THE PORT AUTHORITY OF NY & NJ

PROCUREMENT DEPARTMENT
4 WORLD TRADE CENTER (4 WTC)
150 GREENWICH STREET, 21ST
FLOOR NEW YORK, NY 10007

October 6, 2017

ADDENDUM #2

TO PROSPECTIVE BIDDER(S) ON **BID #50993 – World Trade Center (WTC) Flood Mitigation and Resiliency Improvement Program – West Bathtub Water Intrusion Protection Systems-Below Grade**

Bids Due: October 20, 2017 at 2:30PM

RFI Submission Due by: 5:00PM Friday, October 13, 2017

I. BIDDER'S QUESTIONS AND ANSWERS

The following information is made available in response to questions submitted by prospective Bidder(s). It should not be deemed to answer all questions that have been submitted by Bidder(s) to the Port Authority. It addresses only those questions which the Port Authority has deemed to require additional information and/or clarification. The fact that information has not been supplied with respect to a question asked by a Bidder(s) does not mean or imply, nor should it be deemed to mean or imply, any meaning, construction, or implication with respect to the terms of the Bid Solicitation Document.

The Port Authority makes no representations, warranties or guarantees that the information contained herein is accurate, complete or timely or that such information accurately represents the conditions that would be encountered during the performance of the Agreement. The furnishing of such information by the Port Authority shall not create or be deemed to create any obligation or liability upon it for any reason whatsoever and each Bidder, by submitting its proposal, expressly agrees that it has not relied upon the foregoing information, and that it shall not hold the Port Authority liable or responsible therefor in any manner whatsoever. Accordingly, nothing contained herein and no representation, statement or promise, of the Port Authority, its directors, officers, agents, representatives or employees, oral or in writing, shall impair or limit the effect of the warranties of the Bidder(s) required by this Proposal or Agreement and the Bidder(s) agrees that it shall not hold the Port Authority liable or responsible therefor in any manner whatsoever.

Question #3	Thank you for Addendum No 1. On Page 3 of 6 at B. says The following drawings have been revised on September 29, 2017. These drawings are forwarded herewith…" We have not received any drawings with this addendum. We have checked at the PANYNJ website and cannot find them there. Please advise how we can obtain these drawings as quickly as possible.
Answer #3	To obtain Solicitation Documents (including Addenda Drawings and Specifications that are not posted) contact Elza Renazile at erenazile@nynj.gov.
Question #4	Drawing A901 at the bottom of the center section shows a Flood Barrier Type K. In the Specs Section 10711 at page 2, at 1.04 B. in the TABLE OF FLOOD BARRIER ASSEMBLIES shows FLOOD BARRIER ASSEMBLY Type K. as "Not Used"; therefore there is no LEAKAGE RATE prescribed. Is there a leakage rate for Type K flood barriers?
Answer #4	Page 2 from Specification 10711 in the 100% CD Signed/Sealed package uploaded to PA shows the Type K Barrier with a leakage rate vs. "Not Used".
Question #5	When will a size for the opening BG OBA.2 (SWLL Room Identifier HE-C5-OBA) be made.
Answer #5	Door BG-OBA.2 is scheduled to be completed by December 1, 2017. Design drawings and door schedule for the WTC Transportation Hub base contract indicate that Door BG-OBA.2 (SWLL HE-C5-OBA) is similar in size to Doors BG-OBJ.2 (SWLL HE-C5-OBJ) and Door IV-OBLA.2 (SWLL HE-C4-OBLA).
Question #6	What finish is required for the "L" devices (Flood Doors)?
Answer #6	The "L" door devices finishes are to match the existing installed hardware on Door BG-OBJ.2, IV-OBLA.2 and UT-OOU.2. Design drawings and specifications for the WTC Transportation Hub base contract called for US32D finish on Stainless Steel, and, for US26D dull chrome finish for hardware not available in US32D.

II. CHANGES TO THE SPECIFICATIONS

Please replace 10711 Flood Barrier Assemblies of the Specification, dated C 9/29/17, with the following 10711 Flood Barrier Assemblies, dated C 10/5/17.

SECTION 10711

FLOOD BARRIER ASSEMBLIES

PART 1 - GENERAL

1.01 SUMMARY

A. The Work includes furnishing and installation of flood barrier assemblies and systems, assembled with frames, hardware and all accessories in accordance with the contract documents.

B. Replacement as required of existing wall cladding, pavement and other finish elements.

1.02 RELATED WORK

A. None Listed.

1.03 REFERENCES

A. At a minimum, all materials and work furnished pursuant to this Specification shall comply with the latest edition, unless otherwise indicated, of the following applicable code provisions and all applicable standards listed below.

B. ASCE 7-10 - Minimum Design Loads for Buildings and Other Structures.

C. ASCE 24 - Flood Resistant Design and Construction.

D. ASTM A36 - Standard Specification for Carbon Structural Steel.

E. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

F. ASTM A992/A992M & A572/A572M - Standard Specification for Carbon Structural Steel.

G. ASTM A240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.

H. ASTM A312 – Specification for Seamless and Welded Austenitic Stainless Steel Pipes.

I. ASTM A554 – Specification for Welded Stainless Steel Mechanical Tubing.

J. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

K. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel,

L. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

M. ASTM B211 - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire.

N. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

O. ASTM F468 - Standard Specification for Nonferrous Bolts, Hex Cap Screws, Socket Head Cap Screws, and Studs for General Use.

P. ASTM F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.

Q. ASTM F594 - Standard Specification for Stainless Steel Nuts.

R. AWS D1.1 - Structural Welding Code - Steel. Latest Edition

S. AWS D1.2 - Structural Welding Code - Aluminum. Latest Edition

T. AWS D1.6 - Structural Welding Code - Stainless Steel. Latest Edition

U. FEMA Technical Bulletin 3-93, Floodproofing - Requirements and Certification.

V. FEMA P-936 - Floodproofing Non-Residential Buildings.

W. Occupational Safety and Health Administration Regulations (Standards - 29 CFR).

1.04 DESIGN AND PERFORMANCE REQUIREMENTS

A. Flood barrier(s) shall be designed per ASCE 7-10 and shall provide an effective seal against the design flood load at the World Trade Center Design Flood Elevation (WTC DFE).

B. Leakage: The flood barrier assemblies shall be substantially watertight under the design flood load. Leakage shall not exceed the gallon per minute (gpm) per linear foot (lf) of perimeter as scheduled below:

FLOOD BARRIER ASSEMBLIES	LEAKAGE RATE
Type A	Not used
Type B	0.1 gpm/1 lf. of perimeter
Type C	Not Used
Type D	0.1 gpm/1 lf. of perimeter
Type E	Not used
Type F	Not used
Type G	Not used
Type H	Not used
Type J	Not used
Type K	0.1 gpm/1 lf. of perimeter
Type L	0.1 gpm/1 lf. of perimeter
Type M	Not used
Type N	Not used
Type P	Not used

C. Design Head: For the purpose of these specifications, the flood barrier assemblies shall be defined as meeting the structural and leakage requirements at maximum water level which is the WTC DFE .

D. Structural Performance:

1. See Structural drawings for performance criteria and requirements, including: hydrostatic pressure resistance, hydrodynamic force resistance, and debris impact force resistance of the Work.

E. See Special Construction Consideration Notes on drawings, for supplemental work and requirements associated with existing wall cladding, pavement and other finish elements included in the work of this section.

F. For additional Flood Barrier Assemblies Performance Criteria, including deployment and related requirements, refer to the Contract Documents.

1. Flood barrier systems shall not require manpower of more than two (2) personnel for deployment.

2. Individual components of flood barrier systems shall not weigh more than 100 pounds.

G. Submit complete set of shop drawings and calculations to the Engineer for review and approval for conformance with the design criteria.

1.05 QUALITY ASSURANCE

A. All work shall, as far as practical, be built-up, assembled, and finished in the shop and shall conform to the actual measurements taken by the Contractor at the installation location.

B. The fully assembled flood barriers shall be shop inspected before shipping.

C. This project is governed by "Buy America" and "Buy American" requirements, the Authority will require documentation to confirm the country of origin of all applicable products and materials. The Contractor is responsible for communicating "Buy America" and "Buy American" requirements to his subcontractors and suppliers. The lack of sufficient documentation may be grounds for rejecting a product or material.

D. Manufacturer qualifications: Manufacturer shall present evidence attesting to at least one (1) successful experience in the design and manufacturing of flood barrier assemblies of a similar type installed on a Federally Funded Project.

1. The manufacturer shall have a quality assurance program in effect at their facility.

2. The manufacturer will provide access to the Authority to shop facilities for inspection of materials, testing, and workmanship.

3. The manufacturer shall be able to provide standard service, maintenance, and inspection agreements for their products under separate contract.

E. Welder qualifications: Welders certified in accordance with American Welding Society Procedures. AWS-1-GMAW-S, WPS No. B2.004.90 for applicable material used in production of specified product. Submit certification documentation to this effect.

F. Installer Qualifications:

1. Installer and Installer's employees shall submit certification of training by the manufacturer to install the manufacturer's products.

2. Experienced installer with a minimum of five (5) successfully completed projects of similar materials and scope and approved by the manufacturer to install the

specified products. Submit certification and experience documentation to this effect.

G. Inspections and Testing:

1. Inspections and testing shall be conducted by a qualified testing agency, approved by the Authority. Reports shall be on testing agency's standard forms, indicating and interpreting results of inspections and tests performed during installation of product or after product is installed in its non-deployed storage location, for compliance with requirements in the Contract Documents.

2. Pursuant to NYC Building Code Appendix G, Section BC G105.4, Progress and Special Inspection Requirements, the Contractor shall coordinate with the scheduling of, and provide all labor required to assist, the Special Inspector designated to perform required inspections of flood shields. This shall include, but not be limited to, activation, deployment, and subsequent restoration to storage placement of each type of flood shield.

1.06 WARRANTIES

A. Provide manufacturer’s special warranty agreeing to repair or replace components of the flood barrier assemblies in the event of defective material or substandard workmanship within 5 years from the date of Substantial Completion.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.

1.07 SUBMITTALS

A. The contractor shall submit, for approval by the Authority, drawings showing the principal dimensions, general construction and all materials used in the flood barrier assemblies in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1- GENERAL PROVISIONS.

B. Manufacturers Data: Submit product specifications and other data necessary to prove compliance with the requirements specified herein and with the referenced standards. Submit Operations and Maintenance Manual as per section 1.10.

C. Shop Drawings: The Shop Drawings shall show details of the barrier assemblies including elevations, interior reinforcement, anchoring, connection methods, materials, finishes, complete parts list and installation requirements for the specific type of assemblies proposed and distinguish between factory and field assembled work. Contractor shall provide information, details, calculations and samples as required and associated with replacement of impacted existing wall cladding and pavers pursuant to the Special Construction Consideration notes on the drawings, which are supplemental to the work of this section. Prior to creating shop drawings, the Contractor shall field measure and verify all dimensions including surveying and verifying grade elevations. The Contractor shall also verify the construction of the adjoining walls and slabs by conducting probes or drilling pilot holes. Anchors that are compatible with the existing construction shall be selected and tested. Anchors test results shall be submitted with the shop drawings for

approval. All shop drawing submittals shall bear the stamp, signature and contact information of a Professional Engineer, licensed to practice in the State of New York.

D. Calculations: Submit calculations, certified by a licensed New York State Professional Engineer, to verify the flood barrier's ability to withstand the design pressure loading. The engineering analysis shall be based on results of factory testing.

E. Certificates: Submit manufacturer's certified test reports of water tightness and hydrostatic pressure load resistance of proposed assembly types and models.

F. Qualifications

1. Manufacturer: Demonstrate capabilities and experience. Include list of completed projects with project names, addresses, names of architects and owners.

2. Installer: Demonstrate capabilities and experience. Include list of completed projects with project names, addresses, names of architects and owners.

3. Independent testing agency qualifications as approved by the Authority.

4. Professional Engineer: Demonstrate capabilities and experience. Include list of completed projects with project names, addresses, names of architects and owners.

5. Welder: Evidence of current AWS certification.

G. Independent testing agency inspections and testing reports.

H. Samples: Submit samples of specified finish, on 12" lengths of frame members. Engineer reserves right to require additional samples, which will show fabrication techniques and workmanship, and design of hardware and accessories.

I. Warranty: Sample of special warranties.

J. Continuing Maintenance: Submit evidence of the ability to provide continuing maintenance from Manufacturer and/or Installer to Authority, in the form of a separate standard five-year maintenance agreement. State services, obligations, conditions, and terms for agreement period and for future renewal options.

1.08 MAINTENANCE MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Spare parts: For each assembly type, furnish one complete set each of spare parts, including hinges, locks, anchors, fasteners, gaskets and other system components that are subject to degradation over time.

B. Special Tools and Keys: For each assembly type, furnish five (5) complete sets of special tools and keys for each type of assembly installed. Set shall consist of all tools or keys necessary to deploy, unlock, open, lock and close each type of assembly.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. All materials shall be carefully handled, packaged, and stored to prevent inclusion of foreign materials, or exposure to temperatures exceeding 130-degrees Fahrenheit.

C. Perforated or deformed sealant containers shall be discarded. No salvage of such damaged goods will be permitted. Sealant components outdated as indicated by the shelf life date shall not be used.

D. Multi-component materials shall be supplied from a single manufacturer, and shall be coded and packaged as a set. The Authority reserves the right to reject any material that is packaged improperly.

1.10 OPERATION AND MAINTENANCE MANUALS

A. A preliminary manual shall be submitted with shop drawings required under Submittals of this Section.

B. Three copies of the revised manual incorporating all changes and corrections resulting from shop drawings review shall be submitted to the Engineer prior to field testing.

C. After field testing has been approved, the Contractor shall submit ten (10) copies of the final Operation and Maintenance Manual.

D. The manuals shall contain: description and drawings covering the location, installation and operation of the equipment including, labeling, color coding and/or unique identification of each flood barrier and its component parts for ease of deployment; parts lists for all flood shields and components; routine and long-term maintenance instructions; emergency information regarding procedures for handling failure of equipment components.

E. Contractor shall provide full Operations and Maintenance Manual (O/M) for each type of device. Manual shall include a recommended schedule and procedure for periodic deployment and inspection of all components, including accessories, attachment details, and criteria for replacement of worn or degraded parts.

F. Pursuant to NYC Building Code Appendix G, Section BC G501, Section 6.2.3, the Contractor shall assist and provide any information or documentation in addition to the O/M Manual that may be deemed necessary by the Authority for the development of the Flood Emergency Plan.

G. Contractor shall provide Training Session for the Authority personnel on deployment and stowage of barriers. Training Session shall be recorded by videotape and a manual for the training shall be provided.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with requirements, provide products indicated or comparable products by one of the following:

1. ILC Dover LP, Frederica, DE.
2. Presray Corporation, Wassaic, NY
3. PS Doors, Grand Forks, ND
4. Walz & Krenzer, Inc., Oxford, CT
5. Flood Break Automatic Floodgates, Houston, TX.
6. Flood Control America, LLC, Herndon, VA.
7. Approved equal of similar product, material type and performance.
8. Each barrier system/assembly to be provided by single manufacturer.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification. A Comparable or Approved Equal Product is a product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified products. Engineer will consider Contractor's request for comparable or equal product when the following conditions are satisfied. If the following conditions are not satisfied, Engineer may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents, and that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and performance requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of engineers and owners, if requested.
5. Samples, if requested.

2.02 MATERIALS

A. Components - All material for fabric, stiffeners, hardware, gaskets, opening and closure mechanisms, and embedded frame pieces shall be selected and supplied by the manufacturer based on the submitted design calculations to meet the design loads and performance criteria.

1. All components shall be constructed with flood damage-resistant materials in accordance with ASCE 24.

B. All structural steel for the frame assembly shall conform to ASTM A572/A572M or ASTM A992/A992M or ASTM A500/A500M.

C. Stainless steel shall be 316 Grade, 35 KSI.

D. All structural aluminum elements and components shall conform to ASTM B209 or ASTM B211.

E. Dissimilar Materials: The assembly design and installation shall ensure that:

1. Aluminum shall be physically separated from concrete.

2. Dissimilar metals shall be physically separated.

F. All fasteners exposed to view shall be vandal resistant with a security type head.

G. Each component part of the flood barriers shall be furnished with a permanent label indicating the SWLL or other identifying number to reference its deployment location. Submit label format and material sample to Engineer for approval.

2.03 FLEXIBLE MEMBRANE FLOOD BARRIER SYSTEMS

A. **TYPE A**: Vertically Deployed Barrier. - NOT USED

1. Basis of Design Products:

a. Vertically Deployed Flex-Wall as manufactured by ILC Dover LP, Frederica, DE.

B. **TYPE B**: Side Deployed Barrier.

1. Basis of Design Products:

a. Side Deploy Flex-Wall as manufactured by ILC Dover LP, Frederica, DE.

C. **TYPE C**: Over-head Deployed Barrier. – NOT USED

1. Basis of Design Products:

a. Portal Flex-Gate as manufactured by ILC Dover LP, Frederica, DE.

D. **TYPE M:** Horizontal Cover. - NOT USED

1. Basis of Design Products:

a. Flexible cover as manufactured by ILC Dover LP, Frederica, DE.

E. **TYPE N:** Stairwell Barrier. - NOT USED

1. Basis of Design Products:

a. Stairwell Flex-Gate as manufactured by ILC Dover LP, Frederica, DE.

F. Gaskets: All gaskets shall be fabricated from Silicone Sponge at thickness required to meet design performance criteria.

G. Membrane Components:

1. PVC coated polyester for: Type M Horizontal Cover.

2. PVC coated polyester with Kevlar webbing in both directions, horizontally and vertically for: Type C Overhead Deployed Barrier; Type N Stairwell Barrier; and

Type A Vertically Deployed Barrier and Type B Side Deployed Barrier for both types over 36" in height.

3. PVC coated polyester with Kevlar webbing in the horizontal direction and Polyester webbing in the vertical direction for: Type A Vertically Deployed Barrier and Type B Side Deployed Barrier for both types below 36" in height.

H. Metal Compounds:

1. All gate-guides, clamping bars, dams, floor receiver plate and exposed plate shall be of ASTM 240 Type 316L Stainless Steel, minimum yield 40 KSI, with a number 2B or 2D finish; if exposed to view stainless steel shall have a #4 finish.

2. All tubing shall consist of ASTM A 554, Grade MT, Type 316L Stainless Steel, for exterior use.

3. All pipes shall consist of ASTM A 312, Grade TP, Type 316L Stainless Steel, for exterior use.

4. All bolts and screws shall consist of ASTM F593 Type 316L Stainless Steel, minimum yield 65 KSI.

5. All nuts shall consist of ASTM F594 Type 316L Stainless Steel, minimum yield 40 KSI.

6. All washers shall consist of ASTM F594 Type 316L Stainless Steel, minimum yield 30 KSI.

7. Interior non-exposed support plating shall be of ASTM A240 Type 316L Stainless Steel, minimum yield 40 KSI.

8. All drive chain shall consist of Type 316L Stainless Steel.

9. All non-exposed bearings, bearing sleeves, bearing supports, spools, shafts, and springs shall be of either ASTM A240 Type 316L Stainless Steel, minimum yield 35 KSI, or ASTM A240 Type 304 Stainless Steel, minimum yield 40 KSI.

10. Welding wire shall be Duplex Stainless Steel wire - UNS S31603.

I. Shims: Shims shall be stainless steel plate or flat stock, milled to suit. Dissimilar metal separator above shims to be phenolic minimum thickness 3/16". Shim package to be securely fixed to assemblies to ensure no movement during installation or in service.

J. Electrical motor rating: For Over-head deployed barrier provide motor FLA 7.5 amps at 480 volt and local disconnect switch as required by state and local code. Control for Over-head deployed barrier shall be mounted 5'-0" AFF on the dry side of the barrier. Control unit shall be lockable with Master Keying System Lock.

K. Grab handles on all manually-deployed flexible membrane systems for ease of handling.

L. Provide Stainless Steel vented container box in #4 finish with Master Key System Locks for the storage of non-deployed flexible membrane, Stainless Steel Clamp Bars and Stainless Steel Tube Posts vertical supporting members. Coordinate keying system with Engineer.

M. Provide Stainless Steel cable and winch built-in inside the container box for Side Deployed Flex-Wall spans over 20 feet and over 4 feet in height.

N. Provide special instruction and procedure on the Type B Side Deployed Barrier for lowering the barrier membrane to 18" high for egress purpose.

2.04 FLOOD PANELS

A. **TYPE D & H**: Flood Panel. - TYPE H NOT USED

1. Basis of Design Products:

a. Lipseal barrier Models FP-LS and FP-M as manufactured by Walz & Krenzer, Inc.

1) Panel: 5051-H32 aluminum plate with 6061-T6 aluminum stiffeners.

2) Frame: Stainless Steel Grade 316/316L.

3) Finishes:

a) Panel, bright aluminum finish.
b) If exposed to view, finish for stainless steel shall be # 4 Finish. If concealed from view, finish for stainless steel shall be AISI No. 2D.
c) Finish shall be uniform and free from blemishes, scratches or other defects.

4) Gasket: EPDM compression gasket with fully molded corners.

5) Grab Handles: Welded lift attachments on top edge and/or face of panel for ease of handling. Provide Casters as required for panel or component over the 100 pounds limit.

6) Stowage wall brackets shall be furnished and installed for both top and bottom panels and the removable stainless steel angle side frames, including Master Key System Padlock for securing non-deployed panels and angle side frame. Submit Padlock for Engineer approval.

7) Quick release Latch-Bolts requiring no tools shall be provided for connection during deployment installation and removal of panels. Latching mechanism shall be located at the upper edge of the top panel, so that release operation is readily accessible to approach from either side of door opening.

2.05 SLIDING GATE

A. **TYPE E**: Horizontal Sliding Flood Barrier. - NOT USED

1. Basis of Design Products:

a. Horizontal Sliding Flood Barrier Model HS-560 as manufactured by PS Doors.

1) Sealing Requirements: Flood barrier and gasket design shall provide an effective barrier against high water situations, to the protection level indicated on Drawings.

2) Operation: Provide with latching operable from one side only (typical).

3) Mounting/Load Transfer: Anchor to existing structure. Flood barrier designed for specified hydrostatic pressure (and other loads as specified) and will transfer loads to adjacent structure.

4) Frames to be cast-in-place or anchored utilizing mechanical, chemical or other anchor types as designed. Manufacturer to include all anchors, water-stop, and sealants, as required to meet the performance requirements.

5) Standard: Positive Pressure Loading: Direction of loading against flood barrier so as to further compress gaskets against flood barrier frame.

6) Provide rectangular door opening with square corners to facilitate easy passage.

7) Provide compression gasket which requires no inflation.

8) Electrical motor rating: 3 HP and as shown on Electrical drawings if required.

2. Fabrication:

a. Fit and shop assemble items in largest practical sections, for delivery to site.

b. Fabricate items with joints tightly fitted and secured.

c. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.06 BUOYANT LOUVER PANELS

A. **TYPE F**: Flood Control Vent Gates - NOT USED

1. Basis of Design Products:

a. Flood Control Vent Gates as manufactured by Flood Break Automatic Floodgates, Houston, TX.

1) Gates: Aluminum Smooth Plate - Grade 5052 MIN FY= 30 KSI.

2) Flat Bars, Structural Angles, Hinges - Aluminum Grade 6061-T6 MIN FY = 40 KSI.

3) Gaskets: 3/16 inch EPDM rubber.

b. Design vent gate system height based on the Mitigation Height at the location of the gate as determined by the Federal Emergency Management Agency (FEMA) unless as otherwise indicated in the Contract Documents.

c. Design the vent gate with minimal airflow reduction in the “open” position.

d. Design the vent gate to hinder the passage of floodwater and resist hydrostatic pressures while in its operating or "closed" position and only ”close” to the flood height.

e. Design the gate to exclude the use of any electric pumps or other ancillary powered support equipment for operation in passive mode.

2.07 DEMOUNTABLE FLOOD CONTROL SYSTEM

A. **TYPE G**: Demountable Floodwall - NOT USED

1. Basis of Design Products:

a. Invisible Flood Control Wall (IFCW) as manufactured by Flood Control America, LLC, Herndon, VA.

1) Posts and Bracing: Hot dipped galvanized – ASTM A123.

a) Pins and Security Retainer Clips: Type 316/316L stainless steel – ASTM F593.

2) Stop Logs: High strength, aluminum extrusion – ASTM B221 Alloy 6005.

3) Miscellaneous Steel Components:

a) Posts and Plates: ASTM A992 and ASTM A572, Grade 50, galvanized as per ASTM A123.

b) Tubes: ASTM A500, Grade 50.

4) Shear Pins and High Strength Bolts:

a) Non-ferrous Bolts: ASTM F468.

b) Stainless Steel: Type 316/316L ASTM F593.

Material Type	EPDM	EPDM micro porous
Hardness	60-70 ShA	30 ShA
Specific mass	1.4 g/cm^3	0.7 g/cm^3
Temperature range	-30/100ºC	-30/+100ºC
Strength	7 N/mm^2	1 N/mm^2
Ductility	350%	150%

5) Hold Downs: Hot dipped galvanized – ASTM A123.

6) Rubber Seals: EPDM or EPDM micro porous.

7) Continuous Gasket: Armacell Ensolite IUO

8) Emergency Access Stairways: Hot dipped galvanized – ASTM A123

b. Design floodwall system for ease of assembly, removal, and storage.

c. Posts shall be connected to existing steel bollards with stop logs placed between posts and bracing where required.

d. Design posts for a minimum safety factor of 1.5 for sliding (flood condition without collision impact load) and/or 1.25 (flood condition with collision impact load). Minimum factor against overturning shall be 1.5.

e. All stop logs shall be manufactured with a uniform specified profile to accommodate stacking, and shall include two formed channels, shaped to accept rubber seals that can be installed by pressure, without the need of adhesives to attach the rubber seal to the stop log. All stop logs shall have two rubber seals. The rubber seal side of the stop log shall be positioned facing down.

f. All miscellaneous steel components shall be designed to provide either a shop welded, or bolted or pinned connection.

g. Hold downs shall be designed to secure the aluminum stop logs once they are stacked within the steel post section. The stop logs shall be designed to withstand floodwater forces and shall have watertight seals horizontally (where the lowest stop log meets the ground surface) and vertically (where the stop log meets the posts).

h. Rubber seals in posts shall be a common design to simplify replacement and inventorying of spare parts. Posts and stop logs shall lock securely in place without adhesives when rubber seals are pressed into grooves fabricated in either the stop logs or posts.

i. Continuous gaskets shall be designed to account for changes in grade on the project site and to limit damage to the ground surface due to deployment and removal of the floodwall system. Provide two sets of continuous gaskets for the entire site.

j. Emergency access stairways shall be a minimum of 22 inches wide and shall be designed according to 29 CFR 1926 OSHA for the locations shown on the Contract Drawings.

2.08 HINGED GATE

A. **TYPE K:** Hinged Gate Flood Barrier

1. Basis of Design Products:

a. Side Hinged Gate Flood Barrier Model FG-C as manufactured by Walz & Krenzer, Inc.

1) Design:

a) Side frames are angles for mounting on the exterior face of the wall surface.

b) Bottom frame is a flatbar with raised machined knife-edge. Standard bottom sill is raised 1-1/2” from the floor surfaces. Frame knife-edge shall be rounded and smooth to maximize sealing.

c) Roller assembly is provided on gates wider than 6’.

d) Frame(s) shall have mounting holes for expansion anchors.
e) The quantity and type of 'dogs' are designed to adjust gasket compression.

2) Materials:

a) Panel: 5051-H32 aluminum plate with 6061-T6 aluminum stiffeners.
b) Frame: ASTM A-36 steel.
c) Gasket: ASTM D2000 GR DE neoprene gasket, 25 duro with fully molded corners.
d) Dogs/Drop bolts: Stainless Steel dogs or drop bolts.
e) Hinges: To include bronze oil-impregnated thrust bearing and stainless steel hinge pins.
f) Grab Handle and Panel Stops: 6061-T6 aluminum.
g) Material Finishing shall be submitted to the Engineer for review and selection.

2.09 FLOOD DOOR

A. **TYPE L:** Flood Doors

1. Basis of Design Products:

a. Hinged Pedestrian Flood Door: the aluminum sill and door operation shall be New York City Building Code and ADA compliant; and shall have 90 minutes fire rated door and frame assembly to comply with the 2-hours fire rating required for egress stair locations.

1) Door: To be fabricated as a welded steel structural frame, and sheeted both sides with flat sheeting welded in place. Flood door panel to be designed for maximum water height as indicated in door/barrier schedule. Provide view window to door if required and as indicated in barrier/door schedule.

2) Frame: Include jamb, head and sill members for field installation on existing structure. Frame members to be fabricated from structural shapes and formed members. Field grouting as required and installation procedure as specified by the manufacturer. Apply continuous Swelling Paste Beads between door frame/sill member and the existing structure as shown in drawing.

3) Sealing Requirements: Flood Door and Gasket shall be factory mounted to the flood door assembly. Gaskets to be compressible and to be field replaceable.

4) Operation Hardware: Provide hardware sized for the size and weight of the flood door and loads. Hardware to be factory located and installed on jambs and door panels. All loads are transferred to building structure. Latching hardware to match existing site installed

condition. Flood door panel to be factory prepared for applicable latching devices.

a) Panic Hardware: Von Duprin 98/99 series.
b) Door and Frame to be wired to match and ready to connect to existing electronic keypad, card reader and/or security devices.
c) Manufacturer to incorporate the existing electronic/security devices on site, to each location of door/frame.

5) Material Finishing shall be submitted to the Engineer for review and selection.

2. Security Door Contacts for Single and Double Door:

a. Contractor shall perform the following work:

1) Before starting any work the contactor shall test the door(s) alarm system to ascertain that the alarm works when the door(s) open.

2) Submit detailed shop drawings furnishing all the required services for the support of fail-secure operation of electrified door locking hardware.

3) Coordinate all work with the Engineer who will coordinate with the Authority, the SACS system administrator. Notify the Engineer 48 hours prior to the beginning of the work.

4) Remove recessed door contact(s) from the door(s) and frame and disconnect wiring. Store and protect contacts for future installation on the Flood Door(s).

5) Pull back wiring from within the door frame. Remove wiring, conduit, elbows and junction boxes from the area of work. Protect wiring for future reconnection to the reinstalled door contact(s).

6) Remove, store and protect supervisory end-of-line resistors, if required to be removed in cleaning the area of work.

7) Furnish and install pulling elbows and/or junction boxes, and conduit to the door frame for the reconnection of the contact(s) to the protective circuit wiring.

8) Reinstall wiring into the door frame for connection to the door contacts.

9) Connect switch contact(s) to the protective circuit wiring. On double doors, wire two contacts in series before connection to the protective circuit wiring.

10) Install the contact(s) at the Flood Doors and frames per the contact manufacturer's instructions. Include the cost of furnishing surface-mounted, triple-biased door contacts with three-foot leads in flexible

steel conduit should it be demonstrated that recessed style contacts are not suitable for mounting on the Flood Doors.

11) Install the supervisory end-of-line resistors per the manufacturer's instructions.

12) Immediately following completion of the work, the system shall be tested to demonstrate the system is successfully restored and alarms works.

2.10 VERTICAL LIFT SYSTEM

A. **TYPE P:** Vertical Sliding Flood Barrier - NOT USED

1. Basis of Design Products:

a. Vertical Sliding Flood Barrier WK Model# FG-S as manufactured by Walz & Krenzer, Inc.

1) Design:
   a) The flatbar bottom frame is to be mounted flush with the ground level.
   b) Wire Winch supplied with the system shall correspond with the designed weight of the barrier for smooth and non-strenuous operation.
   c) Gasket to be compressible and to be field replaceable.

2) Materials:
   a) Panel: 5051-H32 aluminum plate with 6061-T6 aluminum stiffeners
   b) Frame: ASTM A-36 steel.
   c) Latches: Stainless Steel sliding latch bolts.
   d) Gasket: ASTM D2000 GR DE neoprene gasket, 25 durometer with fully molded corners. In pressure exceeding 20' design pressure, 40 durometer gasket is used.
   e) Guide Rails: ASTM A-36 steel.
   f) Grab Handle and Panel Stops: 6061-T6 aluminum.
   g) Material Finishing shall be submitted to the Engineer for review and selection.

2.11 FACTORY TESTING

A. Perform shop operational test on all flood barrier assemblies and elements to ensure full compliance with Contract Documents.

B. Testing: Provide hydrostatic, hydrodynamic, and impact test data certifying that the flood barrier assemblies furnished, or flood barrier assemblies of similar design, have been satisfactorily tested to verify that it will withstand the design loads.

C. The Contractor shall provide Manufacturer's documentation of results for all testing. Submit test/inspection reports showing compliance with specified quality assurance requirements.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. The flood barrier assemblies shall be handled and installed in accordance with the manufacturer's recommendations.

B. The manufacturer shall supply all components of the flood barrier to be installed by the Contractor. Contractor shall coordinate the location of these components with all required project trades and submit a composite shop drawing for review and approval.

C. Barrier calculations and fabrication drawings shall be submitted for review prior to the construction of the supporting frame; however, the final barrier dimensions and fabrication must be based on an as-built survey of the constructed frame to ensure proper size, fit-up, and closure.

D. Where existing waterproofing membrane or sealers are penetrated, removed or otherwise impacted, in order to install flood barrier components including but not limited to anchorage or framing, the contractor shall ascertain the appropriate detail recommended for the specific application in order to restore the continuity of the waterproofing membrane or sealer. These details shall be indicated on Shop Drawings, and approved prior to field installations.

E. Apply appropriate sealants where indicated on shop drawings and in accordance with manufacturers recommendations.

F. All fasteners, anchors and mounting hardware shall be installed and adjusted per the torque or pull-out requirements determined by the manufacturer based on the submitted design calculations to meet the design loads and performance criteria.

3.03 FIELD QUALITY TESTING

A. Manufacturer's representative shall verify that installation of assembly and that the perimeter conditions are in conformance to the manufacturer's recommendations.

B. After installation, all flood barrier assemblies shall be operationally field tested, at no additional cost to the Authority, by an independent qualified testing and inspection agency approved by the Authority and in the presence of the Engineer to ensure that all equipment

is in full compliance with the Contract Documents. Field tests shall be performed with barriers installed in place. Testing agency shall perform inspections and develop testing protocols and prepare test reports.

C. Verify proper deployment and retraction after product installation.

D. Field Operational Testing:

1. Products shall be operated and field verified including the sealing surfaces to assure that they maintain contact at the correct sealing points.

2. Contractor shall verify that all hinging and latching assemblies operate freely and correctly.

3. Contractor shall verify all anchorage is in accordance with manufacturer's installation instructions and applicable data sheets.

4. Contractor shall perform visual dry test for gasket alignment, continuity contact and pre-compression.

5. Replace those items that cannot be adjusted to operate freely and smoothly as intended for the application made.

E. Contractor shall correct any deficiencies revealed during testing at no additional expense to the Authority. Remove and replace assemblies where inspections indicate that they do not comply with the specified requirements.

F. The Contractor shall repeat test as necessary until test results meet Contract Document requirements. Additional testing shall be performed at no additional expense to the Authority.

3.04 DEMONSTRATION

A. Engage a factory-authorized service representative to train the Authority's maintenance personnel to deploy, operate, and maintain the installed flood barrier assemblies.

END OF SECTION

QUESTIONS CONCERNING THIS ADDENDUM MAY BE ADDRESSED TO ELZA RENAZILE, WHO CAN BE REACHED AT (212) 435-4657 or at erenazile@panynj.gov.

JOANN SPIRITO

THE PORT AUTHORITY OF NY &

NJ
PROCUREMENT MANAGER
FTA/WTC SITE PROJECTS

RESPONDENT'S FIRM NAME: _____

INITIALED: _____

DATE: _