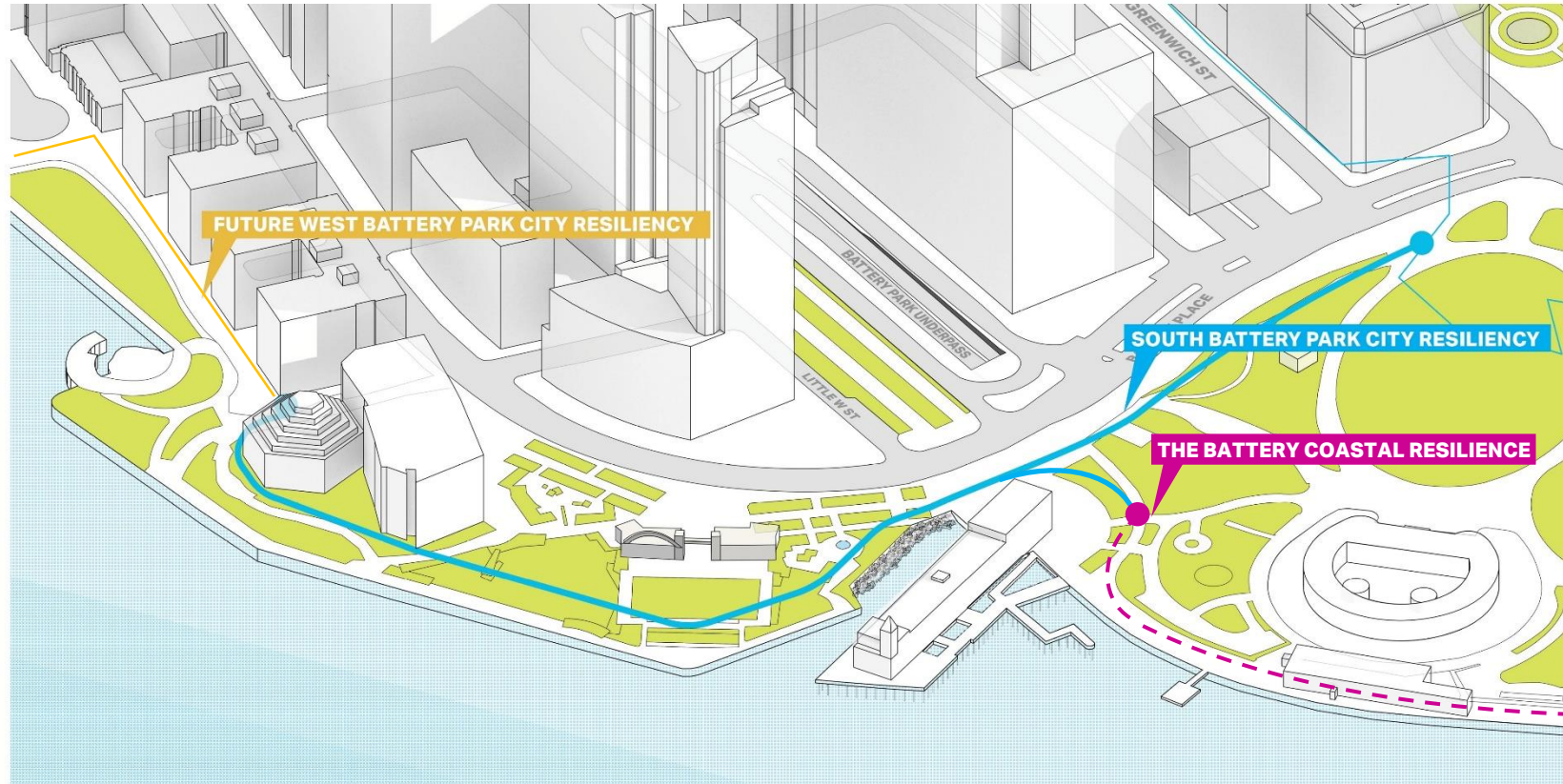


SOUTH BATTERY PARK CITY RESILIENCY PROJECT

DEPLOYABLE GATE

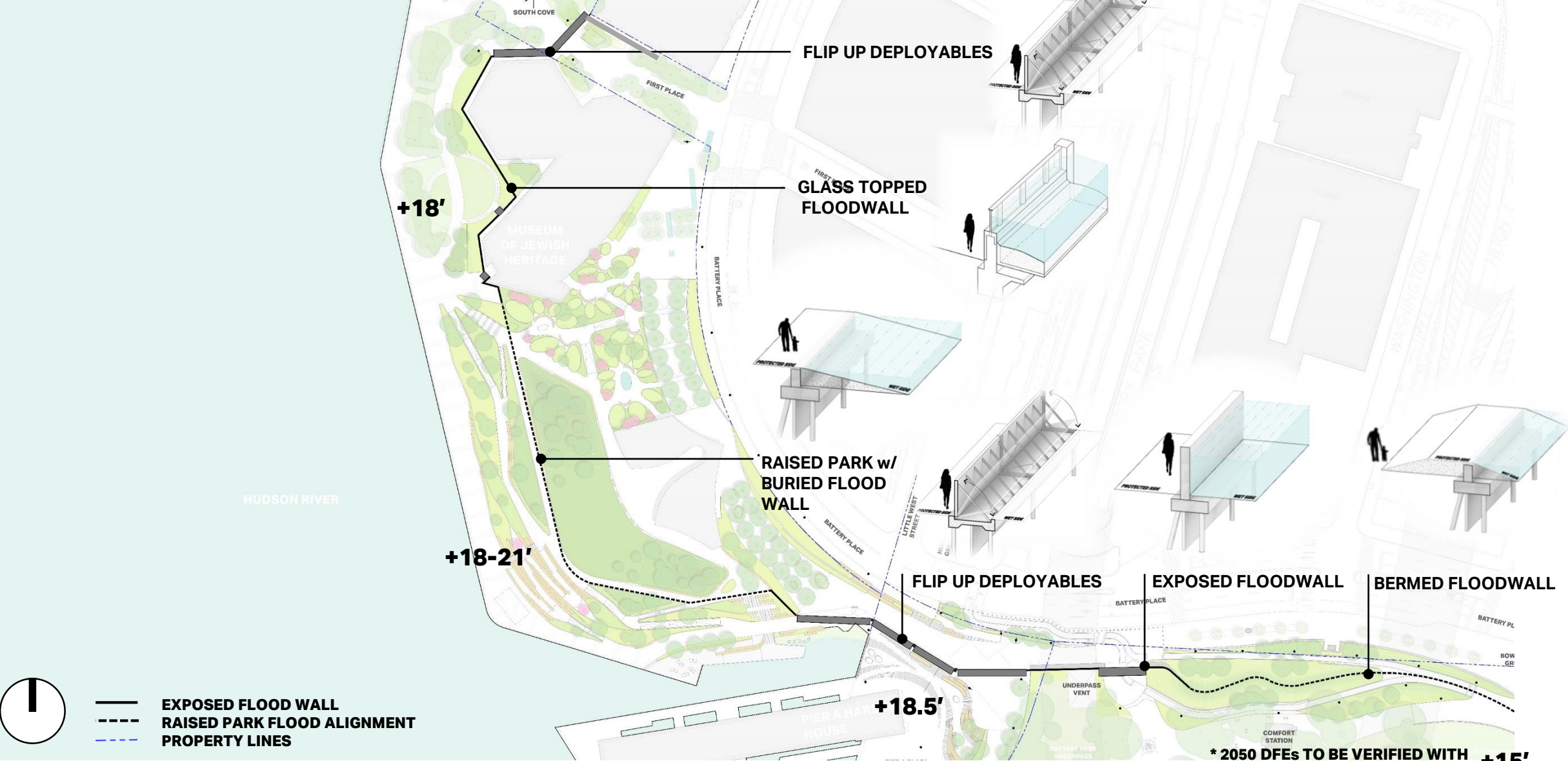


May 18, 2020

AGENDA

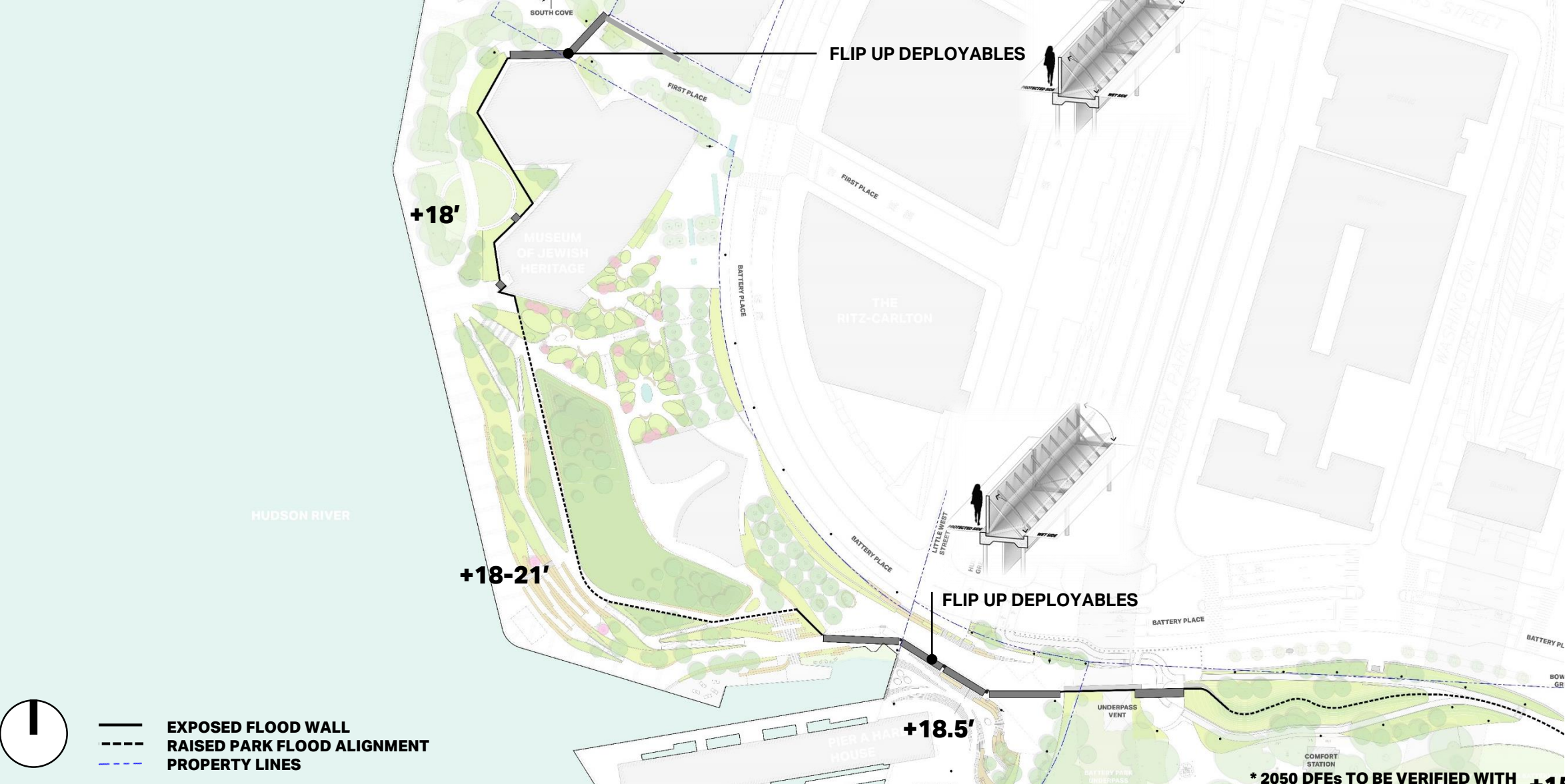
- 1. Introduction**
- 2. Flip Up Gates**
- 3. Deployment Time**

INTRODUCTION| SOUTH BATTERY PARK RESILIENCY



* 2050 DFEs TO BE VERIFIED WITH TOPO **+15'**

INTRODUCTION| SOUTH BATTERY PARK RESILIENCY

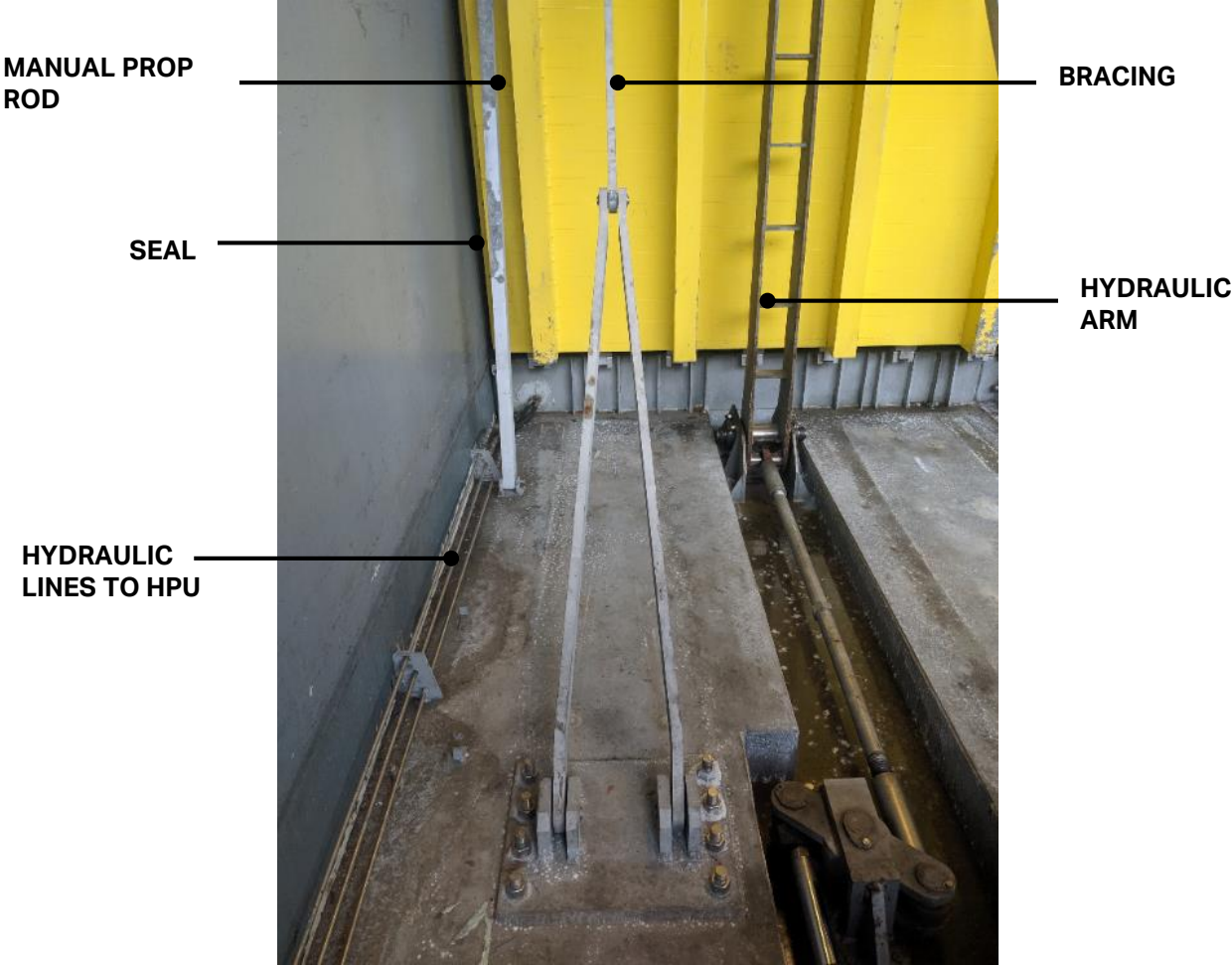
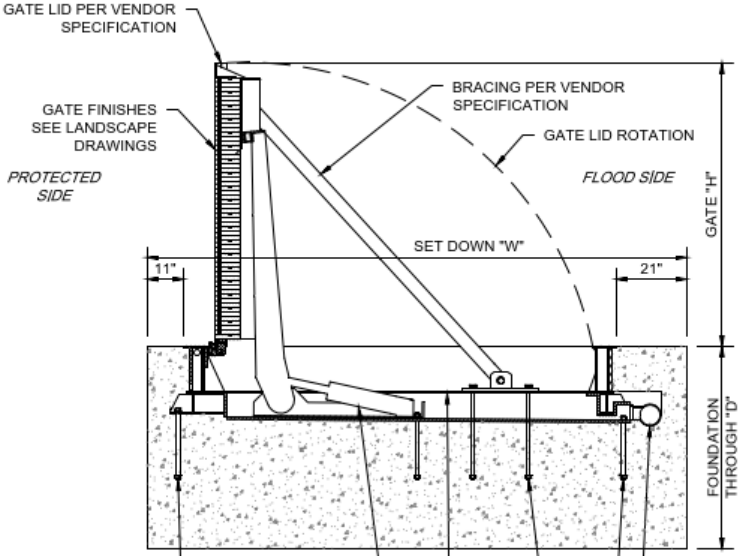


 EXPOSED FLOOD WALL
RAISED PARK FLOOD ALIGNMENT
PROPERTY LINES

* 2050 DFEs TO BE VERIFIED WITH TOPO +15'

FLIP UP GATES

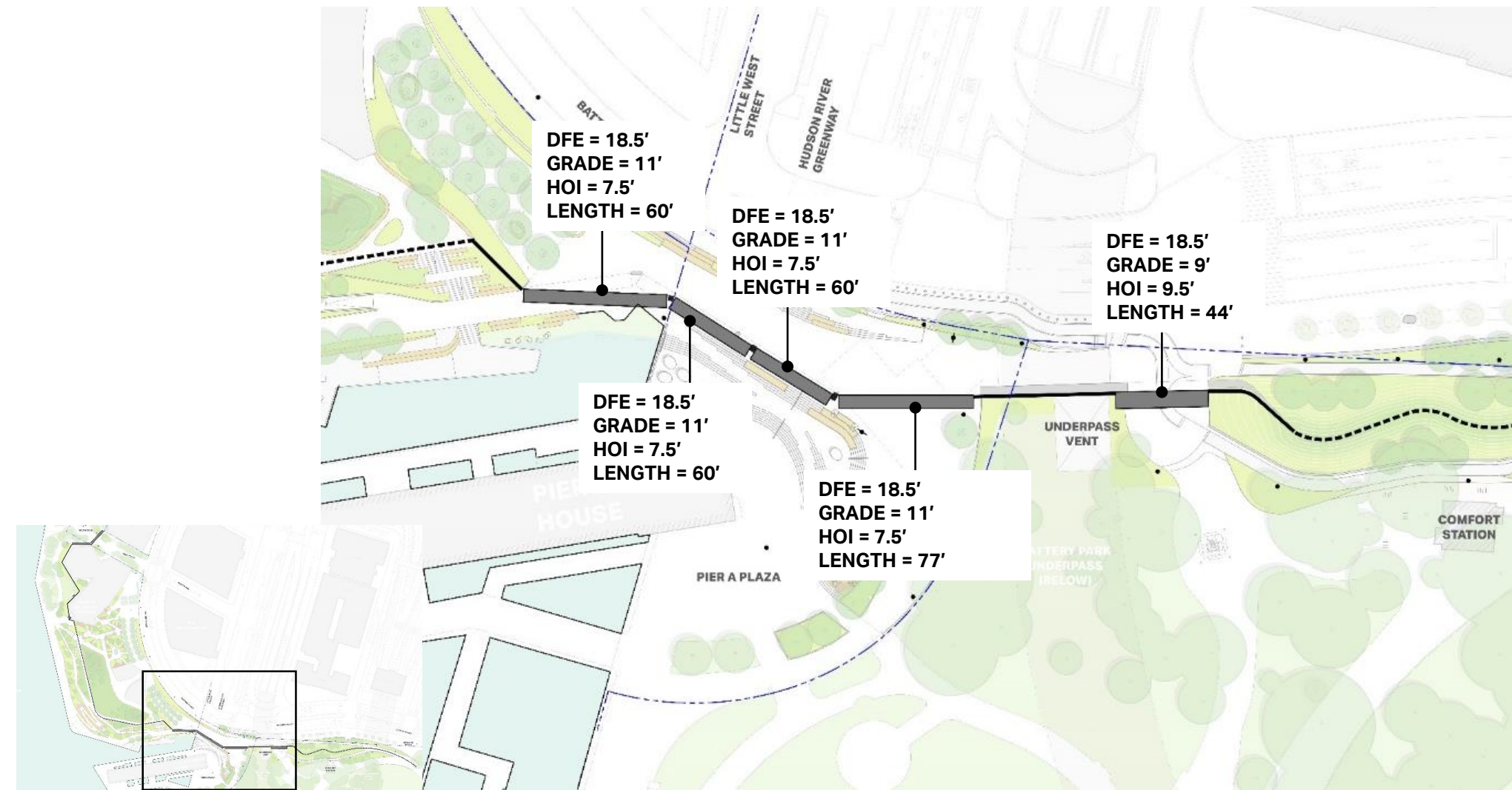
FLIP UP GATE | COMPONENTS



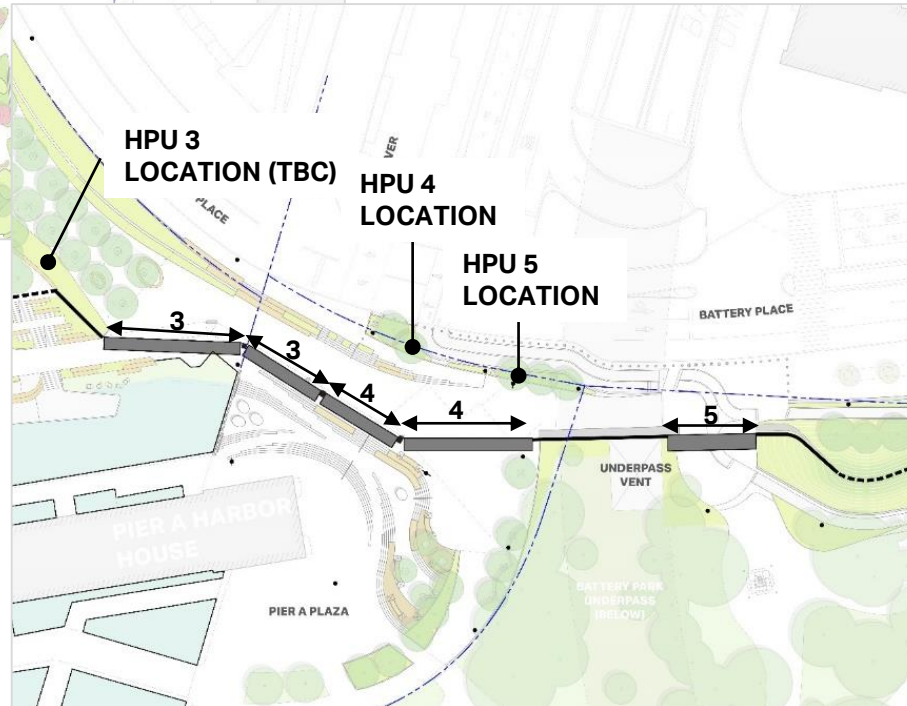
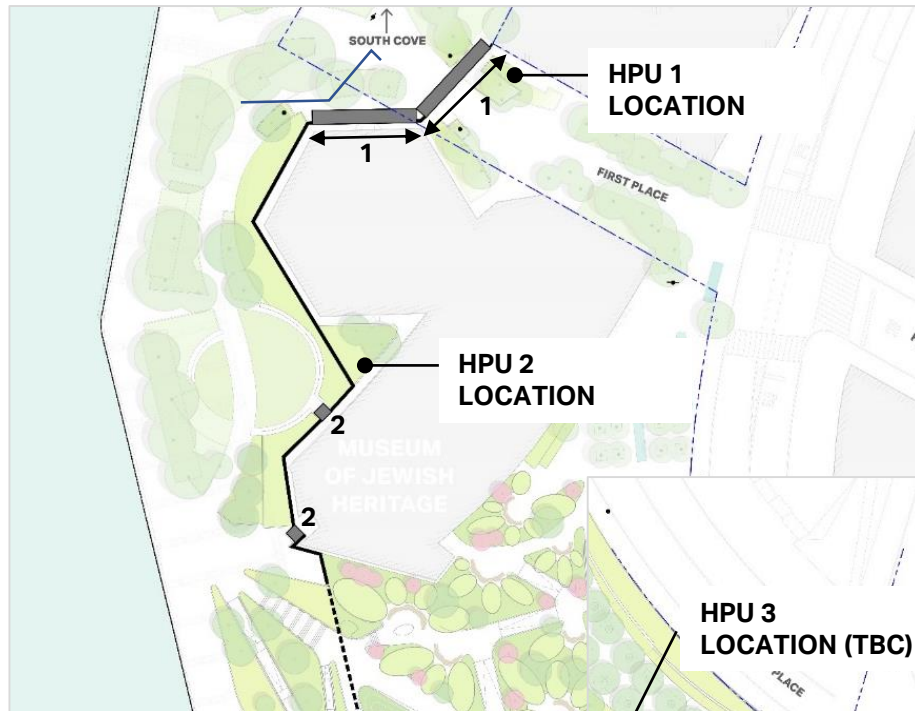
FLIP UP GATE GEOMETRY | MUSEUM OF JEWISH HERITAGE



FLIP UP GATE GEOMETRY | PIER A



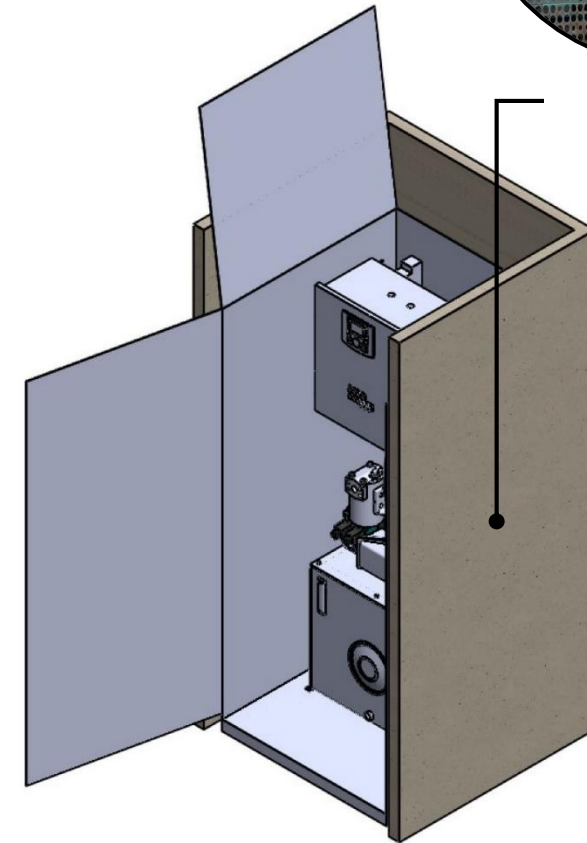
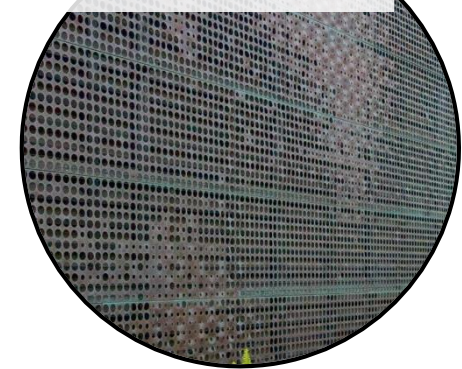
HPU | LOCATIONS & MATERIALITY



HYDRAULIC POWER UNITS

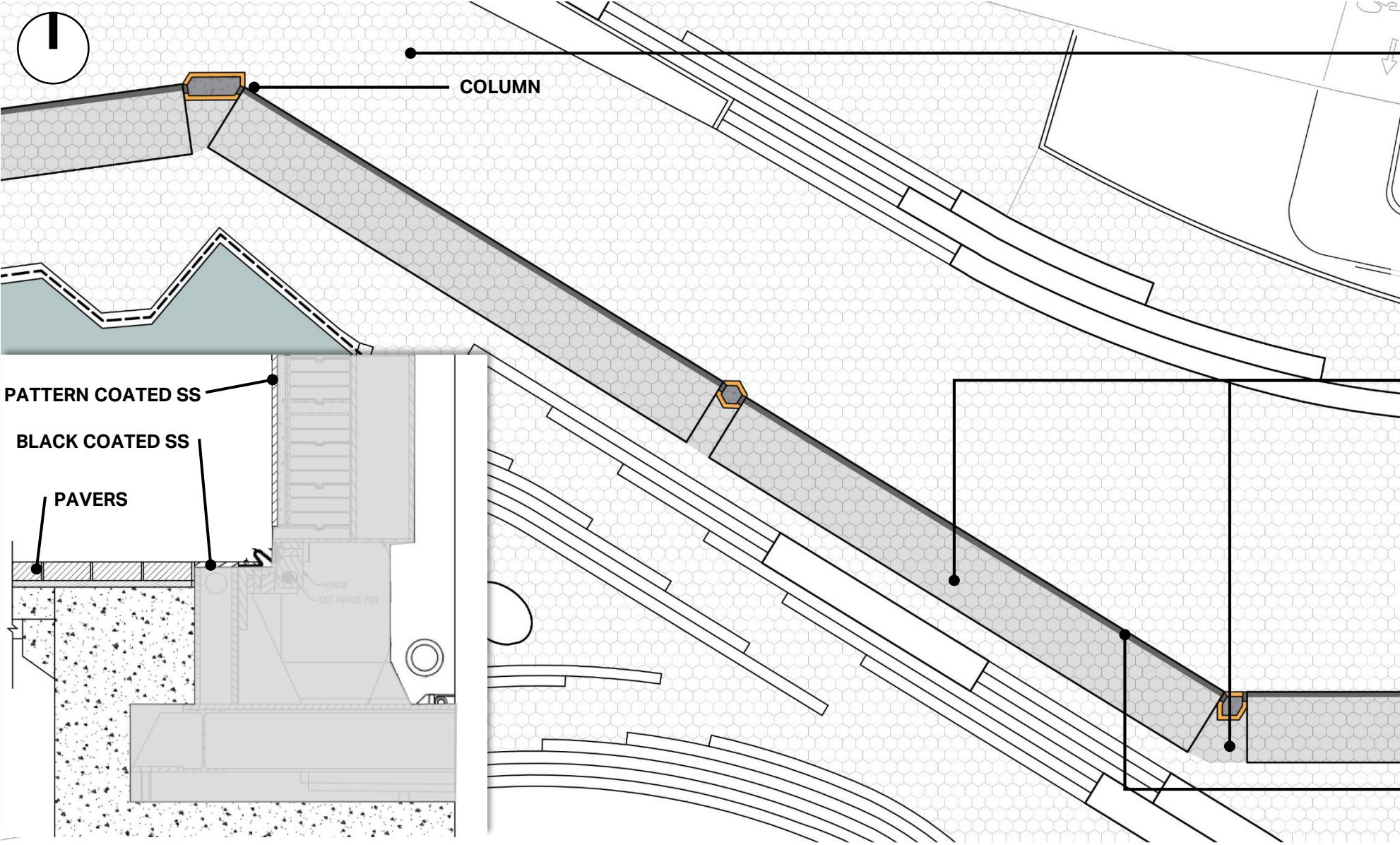
- USED TO POWER LIFTING ARMS
- INSIDE SECURITY BARRIER
- ADEQUATE ACCESS FOR OPERATIONS AND MAINTENANCE

PERFORATED STAINLESS STEEL
WITH BLACK FINISH



HPU WITH ENCLOSURE

AESTHETICS | PIER A FLIP UP GATE CLADDING



AESTHETICS | MATERIALITY PRECEDENTS

SLIP NOT COATING NYC APPLICATIONS

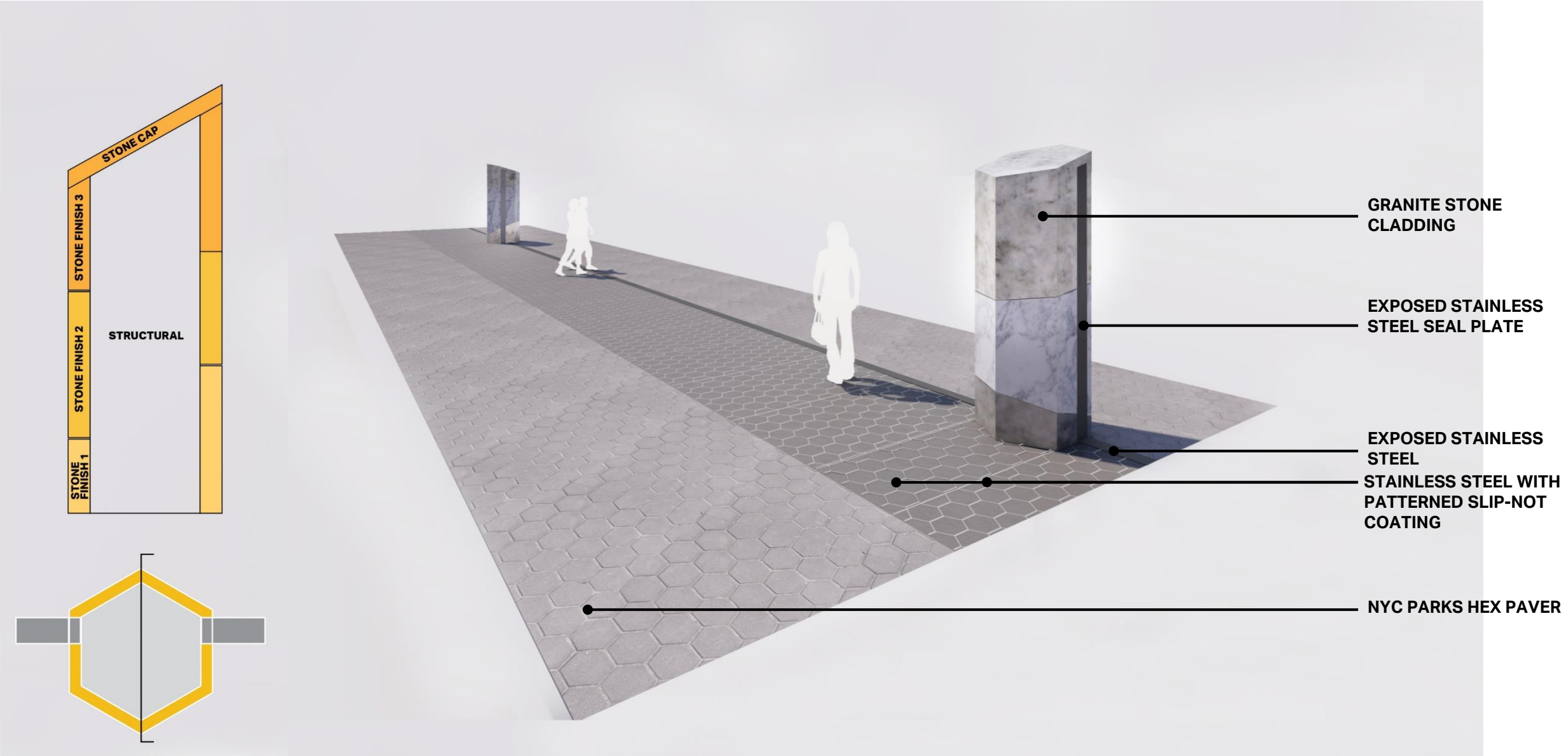


**LINCOLN CENTER, NYC
STAINLESS STEEL BRIDGE FLOORING**

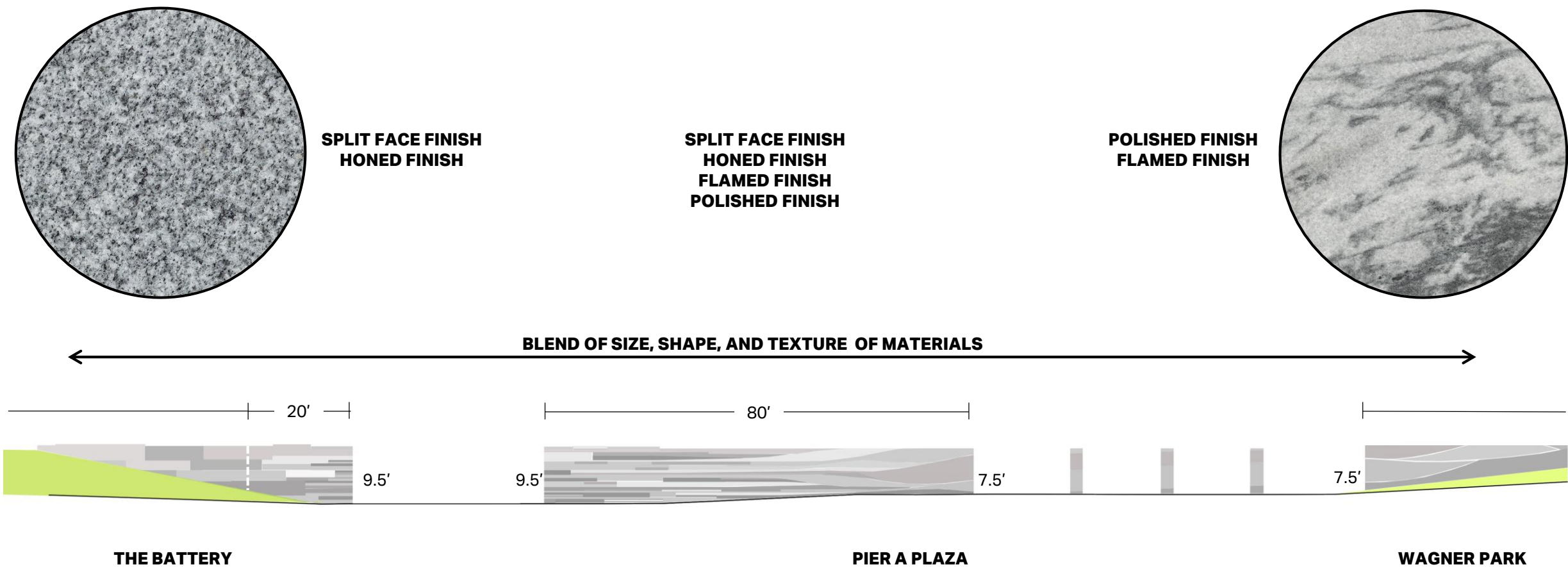


**HIGH LIGH LINE PARK, NYC
NON-SLIP STAINLESS STEEL**

AESTHETICS | PIER A FLIP UP GATE + COLUMN CLADDING

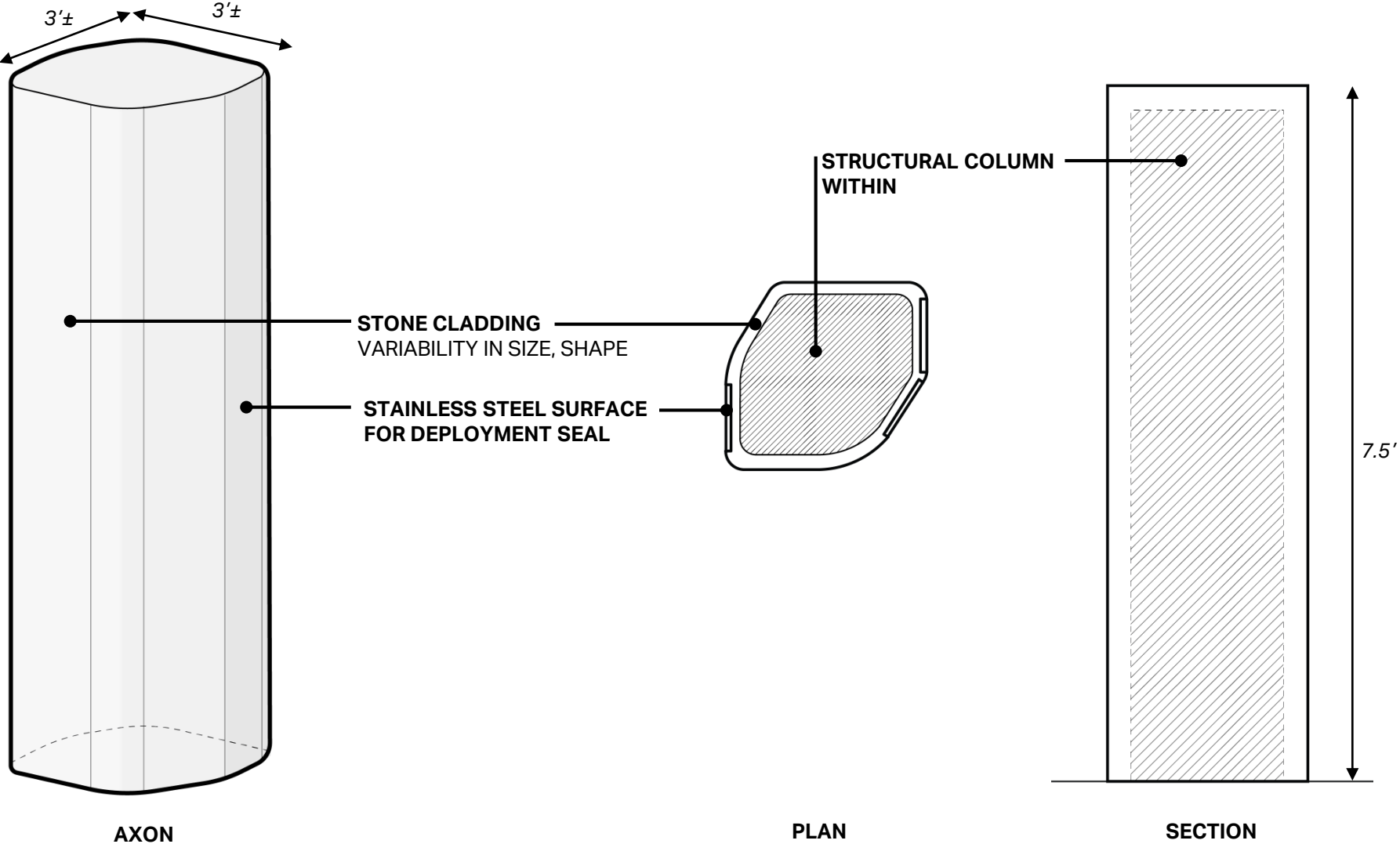


AESTHETICS | PIER A FLOODWALL MATERIALS PALETTE

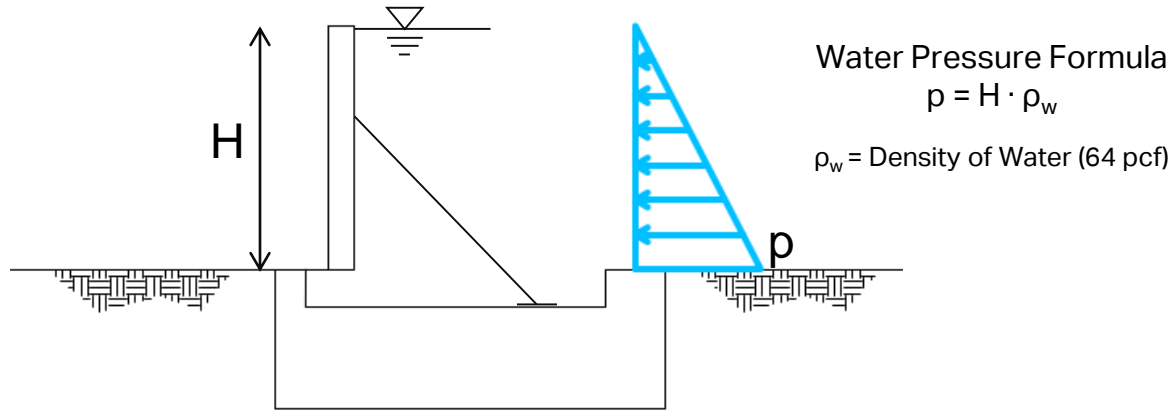


NOTE: X AND Y SCALES DISTORTED FOR CLARITY

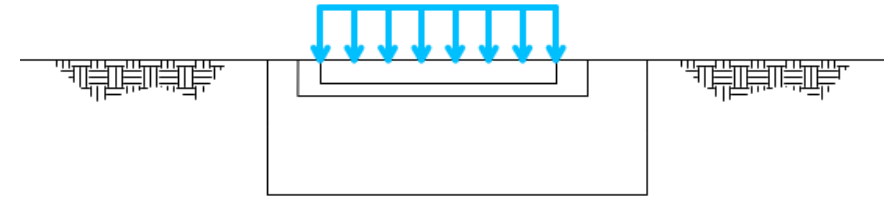
AESTHETICS | PIER A FLIP UP GATE COLUMN DESIGN



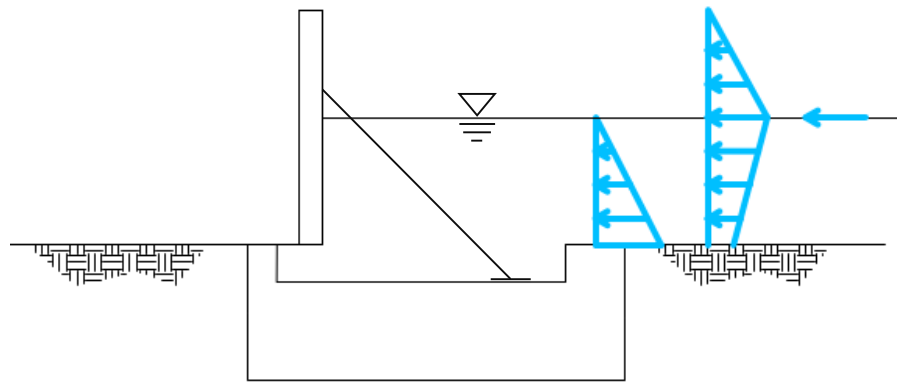
FLIP UP GATES | STRUCTURAL REQUIREMENTS



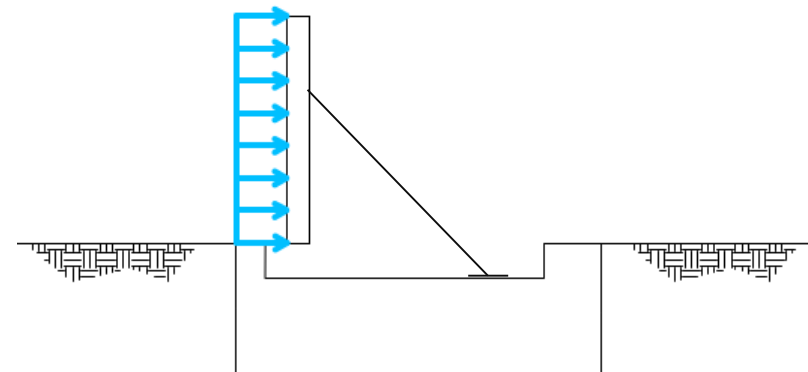
1. Hydrostatic



3. Vehicle Load (HS-25)



2. Hydrostatic + Hydrodynamic + Debris



4. Wind

GATE MANUFACTURERS| SELECTION CRITERIA

Geometric Constraints

- Project specific heights and widths of the gates

Structural System

- What type of structural system the gate relies on when deployed

Gasket System

- How the gaskets function in between gate panels, troughs and posts

Roadway Gates

- How the gates function when implemented over a roadway

Past Precedence

- Vendor must show that they are viable and have experience in constructing robust gates

Potential US Based Supply Vendors

- FloodBreak
- Walz & Krenzer
- Flood Control International

GATE MANUFACTURERS| PAST PRECEDENCE



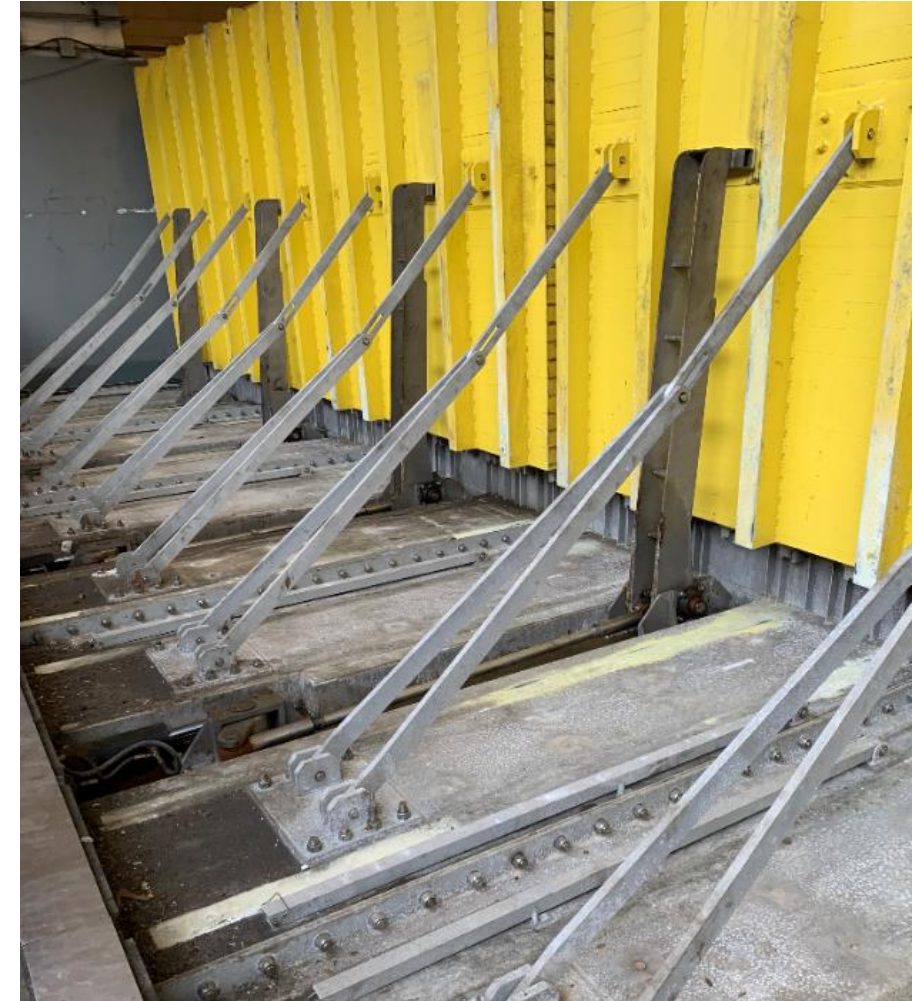
29' X 7'-10" Lourdes Hospital Binghamton, NY



HPU Langone NYU, NY
(without enclosure)



100' x 3' Jackson Road NAFTA Corridor Hidalgo County, Texas



30' x 12' Langone NYU, NY

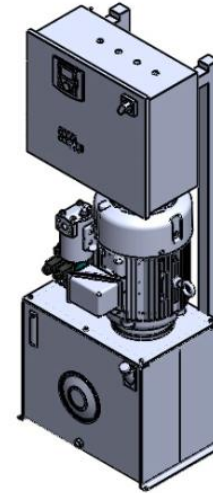
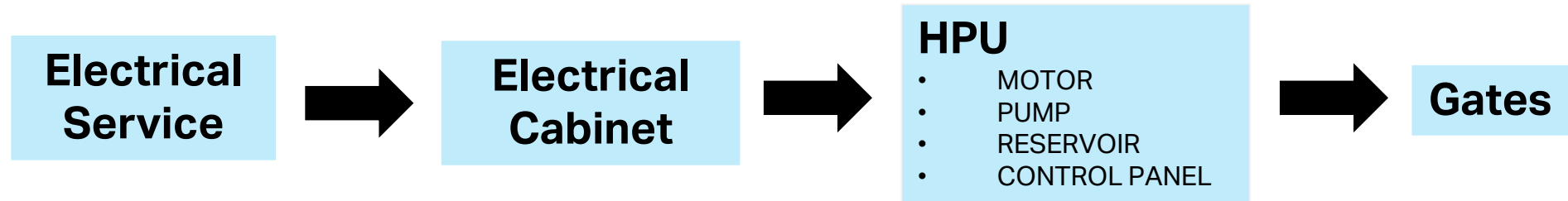
FLIP UP GATES | DEPLOYMENT METHODS

PRIMARY

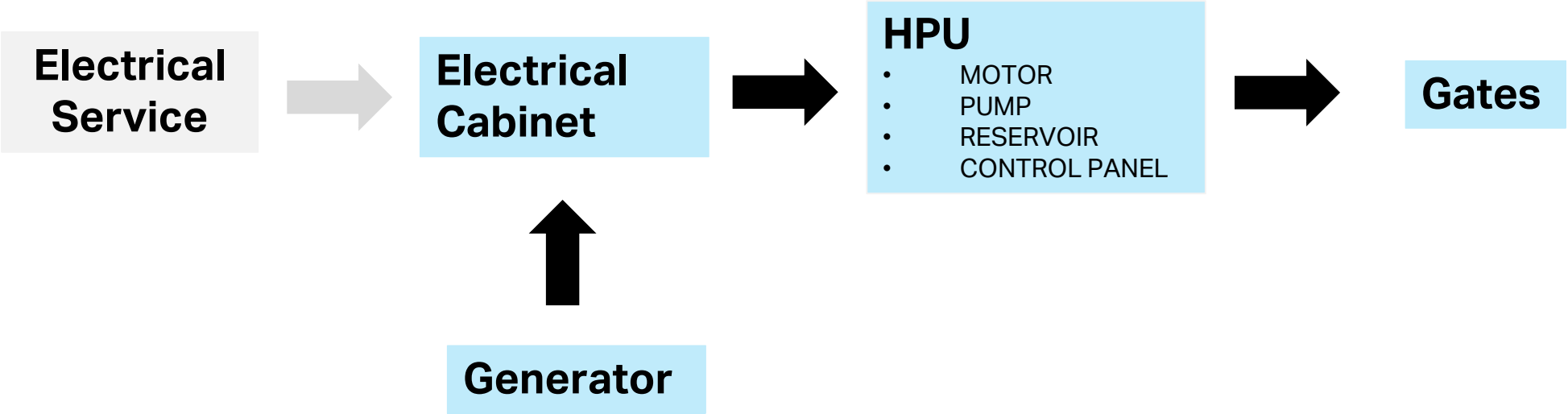
SECONDARY

TERTIARY

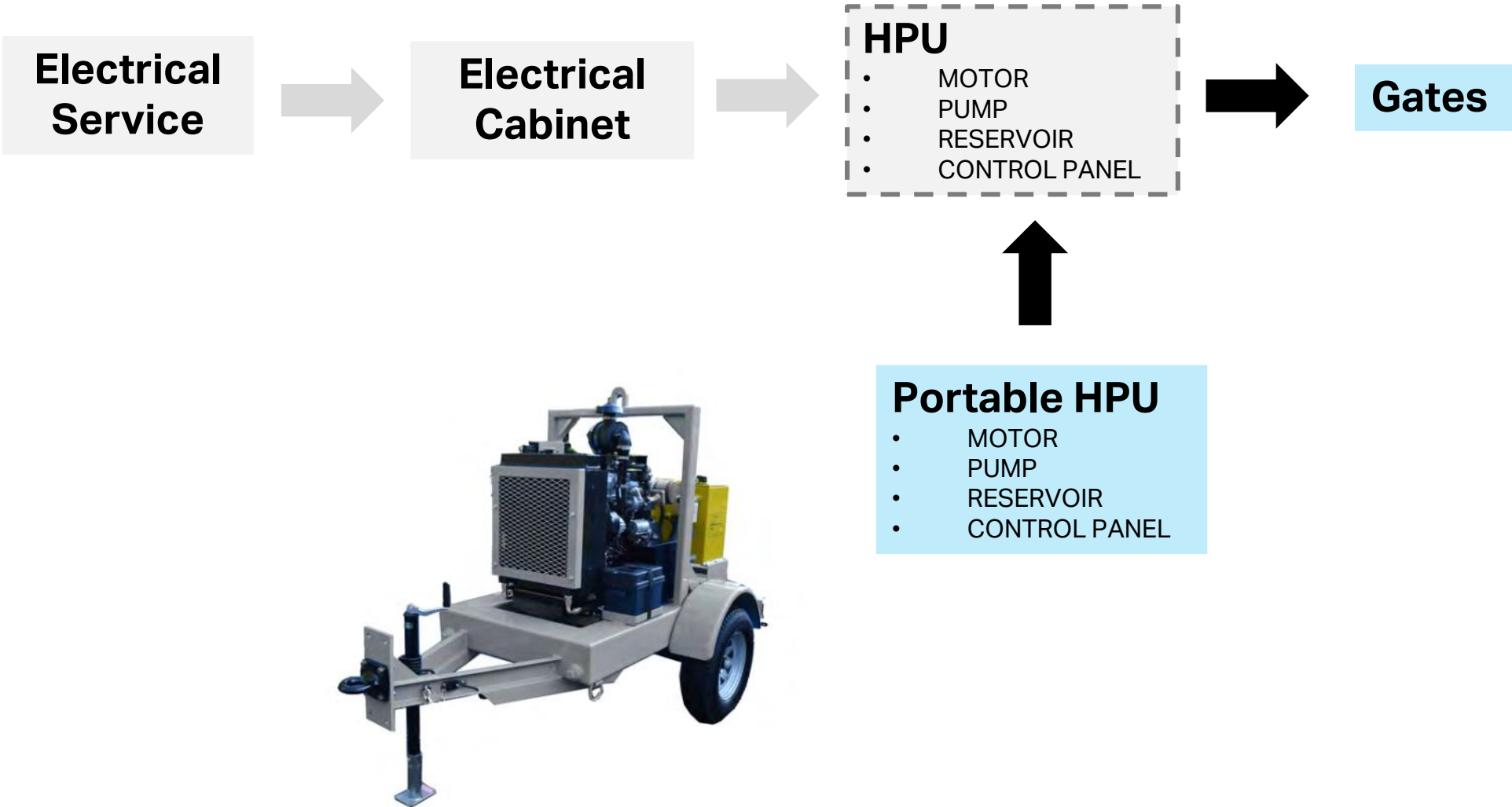
FLIP UP GATES | PRIMARY DEPLOYMENT



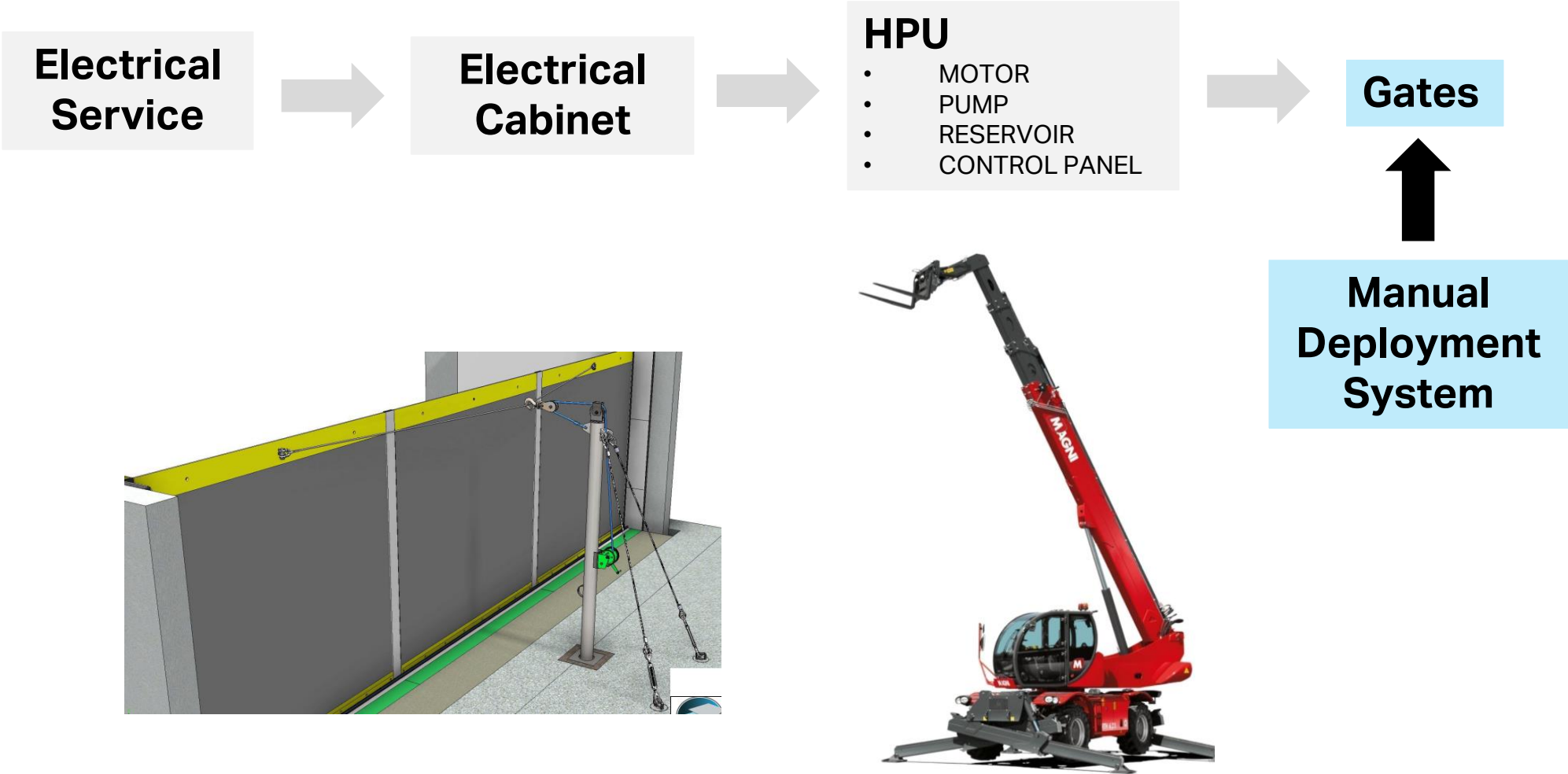
FLIP UP GATES | SECONDARY DEPLOYMENT OPTION 1



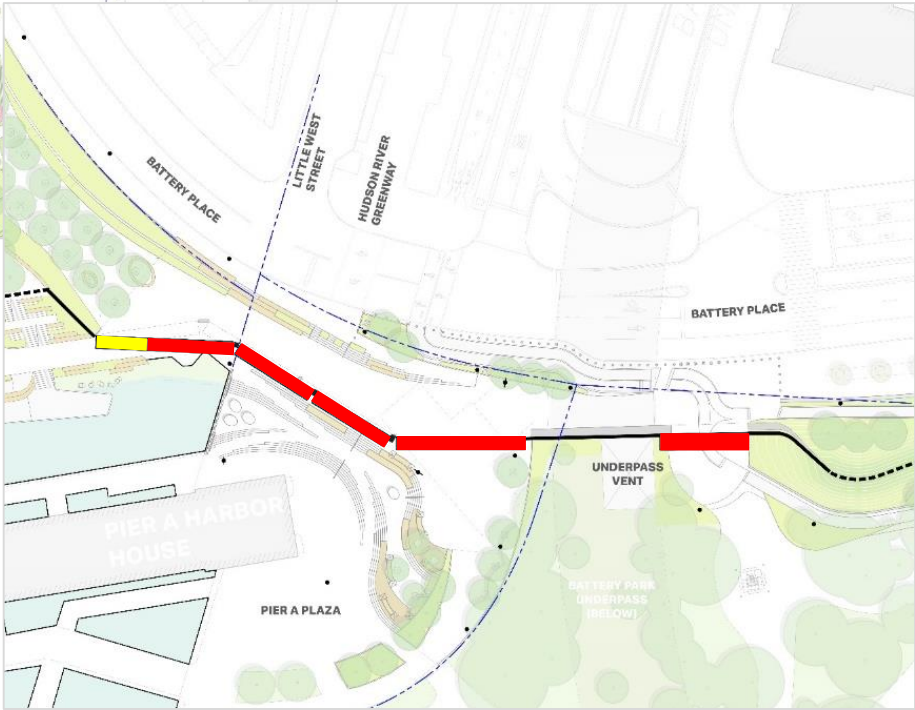
FLIP UP GATES | SECONDARY DEPLOYMENT OPTION 2



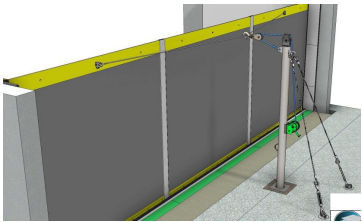
FLIP UP GATES | TERTIARY DEPLOYMENT



FLIP UP GATES | TERTIARY DEPLOYMENT



**POLE/WINCH
DEPLOYMENT**



**TELEHANDLER
DEPLOYMENT**



DEPLOYMENT TIME

DEPLOYMENT TIME | ASSUMPTIONS

Deployable Section	Primary		Secondary		Manual	
	Time to Deploy Per Panel	Personnel Per Team	Time to Deploy Per Panel	Personnel Per Team	Time to Deploy Per Panel	Personnel Per Team
Flip Ups MJH	20	2	20*	2	75	2
Flip Ups Pier A	20	2	20*	2	45	3

* Same time as primary once auxiliary unit is on site

DEPLOYMENT TIME | PROPOSED CONDITIONS

Condition 1

[0%] component failure
Deployment time N.T.E. 12 hours

Condition 2

[20%] component failure
Deployment time N.T.E. 12 hours

Condition 3

[100%] electric grid failure
Deployment time N.T.E. 12 hours

ASCE 24-14

6.2.3 Limits on Human Intervention Dry floodproofing measures that require human intervention to activate or implement prior to or during a flood shall be permitted only when all of the following conditions are satisfied:

1. The flood warning time (alerting potential flood victims of a pending flood situation) shall be a minimum of 12 h unless the community operates a flood warning system and implements an emergency plan to ensure safe evacuation of flood hazard areas, in which case human intervention is allowed only if the community can provide a minimum flood warning time equal to or longer than the cumulative time
 - (a) to notify persons responsible for installation of floodproofing measures,
 - (b) for responsible persons to travel to structures to be floodproofed,
 - (c) to install, activate, or implement floodproofing measures, and
 - (d) to evacuate all occupants from the flood hazard area.

DEPLOYMENT TIME | SUMMARY

Condition	Component Failure	Approx. No. Panels Manually Deployed	No. Total Crews Req'd	No. Personnel Req'd	Total Time To Deploy (hrs)
Condition 1	0% Failure Rate	0	2	4	8
Condition 2	20% Failure Rate	6	4	8	8
Condition 3	100% Failure Rate	23	4	10	12

* The table above includes (1) backup deployment system and crew

QUESTIONS