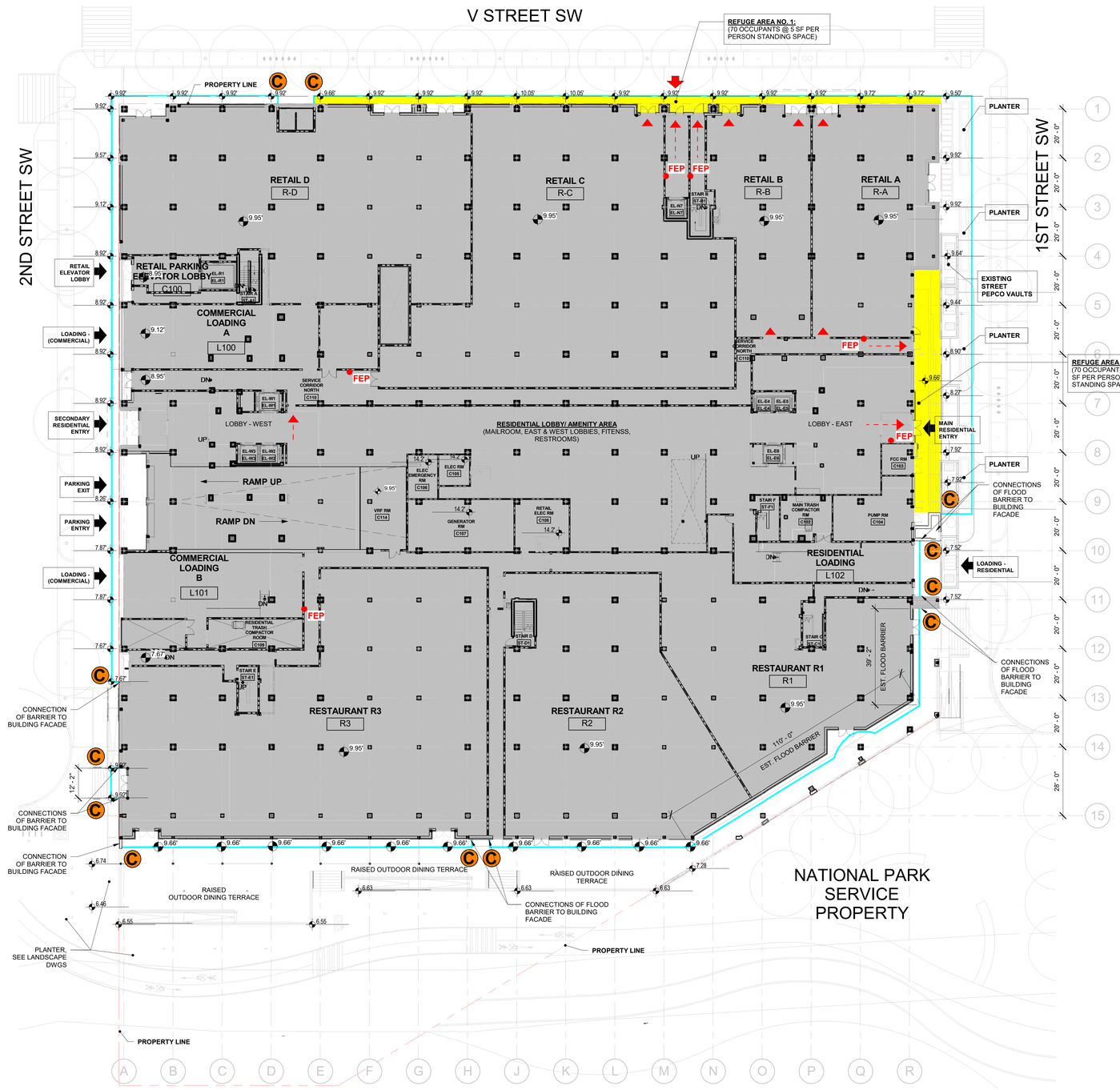
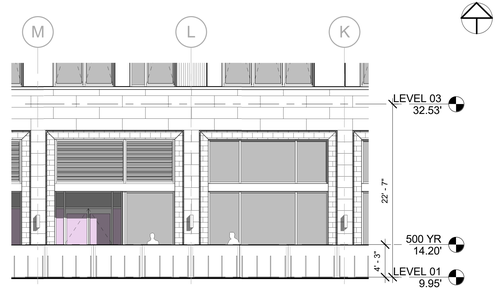


1 FLOOD PROTECTION PLAN
1" = 20'-0"

2 ENLARGED ELEVATION - V ST (NORTH) WITHOUT BARRIERS
1/8" = 1'-0"



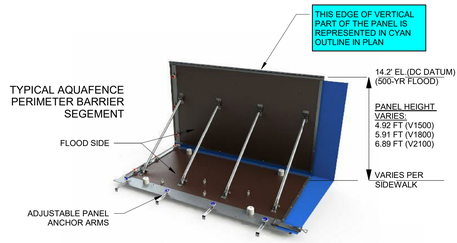
3 ENLARGED ELEVATION - V ST (NORTH) WITH BARRIERS
1/8" = 1'-0"

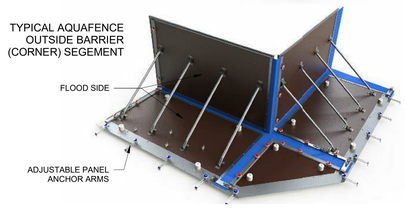
KEY LEGEND

- LOCATION OUTLINE OF REMOVABLE FLOOD BARRIERS; VERTICAL PART OF PANEL IN HEIGHT UP TO 500-YEAR FLOOD ELEVATION (14.1' NAVD88) IS REPRESENTED BY THE CYAN LINE IN PLAN
- REFUGE AREAS
- FEP — LOCATION OF POSTED FLOOD EMERGENCY PLAN (FEP)
- EGRESS PATH TO REFUGE AREAS
- GROUND FLOOR FOOTPRINT
- C — CONNECTION POINT OF AQUAFENCE FLOOD BARRIER PANEL WITH BUILDING FACADE; SHOWN FOR LOCATION PURPOSES

BRIEF DESCRIPTION OF FLOOD PROTECTION BARRIERS:

TYPE:	ACTIVE (REQUIRES HUMAN INTERVENTION)
REMOVABLE:	YES
FM APPROVED:	YES
TOP OF FLOOD BARRIER PANEL:	14.2' DC DATUM (14.1' NAVD 88) MIN.
SIDEWALK ATTACHEMENT REQUIRED:	YES, INTERNALLY-THREADED TIE-DOWN ANCHORS TO SECURE THE TOE OF AQUAFENCE PANELS TO ASPHALT OR CONCRETE PAVEMENTS, 3/8 OR 1/2" DIAMETER (SEE BELOW)
DESCRIPTION:	PANELS DESIGNED FOR RAPID DEPLOYMENT, CONSTRUCTED OF MARINE GRADE LAMINATE, STAINLESS STEEL, ALUMINUM AND REINFORCED PVC CANVAS.





AquaFence

What types of **ANCHORS** do we use?

AquaFence recommends using internally-threaded tie-down anchors to secure the toe of AquaFence panels to asphalt or concrete pavements. The anchors should be flush with the pavement surface to prevent damage from traffic, and removable caps should be installed to protect the threads and prevent debris from entering the threaded holes. Portions of pavement anchors embedded in the ground should be zinc-plated or stainless steel to resist corrosion. Anchor bolts can be stored with the panels for quick deployment. Anchoring systems should be designed by an engineer and be load-tested to verify capacity. See side 2 of this sheet for a typical anchoring sequence of operations.

01 Asphalt Pavement Anchor

In asphalt pavements, specially designed asphalt pavement anchors for 3/8" or 1/2" diameter bolts are inserted into cored holes and secured with fast-setting grout or epoxy. Anchors made by Asphalt Anchors Corp. are examples of asphalt pavement anchors. Anchor sizes will depend on the anchor loads needed and the pavement construction.

Anchor Specs

Asphalt Pavement Anchors
Zinc Plated or Stainless Steel
Inside Thread 3/8" or 1/2" Diameter

Grout
Self-leveling
Approved by the Anchor Manufacturer

Plastic Cap
3/8" or 1/2" Diameter to Match Anchor Used

AnchorBolts
Zinc Plated or Stainless Steel
3/8" or 1/2" Diameter

Washer
Zinc Plated or Stainless Steel

02 Concrete Pavement Anchor

In concrete pavements, a number of internally-threaded, drop-in or adhesive-type anchor systems for 3/8" or 1/2" diameter bolts can be used, depending on the required anchor loads and strength of concrete. The same types of anchors can also be used for bolting to concrete walls.

Anchor Specs

Drop-In Anchors
Stainless Steel
Non-Flange
Inside Thread 3/8" or 1/2" Diameter

Stainless Steel Cap Screw
Flat Head - Tapered
3/8" or 1/2" Diameter to Match Anchor Used

AnchorBolts
Zinc Plated or Stainless Steel
3/8" or 1/2" Diameter

Washer
Zinc Plated or Stainless Steel

Attatching to Typical Embedded Anchor

The following shows a typical installation sequence for attaching AquaFence panels to embedded anchors in asphalt or concrete pavements. Panel anchor arms are adjustable. Panels do not need to be in exact location to line up with anchors.

- Remove cap.
- Clean area.
- Prepare anchor bolts and nuts.

01

02

- Place AquaFence panels in position.
- Place attachment arm directly over the embedded anchor so that the open slot aligns with the anchor.
- Install bolt with washer through open slot in attachment arm.

- Hand-tighten both the anchor bolt and the fastening wheel on the panel to an even pressure.
- Use a wrench to firmly tighten the anchor bolt.

03

These three steps are the same for embedded anchors in asphalt or concrete pavements.

Asphalt Pavement

Concrete Pavement

DOB APPROVAL STAMPS:

No.	Date	Description
10	12/14/18	IFC
5	07/16/18	Final GMP & Coordination Set
4	04/10/18	95% CD

Submissions & Revisions

Owner

River Point Partners, LLC
601 13th Street, NW
Suite 300 North
Washington, DC 20005
Phone: 202.638.3000

Architect

ANTUNOVICH ASSOCIATES
ARCHITECTURE · PLANNING · INTERIOR DESIGN
1144 3rd Street, NE
Washington, DC 20002
Main: (202) 540 -1144
www.antunovich.com

Structural Engineer

Tadjer-Cohen-Edelson Associates, Inc.
1109 Spring Street
Suite 510
Silver Spring, MD 20910
Phone: 301.587.1820

M.E.P. & F.P. Engineers

Metropolitan Engineering
1225 19th Street, NW
Suite 800
Washington, DC 20036
Phone: 202.296.2580

Civil Engineer

Wiles-Mensch Coporation - DC
510 8th Street, SE
Washington, DC 20003
Phone: 202.552.0250

Landscape Architect

West 8
333 Hudson Street
Suite 905
New York, New York 10013
Phone: 212.285.0088

General Contractor

CBG Building Company
12200 Tech Road,
Suite 300
Silver Spring, MD 20904
Phone: 301-680-3200

Project Location

2100 2nd St, SW
Washington, DC

Drawing Title

FLOOD PROTECTION PLAN

Seal

DISTRICT OF COLUMBIA · JOSEPH M. ANTUNOVICH · No. 5020 · REGISTERED ARCHITECT

Date: 12/14/18
Drawn By:
Checked By:
Project No:

Drawing No.

0020

COMMISSION
District of Columbia
EXHIBIT NO.104

12/20/2018 6:12:49 PM C:\Users\jbelikova\Documents\2100_2ND ST SW_ARCH_CD05_jbelikova.rvt

FLOODPLAIN NARRATIVE

The DC Flood Hazard Rules are presented in Title 20 DCMR, Chapter 31, and outline the requirements for development in a regulatory floodplain with the purpose of promoting the public health, safety and general welfare, and to minimize public and private losses due to flood conditions. The regulations apply to all land located within a Special Flood Hazard Area (SFHA) within the jurisdiction of the District of Columbia (the District) as designated on the Flood Insurance Rate Map (FIRM) and in the Flood Insurance Study (FIS) for the District prepared by the Federal Emergency Management Agency (FEMA) with effective dates of September 27, 2010. River Point (Site) is located partially within a Zone AE SFHA associated with the Anacostia River requiring compliance with the DC Flood Hazard Rules.

The Flood Hazard Rules do not specifically allow for proposed mixed-use development within a regulatory floodplain. Therefore, as a mixed-use development proposed with below grade parking, the applicant must apply for a Code Modification in accordance with DCRA Administrative Bulletin CC2016-02 to justify that the project will be designed, constructed and protected in a way that is reasonably safe from flooding. Based on prior discussions with DOEE regarding the Code Modification request, the following summarizes site specific flood information and design elements of this development that will be implemented to ensure this project will remain reasonably safe from flooding:

Base Flood Elevation (BFE): The BFE associated with the Potomac River at Buzzard Point is 10.6 feet (NAVD 88).

Design Flood Elevation (DFE): The DFE agreed to between the Applicant and DOEE for this Site is the 500-year flood elevation of 14.1 feet (NAVD 88).

Encroachment Analysis: Due to the Site's location at the confluence of the Anacostia and Potomac Rivers, the flood elevation at this location along the Anacostia River is a backwater effect from the Potomac River. Development and fill placed in the floodplain of the Anacostia River at this location has no effect on flood elevations due to the backwater influence from the Potomac River.

Lowest Residential Floor Elevation: The lowest floor elevation of residential units is required to be at or above the DFE. The lowest floor shall be at elevation 32.53 feet DC Datum (32.43 feet NAVD 88), which is 18.33 feet above the DFE. An Elevation Certificate has been prepared (included on this sheet) and provided to the District to certify the elevations of the lowest residential floors.

Utilities and Ventilation Openings: All utilities and ventilation openings are required to be at least 1.5 feet above the BFE and therefore will be installed above elevation 12.1 feet (NAVD 88). An Elevation Certificate has been prepared (included on this sheet) and provided to the District to certify the elevations of utilities and ventilation openings.

Floodproofing: Floodproofing is required up to at least the DFE. Floodproofing shall consist of utilizing flood resistant construction materials in combination with dry-floodproofing up to an elevation of 14.1 feet (NAVD 88). Dry-floodproofing shall be accomplished through the use of an "active" (manual) flood barrier system that will require installation prior to flooding events. Due to the number of doors and the presence of windows around the perimeter of the building, the flood barrier system shall be designed to encompass and protect the entire building upon erection.

An Operation and Maintenance (O&M) Program will be established outlining the maintenance requirements and operational procedures necessary for the use of such a system. In addition, a Floodproofing Certificate shall be provided at completion of the project to certify that the entire building perimeter is floodproofed to the DFE of 14.1 feet, as required.

Storage of Materials: Storage for all hazardous materials (required for general maintenance and cleaning of the facility) will be provided within the Janitor's closet located on the first floor and the Mechanical Room/ Water heater room on the Penthouse level, both within the floodproofed building. There will be no other storage of hazardous materials outside of the floodproofed building at this site.

Means of Egress:
Two separate exits, one at V Street and second exit on 1st Street, have been provided from the building. V Street exit is along the North Face façade of the building and is at elevation of 9.95 feet DC Datum (9.85 feet NAVD 88). 1st Street exit is along the East Façade of the building and is at elevation of 9.95 feet DC Datum (9.85 feet NAVD 88). Road grades along V Street generally range from elevation 8.6' to elevation 9.9' along the property.

Due to the grades of the surrounding streets, flood depths between the building and V Street for the 100-year and 500-year flood events will be approximately 1.5 feet and over 5 feet, respectively. Flow velocities at Buzzard Point are expected to be minimal due to backwater conditions from the Potomac River and therefore flood depths up to approximately 2.5 feet are assumed to be acceptable for emergency personnel and residents to wade through flood waters, if necessary.

There will be no sheltering in place and evacuation of building tenants is mandatory in case of a flood emergency.

Refuge Space: Refuge space shall be provided on the ground level in two locations in the event residents will need to be evacuated during a flooding event. One area is located along V Street at the main entrance with space to accommodate 70 people. A second area is located along 1st Street with space to accommodate 70 people.

Flood Warning System: A roof top rainfall monitor will be installed on the roof. The system will allow for remote monitoring at the 24 hour staffed concierge desk in the lobby. The National Weather Service's email alert service will be utilized as the flood warning system that will notify operation and maintenance personnel, as well as residents of the potential for flooding events.

Operations and Maintenance (O&M) Program: An O&M Plan will be developed and kept on site with operations and maintenance personnel that will outline protocol for monitoring potential flood events, ensuring a continual maintenance schedule, performing scheduled maintenance on flood warning and flood protection systems, and updating the Emergency Action Plan information as needed.

Emergency Action Plan (EAP): An EAP shall be developed to identify stages at which emergency action is to be taken, including notification of key personnel for the installation of manual portions of the flood protection system. The EAP shall outline specific protocol for who is responsible for initiating certain notification procedures and list key contact information for responsible parties.

FLOODPROOFING CERTIFICATE
FOR NON-RESIDENTIAL STRUCTURES (Continued)

The floodproofing of non-residential buildings may be permitted as an alternative to elevating to or above the Base Flood Elevation; however, a floodproofing design certification is required. This form is to be used for that certification. Floodproofing of a residential building does not alter a community's floodplain management elevation requirements or affect the insurance rating unless the community has been issued an exception by FEMA to allow floodproofed residential basements. The permitting of a floodproofed residential basement requires a separate certification specifying that the design complies with the local floodplain management ordinance.

BUILDING OWNER'S NAME	FOR INSURANCE COMPANY USE
River Point Partners, LLC	POLICY NUMBER
STREET ADDRESS (Including Apt., Unit, Suite, and/or Bldg. Number) OR P.O. ROUTE AND BOX NUMBER: 2100 2nd Street SW	COMPANY NAIC NUMBER
OTHER DESCRIPTION (Lot and Block Numbers, etc.): Square 613, Lot 10, Land Area: 115,479 sq. ft.	
CITY: Washington; STATE: DC; Zip Code: 20593	

SECTION I – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

Provide the following from the proper FIRM:

COMMUNITY NUMBER	PANEL NUMBER	SUFFIX	DATE OF FIRM INDEX	FIRM ZONE	BASE FLOOD ELEVATION (in AO Zones, Use Depth)
110001	0057	C	09/27/2010	AE	10.6'

Indicate elevation datum used for Base Flood Elevation shown above: ☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source:

SECTION II – FLOODPROOFED ELEVATION CERTIFICATION (By a Registered Professional Land Surveyor, Engineer, or Architect)

All elevations must be based on finished construction.

Floodproofing Elevation Information:
Building is floodproofed to an elevation of 14. 1 feet (In Puerto Rico only: _____ . _____ meters).
☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source:
(Elevation datum used must be the same as that used for the Base Flood Elevation.)
Height of floodproofing on the building above the lowest adjacent grade is 7.46 feet (In Puerto Rico only: _____ meters).

For Unnumbered A Zones Only:
Highest adjacent (finished) grade next to the building (HAG) 9.95 feet (In Puerto Rico only: _____ . _____ meters).
☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source:

(NOTE: For insurance rating purposes, the building's floodproofed design elevation must be at least 1 foot above the Base Flood Elevation to receive rating credit. If the building is floodproofed only to the Base Flood Elevation, then the building's insurance rating will result in a higher premium. See the Instructions section for information on documentation that must accompany this certificate if being submitted for flood insurance rating purposes.)

FEMA Form 086-0-34 (6/15) Page 2 of 4

FLOODPROOFING CERTIFICATE
FOR NON-RESIDENTIAL STRUCTURES (Continued)

Non-Residential Floodproofed Elevation Information Certification:
Section II certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information

I certify that the information in Section II on this Certificate represents a true and accurate interpretation and determination by the undersigned using the available information and data. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

CERTIFIER'S NAME	LICENSE NUMBER (or Affix Seal)
Joseph M. Antunovich, FAIA	ARC5826
TITLE: President	COMPANY NAME: Antunovich Associates
ADDRESS: 2200 Clarendon Blvd, Suite 1150	CITY: Arlington; STATE: VA; ZIP CODE: 22201
SIGNATURE	DATE: 3/12/2018; PHONE: 703-224-1126

SECTION III – FLOODPROOFED CERTIFICATION (By a Registered Professional Engineer or Architect)

Non-Residential Floodproofed Construction Certification:
I certify the structure, based upon development and/or review of the design, specifications, as-built drawings for construction and physical inspection, has been designed and constructed in accordance with the accepted standards of practice (ASCE 24-05, ASCE 24-14 or their equivalent) and any alterations also meet those standards and the following provisions.

The structure, together with attendant utilities and sanitary facilities is watertight to the floodproofed design elevation indicated above, is substantially impermeable to the passage of water, and shall perform in accordance with the 44 Code of Federal Regulations (44 CFR 60.3(c)(3).

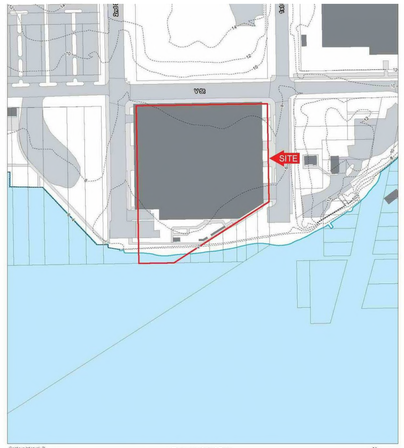
All structural components are capable of resisting hydrostatic and hydrodynamic flood forces, including the effects of buoyancy, and anticipated debris impact forces.

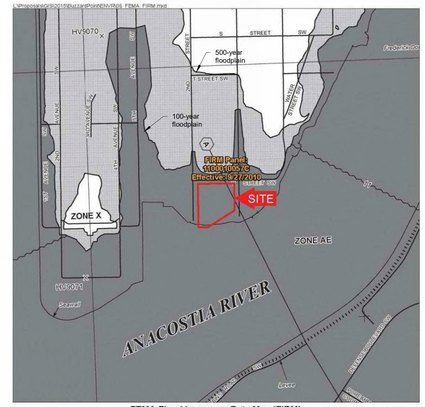
I certify that the information in Section III on this certificate represents a true and accurate determination by the undersigned using the available information and data. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

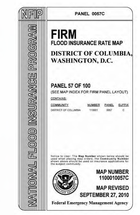
CERTIFIER'S NAME	LICENSE NUMBER (or Affix Seal)
Sanjay Khanna, PE	PE907707
TITLE: Principal	COMPANY NAME: Tadjer Cohen Edelson Associates, Inc.
ADDRESS: 1109 Spring St., Suite 510	CITY: Silver Spring; STATE: VA; ZIP CODE: 20910
SIGNATURE	DATE; PHONE: (301) 587-1820

Copy all pages of this Floodproofing Certificate and all attachments for 1) community official, 2) insurance agent/company, and 3) building owner.

FEMA Form 086-0-34 (6/15) Page 3 of 4







FLOOD PROTECTION NOTES

1. THE FLOOD EMERGENCY PLAN (FEP) SHALL BE POSTED PERMANENTLY IN AT LEAST TWO (2) CONSPICUOUS LOCATIONS WITHIN THE STRUCTURE.
2. PROVISIONS WILL BE MADE FOR THE EVACUATION OF ALL OCCUPANTS BEFORE THE BUILDING IS ISOLATED BY FLOOD WATERS.
3. PROPOSED REFUGE AREAS DURING A FLOOD EVENT HAVE BEEN DESIGNATED FOR OCCUPANTS WHO DO NOT EVACUATE PRIOR TO THE ONSET OF FLOODING:

   REFUGE AREA NO. 1:
   -LOCATED AT V STREET, SW
   -ESTIMATED CAPACITY IS 70 OCCUPANTS STANDING SPACE MIN.
   -ALUMINUM 'CROSSOVER' PORTABLE LADDER TO BE PROVIDED AT EACH REFUGE AREA TO REACH OVER THE FLOOD BARRIER

   REFUGE AREA NO. 2:
   -LOCATED ON 1ST STREET, SW
   -ESTIMATED CAPACITY IS 70 OCCUPANTS STANDING SPACE MIN.
   -ALUMINUM 'CROSSOVER' PORTABLE LADDER TO BE PROVIDED AT EACH REFUGE AREA TO REACH OVER THE FLOOD BARRIER
4. THIS PROJECT IS **NOT A CRITICAL FACILITY** SUCH AS A HOSPITAL OR A POLICE STATION. SHELTERING IN PLACE IS NOT ALLOWED. CLOSEST EVACUATION SHELTER IS JEFFERSON MIDDLE SCHOOL LOCATED AT 801 7TH STREET SW PER HSEMA SHELTER & EVACUATION GUIDE FOR WARD
5. STORAGE FOR REMOVABLE FLOOD BARRIERS IS ALLOCATED WITHIN P1 & P2 PARKING LEVELS
6. FOR PRECISE SPOT ELEVATIONS PLEASE REFER TO CIVIL DRAWINGS, SHEET CIV0107. SPOT ELEVATIONS SHOWN ARE IN DC DATUM. FOR CONVERSION FORMULA INTO NAVD 88 DATUM SEE FLOODPLAIN CHART ABOVE.

FLOODPLAIN INFO	
FLOOD ZONE:	YES (ZONE AE)
FIRM MAP/ PANEL NUMBER:	110001 0057 C
MAP REVISED:	SEPTEMBER 27, 2010
100-YR FLOODPLAIN:	10.7' EL. (DC DATUM)
500-YR FLOODPLAIN:	14.2' EL. (DC DATUM)
CONVERSION FORMULA FROM NAVD88 TO DC DATUM:	NAVD 88 + 0.1' = DC DATUM DC DATUM = NAVD 88 - 0.1'

BUILDING LEVELS		
LEVEL/ FLOOR	DC DATUM	NAVD 88
P2 - PARKING LEVEL ***LOWEST FLOOR	-9.55'	-9.65'
P2 - PARKING LEVEL TOP OF ELEVATOR PIT	-14.63'	-14.73'
P1 - PARKING LEVEL	-0.76'	-0.86'
LEVEL 01 - GROUND	9.95'	9.85'
LEVEL 02 - CONTAINS MAIN ELECTRICAL ROOM ONLY	19.87'	19.77'
LEVEL 03 - LOWEST FLOOR WITH RESIDENTIAL DWELLING UNITS	32.53'	32.43'
LEVEL 04	43.20'	43.10'
LEVEL 05	53.87'	53.77'
LEVEL 06	64.53'	64.43'
LEVEL 07	75.20'	75.10'
LEVEL 08	85.87'	85.77'
LEVEL PH (PENTHOUSE)	97.78'	97.68'

STATEMENT BY PROFESSIONAL ENGINEER REGISTERED IN THE DISTRICT OF COLUMBIA

This is to certify that the elevation information data, hydrologic and hydraulic analyses, and any other supporting data of this floodplain management plan and report have been examined and performed by me and found to be in conformity with modern engineering principles. I further certify that all project works are designed in accordance with sound engineering practices to provide protection from the base flood (also referred to as the "one hundred year flood") and are not impacting other structures and properties, in accordance with the specifications required under Title 20 DCMR, Chapter 31. I understand that any false statement may be punishable by fine or imprisonment pursuant to D.C. Official Code § 22-2405.

Michael S. Marsala
Name and Title (please type)
Signature
8300 Wellington Branch Drive
Address
Gainesville, VA 20155
Date: 03-14-2018 Phone No: 703-679-5656

Affix Seal:

DISTRICT OF COLUMBIA · MICHAEL S. MARSALA · PE907351 · CIVIL · PROFESSIONAL ENGINEER

U.S. DEPARTMENT OF HOMELAND SECURITY
Federal Emergency Management Agency
National Flood Insurance Program

OMB No. 1660-0008
Expiration Date: November 30, 2018

ELEVATION CERTIFICATE

Important: Follow the instructions on pages 1–4.

Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.

SECTION A – PROPERTY INFORMATION | FOR INSURANCE COMPANY USE

A1. Building Owner's Name: River Point Partners, LLC | Policy Number:
A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: 2100 2nd Street, SW | Company NAIC Number:
City: Washington; State: District of Columbia; ZIP Code: 20593
A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.): Square 613, Lot 10, Land Area 115,479 sq. ft.
A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.) Residential Apartments w/ Commercial at Ground
A5. Latitude/Longitude: Lat. 38.51 Long: -77.00 Horizontal Datum: ☐ NAD 1927 ☒ NAD 1983
A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.
A7. Building Diagram Number _____
A8. For a building with a crawlspace or enclosure(s):
a) Square footage of crawlspace or enclosure(s): _____ sq ft
b) Number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade _____
c) Total net area of flood openings in A8.b _____ sq in
d) Engineered flood openings? ☐ Yes ☐ No
A9. For a building with an attached garage:
a) Square footage of attached garage (P1 & P2) 189,679 sq ft
b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade n/a
c) Total net area of flood openings in A9.b n/a sq in
d) Engineered flood openings? ☐ Yes ☒ No

SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP Community Name & Community Number	B2. County Name	B3. State
District of Columbia	n/a	District of Columbia

B4. Map/Panel Number	B5. Suffix	B6. FIRM Index Date	B7. FIRM Panel Effective/ Revised Date	B8. Flood Zone(s)	B9. Base Flood Elevation(s) (Zone AO, use Base Flood Depth)
110001 0057	C	09/27/2010	09/27/2010	AE	10.6'

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9:
☒ FIS Profile ☒ FIRM ☐ Community Determined ☐ Other/Source:
B11. Indicate elevation datum used for BFE in Item B9: ☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source:
B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? ☐ Yes ☒ No
Designation Date: _____ ☐ CBRS ☐ OPA

FEMA Form 086-0-33 (7/15) Replaces all previous editions. Form Page 1 of 6

OMB No. 1660-0008
Expiration Date: November 30, 2018

ELEVATION CERTIFICATE

IMPORTANT: In these spaces, copy the corresponding information from Section A. | FOR INSURANCE COMPANY USE

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: River Point Partners, LLC | Policy Number:
City: Washington; State: District of Columbia; ZIP Code: 20593 | Company NAIC Number

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: ☒ Construction Drawings* ☐ Building Under Construction* ☐ Finished Construction
*A new Elevation Certificate will be required when construction of the building is complete.
C2. Elevations – Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO. Complete Items C2.a–h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters.
Benchmark Utilized: DC DPW_Map 12-10 Vertical Datum:
Indicate elevation datum used for the elevations in items a) through h) below.
☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source:
Datum used for building elevations must be the same as that used for the BFE.

		Check the measurement used.
a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	-9.55	☒ feet ☐ meters
b) Top of the next higher floor	-0.86 (P1)/ 9.85 (ground)	☐ feet ☐ meters
c) Bottom of the lowest horizontal structural member (V Zones only)	n/a	☐ feet ☐ meters
d) Attached garage (top of slab)	-9.55	☒ feet ☐ meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	14.1	☒ feet ☐ meters
f) Lowest adjacent (finished) grade next to building (LAG)	6.64	☒ feet ☐ meters
g) Highest adjacent (finished) grade next to building (HAG)	9.95	☒ feet ☐ meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	6.43	☒ feet ☐ meters

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. *I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.*
Were latitude and longitude in Section A provided by a licensed land surveyor? ☒ Yes ☐ No ☐ Check here if attachments.

Certifier's Name	License Number
Joseph M. Antunovich, FAIA	ARC5826
Title: President	
Company Name: Antunovich Associates	
Address: 2200 Clarendon Blvd, Suite 1150	
City: Arlington; State: Virginia; ZIP Code: 22201	
Signature	Date: 3/12/2018; Telephone: 703-224-1126; Ext.: 1148

DISTRICT OF COLUMBIA · JOSEPH M. ANTUNOVICH · No. ARC5826 · REGISTERED ARCHITECT

Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.
Comments (including type of equipment and location, per C2(e), if applicable)
Building generator, electrical room supporting building generator, electrical room for retail tenants, electrical room for residential lobby areas
Lowest floor of Residential Dwelling Units is on Level 03 at elevation 32.43 feet NAVD 1988.

FEMA Form 086-0-33 (7/15) Replaces all previous editions. Form Page 2 of 6

OMB No. 1660-0008
Expiration Date: November 30, 2018

ELEVATION CERTIFICATE

IMPORTANT: In these spaces, copy the corresponding information from Section A. | FOR INSURANCE COMPANY USE

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: River Point Partners, LLC | Policy Number:
City: Washington; State: District of Columbia; ZIP Code: 20593 | Company NAIC Number

SECTION E – BUILDING ELEVATION INFORMATION (SURVEY NOT REQUIRED) FOR ZONE AO AND ZONE A (WITHOUT BFE)

For Zones AO and A (without BFE), complete Items E1–E5. If the Certificate is intended to support a LOMA or LOMR-F request, complete Sections A, B, and C. For Items E1–E4, use natural grade, if available. Check the measurement used. In Puerto Rico only, enter meters.
E1. Provide elevation information for the following and check the appropriate boxes to show whether the elevation is above or below the highest adjacent grade (HAG) and the lowest adjacent grade (LAG).
a) Top of bottom floor (including basement, crawlspace, or enclosure) is _____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.
b) Top of bottom floor (including basement, crawlspace, or enclosure) is _____ ☐ feet ☐ meters ☐ above or ☐ below the LAG.
E2. For Building Diagrams 6–9 with permanent flood openings provided in Section A Items 8 and/or 9 (see pages 1–2 of Instructions), the next higher floor (elevation C2.b in the diagrams) of the building is _____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.
E3. Attached garage (top of slab) is _____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.
E4. Top of platform of machinery and/or equipment servicing the building is _____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.
E5. Zone AO only: If no flood depth number is available, is the top of the bottom floor elevated in accordance with the community's floodplain management ordinance? ☐ Yes ☐ No ☐ Unknown. The local official must certify this information in Section G.

SECTION F – PROPERTY OWNER (OR OWNER'S REPRESENTATIVE) CERTIFICATION

The property owner or owner's authorized representative who completes Sections A, B, and E for Zone A (without a FEMA-issued or community-issued BFE) or Zone AO must sign here. The statements in Sections A, B, and E are correct to the best of my knowledge.

Property Owner or Owner's Authorized Representative's Name
Address | City | State | ZIP Code
Signature | Date | Telephone
Comments
☐ Check here if attachments.

FEMA Form 086-0-33 (7/15) Replaces all previous editions. Form Page 3 of 6

OMB No. 1660-0008
Expiration Date: November 30, 2018

ELEVATION CERTIFICATE

IMPORTANT: In these spaces, copy the corresponding information from Section A. | FOR INSURANCE COMPANY USE

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: River Point Partners, LLC | Policy Number:
City: Washington; State: District of Columbia; ZIP Code: 20593 | Company NAIC Number

SECTION G – COMMUNITY INFORMATION (OPTIONAL)

The local official who is authorized by law or ordinance to administer the community's floodplain management ordinance can complete Sections A, B, C (or E), and G of this Elevation Certificate. Complete the applicable item(s) and sign below. Check the measurement used in Items G8–G10. In Puerto Rico only, enter meters.
G1. ☐ The information in Section C was taken from other documentation that has been signed and sealed by a licensed surveyor, engineer, or architect who is authorized by law to certify elevation information. (Indicate the source and date of the elevation data in the Comments area below.)
G2. ☐ A community official completed Section E for a building located in Zone A (without a FEMA-issued or community-issued BFE) or Zone AO.
G3. ☐ The following information (Items G4–G10) is provided for community floodplain management purposes.

G4. Permit Number	G5. Date Permit Issued	G6. Date Certificate of Compliance/Occupancy Issued

G7. This permit has been issued for: ☐ New Construction ☐ Substantial Improvement
G8. Elevation of as-built lowest floor (including basement) of the building: _____ ☐ feet ☐ meters Datum _____
G9. BFE or (in Zone AO) depth of flooding at the building site: _____ ☐ feet ☐ meters Datum _____
G10. Community's design flood elevation: _____ ☐ feet ☐ meters Datum _____

Local Official's Name | Title
Community Name | Telephone
Signature | Date
Comments (including type of equipment and location, per C2(e), if applicable)
☐ Check here if attachments.

FEMA Form 086-0-33 (7/15) Replaces all previous editions. Form Page 4 of 6

BUILDING PHOTOGRAPHS

See Instructions for Item A6.

OMB No. 1660-0008
Expiration Date: November 30, 2018

ELEVATION CERTIFICATE

IMPORTANT: In these spaces, copy the corresponding information from Section A. | FOR INSURANCE COMPANY USE

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: River Point Partners, LLC | Policy Number:
City: Washington; State: District of Columbia; ZIP Code: 20593 | Company NAIC Number

If using the Elevation Certificate to obtain NFIP flood insurance, affix at least 2 building photographs below according to the instructions for Item A6. Identify all photographs with date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View." When applicable, photographs must show the foundation with representative examples of the flood openings or vents, as indicated in Section A8. If submitting more photographs than will fit on this page, use the Continuation Page.


Photo One

Photo One Caption: Aerial View Looking in Northwest Direction — Clear Photo One

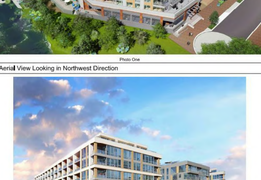


Photo Two

Photo Two Caption: Southwest Corner — Clear Photo Two

FEMA Form 086-0-33 (7/15) Replaces all previous editions. Form Page 5 of 6

DOB APPROVAL STAMPS:

No.	Date	Description
10	12/14/18	IFC
5	07/16/18	Final GMP & Coordination Set
4	04/10/18	95% CD
1	03/16/18	GMP Addendum 01

Submissions & Revisions

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Phone: 212.285.0088

General Contractor
CBG Building Company
12200 Tech Road,
Suite 300
Silver Spring, MD 20904
Phone: 301-680-3200

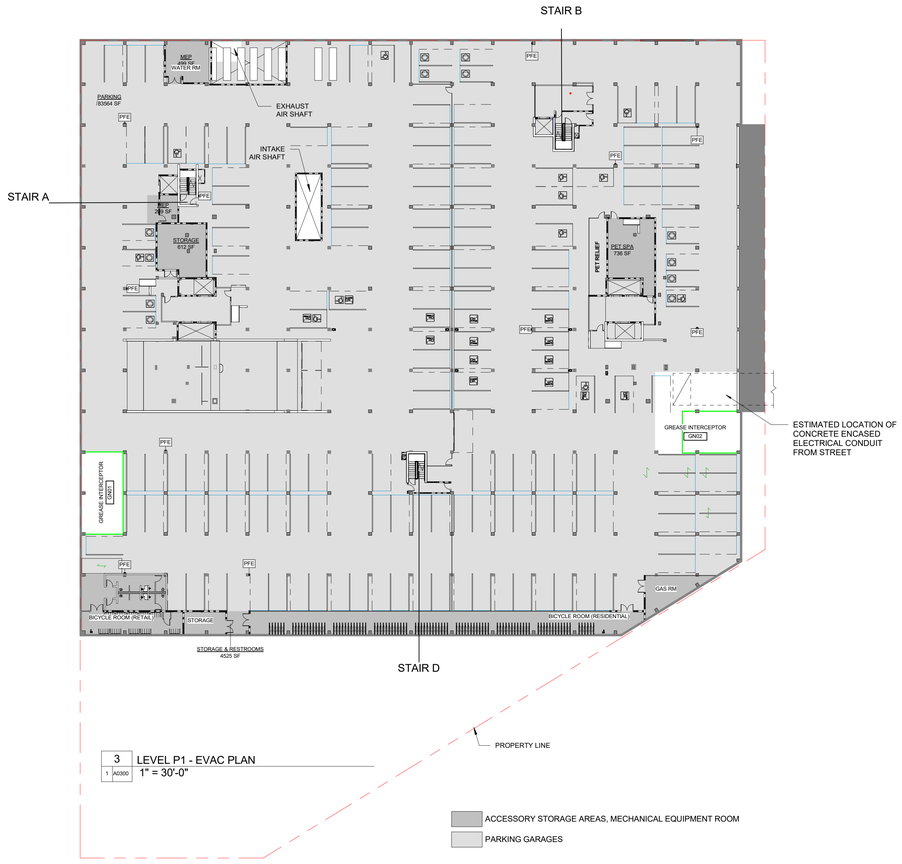
Project Location
2100 2nd St, SW
Washington, DC

Drawing Title
FLOOD PROTECTION

Seal: DISTRICT OF COLUMBIA · JOSEPH M. ANTUNOVICH · No. ARC5826 · REGISTERED ARCHITECT
Date: 12/14/18
Drawn By:
Checked By:
Project No:

Drawing No.
0021

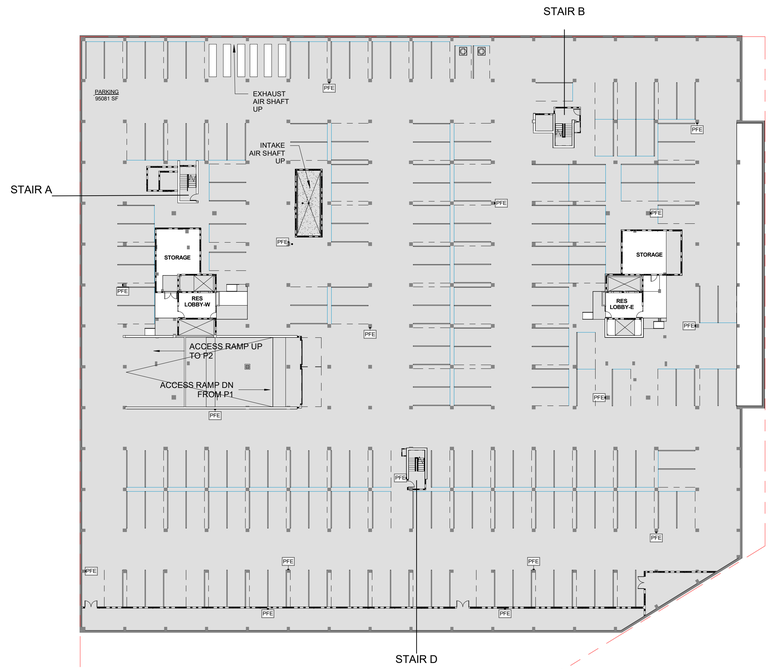
C:\Users\jbellkova\Documents\2100_2ND ST SW_ARCH_CD05_ybellkova.rvt
12/20/2018 6:14:15 PM



3 / 1 A0300 LEVEL P1 - EVAC PLAN
1" = 30'-0"

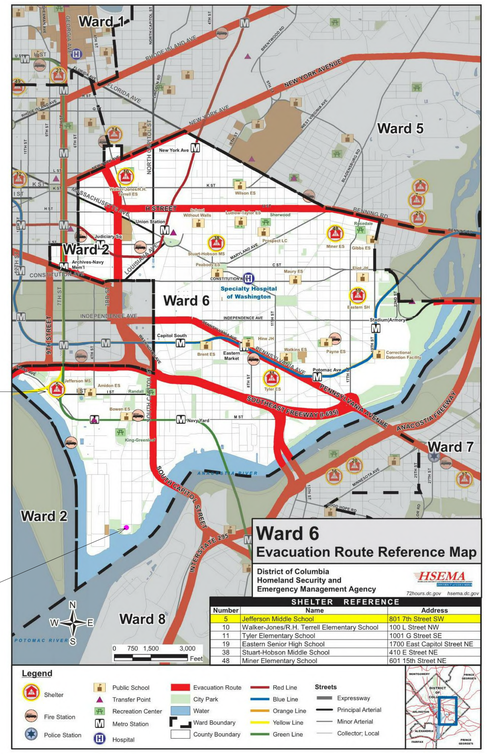
ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM

PARKING GARAGES



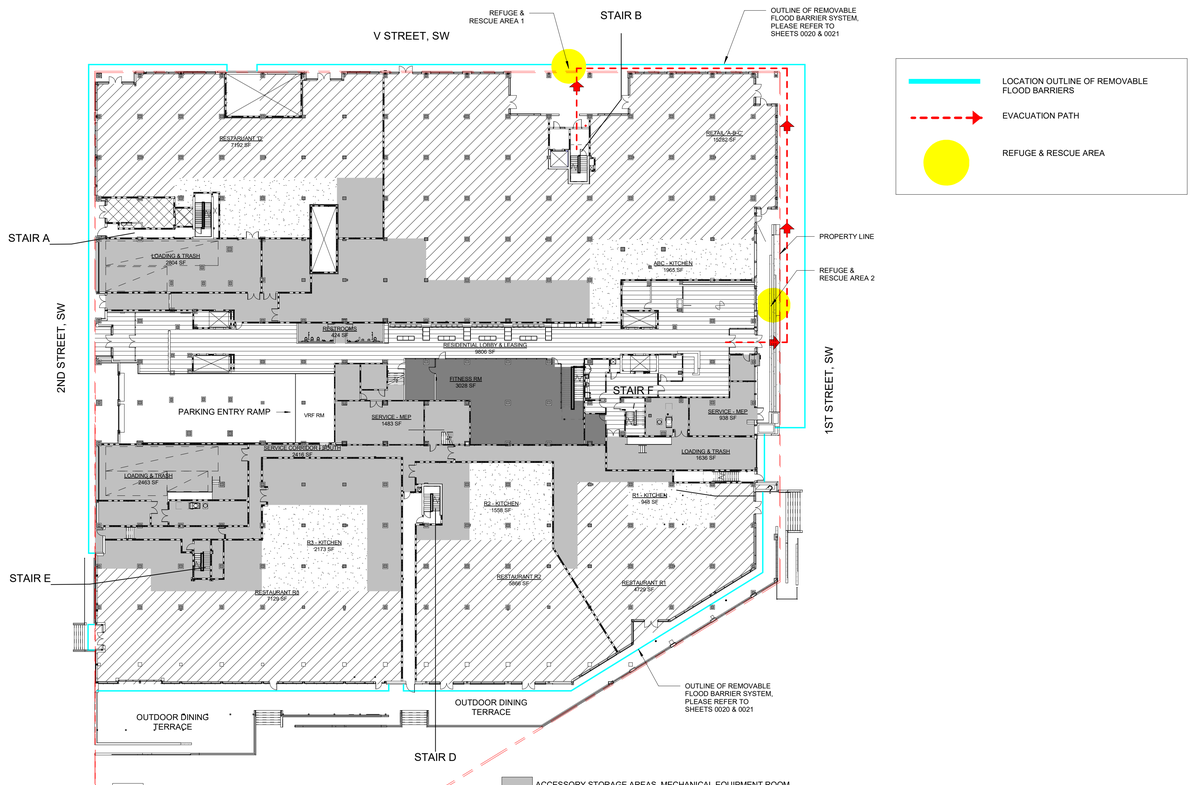
2 / 1 A0300 LEVEL P2 - EVAC PLAN
1" = 30'-0"

PARKING GARAGES



NEAREST SHELTER:
JEFFERSON
MIDDLE SCHOOL
801 7TH ST SW

PROJECT SITE:
2100 2ND ST SW
SQ 613, LOT 10



1 / 2 0020 LEVEL 01 - EVAC PLAN
1" = 30'-0"

PROPERTY LINE

ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM
ASSEMBLY - UNCONCENTRATED (TABLES AND CHAIRS)
BUSINESS AREAS
EXERCISE ROOMS
KITCHENS - COMMERCIAL
MERCANTILE - BASEMENT AND GRADE FLOOR AREAS

GENERAL NOTES:

1. THIS PROJECT IS **NOT A CRITICAL FACILITY** SUCH AS A HOSPITAL OR A POLICE STATION. SHELTERING IN PLACE IS NOT ALLOWED. CLOSEST EVACUATION SHELTER IS JEFFERSON MIDDLE SCHOOL LOCATED AT 801 7TH STREET SW PER HSEMA SHELTER & EVACUATION GUIDE FOR WARD 6
2. THERE ARE (2) TWO BELOW GRADE PARKING LEVELS - P1 AND P2. EGRESS FROM P1 AND P2 IS VIA (3) EGRESS STAIRS:
   - STAIR A - EXITS WITHIN FLOOD PROTECTED ENCLOSURE ON 2ND STREET & LEADS TO REFUGE AREA 1 ON V STREET
   - STAIR B- EXITS WITHIN FLOOD PROTECTED ENCLOSURE ON V STREET & AT REFUGE AREA 1
   - STAIR D- EXITS THROUGH SERVICE RETAIL CORRIDOR DURING A FLOOD EMERGENCY & CONNECTS TO FLOOD PROTECTED ENCLOSURE ON 2ND STREET WHICH LEADS TO REFUGE AREA 1 ON V STREET

   FOR RESIDENTIAL AND LODGING OCCUPANTS ABOVE GROUND FLOOR EGRESS IS PROVIDED VIA (5) EGRESS STAIRS:
   - STAIR A,B,D- SAME AS ABOVE
   - STAIR C- EXITS WITHIN FLOOD PROTECTED ENCLOSURE ON 1ST STREET AND LEADS TO REFUGE AREA 1 & 2.
   - STAIR E- EXITS WITHIN FLOOD PROTECTED ENCLOSURE ON 2ND STREET & LEADS TO REFUGE AREA 1 ON V STREET
3. EVACUATION WARNING SYSTEM WILL BE TIED INTO FLOOD FORECASTING SYSTEM.

DOB APPROVAL STAMPS:

No.	Date	Description
10	12/14/18	IFC
5	07/16/18	Final GMP & Coordination Set

Submissions & Revisions

Owner
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Washington, DC 20003
Phone: 202.552.0250

Landscape Architect
West 8
333 Hudson Street
Suite 905
New York, New York 10013
Phone: 212.285.0088

General Contractor
CBG Building Company
12200 Tech Road,
Suite 300
Silver Spring, MD 20904
Phone: 301-680-3200

Project Location
2121 1st St, SW
Washington, DC

Drawing Title
FLOOD PROTECTION EVACUATION PLAN

Seal: DISTRICT OF COLUMBIA · JOSEPH M. ANTUNOVICH · No. 5826 · REGISTERED ARCHITECT
Date: 02/14/2020
Drawn By:
Checked By:
Project No:

Drawing No.
0022

2/14/2020 5:08:45 PM C:\Users\ybelikova\Documents\2100 2ND ST SW_ARCH_CD09_ybelikova.rvt

Yulia Beltikova

From: Emminizer, John T. Jr (DOEE) <john.emminizer@dc.gov>
Sent: Monday, August 20, 2018 10:56 AM
To: Yulia Beltikova
Cc: Huriyet Anaz; Cone, Trevor (DOEE)
Subject: RE: DOEE - River Point MVQ1800081 - Evacuation Plan

Good Morning,

I have reviewed your email and have not further issues or questions

Thanks,

John

John T. Emminizer, Jr.
Chief, Emergency Operations
Department of Energy & Environment
Government of the District of Columbia
Cell: 202-281-0885
Web: doee.dc.gov

From: Yulia Beltikova [mailto:ybeltikova@antunovich.com]
Sent: Monday, August 20, 2018 10:21 AM
To: Emminizer, John T. Jr (DOEE)
Cc: Huriyet Anaz; Cone, Trevor (DOEE)
Subject: RE: DOEE - River Point MVQ1800081 - Evacuation Plan

Good Morning John,

Could you please let us know you received our responses and whether or not you have any additional comments for us?

Thank you,
Yulia

Yulia Beltikova, AIA, LEED AP BD+C
Associate Principal

ANTUNOVICH ASSOCIATES
Architecture • Planning • Interior Design
2200 Clarendon Boulevard, Suite 1150
Arlington, Virginia 22201
Main: 703.224.1126
www.antunovich.com
cloud.antunovich.com

PLEASE NOTE OUR ADDRESS CHANGE IN OCTOBER 2018!
1144 3rd Street NE
Washington, DC 20002

From: Yulia Beltikova
Sent: Tuesday, August 14, 2018 10:19 AM
To: 'Emminizer, John T. Jr (DOEE)' <john.emminizer@dc.gov>
Cc: Huriyet Anaz <huriyet.anaz@orrpartners.com>; Cone, Trevor (DOEE) <trevor.cone@dc.gov>
Subject: RE: DOEE - River Point MVQ1800081 - Evacuation Plan

John,

Please see below in red responses from the Development Team.
Please let us know if you have any other questions or comments.

Thank you,
Yulia

Yulia Beltikova, AIA, LEED AP BD+C
Associate Principal

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Arlington, Virginia 22201
Main: 703.224.1126
www.antunovich.com
cloud.antunovich.com

From: Emminizer, John T. Jr (DOEE) <john.emminizer@dc.gov>
Sent: Friday, August 3, 2018 3:22 PM
To: Yulia Beltikova <ybeltikova@antunovich.com>
Cc: Huriyet Anaz <huriyet.anaz@orrpartners.com>; Cone, Trevor (DOEE) <trevor.cone@dc.gov>
Subject: RE: DOEE - River Point MVQ1800081 - Evacuation Plan

Yulia,

Please see below my questions / comments that need to be addressed prior to acceptance of the plan;

1. The information provided does not indicate the width of the evacuation path between the building and flood protection devices.

   North Refuge Area on V Street:
   Distance from façade to the flood barrier varies: from 6 ft at the entry doors and 3 ft on each side of the entry doors.
   East Refuge Area on 1ST Street:
   Distance from façade to the flood barrier is 22 ft.

2. The drawings clearly indicate that the perimeter of the flood barriers are outside of the shown property line. Please provide some proof that an easement or permission has been granted to install flood protection at this location. The evacuation concern is if this permission is rescinded or revoked that flood protection may have to be pushed back into the evacuation zone.

   Temporary flood barriers are outside of the property line on East, West and North sides of the building during a flood event or scheduled annual maintenance training.
   The only elements that will remain permanently in public space will be ½ inch in diameter anchor bolts installed flush with sidewalk. Placement of temporary and permanent elements associated with flood protection have been discussed with DDOT, DOEE and OP staff and submitted for Public Space review and approval.
   Public Space submission is currently under review by DCRA. Submitted drawings provide information of components that will be installed outside of the property line, and in public space.

3. Have the areas of refuge and rescue been reviewed with the DC Fire and EMS to ensure they can safely access these points to affect a rescue if necessary?

   Applicant received approval for Fire and Life Safety review from DCRA (building permit B1803132). No additional meetings were requested during review process.

4. Due to the height of the flood barriers what is the plan to get evacuees to boats or rescue vehicles on the other side of the wall should they become trapped? Specifically of concern is there a provision for residents or visitors with disabilities or functional needs.

   Evacuation of all residents and all tenants is mandatory, and will be written into the lease agreements.
   All residents will be required to evacuate prior to onset of a flood event. This project is not a critical facility such as a hospital or a police station. Sheltering in place is not allowed.
   Aluminum 'crossover' portable ladder will be provided at each refuge area to reach over the flood barrier.
   Additionally, a portable wheelchair ramp can be provided for those with mobility issues.

5. The drawings provided provide path and rally points but do not provide detailed information on how an evacuation will be managed. The following details will need to be provided before acceptance of this plan;
   - What will be the buildings criteria for evacuation of residence?

     Flood evacuation will be per building's Flood Emergency Action Plan submitted with this code modification (also attached). Please refer to page 3 of the attached PDF.

   - How will this evacuation information be conveyed to residence and visitors at the time of evacuation?

     Property management personnel will conduct door-to-door notifications to ensure the area is evacuated.
     Designated building emergency personnel will remain on site to monitor flood conditions. Emergency power will be provided by the building generator.

   - What are the steps that will be taken in the management of the evacuation and identification of those that refuse to evacuate?

     Evacuation of all residents and all tenants is mandatory, and will be written into the lease agreements.

   - What is the plan for evacuating those with disability or mobility issues?

     Residents with disability or mobility issues will be evacuated prior to onset of a flood event. In case there is a person(s) with mobility issues, portable wheelchair ramp can be provided.

   - Has any coordination been done with the closest shelter so they are aware you have designated them as your primary?

     Development team is in the process of reaching out to the shelter (Jefferson Middle School located at 801 7th Street SW).

   - How will the flood evacuation plan be available and communicated to the building residents and occupants?

     Flood emergency plan will be posted permanently in at least two conspicuous locations within the building. Proposed locations are shown in the flood protection plan previously submitted to DOEE. Proposed locations include areas by the commercial loading docks, at the main residential entry & within North retail service corridor exiting to Refuge Area on 1st Street, as well as within egress areas exiting towards Refuge Area on V Street. A copy of Flood Evacuation Plan will also be available at the leasing office.

Regards,

John

John T. Emminizer, Jr.
Chief, Emergency Operations
Department of Energy & Environment
Government of the District of Columbia
Cell: 202-281-0885
Web: doee.dc.gov

DOB APPROVAL STAMPS:

No.	Date	Description
10	12/14/18	IFC

Submissions & Revisions

Owner

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Civil Engineer

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Landscape Architect

West 8
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Suite 905
New York, New York 10013
Phone: 212.285.0088

General Contractor

CBG Building Company
12200 Tech Road,
Suite 300
Silver Spring, MD 20904
Phone: 301-680-3200

Project Location

2100 2nd St, SW

Washington, DC

Drawing Title

FLOOD PROTECTION EVACUATION PLAN INFO

Seal

DISTRICT OF COLUMBIA · JOSEPH M. ANTUNOVICH · No. 5826 · REGISTERED ARCHITECT

Date: 12/14/18
Drawn By:
Checked By:
Project No:

Drawing No.

0023

Tadjer-Cohen-Edelson Associates, Inc.
Consulting Structural Engineers
www.tadjerco.com
Engineering Excellence Since 1962

August 27, 2018

Semere Hadera, PE
Structural Eng, Supervisor, POD
Department of Consumer and Regulatory Affairs
1100 4th St, SW
Washington, DC 20024
ph. 202-442-4673
semere.hadera@dc.gov

Re: **Project Address: 2100 2nd St, SW/ Code Modification MVQ1800081**
Responses to structural comments dated August 22, 2018

Dear Mr. Hadera,

Below please find responses related to the design of structural elements associated with Code Modification MVQ1800081 for River Point project located at 2100 2nd Street SW.

1. Introduction:

This document has been prepared in response to structural review comments associated with Code Modification MVQ 1800081 for 2100 2nd Street SW project (Building Permit Application B1803132).

2. Site Description:

The project is located within the 100-year floodplain in flood zone AE, but it will be designed to protect the building up to an increased 500-year floodplain per City's recommendation based on ongoing climate change studies. Flood protection is planned to be achieved via a dry flood proofing method. It will be accomplished through a combination of flood-damage resistant materials and use of removable flood barriers (per flood protection plan previously submitted on sheet 0020) which will be deployed manually in case of a flood event warning.

100-year flood elevation = 10.7' el. (DC Datum) OR 10.6' el. (NAVD 88)
100-year flood elevation + 1.5 ft of freeboard = 10.7' + 1.5'=12.2' el. (DC Datum) OR 12.1' el. (NAVD 88)
500-year flood elevation = 14.2' el. (DC Datum) OR 14.1' el. (NAVD 88)

Existing Top of P2 Level (Foundation) = -9.55' el. (DC Datum)
Existing Top of P1 Level = -0.76' el. (DC Datum)
Existing Top of Ground Floor Level = 9.95' el. (DC Datum)

3. Brief Description and Assessment of the Existing Structure and Structural Elements:

The project's design, orientation and massing are based on the adaptive reuse of the existing building which requires carving out four residential courtyards starting with 3rd floor level to maximize articulation and views for residents and visitors.
The existing structure is a conventionally reinforced concrete structure consists of:
a. (2) two below grade parking levels P1 and P2
b. (8) eight above grade levels

Proposed structural scope of alteration includes:

a. Existing Foundation:
The existing building is supported on a 30-inch thick mat foundation.
Tie down anchors (micro piles) will be added at the footprint of four courtyards areas through the existing mat foundation to resist water uplift pressure due to potential flood. A 3-inch concrete topping will be added on top of mat foundation to strength it to resist potential uplift forces and repair existing damage due to wear-and-tear.

Note: Tie-down details and tie-down anchors plan were submitted and approved with supplemental structural permit B1810745, details were shown on structural sheet S001 of that submission.

b. Existing 2nd Floor Slab:
Demolition of existing 2nd floor slab in its entirety to create a double height space at ground level for Retail Users. Supporting existing columns in these high spaces will be strengthened by enlarging them on all sides with several inches of concrete and rebar (see calculations pages 1 to 10).

c. Existing 3rd Floor Slab:
Partial demolition of existing the 3rd floor slab for the purposes of creating four residential courtyards. Courtyard portions of the slab will be removed and re-poured to allow for landscaping and paving within the courtyard.

d. Existing 4th through 8th Floor Slabs:
(4) four courtyards will be carved out of the existing floor slabs to provide light to the residential units

e. Existing Roof Slab (New Penthouse floor level):
Demolition of existing roof slab in its entirety and re-pouring of a new 14" thick concrete roof slab with 6" of concrete topping slab (total thickness of concrete = 20"). The topping slab is added to resist the flood uplift forces.
Addition of a Penthouse Level on top of re-poured slab.

f. New Penthouse roof:
The Penthouse roof is composite steel construction (3.25" concrete over 3" steel deck supported on steel beams and columns.

g. New Shear Walls:
New shear walls will be added from top of mat to underside of third floor slab to resist the lateral forces.

h. New Stair and Elevator Slab Openings:
New stair and elevator slab openings above 3rd floor will be supported by new steel beams and steel columns as required.

i. Slab extension on 3rd through Penthouse Floor (gridlines 14 to 15):
One bay will be added at south side of the building, starting at level 3 and continue up to new Penthouse level. The added bay will be an 8-inch thick concrete slab with concrete beams ranging in depth from 20 to 24 inches. Extended south bay will be supported by new concrete columns on the southern edge. The existing columns were checked for the additional loads (see calculations pages 67 to 86).

4. Problem statement:

The removal of portions of existing concrete slabs associated with the creation of four residential courtyards reduce the building weight resisting the flood uplift forces and resulted in a net uplift is created at the courtyards area.

DOEE requested to have structural elements designed to withstand forces associated with 500-year flood. Those structural elements included:
a. existing mat foundation,
b. existing foundation walls, and
c. limited portions of above grade exterior walls that were not protected by removable flood barriers. Those portions were located at southeast and southwest corners of the building.

5. Challenges:

A. To prevent uplift existing structure will require to be modified.

The existing 30 inch thick mat slab foundation needed to have tie-down (also referred to as micropiles) anchors to withstand uplift forces associated with 500-year flood under the courtyards.

The existing foundation walls were checked, and are found to be able to resist hydrostatic, hydrodynamic and impact forces associated with a 500-year flood. Additionally, there are limited portions of exterior walls at the Southeast and Southwest corners of the building envelope which will be built anew, and will have an 8 to 10 inch thick concrete back-up wall in height up to 500-year flood elevation. These new walls are designed to withstand required forces associated with 500-year flood as well.

A majority of the exterior façade has openings consisting of storefront windows and doors. To prevent flood waters from entering the building, removable flood barrier panels are proposed to be installed up to the required 500-year flood elevation. Design of these removable flood barrier panels is by others, calculations associated with that design have been also submitted the previous submissions.

B. The existing mat foundation at the transfer girder supporting column for revised increased loads.

B The existing columns which support the transfer girder for revised increased loads.

6. Method of Design and Analysis:

To demonstrate that foundation will be able to withstand uplift water pressure Geotechnical Study described in *Memorandum No. 1* prepared by ECS was used. It addresses geotechnical design requirements resulting from the 500-year flood. To address the increase in water pressure, ECS evaluated two items:
1) the positive effects of soil friction along the basement walls, and
2) the time rate effects of the flood, and whether or not the flood stage persists for sufficient time to increase water pressure below the mat.

To demonstrate that existing foundation walls and portions of exterior walls that were not protected by removable flood barriers will be able to withstand all necessary forces associated with 500-year flood (see calculations pages A1 to A4).

Hydrostatic and Hydrodynamic forces were calculated to withstand up to 500-year flood elevation.
For impact loads due to debris acting on exterior walls that are not protected by removable flood barriers 1,000 lbs force was used in accordance with ASCE 7-10 Eq C5-3, with Velocity of Water not to exceed 5 ft/s in accordance with dry flood proofing requirements of ASCE 24-14 Section 6.2.1.

7. Proposed Solution:

A. For the existing structure to be able to withstand forces (uplift, hydrostatic, hydrodynamic and impact) associated with 500-year flood event the following alterations are being proposed:
a. Addition of tie-down anchors through the existing mat foundation at four courtyards area (structural sheet S001, B1810745 and see structural calculations pages 100, 101, 102 to 108).
b. Addition of 3" concrete topping on top of the existing mat foundation (P2 level) and add 6"concrete topping slab on top of the new 14" penthouse level slab at tower area (see calculations pages 96, 97 and 101 to 108).
c. Addition of 8 to 10 inch thick concrete backup walls up to 500-year flood elevation of 14.2' in limited select locations where building façade is not protected by removable flood barriers. Those locations are the exterior perimeter at Southeast and Southwest corners of the building envelope.
B. The existing mat foundation at the transfer girder supporting column needed to be strengthened for revised increased loads. Increase the mat thickness by 3" structural topping slab with rebar and strengthen the existing column with enlarging on all four sides by 5" of concrete and rebar (see calculation pages 87 to 95).
C. Check The existing column which support the transfer girder needed to be strengthened for increased loads. Strengthen the existing column with enlarging on all sides by 5" of concrete and rebar (see calculation pages 17 to 66).

8. List of Referenced Codes & Standards:

ASCE 7-10 – Minimum Design Loads for Buildings and Other Structures
ASCE 24-14 – Flood Resistant Design for Construction
2013 District of Columbia Building Code, Section 1612 – Flood Loads

9. Requirements of ASCE-7 10, ASCE-24 and DCBC 1612:

Please refer to structural calculations that demonstrate compliance with referenced standards.

10. Conclusion:

Existing structural components will be able to withstand required forces associated with a 500-year flood event provided proposed structural alterations of adding tie-downs and thickened concrete backup walls in limited locations are provided.

Should you have any questions, please don't hesitate to contact our office.

Sincerely,

Sanjay Khanna, PE
Principal

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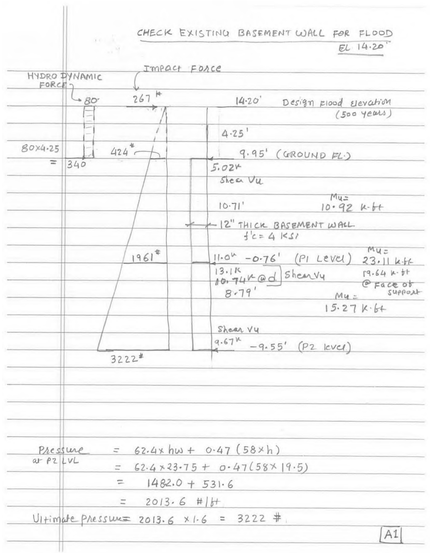

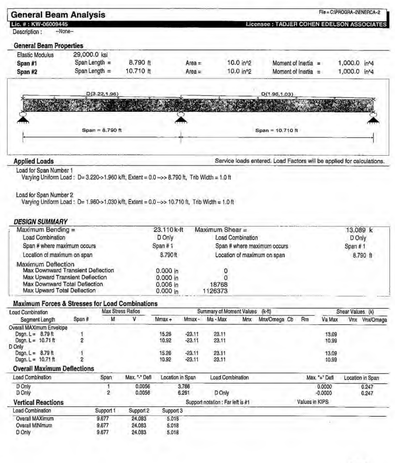

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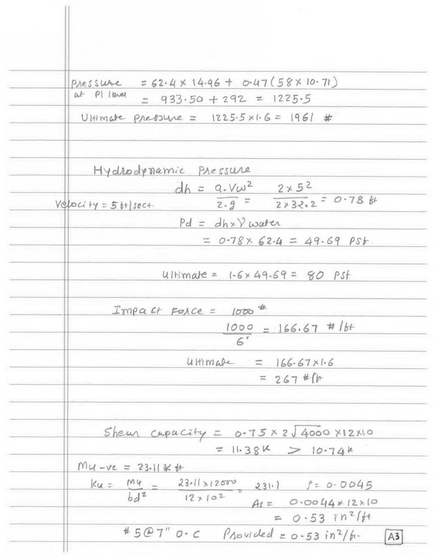

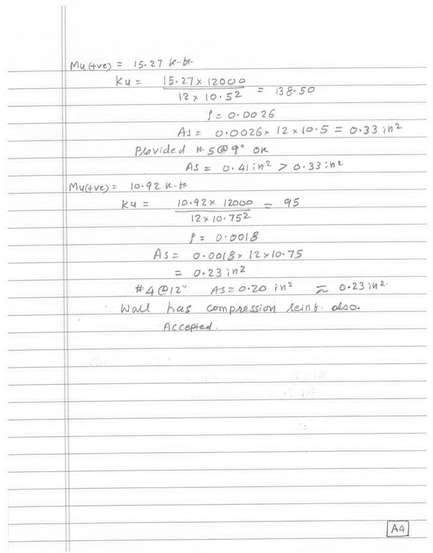

DOB APPROVAL STAMPS:

No.	Date	Description
10	12/14/18	IFC

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Drawing Title
FLOOD PROTECTION STRUCTURAL NARRATIVE

Seal: DISTRICT OF COLUMBIA · JOSEPH M. ANTUNOVICH · No. 5826 · REGISTERED ARCHITECT

Date: 12/14/18
Drawn By:
Checked By:
Project No:

Drawing No.
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