Rights Law, all other State and Federal statutory and constitutional non-discrimination provisions. The Contractor and subcontractors shall not discriminate against any employee or applicant for employment because of race, creed (religion), color, sex, national origin, sexual orientation, military status, age, disability, predisposing genetic characteristic, marital status or domestic violence victim status, and shall also follow the requirements of the Human Rights Law with regard to non-discrimination on the basis of prior criminal conviction and prior arrest.
- (e) This organization will include the provisions of sections (a) through (d) of this agreement in every subcontract in such a manner that the requirements of the subdivisions will be binding upon each subcontractor as to work in connection with the State contract.

Battery Park City Authority Request For Proposals

Agreed to this _____ day of _____, 2016

By _____

Print: _____ Title: _____

_____ is designated as the Consultant's Minority Business Enterprise Liaison responsible for administering the Minority and Women-Owned Business Enterprises - Equal Employment Opportunity (MBE/WBE - EEO) program.

MBE/WBE Contract Goals

30% Minority and Women's Business Enterprise Participation

____% Minority Business Enterprise Participation

____% Women's Business Enterprise Participation

EEO Contract Goals (if applicable)

____% Minority Labor Force Participation

____% Female Labor Force Participation

(Authorized Representative)

Title: _____

Date: _____

Diversity Practices Questionnaire

I, _____, as _____ (title) of _____ company (the "Company"), swear and/or affirm under penalty of perjury that the answers submitted to the following questions are complete and accurate to the best of my knowledge:

1. Does your Company have a Chief Diversity Officer or other individual who is tasked with supplier diversity initiatives? Yes or No

If Yes, provide the name, title, description of duties, and evidence of initiatives performed by this individual or individuals.

2. What percentage of your Company's gross revenues (from your prior fiscal year) was paid to New York State certified MBEs/WBEs as subcontractors, suppliers, joint-ventures, partners or other similar arrangement for the provision of goods or services to your Company's clients or customers?

3. What percentage of your Company's overhead (i.e. those expenditures that are not directly related to the provision of goods or services to your Company's clients or customers) or non-contract-related expenses (from your prior fiscal year) was paid to New York State certified MBEs/WBEs as suppliers/contractors?¹

4. Does your Company provide technical training² to MBEs/WBEs? Yes or No

If Yes, provide a description of such training which should include, but not be limited to, the date the program was initiated, the names and the number of MBEs/WBEs participating in such training, the number of years such training has been offered and the number of hours per year for which such training occurs.

5. Is your Company participating in a government approved M/WBE mentor-protégé program?

If Yes, identify the governmental mentoring program in which your Company participates and provide evidence demonstrating the extent of your Company's commitment to the governmental mentoring program.

6. Does your Company include specific quantitative goals for the utilization of MBEs/WBEs in its non-government procurements? Yes or No

If Yes, provide a description of such non-government procurements (including time period, goal, scope and dollar amount) and indicate the percentage of the goals that were attained.

7. Does your Company have a formal M/WBE supplier diversity program? Yes or No

If Yes, provide documentation of program activities and a copy of policy or program materials.

8. Does your Company plan to enter into partnering or subcontracting agreements with New York State certified MBEs/WBEs if selected as the successful Proposer? Yes or No

If Yes, complete the attached Utilization Plan

¹ Do not include onsite project overhead.

² Technical training is the process of teaching employees how to more accurately and thoroughly perform the technical components of their jobs. Training can include technology applications, products, sales and service tactics, and more. Technical skills are job-specific as opposed to soft skills, which are transferable.

Battery Park City Authority Request For Proposals

All information provided in connection with the Diversity Practices Questionnaire is subject to audit and any fraudulent statements are subject to criminal prosecution and debarment.

Signature of
Owner/Official
Printed Name of
Signatory
Title

Name of Business

Address

City, State, Zip

STATE OF _____

COUNTY OF _____) ss:

On the _____ day of _____, 20____, before me, the undersigned, a Notary Public in and for the State of _____, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to this certification and said person executed this instrument.

Notary Public

EXHIBIT C

(BPCA Sample Form of Contract)

(attached)

EXHIBIT D

(Acknowledgement of Addenda)

RFP TITLE: _____

Complete Part I <u>or</u> Part II, whichever is applicable, and sign your name in Part III.
--

Part I

Listed below are the dates of issue for each Addendum received in connection with this RFP:

Addendum # 1, Dated _____, ____

Addendum # 2, Dated _____, ____

Addendum # 3, Dated _____, ____

Addendum # 4, Dated _____, ____

Addendum # 5, Dated _____, ____

Addendum # 6, Dated _____, ____

Part II Acknowledgement of No Receipt

_____ No Addendum was received in connection with this RFP

Part III

Proposer's Name: _____

Proposer's Authorized Representative:

Name: _____

Title: _____

Signature: _____ Date: _____

EXHIBIT E

List of BPCA & BPCPC Board Members and Employees

(attached)

LIST OF BOARD MEMBERS

George J. Tsunis (Chair)

Donald Capoccia

Lester Petracca

Louis J. Bevilacqua

Catherine McVay Hughes

Martha J. Gallo

Anthony Kendall

Employees:

Betzayda Abreu	Robert Hansen	Bruno Pomponio
Deborah Addison	Nimisha Haribaran	Katherine Powell
Curtis Afzal	Nicole Heater	Sandra Power
Elsa Alvarez	Sankar Heerah	Robert Quon
Dana Anders	Sonia Henry	Jason Rachnowitz
Anthony Andriano	Stephanie Huayta	Madelin Ramirez
Stephen Arciold	Craig Hudon	Manual Rivera
Sharmila Baichu	Amy Jogie	Anthony Robinson
Marie Baptiste	William John	Nelson Rogers
Brett Beecham	Jasmine Johnson	Jose Rosado
Freddy Belliard	Benjamin Jones	Holly Ross
Emily Birdseye	Roland Kemp	DeCorey Rowe
Nidia Blake-Reeder	Ann Ketring	Carlos Santiago
LaToya Brooks-Jones	Susie Kim	Nicholas Sbordone
Nancy Buivid	Karl Koenig	Jean Schwartz
Anthony Buquicchio	Leandro Lafuente	Jesse Schwartz
Peter Campbell	Michael Lamancusa	Lindsey Senn
Frances Caperchi	Della Lee	Rekha Sewraj
Monica Centeno	Rene Lopcy	Sean Simon
Carlton Chotalal	Janira Lopez	Kemnarine Singh
Julissa Cooke	Robert Maggi	Timothy Skipper
Gwen Dawson	Evelin Maisonet	Sarah Smedley
Nicole Dawson	Jonathan McCain	Bruce Spierer
Gilbert DePadua	Princess McNeill	Nicole Stallworth-Roper
Paul Diaz-Larui	Vanessa Mesine	Shinay Stewart
Tonasia Dopson	Ronnie Mohammed	Jerome Sturiano
Patricia Ehlers	Dana Morgera	Lance Super
Abigail Ehrlich	Lauren Murtha	John Tam
Maria Ellison	Eric Munson	Taujuana Taylor
Richard Faraino	Bertha Narcisse	Alexis Torres
Anitra Fauntleroy	Robert Nesmith	Ryan Torres
Pamela Frederick	Siu May NG	Douglas Van Horn
James Gallagher	Yoshihiro Nishida	Noe Velasquez
Joseph Ganci	Anne O'Neill	Evangelio Villalobos
Abigail Goldenberg	Bienvenido Osorio	Jeffrey Vixamar
Anastasia Gonzalez	Maril Ortiz	Sharon Wade
Lenron Goode	Kevin O'Toole	David Wallace
Neresa Gordon	Hector Oyola	Eric White
Sakina Graves	Willem Paillant	Angela Whitehead
Ned Greenberg	Jonathan Parker	Dwight Williams
Evelyn Gregg	Gladys Pearlman	Kenneth Windman
Jonathan Gross	Dahlia Pena	Al Wright
	Anthony Peterson	

PRELIMINARY PLANNING REPORT

Battery Park City Authority
Resiliency Concept Plan Evaluation
Final Report

200 Liberty Street, 24th Floor
New York, New York 10281

H2M Project No.
BPCA 1701

AUGUST 2018

Prepared for:

Battery Park City Authority
200 Liberty Street, 24th Floor
New York, New York 10281

Prepared by:

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1.0 INTRODUCTION

1.1 Project Overview

The Battery Park City Authority (BPCA) is evaluating the potential for implementation of a flood barrier system (FBS) that would minimize risks to its northwestern and norther borders from coastal flooding. In the aftermath of Hurricane Sandy with its historic 14-foot storm surge¹ causing unprecedented financial damages and disruptions, New York City and other locations on the eastern sea board, governments, business and property owners have begun to plan for a future where coastal development is more resilient to events such as these. While the potential for severe weather associated with climate change continues to threaten coastal areas, such endeavors are critical to ensure that investments are protected.

This report provides a preliminary review of an FBS that would protect the BPCA from the design flood elevation (DFE) of 16.5 feet North American Vertical Datum of 1988 (NAVD88), an event of greater flooding magnitude than Hurricane Sandy's. Various types of barrier structures and flooding protection options have been reviewed and preliminary options that may be promising along each segment of the route are discussed.

1.2 Report Purpose

The purpose of this report is to provide preliminary consideration and visual renderings of an FBS that would achieve BPCA goals of protection to the DFE and identify options that may be viable for further detailed engineering evaluation and discussion with stakeholders. The options discussed and depicted within this report are at the earliest stages of concept planning; barrier heights along varying segments of the FBS route have been preliminarily estimated and potentially effective FBS options are discussed for the purposes of furthering the planning process. This high-level overview of barrier concepts and renderings of different techniques is intended for use in explaining the FBS concept and is not a detailed engineering study. All the concepts identified within should be subject to further detailed planning, design and consideration. Section 5 "General Conclusions and Next Steps" includes information about the type of future engineering and planning studies that would be recommended should any of the FBS strategies be further pursued.

1.3 Elevation Review

The initial concept provided by BPCA shown in Figure 1.1 identified the proposed route for the wall/barrier system beginning at the intersection of Chambers Street and River Terrace, crossing West Street on a diagonal path, and continuing east on Chambers Street to terminate at the northwest corner of the intersection of Chambers and Greenwich Streets. The extent of this route correlates well to the 2050s sea level rise (SLR) 100-year flood plain currently being used by New York City for resiliency planning (See Figure 1.2).

¹ A Stronger More Resilient New York. June 2013. New York City. http://s-media.nyc.gov/agencies/sirr/SIRR_singles_Lo_res.pdf

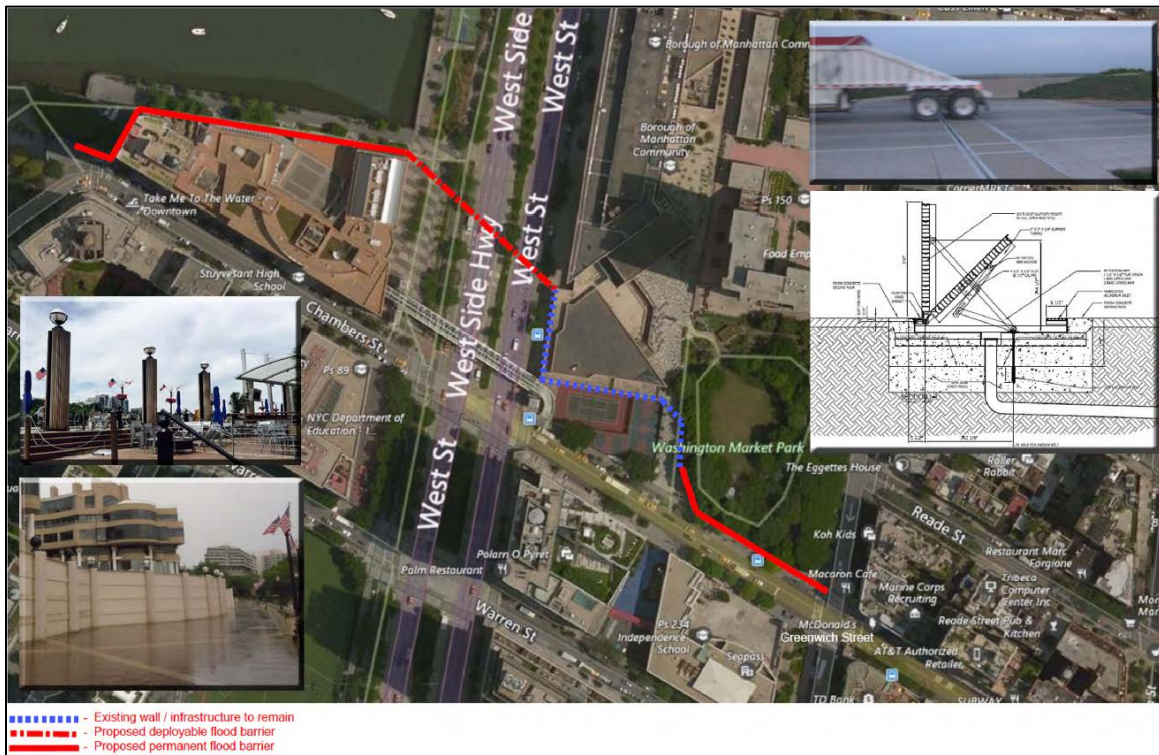


Figure 1.1 Initial FBS Route

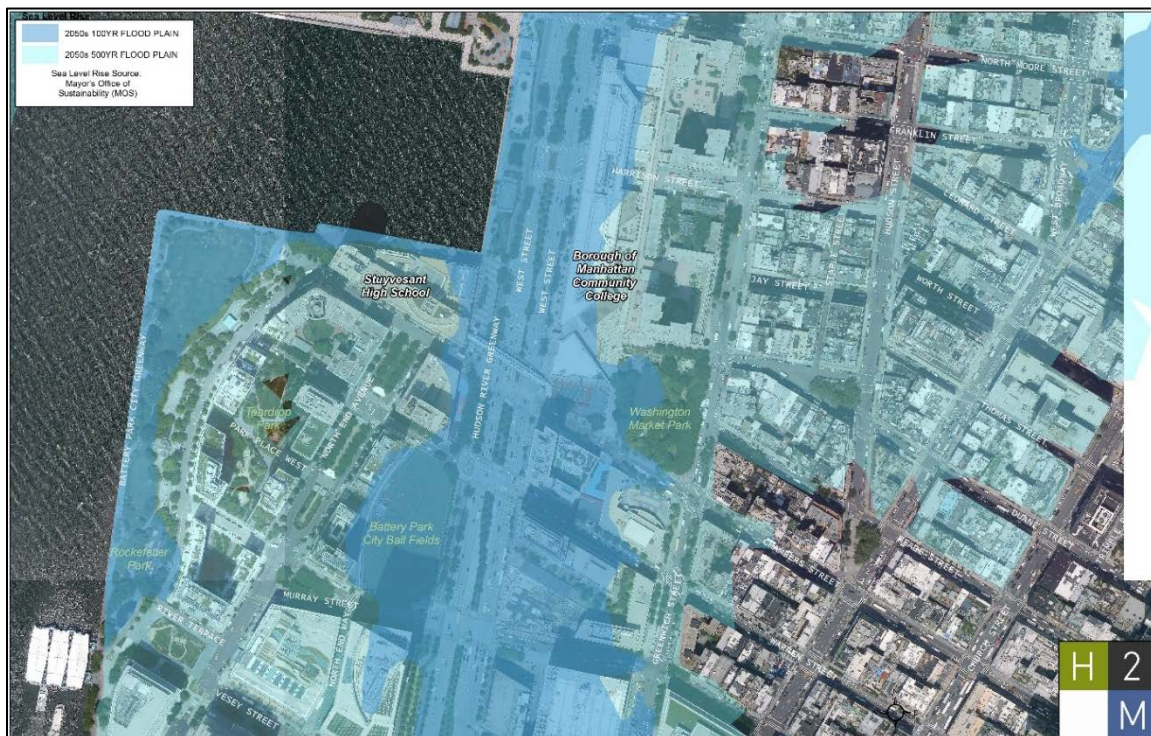


Figure 1.2 2050s 100 and 500 Year Storm Flood Plain

As part of the conceptual evaluation, H2M utilized several sources of elevation information along the proposed FBS route to identify estimated required heights and extent of potential flood barrier wall options. Available data for the proposed route of the wall/barrier system included several record plans for portions of Chambers Street, West Street and the walkway north of Stuyvesant High School. These plans included topographic information based on the Manhattan Borough Datum, which varies from the North American Vertical Datum of 1988 (NAVD88) referenced throughout this study. It is necessary to add 1.65 to all elevations on these record plans to convert the information to NAVD88. The plans also included limited utility information.

Field elevations were also obtained. Initially, several spot elevations were taken along the proposed route using a Trimble Geo7X Handheld GPS Device. The spot elevations confirmed that the ground elevation at the western beginning point of the proposed barrier system exceeded 16.5, which would provide the necessary protection against the design flood elevation (DFE) of 16.5 feet. However, at the eastern terminus, ground elevations at the planned FBS terminus did not reach 16.5, which would not provide the required protection for the design flood, as water could flow to the south along Greenwich Street and beyond.

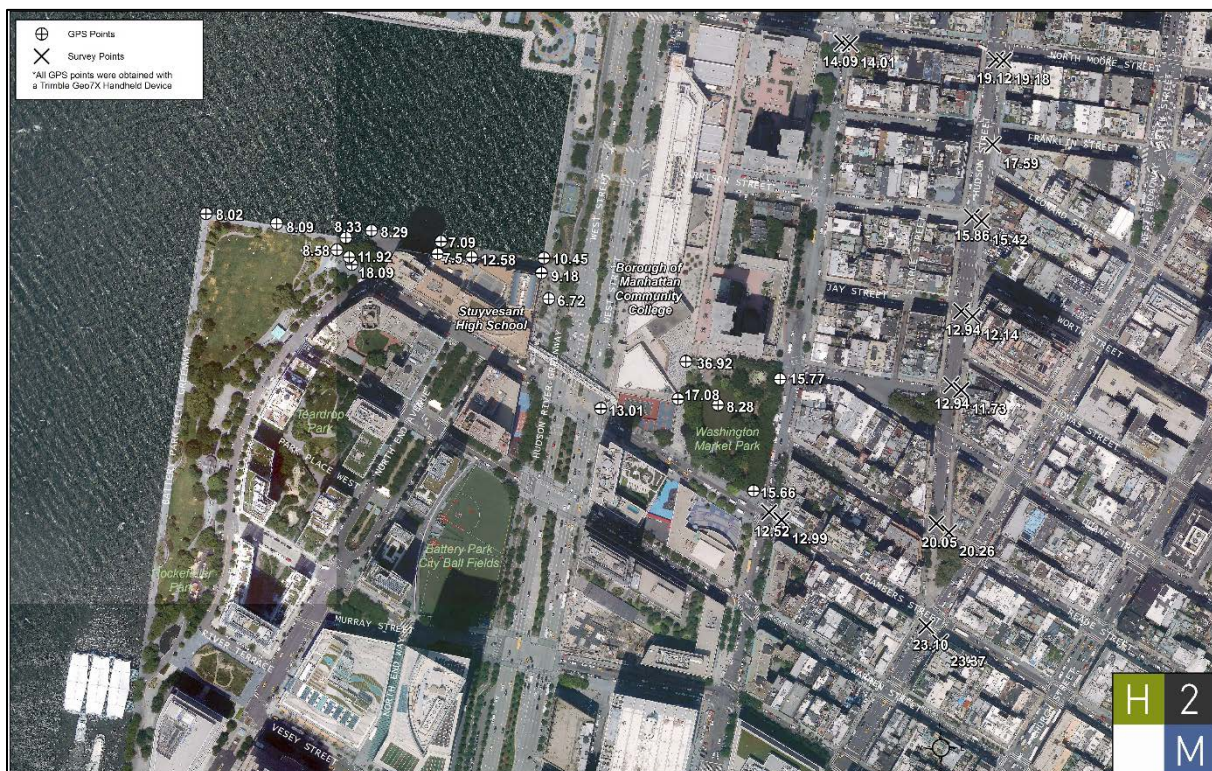


Figure 1.3 Field Elevation Survey Values

This finding indicated that in order to achieve protection to the 16.5 DFE, the wall route would need to be extended further to the east in order to terminate at a ground elevation of 16.5. Reliable topographic information was unavailable for this area, and therefore additional elevations were obtained via survey at various points along Greenwich Street and Hudson Street as shown in Figure 1.3. Based on this information, the approximate location of the 16.5 contour shown in Figure 1.3 was identified. As a result, to achieve full protection for the 16.5 feet design flood elevation (DFE) the proposed flood wall/barrier system needs to extend east along Chambers Street to approximately the midblock to meet this elevation as shown in Figure 1.4.

These limited elevations studies provided potential barrier heights to be used for planning purposes based on the difference between ground elevations and the DFE along the route. They also confirmed that a

portion of Manhattan Community College Performing Arts Center would be an integral portion of the flood barrier system along the current route and that the walkway between the basketball/tennis courts on Chambers Street and Washington Market Park includes ground above the DFE. These areas therefore could be integrated into the overall flood barrier system.

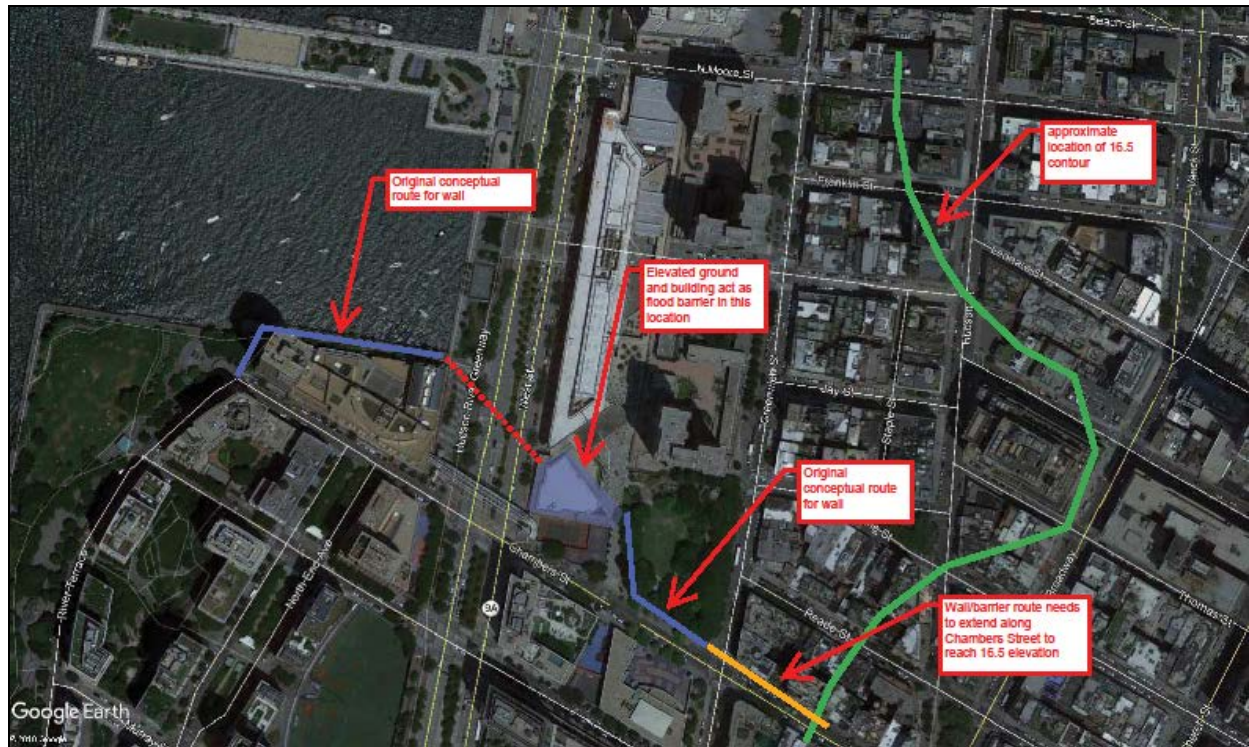


Figure 1.4 FBS Eastern Extent to Achieve 16.5 DFE Protection

The preliminary planning that has been conducted has identified potential strategy types that may be suitable for each segment of the FBS. A discussion of the strategies considered in this report follows in Section 2.0 “Wall Barrier Technology Options”. Section 3.0 “Potential Use of Barrier Options Along The Proposed FBS Route” discusses potential siting and placement of each technology along different segments within the FBS.

2.0 WALL/BARRIER TECHNOLOGY OPTIONS

There are numerous wall and barrier options available to provide resiliency during flood events. For the purpose of this preliminary review, we have focused on strategy types including:

- Permanent Barrier;
- Semi-permanent Barrier;
- Removable Barrier;
- Deployable Barrier; and
- Flood Doors and Floodproofing.

A discussion of each follows.

2.1 Permanent Barrier

This type of barrier is a permanent wall. Options for a permanent wall can include solid concrete or concrete and glass combinations. Concrete walls can be constructed with form liners and concrete pigments to incorporate aesthetic finishes, or brick or stone veneers that would enable the wall to blend with the character of the surroundings. Additionally, glass panels can also be incorporated into the wall design to maintain a visual line of sight. Examples of permanent walls are shown below.



Figure 2.1 Glass Permanent Wall



Figure 2.2 Concrete Wall with Form Liner

2.2 Semi-permanent Barrier

A semi-permanent barrier consists of a foundation plus elements that require assembly before a flooding event. Such a barrier could incorporate a small wall typically utilized as a planter, retaining wall or other architectural element. In advance of a storm event, additional wall height is provided by incorporating panels to the desired height. Examples of semi-permanent barriers are shown in Figure 2.3 and 2.4.



Figure 2.3 Semi Permanent Wall with Permanent Concrete Pillars



Figure 2.4 Semi Permanent Wall with Removable Pillars

The two types of semi-permanent barriers shown employ different options. Although both barriers utilize waterproof panels that are stacked manually, Figure 2.3 is of a barrier system that includes permanent columns. Figure 2.4 is of a system that also requires the installation of support columns. Incorporating permanent columns would reduce the installation time in advance of a storm, but it would create a partial visual obstruction. However, similar to the permanent walls, form liners and dyes could incorporate an aesthetic element, if desired.

2.3 Removable Barrier

A removable barrier consists of foundation/footings installed below ground with minimal or no above ground elements. This type of barrier is similar to a semi-permanent barrier, except all elements are fully assembled before a storm event and are constructed from the ground up. This will allow full use of the site when not installed. Some types of these systems require a flat and level surface at the base of the wall, so localized site grading must be considered in the design. Materials for wall construction are typically stored off site.

Another type of this system is a proprietary product known as Flex-wall®, a barrier that uses a waterproof fabric curtain that drops from the top or is pulled from the side of an opening/ storage area. The benefit to this fabric based system is that it is more easily and quickly put in place before a storm (by motor or manually), stored at the point-of-use and can be adapted to uneven ground and around obstacles. This type of strategy can also be utilized to flood-proof doors and windows, assuming the building is structurally capable of withstanding the loads imposed by flood water. Such an example is shown in Figure 2.7.



Figure 2.5 Removable Window/ Door Barrier



Figure 2.6 Base Plates at Grade Over Removable Barrier Foundations Below Grade



Figure 2.7 FlexWall® Example²

2.4 Deployable Barrier

A deployable barrier consists of barrier elements that remain in place and are either triggered during a flood event with no human intervention or are triggered manually but do not require manpower to construct. They are typically housed below ground or adjacent to openings in buildings or other barrier systems. These barriers are either activated by rise in water levels or can be deployed with little advanced notice so vehicular and pedestrian traffic can be maintained until the road is closed due to rising flood waters. Literature review was conducted to evaluate different type of deployable barriers that may be viable and a summary of the findings and preliminary assessment of the advantages and disadvantages of the various options like this is shown in Table 2.1 Comparison of Deployable Barrier Products (see attached).

2.5 Flood Proofing and Flood Doors

It is possible that building walls can also serve as flood barriers. The structure of each of the walls being considered must be evaluated for their ability to resist the force of water pushing against one side as part of a subsequent study. If necessary, walls may need to be reinforced to accommodate the additional pressure from the water. Walls can be flood proofed below flood elevations with waterproof coatings, impermeable membranes, or a supplemental layer of concrete. Using the existing walls is typically less costly than other barrier options, but will require regular maintenance to keep the coating intact.

Doors can be replaced with flood proof doors that are sealed with gaskets along the perimeter frame. The structure around the openings must be strong enough to resist the force of water against the door, so some structural enhancements may be required.



² <https://dryfloodproofing.com/>



Figure 2.8 Flood Door³

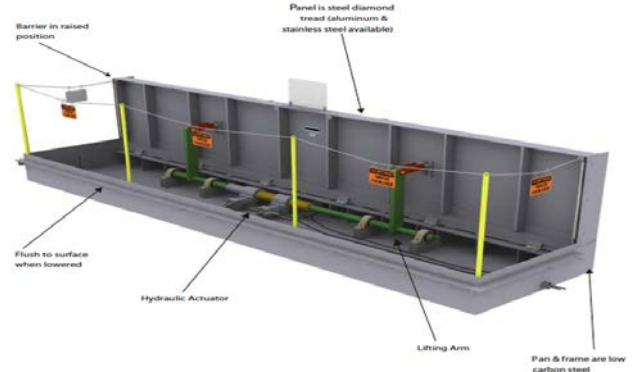

³ Psdoors.com

TABLE 2.1 COMPARISON OF POTENTIAL DEPLOYABLE ROADWAY BARRIER PRODUCTS

BARRIER TYPE	CONSIDERATIONS SUMMARY	EXAMPLE
FloodBreak ⁴ Roadway Gate	<p>Advantages</p> <ul style="list-style-type: none"> Fully Automatic- activated by rising floodwaters Manufactured to exact size requirements HS-25 load specifications Hidden Underground Gate can be manually lifted if needed by a crane with a spreader bar or the manufacturer's optional hydraulic lift. Simpler mechanism as compared to Self-Closing Floor Barrier. Here below ground initial work and maintenance will be less because of less underground depth required. <p>Disadvantages</p> <ul style="list-style-type: none"> Utilities need to be rerouted if they conflict with the foundation. Any utilities below the foundation may need to be sleeved or encased. FEMA requires annual deployment to test the system. A crane is required to deploy the manual barrier system for testing, which requires closing the entire road for several hours (The optional hydraulic lift system allows sections of the barrier to be tested individually, eliminating the need to close the entire road or employ a crane for testing). 	
Self-Closing Flood Barrier ⁵	<p>Advantages</p> <ul style="list-style-type: none"> Fully Automatic- activated by rising floodwaters Hidden Underground HS-20 Loading <p>Disadvantages</p> <ul style="list-style-type: none"> Requires deeper foundation to accommodate height of wall plus foundational elements. Cannot raise the barrier manually before flood. 	

⁴ <http://floodbreak.com/>⁵ <http://www.floodcontrolinternational.com/PRODUCTS/FLOOD-BARRIERS/self-closing.html>

TABLE 2.1 COMPARISON OF POTENTIAL DEPLOYABLE ROADWAY BARRIER PRODUCTS

BARRIER TYPE	CONSIDERATIONS SUMMARY	EXAMPLE
Bottom Hinged Flood Gate ⁶	<p>Advantages</p> <ul style="list-style-type: none"> ▪ Trigger automatic deployment via simple mechanism ▪ Hidden Underground <p>Disadvantages</p> <ul style="list-style-type: none"> ▪ Flush surface required ▪ Built 25' wide and 5' height <p>This product would not be applicable for a West Street crossing as the 5' height maximum does not meet DFE height requirements.</p>	
Sliding Flood Barrier ⁷	<p>Advantages</p> <ul style="list-style-type: none"> ▪ Manufactured to size requirements ▪ Deployment manually performed via simple steps <p>Disadvantages</p> <ul style="list-style-type: none"> ▪ Requires some space to install ▪ Most applicable to building openings and garages <p>This product would not be applicable for a West Street crossing as buildings and walls adjacent would not be suitable to anchor this facility.</p>	

⁶ https://cdn2.hubspot.net/hub/187435/file-19125633-pdf/docs/fb55_fact_sheet.pdf

⁷ <http://www.presray.com/flood-protection/sliding-flood-barrier-cg3s>

3.0 POTENTIAL USE OF BARRIER TECHNOLOGIES ALONG THE PROPOSED FBS ROUTE

Different barrier technologies can be utilized along the proposed route of the wall barrier system. In some cases, more than one technology may be utilized, depending upon further evaluation and/or stakeholder preferences. The proposed FBS route has been separated into segments that can incorporate one or more of the specific technology options described above. Following are discussions regarding the suitability of the various technology options for each FBS segment.

3.1 Segment 1 Chambers Street/River Terrace Intersection to Northwest Corner of Stuyvesant High School

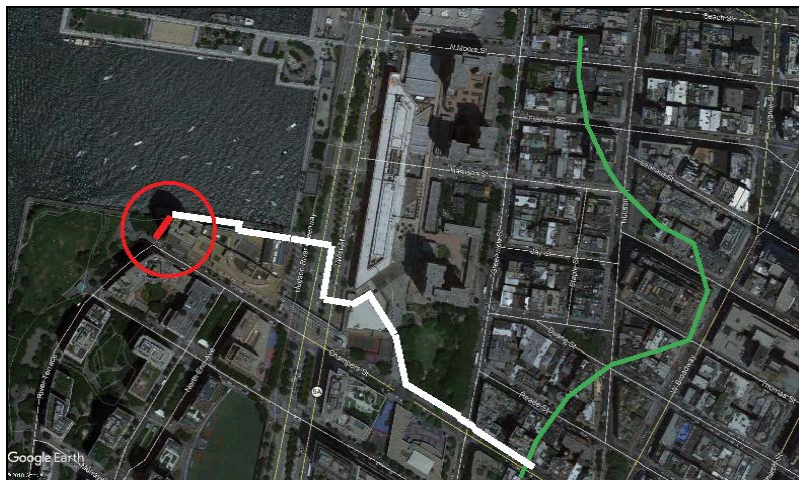


Figure 3.1 Segment Location

Segment 1 is located at the westernmost segment of the proposed FBS and starts at an elevation of approximately 18.5. The embankment that comprises this portion of Chambers Street and River Terrace provides protection against flooding. This portion of the FBS would need to protect the western wall of Stuyvesant High School for approximately 100 feet and would need to be 6-8 feet high.



Figure 3.2 Existing Conditions in Segment 1

The image above is a view looking eastward towards Stuyvesant High School. Strategies considered for this Segment include:

- Utilizing existing building walls with the addition of flood proofing elements and doors (see red area in figure 3.2)
- Permanent barrier
- Semi-permanent barrier
- Removable barrier or a horizontally deployable barrier

A permanent barrier in front of the building foundation can be used in this segment. However, this would create an alley alongside the building that may not be desirable. A semi-permanent or removable barrier may be more appropriate in this segment to avoid alleyway creation, although these would require manpower to install or deploy in advance of the storm. A strategy incorporating the foundation of the building could also be utilized here. However, there are two doors within the foundation, showing in Figure 3.2, that would need to be either floodproofed, or replaced with flood doors.

The preliminary option recommended for further investigation on this segment is floodproofing the existing building wall and the addition of flood doors. This option provides protection from flooding with the benefit of minimizing pre-storm event deployment activities, avoids costs associated with wall construction and avoids the creation of an alleyway. A structural evaluation of the building wall would be required if this option were pursued.

3.2 Segment 2 North Side of Stuyvesant High School (Western End)

Segment 2 of the barrier route is approximately 250 feet long and is located along the north side of a residential building and Stuyvesant High School. This portion of the route includes a small masonry wall, approximately 2 feet high that creates a planting bed along the north side of the building. Additionally, there are a series of louvers and a set of doors located along the building foundation.



Figure 3.3 Segment 2 Location



Figure 3.4 Existing Conditions in Segment 2, Doorways



Figure 3.5 Existing Conditions in Segment 2, Existing Planting Beds and Doors

Strategies considered for this Segment include:

- Replacing the existing wall with a permanent wall that incorporates glass to maintain a line of sight
- Replacing the existing wall with a semi-permanent wall
- Utilizing the existing building foundation as floodproofing and installing a removable barrier in front of each louver and set of doors.
- Replacing the existing wall with a permanent wall

Each of these options would need to be constructed to an elevation approximately 6-8 feet above walkway elevations.

The preliminary option recommended for further investigation along this Segment is the construction of a permanent wall. This option provides protection from flooding with the benefit of minimizing pre-storm event deployment activities. Stone or other decorative facing could be made consistent with existing finishing in the park and surrounding environs and plantings could be incorporated to soften the aesthetics of the new feature. Importantly, proper air flow for the louvers on the residential building on the western side of this Segment would have to be incorporated into the wall design. Additionally, to maintain access to the building, the two sets of double doors would also need to be replaced with floodproof doors. Figure 3.6 shows a rendered view of this wall and Figure 3.7 provides a cross section of the view of this new feature looking west from the Hudson River at the residential building.

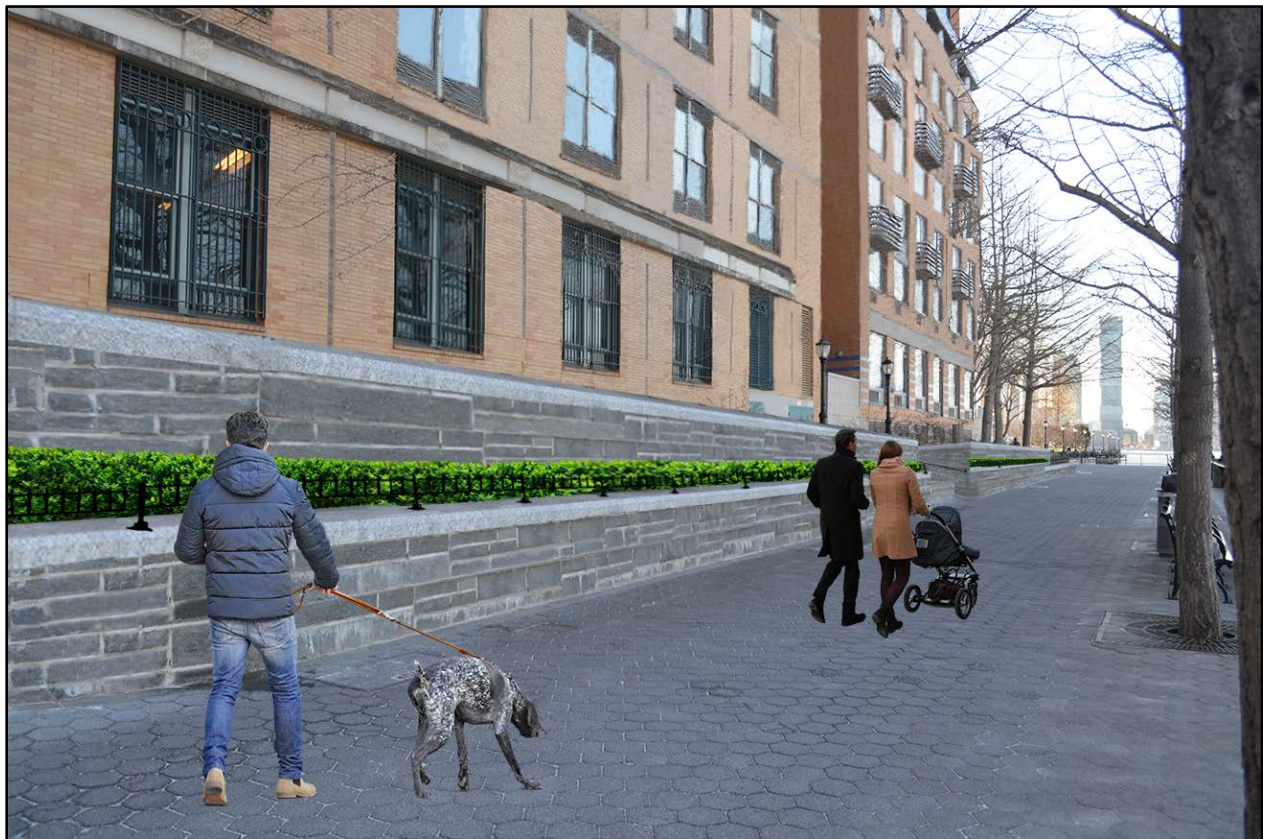


Figure 3.6 Rendered View of Permanent Wall in Segment 2

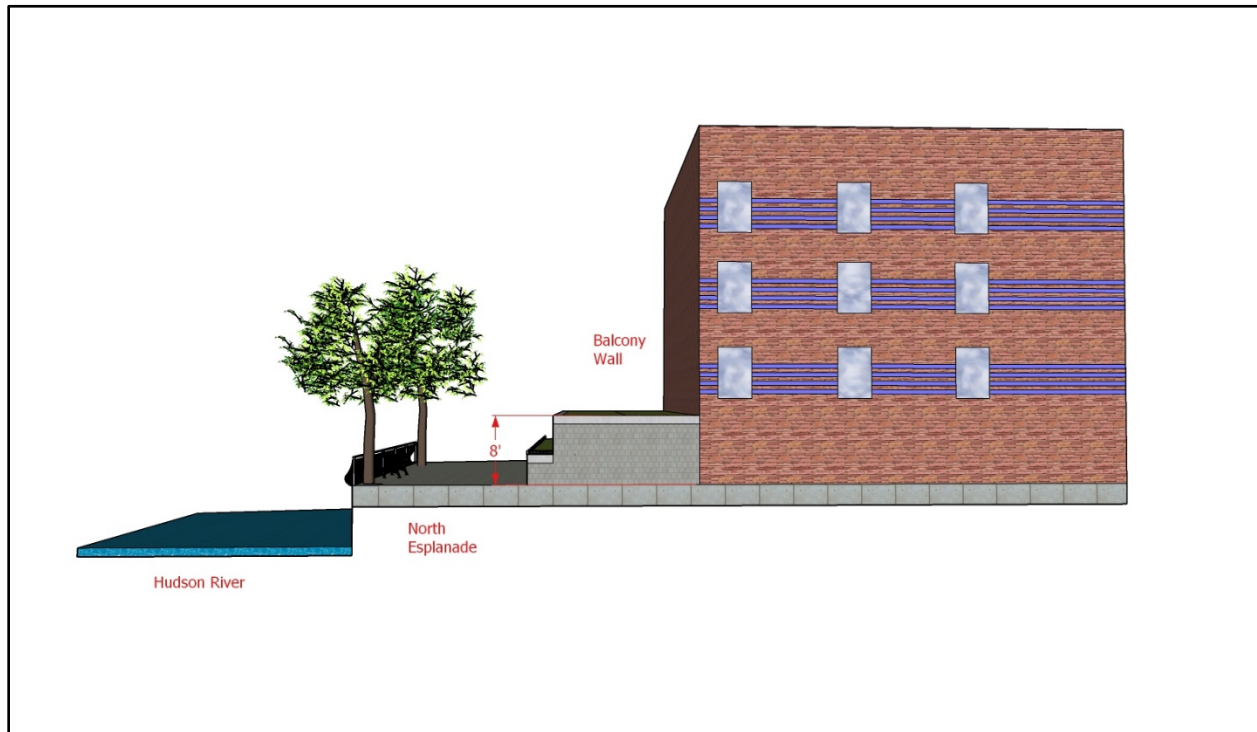


Figure 3.7 Cross Section View of Permanent Wall in Segment 2

3.3 North Side of Stuyvesant High School (Eastern End)

Segment 3 of the barrier route is approximately 200 feet long and is located along the north side of Stuyvesant High School. This portion of the route is similar in construction to Segment 2, but includes a series of larger walls, steps and ramps that are part of the entrance to Stuyvesant High School.

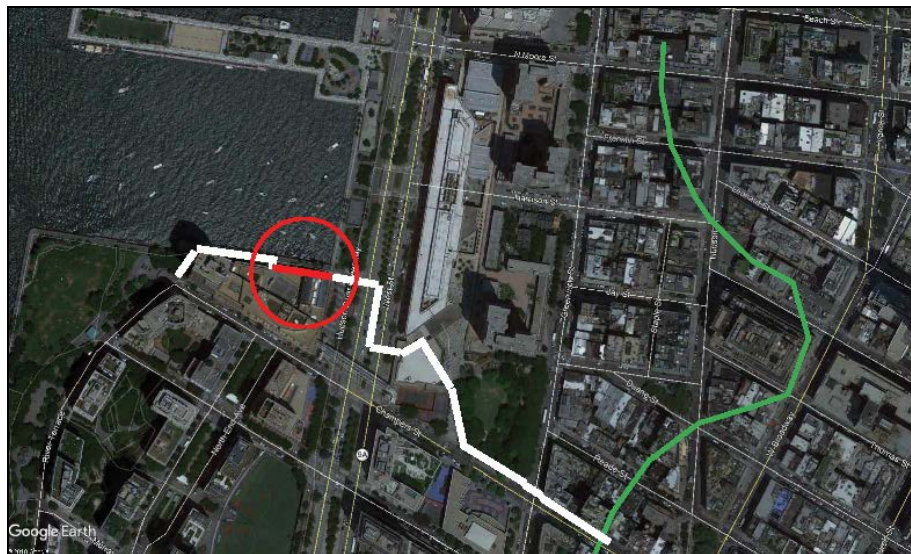


Figure 3.8 Location of Segment 3



Figure 3.9 Existing Conditions Segment 3 Doorways on North Side of Stuyvesant High School



Figure 3.10 Existing Conditions Segment 3

The existing wall currently extends to an approximate elevation of 15 feet in several locations. The preliminary option recommended for further investigation in this Segment is replacing this wall with a slightly taller wall (18 inches higher) which would create a permanent barrier that would not require manpower to install in advance of the storm. With this option, the doorway would require additional floodproofing in the form of replacement with flood doors, or protection with either removable or deployable barriers. Currently, replacing the doors with flood doors is thought to be the most promising and cost-effective approach.

3.4 Segment 4 West Street

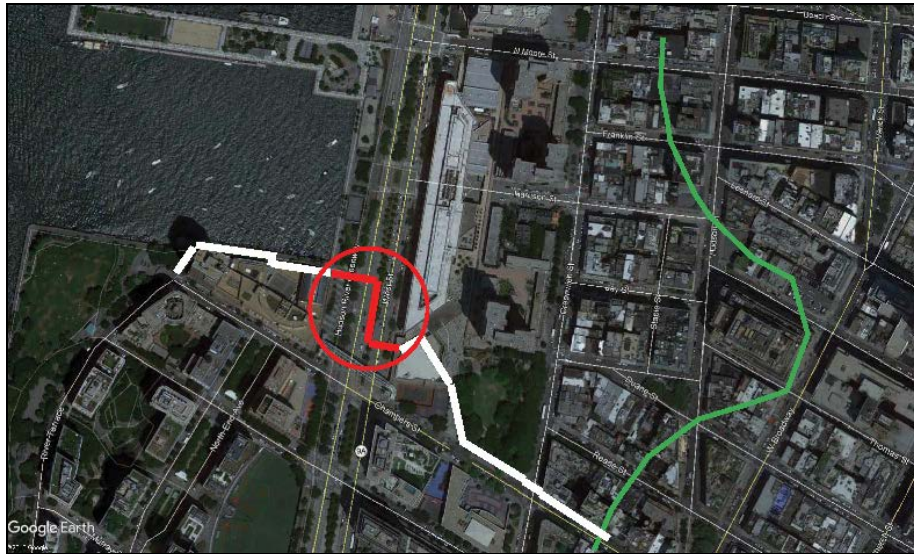


Figure 3.11 Location of Segment 4 West Street

Segment 4 of the barrier route includes the portion that crosses West Street also known as Route 9A, a road under the jurisdiction of the New York State Department of Transportation (NYSDOT). Because the unimpeded operation of this roadway is important, walls with minimal deployment and surface features are thought to be the only viable strategies for protecting this roadway. Because significant time is required to install any sort of removable barrier, which would require interruption to traffic on West Street well in advance of any storm event, these are also not considered a viable option.

The preliminary option recommended for consideration for this segment is a deployable barrier. The model from FloodBreak described in Table 3.1 or an equivalent system would appear to be a suitable option pending further investigation and evaluation. The use of 300 feet of deployable barrier across West Street will enable traffic to be maintained until flood waters activate the barrier to rise. At such a time, the road will have already been closed to traffic by emergency services due to inundation. This option provides for the minimization of flood risk while also minimizing pre-storm event deployment activities. Though construction would be expected to be disruptive, once in place, the deployable barrier would be completely underground (see Figure 3.14), leaving West Street traffic unobstructed. These barriers require a fairly large foundation, which needs to be considered with respect to potential interference from existing buried utilities on West Street as part of the design. Also, barrier strategies to protect the area from the curb line connecting to the next FBS segment on both the western and eastern ends of this deployable strategy would be needed.

A slightly modified method for crossing West Street as compared to the original route is offered for consideration. Utilizing two separate sections of deployable barriers (one placed in each street bed) connected by a wall through the West Street median reduces the overall length of deployable barrier required by approximately 50 feet (25%). This alignment could help to minimize the potential conflicts with existing utilities as the perpendicular sections placed in the West Street street-bed could be sited to avoid major utility conflicts. This approach would then require a 200-foot permanent or semi-permanent barrier within the median on West Street. Such a feature could be enhanced with either decorative facing or public art to soften aesthetic appearance. Figure 3.13 shows the rendering of the barrier in the deployed position and Figure 3.15 shows a cross section of the barrier.

Segment 4 also includes two sidewalk areas on West Street that would need protection: the north-westernmost portion of the Segment, which is the sidewalk between Stuyvesant Highschool and the

western road bed of West Street; and the south-eastern most portion of the Segment, which is the sidewalk between the eastern road bed of the West Street deployable barrier and the beginning of the Segment 5 FBS at the Borough of Manhattan Community College. Considerations for flood protection of these areas include the need to minimize pre-storm activities and keep busy sidewalk areas open as long as possible before the flood event. Accordingly, a removable wall that minimizes time associated with pre-storm assembly installed could possibly be best suited for locations such as these. Deployable barriers, similar to the FloodBreak considered for West Street, may also be a viable option. Any option considered would need to be able to connect to the FBS traversing West Street over the curb areas, to ensure that one continual water proof FBS is in place.



Figure 3.12 Existing Conditions in Segment 4

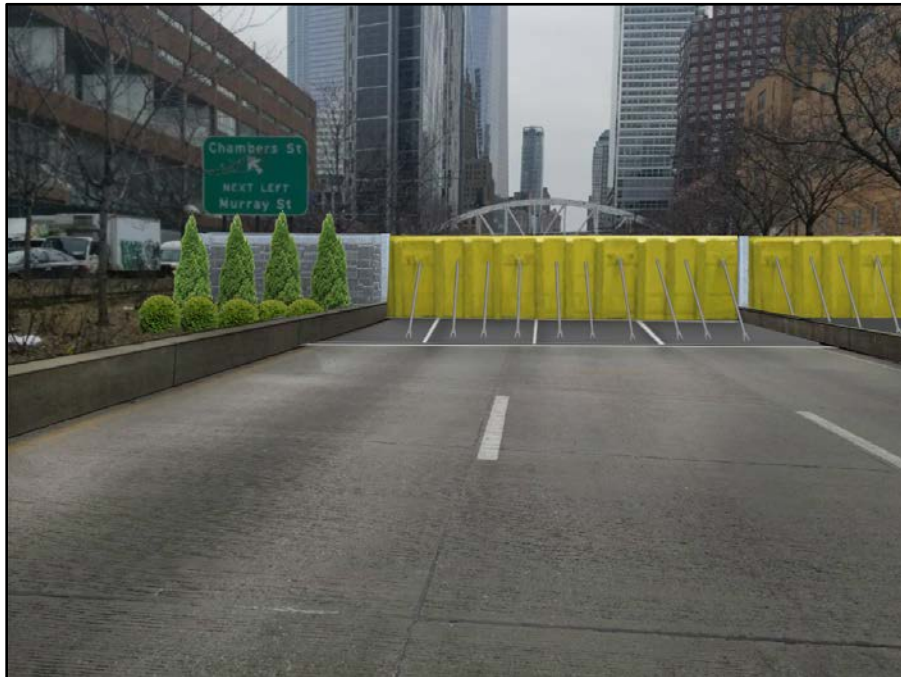


Figure 3.13 Rendered View of Deployable Wall in Deployed Position

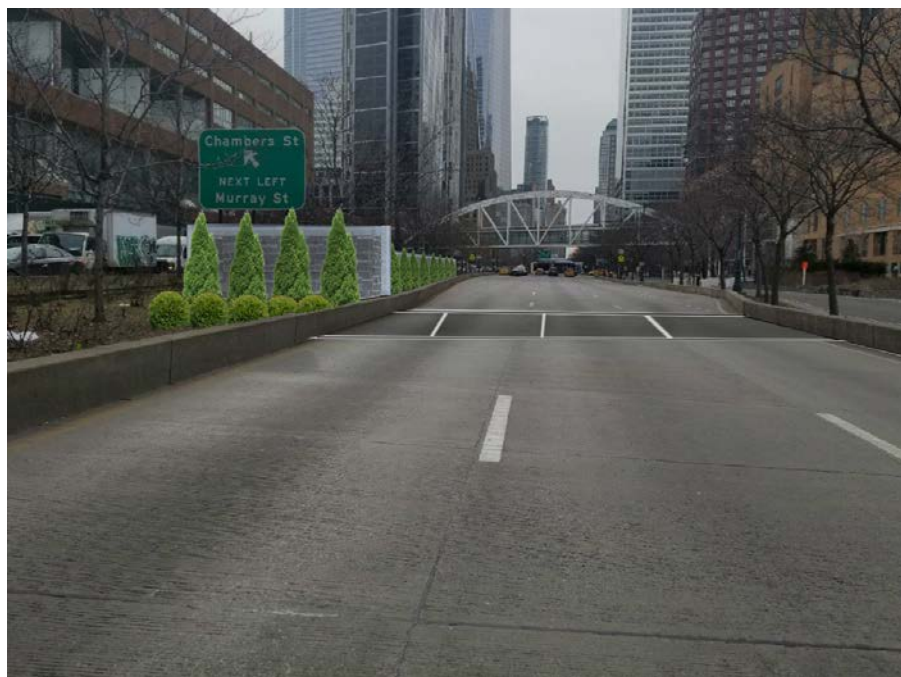


Figure 3.14 Rendered View of Deployable Wall in Down Position

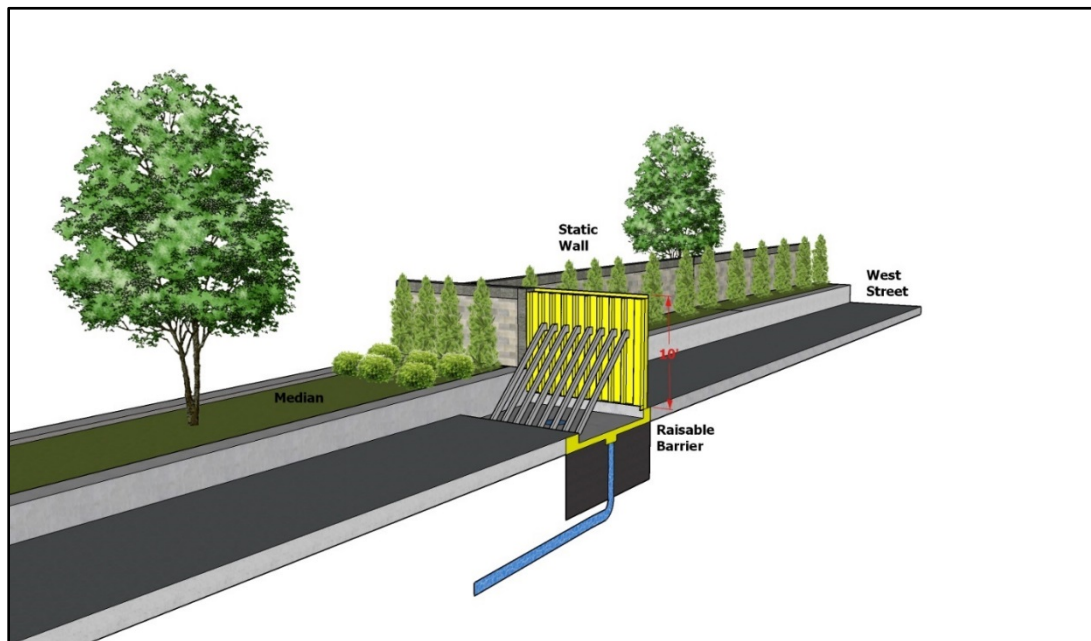


Figure 3.15 Cross Section View of Deployable Wall in Deployed Position

3.5 Segment 5 Manhattan Borough Community College (BMCC)

This portion of the barrier route crosses through the Manhattan Borough Community College north and east of the Tribeca Performing Arts Center building. The existing ground **north of the building** exceeds the required 16.5 elevation. As a result, the building would need to become part of the resiliency plan. On the north side of the Tribeca Performing Arts Center Building, there are a series of entrance doors as shown in the photograph in Figure 3.17.

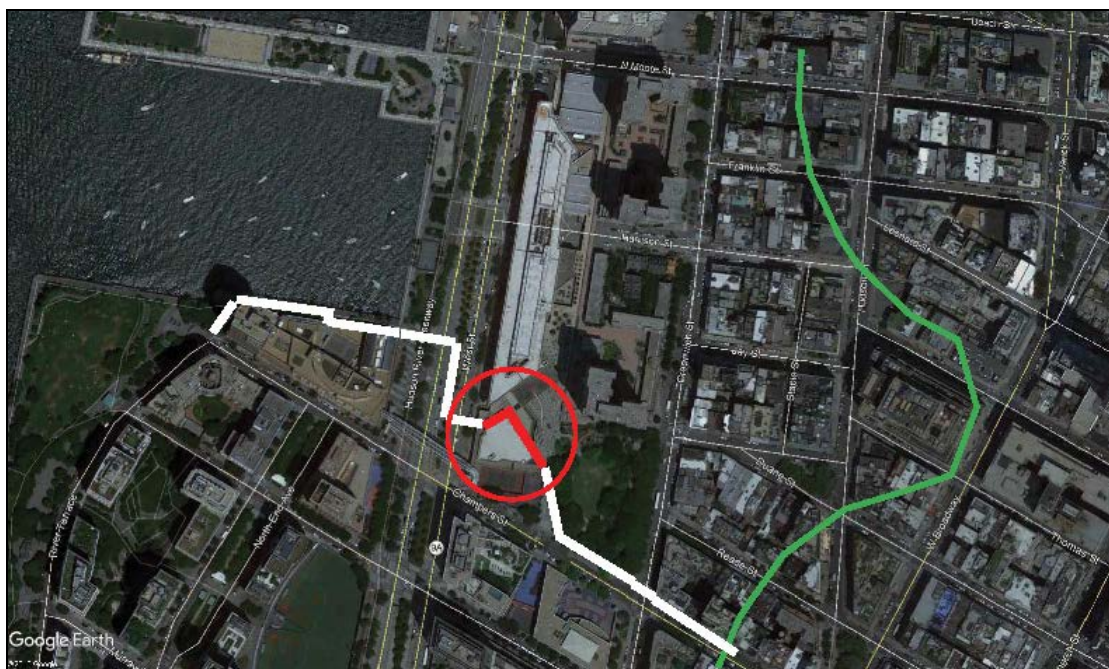


Figure 3.16 Location of Segment 5



Figure 3.17 Tribeca Performing Arts Center North Side

Strategies considered for this Segment include:

- Deployable barrier
- Removable barrier
- Floodproofing of ground level doors on northern side of the building

Several options could be employed to incorporate this building into the FBS with protection of the doors shown in Figure 3.17 important to maintaining the integrity of the remainder of the FBS. A ground-level deployable barrier could potentially be utilized for this area. However, the costs for these systems are high and other options could be considered. This area could also be fitted with a removable barrier that would be stored in place and assembled before the flood event to a height of 8-10 feet.

Since this portion of the FBS needs to be incorporated into private property, the Tribeca Performing Arts Center would have the responsibility to ensure the selected strategy was operational on the north side of the building before the flood event. Since the overall integrity of the FBS would need to rely upon these forces outside the control of Battery Park City Authority, it is recommended that a secondary means of flood resilience be incorporated into the system. In the event the FBS on private property is not deployed before a storm event, the building interior would flood and ultimately have the potential to allow water to bypass the remainder of the FBS through doors and vents on the west side of the building. Therefore, the western wall would need to be flood-proofed from the interior. This would be a highly unconventional approach to flood-proofing and would require additional evaluation of the interior of the structure to determine if such an approach would be feasible. As an alternative secondary approach, a removable or deployable barrier could be utilized and would need to extend south from the end of Segment 4, along the sidewalk on the east side of West Street to the southwest corner of the Performing Arts Center under the pedestrian bridge.



Figure 3.17-a Termination Point for Secondary Barrier System

3.6 Segment 6 Washington Market Park

Segment 6 follows the southern portion of Washington Market Park. Currently, there is a small concrete wall (approximately 3 feet high) with a cast iron fence on top that surrounds most of the park. Along the western portion of the park, the wall increases in height and is incorporated into the southern entrance to Manhattan Borough Community College. This entrance rises above elevation 16.5 and a portion of the park wall adjacent to it would be suitable to provide resiliency protection during a flood event (see Figure 3.18). The FBS for Segment 6 would join this walkway-adjacent wall and proceed east along the park's frontage with Chambers Street as the portions closer to Chambers Street are below elevation 16.5. Because the FBS segment here would need to be constructed to heights up to 6 feet above current ground elevations, the view of Washington Market Park from the street is a consideration.

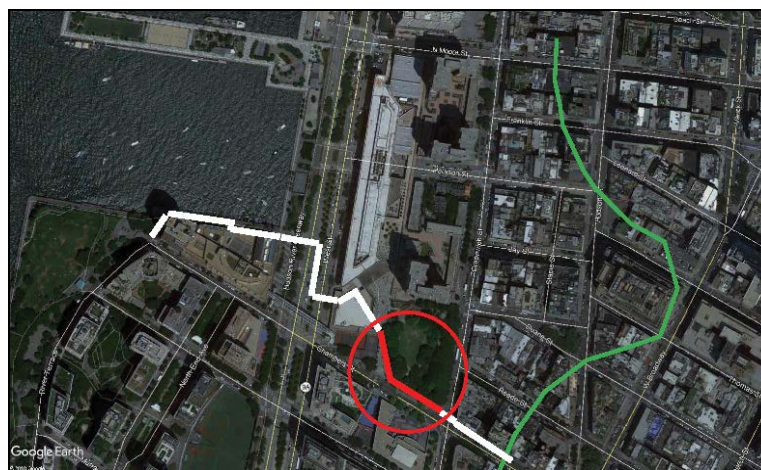


Figure 3.18 Location of Segment 6

Strategies considered for this segment include various types of permanent walls including:

- Permanent concrete wall with and without parkland use incorporated
- Concrete wall with glass panels to maintain line of site
- Removable or semi-permanent barrier.

Two options for this segment were rendered to facilitate further planning of the FBS for this area as shown in Figures 3.21 and 3.23. Figure 3.21 shows a permanent concrete wall incorporated into parkland use through the provision of a sitting wall and decorative plantings (see Figure 3.22 for cross section view). Figure 3.23 shows a permanent concrete wall constructed to replace the existing three-foot-high concrete wall (see figure 3.24 for cross section view). These options provide the benefit of minimizing risk from coastal flooding with no pre-storm deployment activities for this area. The park sitting wall provides the benefit of maintaining park use and enjoyment up to the sidewalk line and helps to facilitate continued connectivity between the park and the sidewalk.



Figure 3.19 Existing View of Washington Market Park Border with BMCC Walkway



Figure 3.20 Existing Conditions on South Side of Washington Market Park

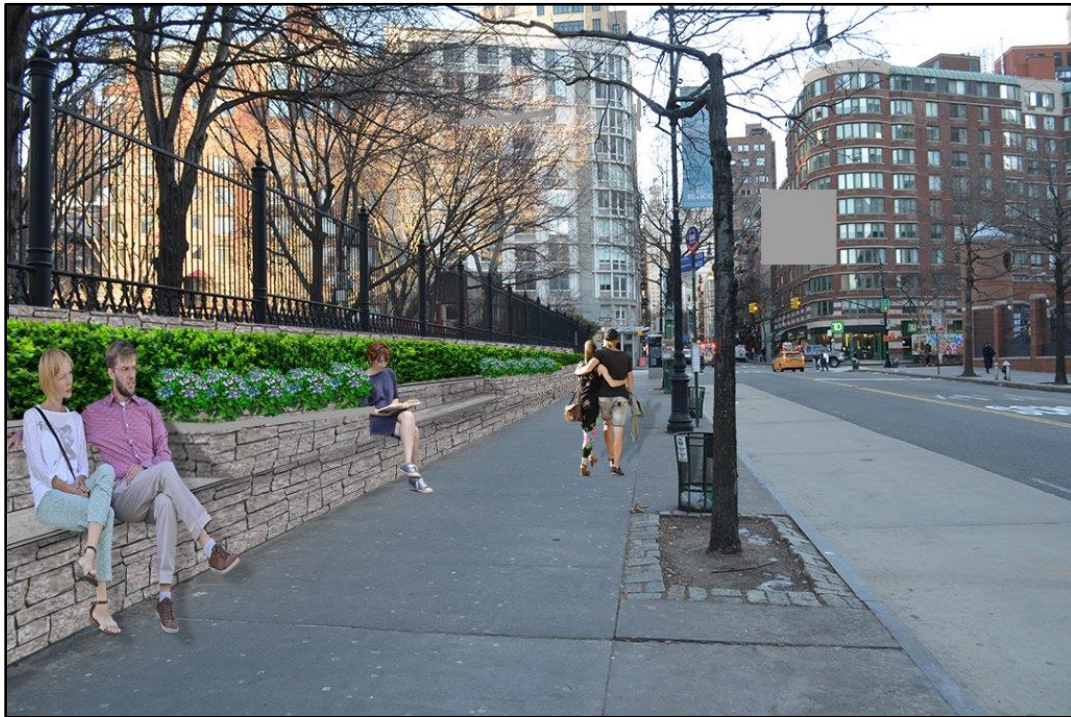


Figure 3.21 Rendered View of Permanent Barrier/ Sitting Wall Fronting Washington Market Park



Figure 3.22 Cross Section View of Sitting Wall



Figure 3.23 Rendered View of Permanent Barrier Fronting Park

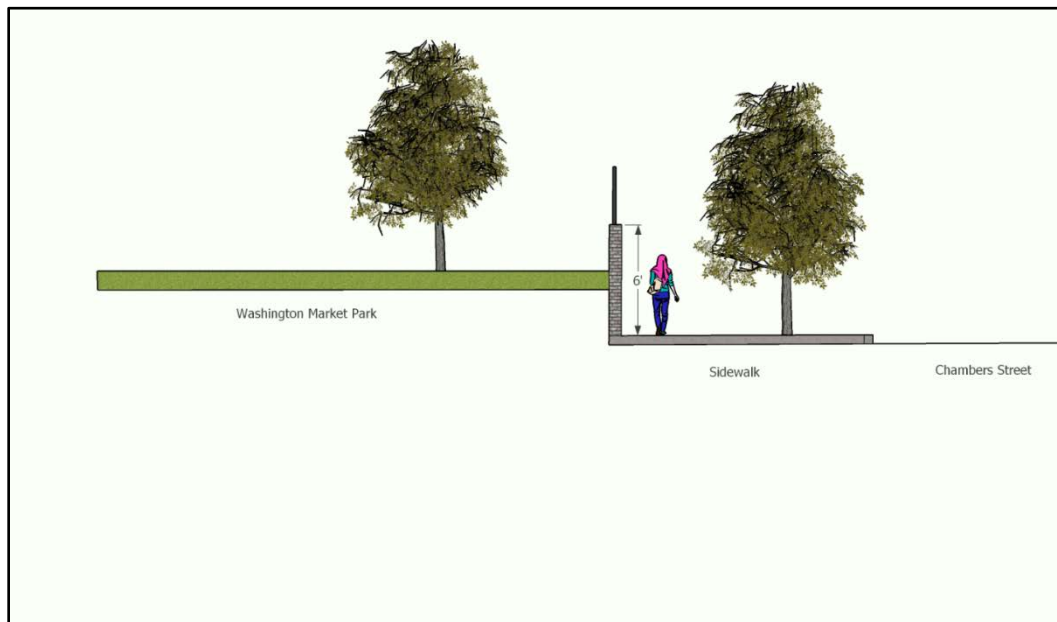


Figure 3.24 Cross Section View of Permanent Wall

3.7 Segment 7 Greenwich Street Intersection with Chambers Street

Segment 7 includes a portion of the FBS added to reach ground elevations of 16.5. Similar to Segment 4 (West Street), the only viable alternative would be a ground-based deployable barrier due to constraints associated with time required to assemble semi-permanent or removable strategy types prior to a storm event.

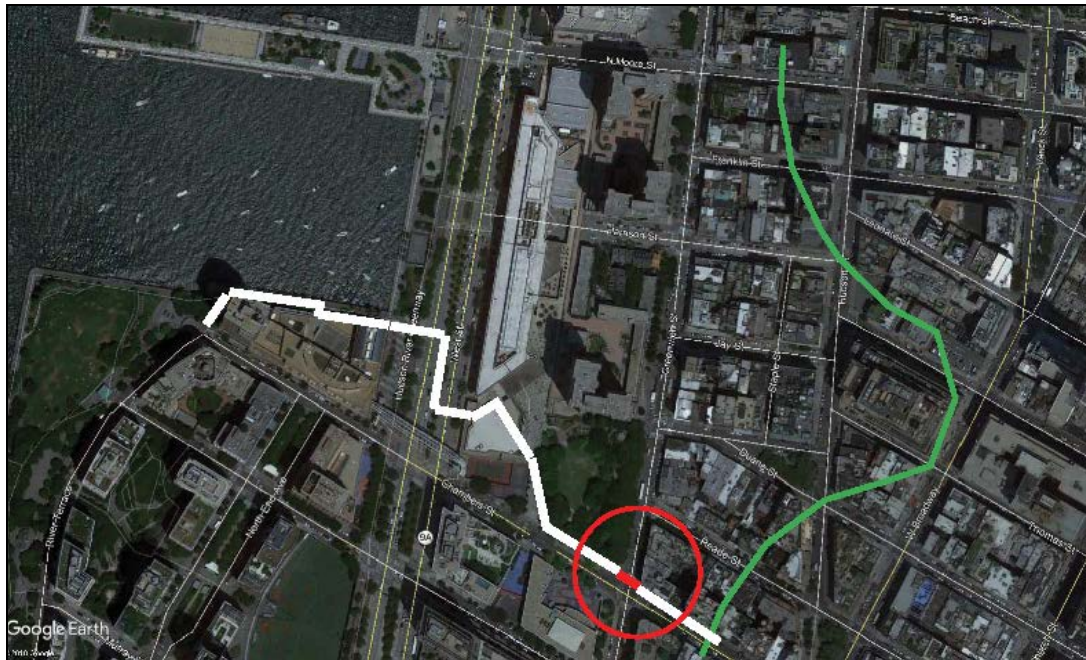


Figure 3.25 Location of Segment 7



Figure 3.26 Existing Conditions in Segment 7

3.8 Segment 8 Chambers Street between Greenwich Street and Hudson Street

Segment 8 includes the portion of the barrier route extended east along Chambers Street towards Greenwich Street to reach ground elevations of 16.5. This area of Chambers Street is populated by ground floor commercial storefronts.

The main strategies considered for this Segment include various types of removable walls. This is due to the considerations associated with accessing businesses on Chambers Street and to provide for continued unimpeded use of the street and sidewalk. Due to the time and potential disruption to traffic required to install and assemble a traditional removable wall within the street bed in advance of the storm, they are not

considered optimal. A removable wall that minimizes time associated with pre-storm assembly installed outside of the street bed on the north side of Chambers Street could possibly be best suited for a location such as this. As alternatives, removable door and window barriers along with flood proofing of the buildings or the use of a removable barrier or Flexwall® along the south side of Chambers Street could also be utilized. However, this would then require an additional deployable barrier across Chambers Street, which would add significantly to the cost.

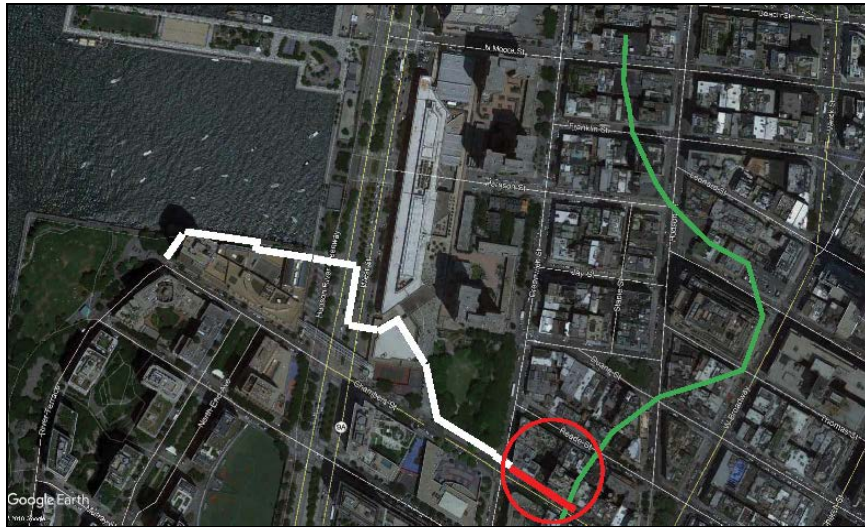


Figure 3.27 Location of Segment 8 Chambers Street Between Greenwich and Hudson Street



Figure 3.28 Existing Conditions on Segment 8

4.0 PERMITTING ASSESSMENT

The planning, design and implementation of the FBS will involve permits, approvals and coordination with many federal, state and local agencies. It is possible that the BPCA's status as a NYS agency may relieve them from certain aspects of the local coordination processes. This would need review and study by BPCA legal counsel.

Table 4.1 includes an initial list of potential permits, approvals and coordination. As plans progress past the initial concept planning it is likely that additional entities involvement and permit types could be triggered.

TABLE 4.1 POTENTIAL PERMITS, APPROVALS AND COORDINATION		
	Agency	Permit/ Approval/ Coordination
Federal United States (US)	Fish and Wildlife Service (FWS)	Coordination regarding threatened and endangered species potentially occurring in the project area
	Federal Emergency Management Agency (FEMA)	Coordination regarding federal guidelines; potential funding under programs such as the Hazard Mitigation program
	Army Corps of Engineers (ACOE)	For placement of outfall structures (if new outfalls are required)
New York State (NYS)	Department of State (DOS)	Coastal Zone Consistency Determination
	Department of Environmental Conservation (DEC)	State Pollution Discharge Elimination System (SPDES) General Permit for stormwater discharges from Construction Activity Construction General Permit
		SPDES Permit for point source discharges (if new stormwater or combined outfalls are required to provide drainage for FBS segments)
		Section 401 Water Quality Certification
		Threatened and Endangered Species Review
	Office of Parks, Recreation and Historic Preservation (OPRHP)	Coordination regarding any potential archeological or historic resources pursuant to the State Historic Preservation Act
	Department of Transportation	Coordination regarding placement of structures in an NYS Roadway (Route 9A) and design/ placement of structures in the NYS Roadway median. Highway work permit.
	Battery Park City Authority (BPCA)	State Environmental Quality Review Act- environmental review for discretionary actions associated with siting and construction of the flood barrier system (FBS). An Environmental Impact Statement (EIS) would likely be required.
	Governor's Office of Storm Recovery	Coordination on plans and strategy
New York City (NYC)	State Legislature	Parkland alienation may apply if placement of wall structures within NYC park property is proposed.
	Department of Environmental Protection (DEP)	Connection approval for connection of FBS drains, consultation regarding potential tide gates on outfalls serving area to reduce potential for 'backdoor flooding', and coordination on infrastructure protection/ relocation of water and wastewater facilities in the right of way.
	Department of Buildings (DOB)	Compliance with Building Code for work on buildings and for resiliency standards in flood zones.
	Public Design Commission (PDC)	Approval for structures and signs in the NYC right of way.
	Department of City Planning (DCP)	Consistency review associated with the NYC Local Waterfront Revitalization Program; zoning and land use approvals potentially associated with FBS strategy vertical heights and setback from sidewalks.
	Department of Parks and Recreation (DPR)	Approval for siting structures and potential tree removal within Washington Market Park.
	Department of Transportation (DOT)	Permits and approvals for work within NYC streets and sidewalks.
	Landmarks Preservation Commission (LPC)	Consultation regarding potential historical and archeological resources.
	Office of Recovery and Resiliency (ORR)	Coordination regarding NYC Coastal Flood Resiliency Plans.
	Police Department (PD)	Coordination regarding West Street deployable barrier potential to impact emergency services

TABLE 4.1 POTENTIAL PERMITS, APPROVALS AND COORDINATION		
	Agency	Permit/ Approval/ Coordination
	Fire Department (FD)	Coordination regarding West Street deployable barrier potential to impact emergency services, review of building flood door/ floodproofing and barrier strategies to ensure acceptability for ingress/ egress.
	City University of New York (CUNY) Borough of Manhattan Community College (BMCC)	Coordination to support integration of BMCC buildings into FBS.
	Community Board 1	Coordination regarding projects within CB 1 boundaries.
	Office of Emergency Management (OEM)	Consultation regarding deployable strategy in West Street and relationships to existing emergency management plans including the Coastal Storm Emergency Plan.
Private Entities	Con Edison	Coordination for plans for structures that might conflict with Con Edison utilities placed in the right of way, potential movement or protection of utilities
	Local business association and business owners	For businesses that might be adjacent to structures placed in the sidewalks or right of way

5.0 GENERAL CONCLUSIONS/ NEXT STEPS

This report identifies potential strategies along each segment of the FBS route that could minimize risk from future damages and disruptions caused by coastal flooding. However, although these strategies are promising in terms of their potential to protect the area, an investment of this complexity and magnitude must be subject of the most careful of planning, design, coordination process in order to ensure the FBS performs as is intended. Coordination with stakeholders along the FBS route including property owners, regulatory authorities and residential and commercial residents would also be important.

The following is an overview of the types of studies and evaluations that would be appropriate as next steps to further the planning and design process for this project.

In order to adequately design and fully evaluate each of the barrier options discussed above, detailed information about each site where a barrier or technology would be sited is required. These would include but not be limited to:

- A detailed topographic survey to identify exact height of the barriers, street and sidewalk width, and other physical setting characteristics along the route must be conducted.
- Geotechnical borings taken along the route will provide the design parameters for the foundations needed to support the new wall structures. Allowable vertical and lateral bearing capacities of the soil as well as depth to water will be used to determine the length and width of the proposed foundations.
- Construction drawings of the affected buildings and walls will be needed. The structure of the walls can be reviewed for their ability to resist the force of water pushing against one side. Affected openings, like doors and windows, will be analyzed. Their elevation will govern whether they need to be covered during flood events. The perimeter of the openings must be strong enough to resist the force against the barrier that spans the width.
- Thorough research around buried structures and utilities would also be needed around the project route. The placement and type of buried conduits, vaults, and other structures will determine exactly where the barrier should be installed, and may limit the type of construction and depths of foundations that is permitted due to depth and utility protection restrictions. Further, special conditions will exist where utilities are crossed.

Another key to successful project implementation is thorough planning around sanitary wastewater and stormwater infrastructure, analyses of which will be crucial to the successful function of the FBS.

Specifically, initial review of the geographic information system (GIS) maps of stormwater and sanitary wastewater information provided by the New York City Department of Environmental Protection indicate that there are three outfalls that discharge to the Hudson River serving the project area, one conveying stormwater only and the other two conveying combined flow (sanitary flow that mixes with stormwater during heavy rains) (see Figure 5.1). During storm surge conditions, these pipes could fill with water from the Hudson River and, via manholes and catch basins, become a pathway for flood waters to reach street level, thus entering the land area behind the protection of the FBS. This condition is sometimes referred to as 'backdoor flooding'. Accordingly, these outfalls or sewers would require protections, in the form of tide gates or check valves that would be activated to close when flood water from the Hudson River enters the pipes. These features would have to be sited with considerations including how to ensure stormwater continues to drain appropriately. Review of drainage information also revealed that the interceptor sewer for the Newtown Creek Wastewater Treatment Plant runs beneath West Street in the vicinity of the potential FBS. The interceptor sewer collects wastewater flow and is connected to other outfalls outside the project area. It is possible that several outfalls along its path could require protections in form of tide gates or check valves to protect them from becoming a conduit through which potential flooding reaches the Battery Park City property.

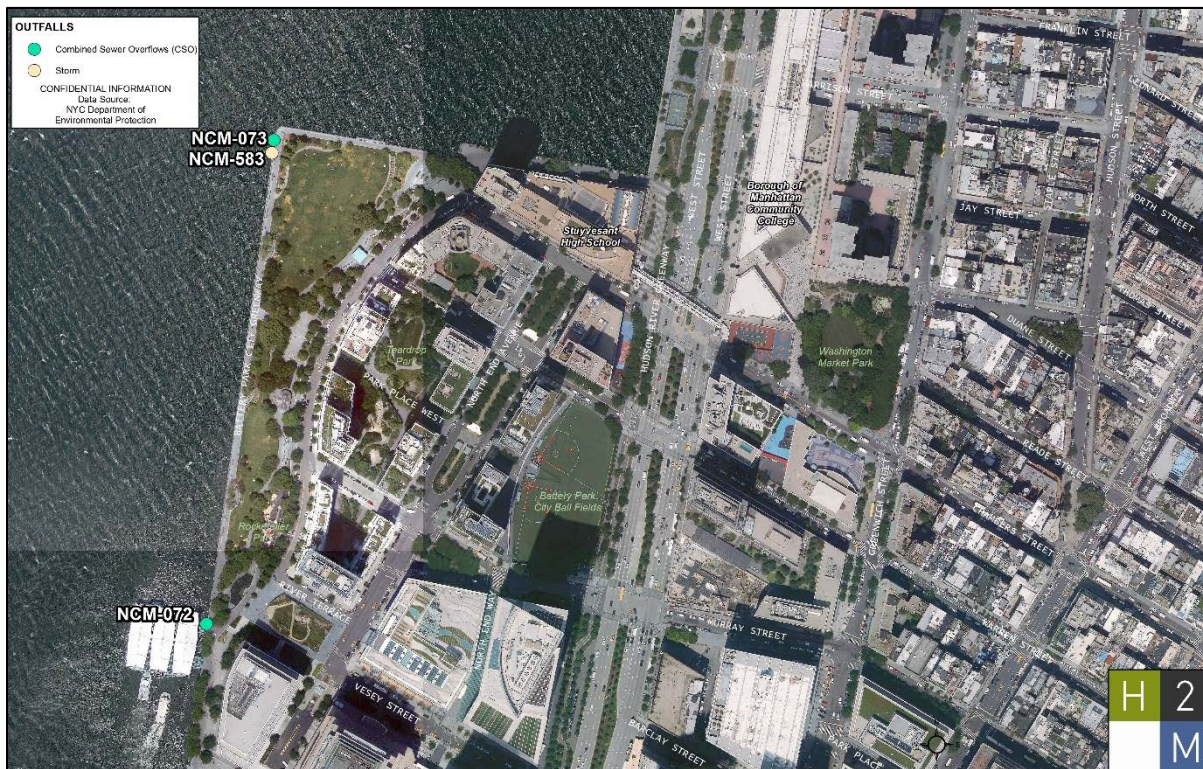


Figure 5.1 Stormwater and Combined Sewer Overflow (CSO) Outfalls Serving the North and Central Portions of Battery Park City



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