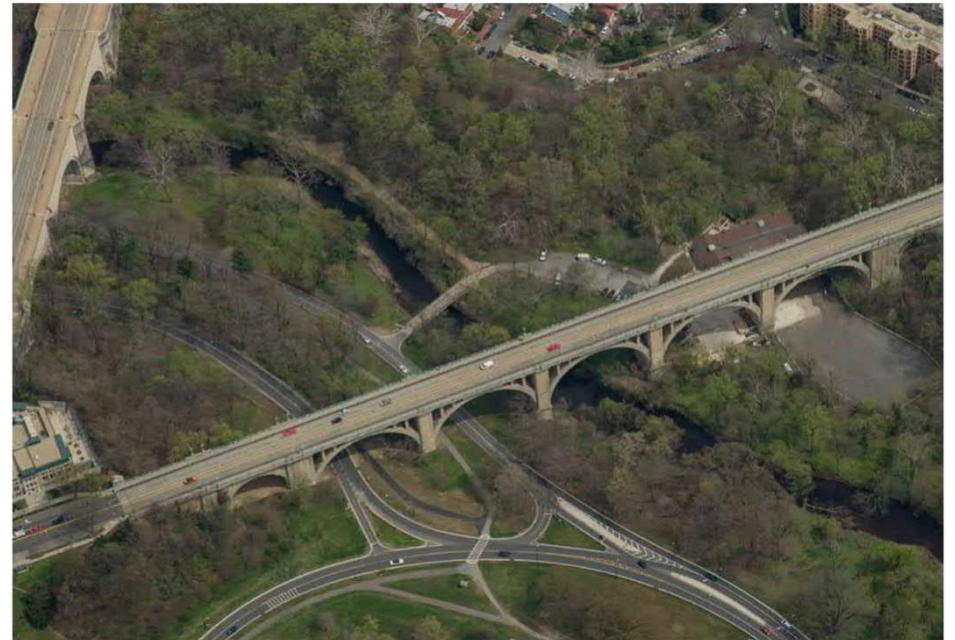


DISTRICT DEPARTMENT OF TRANSPORTATION

William Howard Taft Memorial Bridge Pedestrian Railing Improvement

DISTRICT DEPARTMENT OF TRANSPORTATION

October 23rd, 2023



William Howard Taft Memorial Bridge Pedestrian Railing Improvement

Presentation **Outline**

1. Project Owner, Design Team, and Stakeholders
2. Project Location, Bridge Description and History, and Existing Conditions
3. Design Options Presented to the Commission of Fine Arts

Project Owner, Design Team and Stakeholders

- **Project owner:** District Department of Transportation (DDOT)
- **Design Team:** WSP
- **Stakeholders:**
 - Commission of Fine Arts (CFA)
 - National Capital Planning Commission (NCPC)
 - District of Columbia State Historic Preservation Office (DCSHPO)
 - The National Park Service (NPS)
 - The Federal Highway Administration (FHWA)
 - Several citizen groups
 - Advisory Neighborhood Commissions (ANC)
 - DC Councilmembers
 - DC Residents, Businesses and tourists
 - Smithsonian
 - Historic Preservation Group (Cleveland Park, Woodley Park, Kalorama Park, Dupont Circle)

Need and Purpose of the Project

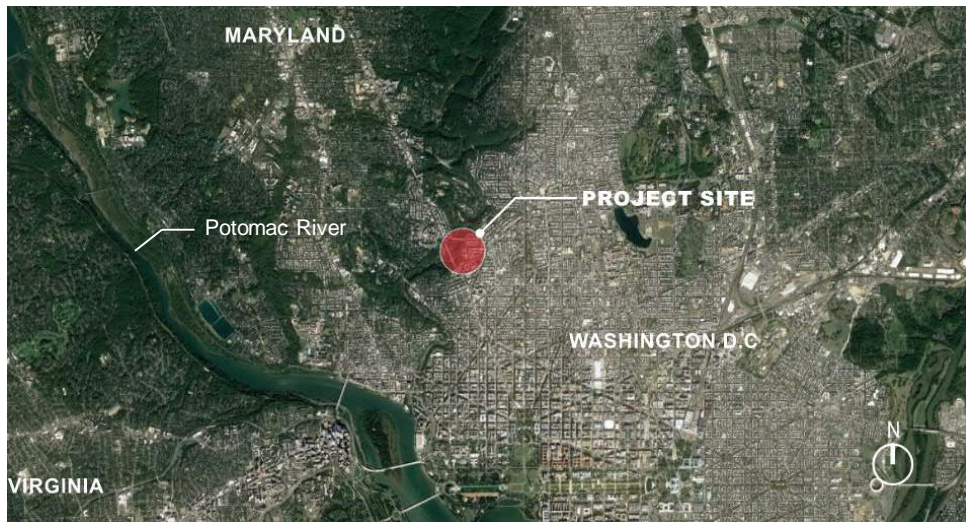
Need:

- DC Government Office of the Chief Medical Examiner data showed that 26 Bridge-related suicides occurred in DC between January 1, 2010, and June 1, 2022, of which 13 fatalities were from the Taft Bridge.

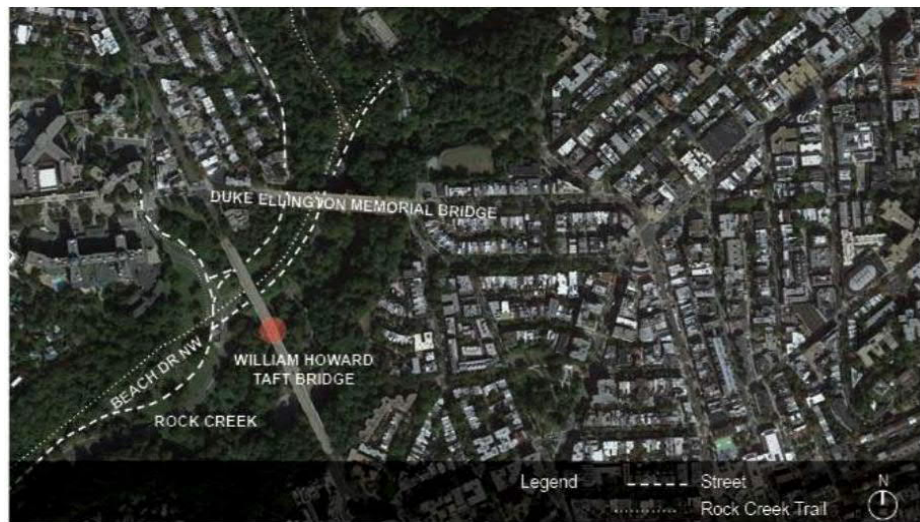
Purpose:

- Develop a suicide deterrent barrier system (SDB) that reduces the potential of suicide attempts.
- Minimize the impact to the existing historic bridge fabric and surrounding viewsheds.
- Provide a deterrent barrier or replacement design that is compatible with the bridge aesthetics.

Project Location



Vicinity Map



Location Map

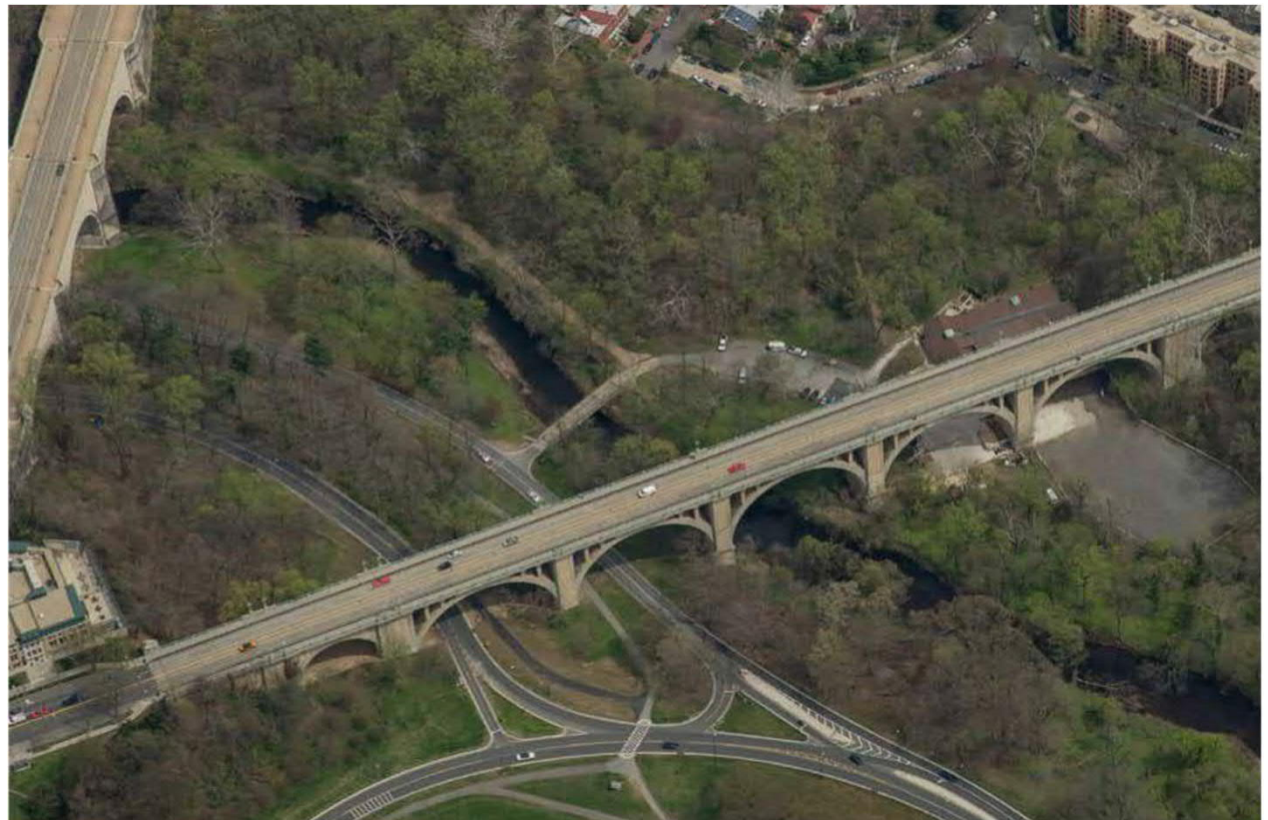
General **View** of the Bridge



Under Bridge View - Rock Creek Park

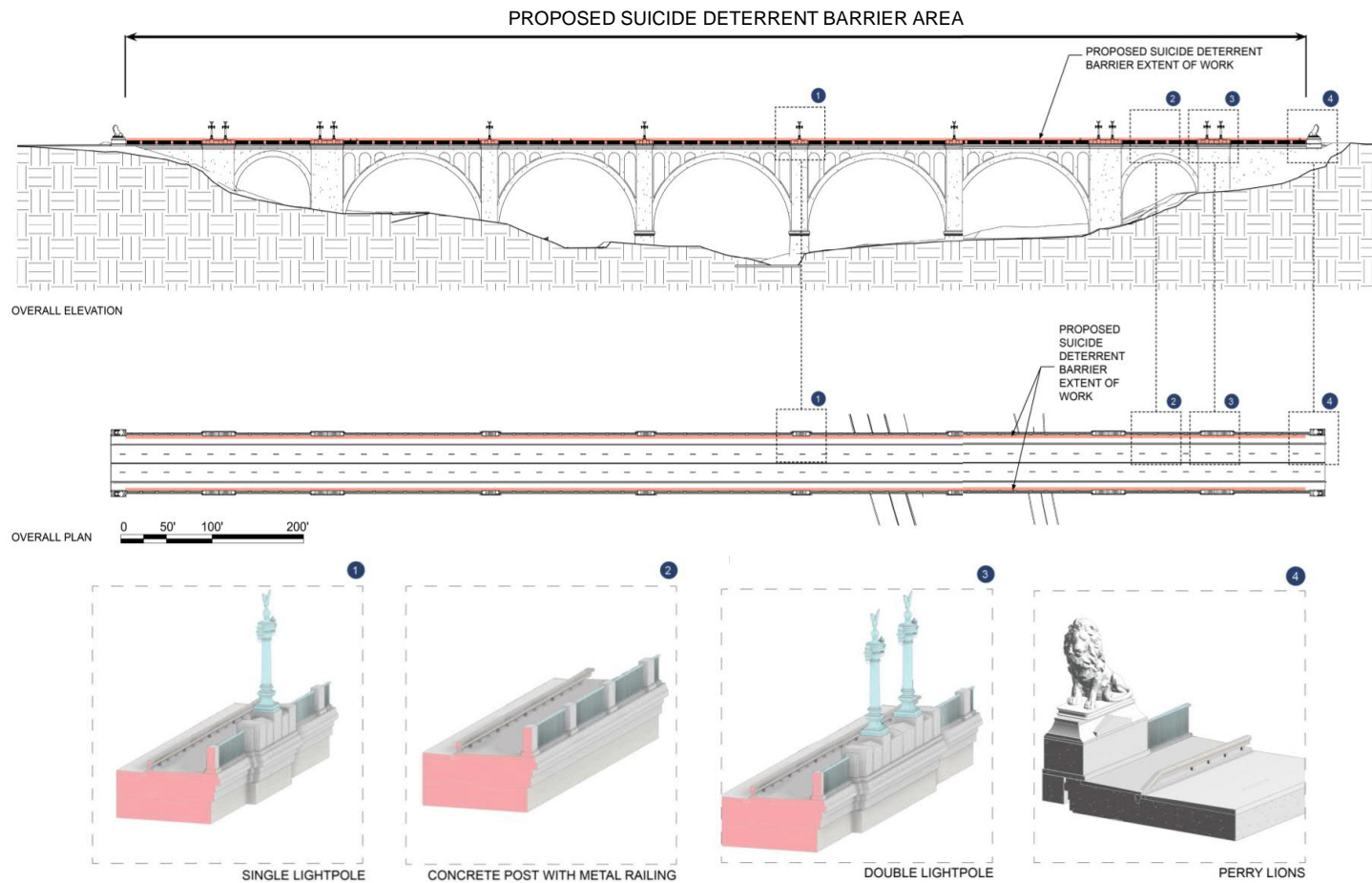


Under Bridge View – Rock Creek Park

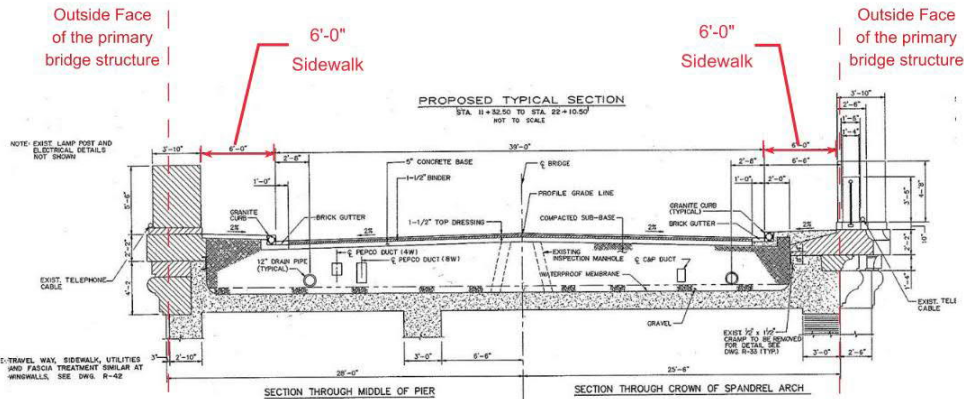


Taft Bridge Birds Eye View Perspective

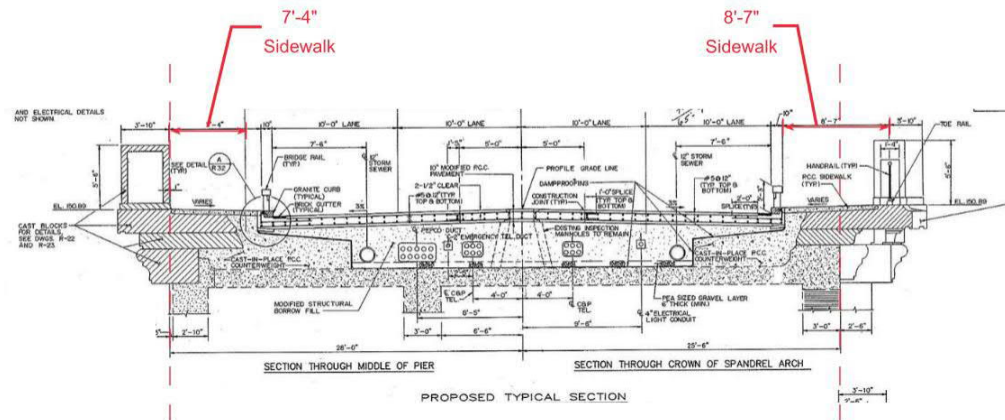
Existing **Plan** and **Elevation** – Features Unique Design Element



Existing Sidewalk Sections – 1995 Rehab



Before 1995



After 1995



Sidewalk Perspective



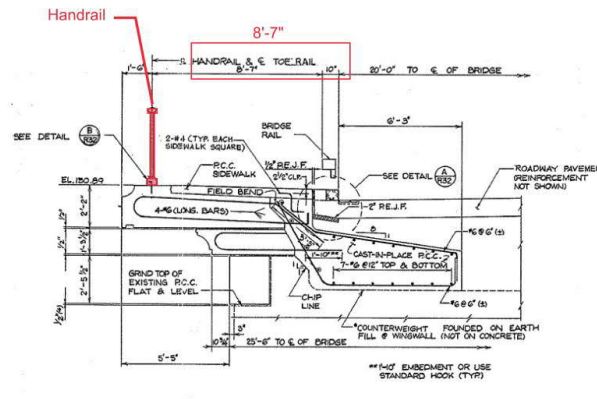
Across Sidewalk Perspective



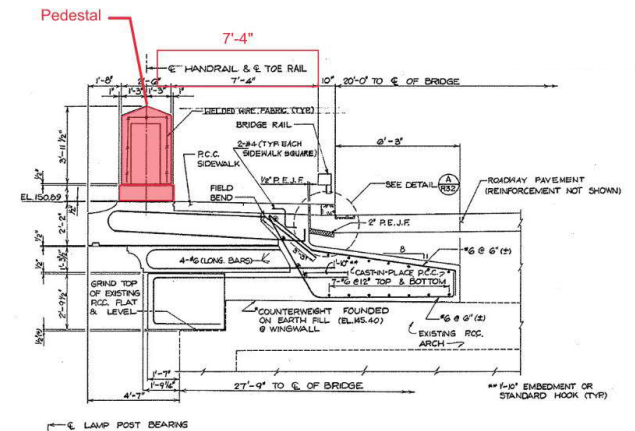
Across Sidewalk Perspective

Existing Sidewalk Sections (2)

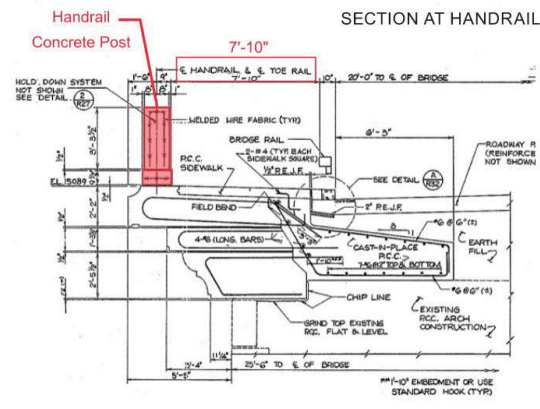
- Typical pilaster width perpendicular to bridge centerline: 1'-4" with inside face 8'-7" from the face of traffic railing
- Lamppost pilaster width directly under the lamppost in the direction perpendicular to bridge centerline: 3'-10" with inside face 7'-4" from the face of traffic railing



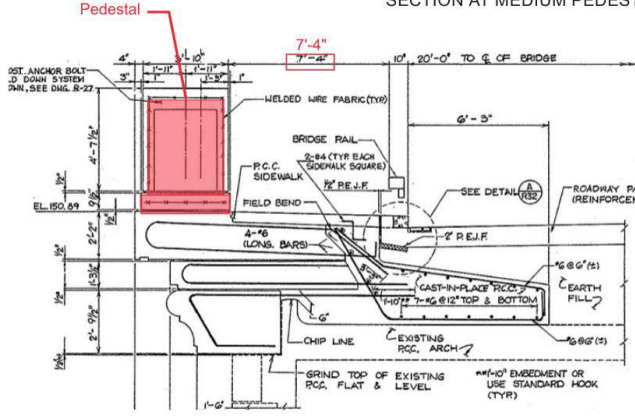
SECTION AT HANDRAIL



SECTION AT MEDIUM PEDESTAL

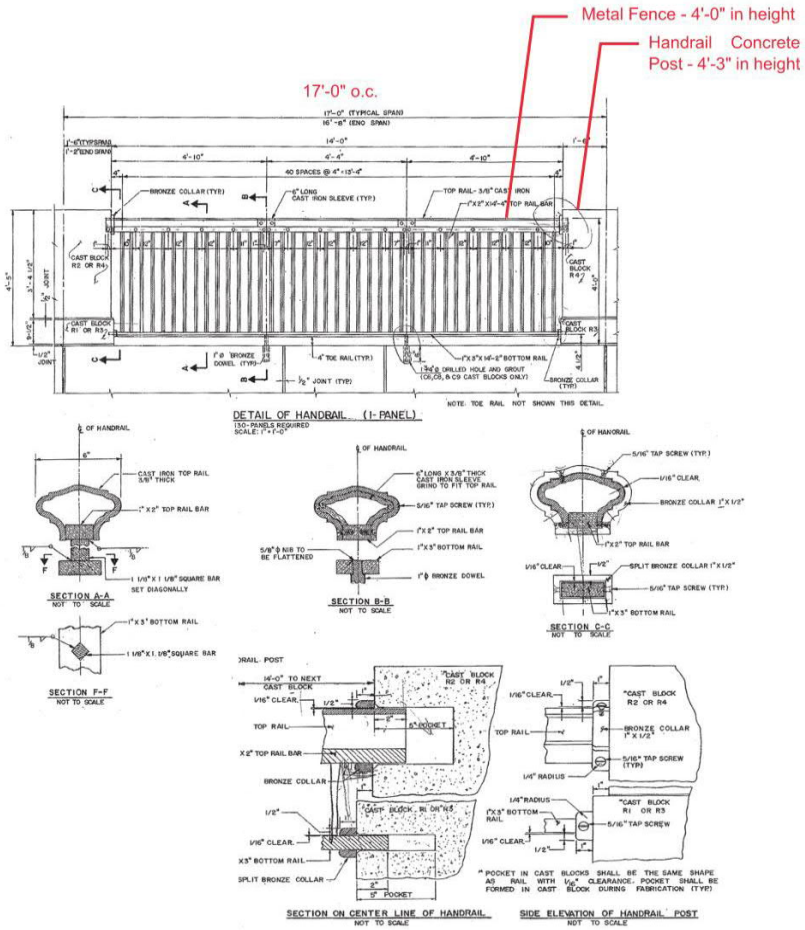


SECTION AT HANDRAIL CONCRETE POST



SECTION AT LARGE PEDESTAL

Existing Details



Taft Memorial drawing R-37 Handrail Detail



Bairstow eagle lamp post

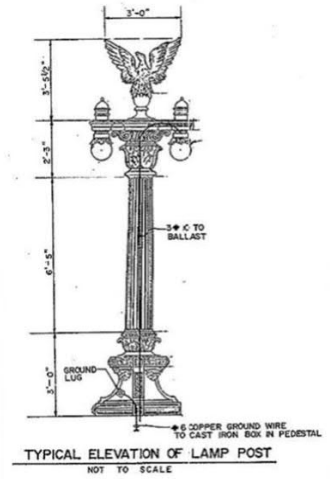


Image of Perry lion



1995 Rehab of Connecticut Ave

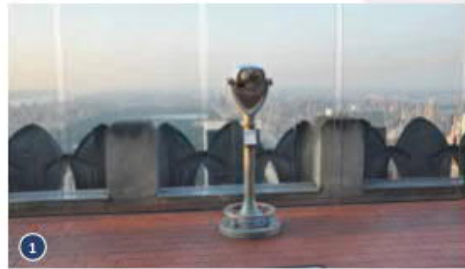
Precedents (1)

Vertical Pickets & Wire Mesh Systems



Precedents (2)

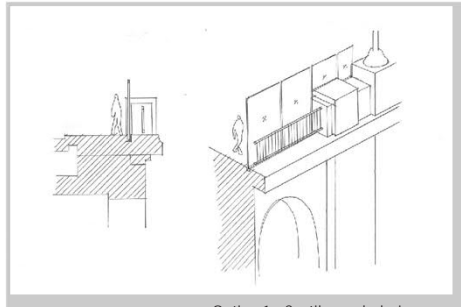
Glass barriers & Nets



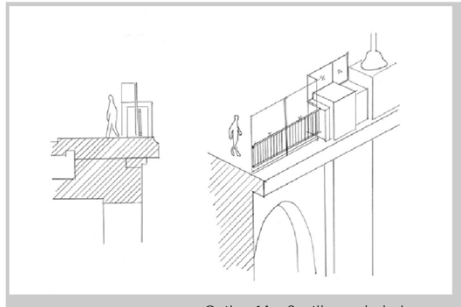
CAPTION LIST	SOURCE
1. Empire State Building, New York	Google image
2. Bridge in Madrid, Spain	DDOT
3. Bridge in Madrid, Spain	DDOT
4. Brooklyn Bridge, New York	Google image
5. Pedestrian bridge, Switzerland	Hammerglass image
6. Golden Gate Bridge, San Francisco	Golden Gate Physical Suicide Deterrent Study
7. Bridge netting	Google image
8. Pedestrian bridge, Switzerland	Google image
9. Duke Ellington Bridge, Washington DC	Google image
10. Key Bridge, Washington DC	Google image
11. 9th Street bridge, Washington DC	Google image
12. Monroe Street bridge, Washington DC	DDOT



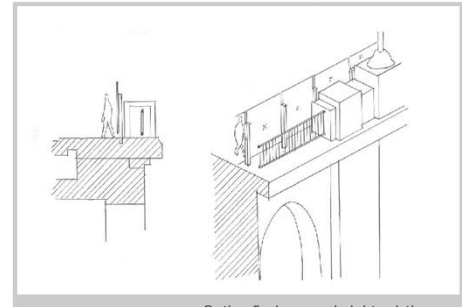
7.0 EVALUATED OPTIONS



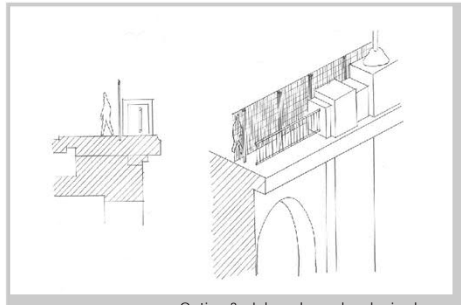
Option 1 - Cantilevered glazing panels



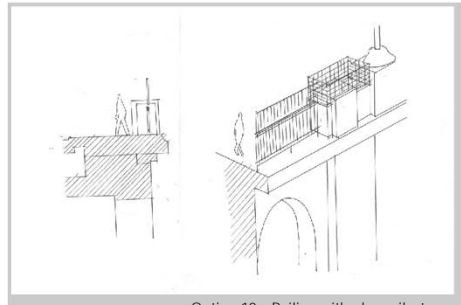
Option 1A - Cantilevered glazing panels



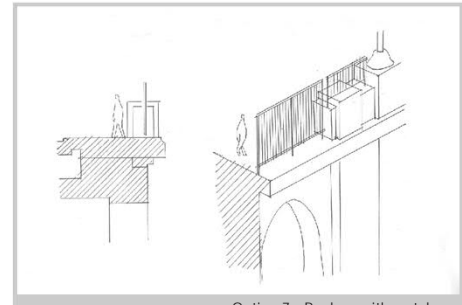
Option 5 - Increase height existing railing



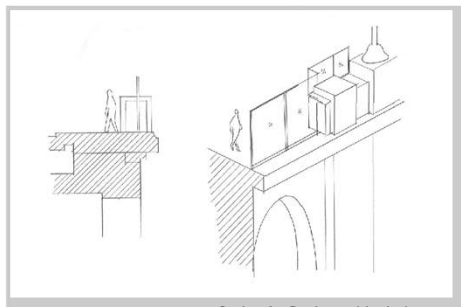
Option 3 - Inboard panel and raised pilaster



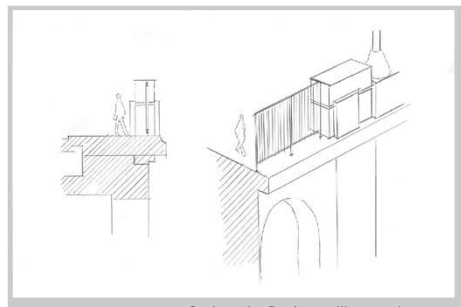
Option 10 - Railing with glass pilaster infill



Option 7 - Replace with metal railing

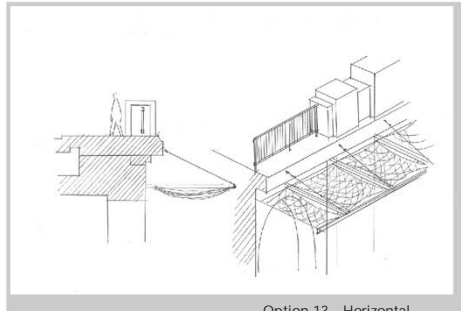


Option 8 - Replace with glazing panel

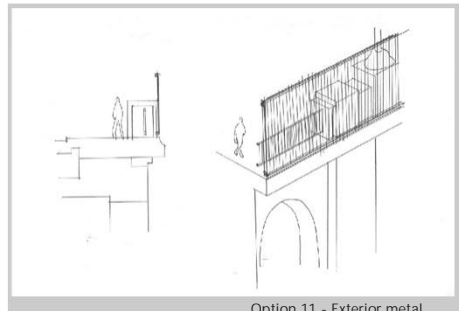


Option 10 - Replace railing & raise pilasters

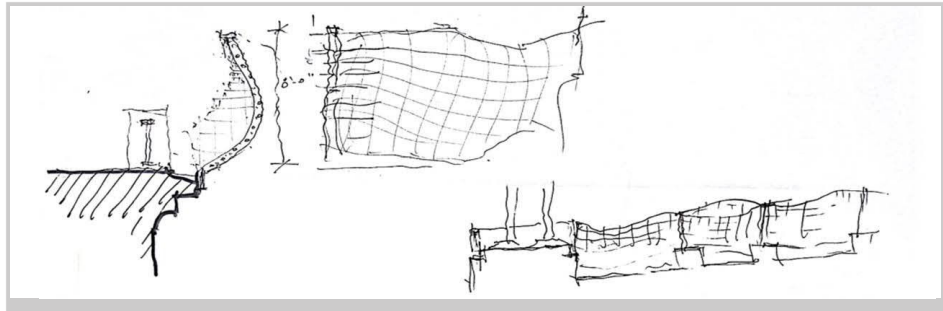
7.0 EVALUATED OPTIONS



Option 13 - Horizontal netting



Option 11 - Exterior metal railing



Option 14 - Vertical netting

- More than twenty options were considered

These options were divided into barrier systems inboard of the existing railing system (Options 1-4), barriers in the same plane as the existing railing system (Options 5-10), barriers outboard of the existing railing system (Options 11-12), and other barrier options including netting systems (Options 13-15).

Through discussion with the stakeholders, a weighted score was assigned to each option with respect to safety, physical deterrence, visual impacts, structural implications, maintenance and probable cost. Safety, physical deterrence and visual impacts were weighted heaviest at 2.0, maintenance and cost at 1.5 and structural implications at 1.0.

- Inboard options tended to score highest as they were the simplest to construct and shortest in height with limited to no impact to existing historic fabric.
- Outboard options tended to score lower as they involved higher vertical elements to achieve the 8'-0" of vertical height above the existing railing as a deterrence to climbing.
- Netting options scored poorly as there were concerns for visual appearance from Rock Creek Park, and concern with maintenance.
- Vertical barrier options in the plane of the existing railing, although providing the greatest pedestrian space also scored poorly as modification or removal of the existing railing was deemed by the stakeholders as detrimental to the existing historic fabric.

From the aforementioned design criteria and evaluations – three options were selected to pursue for concept submission:

- 8'-0" tall glass panel option secured to vertical metal posts inboard of existing railing
- 8'-0" tall metal panel frame with stainless steel wiring inboard of existing railing
- 8'-0" tall metal Clear-Vu fencing secured to vertical metal posts inboard of existing railing

WILLIAM H TAFT MEMORIAL BRIDGE - SUICIDE DETERRENCE BARRIERS DESIGN CRITERIA

GROUP	REFERENCE	DATE	TYPE OF OPTION	BARRIER HEIGHT	NETTING LENGTH	NETTING DEPTH	CLEARANCE	FOOTHOLD	HANDHOLD	INWARD PROTECTION	COMMENTS
EXISTING	WILLIAM H TAFT BRIDGE, WASHINGTON, DC	1909	EXISTING RAILING	4.5'	-	-	3.5"	YES	-	-	EXISTING RAILING 4.5' IN HEIGHT, NO DETERRENCE YET
	DUKE ELLINGTON BRIDGE, WASHINGTON, DC	1986	VERTICAL BARRIER	6.0'	-	-	3.5"	YES	-	YES	6.0' FENCING ATTACHED OUTBOARD OF EXISTING FENCE, 8.0' ABOVE DECK
GOV THOMAS JOHNSON BRIDGE	MDOT GOVERNOR THOMAS JOHNSON BRIDGE EVALUATION OF SUICIDE DETERRENT SYSTEMS	2022	PHYSICAL BARRIER BEHIND EXISTING CONCRETE PARAPET	10'-8" MIN	-	-	NONE INDICATED	YES 10"	NOT INDICATED	YES	NEEDS TO BE LARGER TO FACILITATE STANDING ON PARAPET
	MDOT GOVERNOR THOMAS JOHNSON BRIDGE EVALUATION OF SUICIDE DETERRENT SYSTEMS	2022	PHYSICAL BARRIER ON TOP OF EXISTING CONCRETE PARAPET	8'-10" MIN	-	-	NONE INDICATED	NONE	NOT INDICATED	NO	
	MDOT GOVERNOR THOMAS JOHNSON BRIDGE EVALUATION OF SUICIDE DETERRENT SYSTEMS	2022	NETTING NEAR ROADWAY	-	13" MIN	SMALL	NONE INDICATED	YES 10"	NOT INDICATED	-	NETTING NEAR PARAPET REQUIRES MORE HORIZONTAL PROTECTION
	MDOT GOVERNOR THOMAS JOHNSON BRIDGE EVALUATION OF SUICIDE DETERRENT SYSTEMS	2022	NETTING BELOW ROADWAY	-	13" MIN	LARGE	NONE INDICATED	-	NOT INDICATED	-	NETTING BELOW PARAPET HAS MORE DEPTH BUT LESS HORIZONTAL PROTECTION
	MDOT GOVERNOR THOMAS JOHNSON BRIDGE EVALUATION OF SUICIDE DETERRENT SYSTEMS	2022	HYBRID PHYSICAL BARRIER/NETTING	VARIABLES	VARIABLES	VARIABLES	NONE INDICATED	-	NOT INDICATED	YES	
GOLDEN GATE BRIDGE	GOLDEN GATE PHYSICAL SUICIDE DETERRENT SYSTEM PROJECT	2008	VERTICAL BARRIER TO OUTSIDE RAILING (1A)	8.0'	-	-	NONE INDICATED	-	NOT INDICATED	-	
	GOLDEN GATE PHYSICAL SUICIDE DETERRENT SYSTEM PROJECT	2008	HORIZONTAL BARRIER TO OUTSIDE RAILING (1B)	12.0'	-	-	5.375"	-	NOT INDICATED	YES	8'-0" ABOVE 4'-0" GUARDRAIL WITH HORIZONTAL CABLES 1'-0" WINGLET AT TOP
	GOLDEN GATE PHYSICAL SUICIDE DETERRENT SYSTEM PROJECT	2008	REPLACE OUTSIDE HANDRAIL WITH VERTICAL BARRIER (2A)	12.0'	-	-	4.5"	-	-	-	VERTICAL STEEL RODS
	GOLDEN GATE PHYSICAL SUICIDE DETERRENT SYSTEM PROJECT	2008	REPLACE OUTSIDE HANDRAIL WITH HORIZONTAL BARRIER (2B)	10.0'	-	-	4.4"	-	-	YES	HORIZONTAL CABLES 1'-0" WINGLET AT TOP
	GOLDEN GATE PHYSICAL SUICIDE DETERRENT SYSTEM PROJECT	2008	ADD NET SYSTEM THAT EXTENDS HORIZONTALLY (3)	-	20.0'	20.0'	NONE INDICATED	-	-	-	NETTING 20' FROM BRIDGE, EXTENDS 5' ABOVE BOTTOM CHORD OF BRIDGE. PTD METAL MESH
FLORIDA SKYWAY BRIDGE	FLORIDA SUNSHINE SKYWAY BRIDGE	2019	VERTICAL TRANSPARENT PANEL BARRIER	-	-	-	-	-	-	-	NOT PURSUED DUE TO WEIGHT AND UV DAMAGE
	FLORIDA SUNSHINE SKYWAY BRIDGE	2019	WIRE NET FENCING OPTION	7.5'	-	-	-	CHAMFER AT TOP	-	-	OUTBOARD OPTIONS EXTENDING FROM OUTSIDE OF EXISTING TRAFFIC RAILING
	FLORIDA SUNSHINE SKYWAY BRIDGE	2019	EXTERIOR HORIZONTAL NETTING OPTION	-	13.0'	13.0'	-	-	-	-	HORIZONTAL NETTING BELOW BRIDGE. SPECIAL SNOOPER TRUCK REQUIRED.
NATIONAL SURVEY SWITZERLAND	COMPARING SUICIDE PREVENTION MEASURES: NATIONAL SURVEY IN SWITZERLAND	2017	VERTICAL BARRIER	4.90'	-	-	-	-	-	-	1.5 M HEIGHT 68% REDUCTION
	COMPARING SUICIDE PREVENTION MEASURES: NATIONAL SURVEY IN SWITZERLAND	2017	VERTICAL BARRIER	9.0'	-	-	-	-	-	-	2.75 M HEIGHT 68% REDUCTION
	COMPARING SUICIDE PREVENTION MEASURES: NATIONAL SURVEY IN SWITZERLAND	2017	VERTICAL BARRIER	10.8'	-	-	-	-	-	-	3.3 M HEIGHT 69% REDUCTION
	COMPARING SUICIDE PREVENTION MEASURES: NATIONAL SURVEY IN SWITZERLAND	2017	SAFETY NET	-	-	-	-	-	-	-	SAFETY NETTING LED TO 77.1% REDUCTION

- Concepts were discussed with different agencies
- Choices narrowed to three options

Design Options Presented to the Commission of Fine Arts in their July Meeting

Option 1 **Glazed Panel** Addition



Option 2 **Wire Mesh** Addition



Option 3 **Frame and Cable** Addition



Option 1: Glazed Panel Addition



Option 2: Wire Mesh Addition





**Option 3: Frame and Cables Addition
(Option Rejected by CFA)**

Design Options Presented to the Commission of Fine Arts in their September Meeting

Option 1 **Glazed Panel** Addition



Option 2 **Wire Mesh** Addition



Option 3 (New) **Replace** Concrete & Metal Fence



Option 3 (New): Replace Concrete and Metal Fence



Option 3 : Replace



Sidewalk View



Elevation at Single Light Pole



Elevation at Double Light Pole

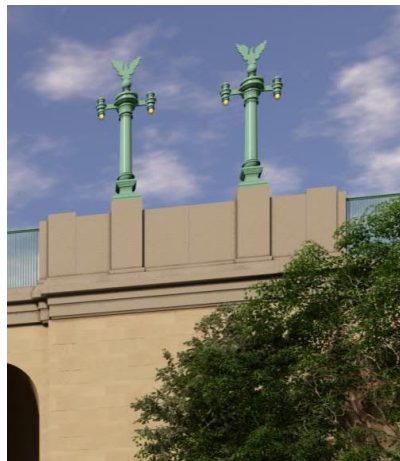


Concrete Post with Metal Handrail - Elevation

Existing



Option 3



View from Rock Creek Park with Single Light Pole Condition



View from Rock Creek Park with Double Light Pole Condition

Existing



Option 3 : **Replace** Concrete and Metal Fence



Perry Lion Statue – Perspective View

Preferred Option
Option 3B: **Articulation of Concrete Mass**



Sidewalk View



Elevation at Single Light Pole



Elevation at Double Light Pole



Concrete Post with Metal Handrail - Elevation

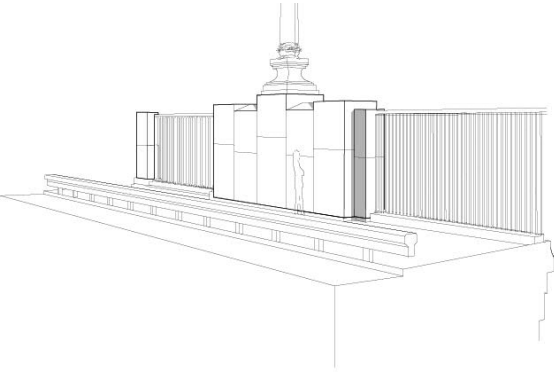
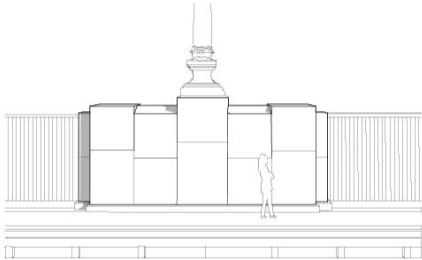


District Department of Transportation

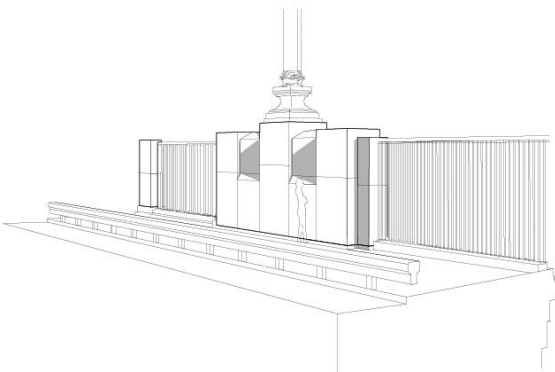
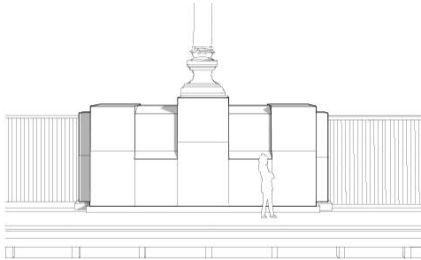
250 M St SE | Washington, DC 20003 | 202.673.6813

Option 3 and Its Major Variations Comparison

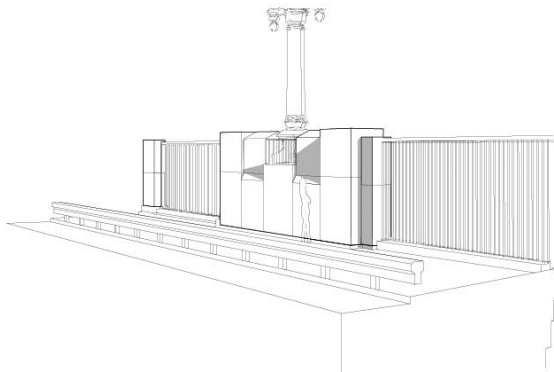
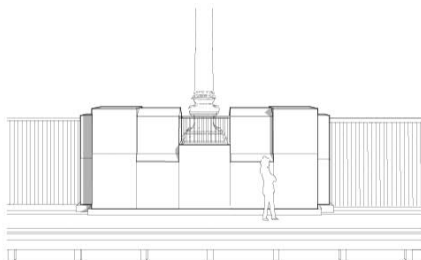
Option 3
Replace



Option 3B
Articulation



Option 3C
Articulation and Modulation



- Simple extruded concrete massing, elevated to min. 8ft
- 3/4" horizontal reveal at the original top profile of the concrete
- 4" setback for the added concrete for the upper portion
- 60 degrees steep slope transition at the bottom of the setback massing
- The light pole and its pedestal remain at the existing height
- Additional metal railing in front of the light pole

Option 3B: Articulation of Concrete Mass



Sidewalk View



Elevation at Single Light Pole



Elevation at Double Light Pole



Concrete Post with Metal Handrail - Elevation

Option 3C: **Modulation and Articulation of Concrete Mass**



Sidewalk View



Elevation at Single Light Pole



Elevation at Double Light Pole



Concrete Post with Metal Handrail - Elevation

Option 3D: **Concrete** Cap as an Additive Material



Sidewalk View



Elevation at Single Light Pole



Elevation at Double Light Pole



Concrete Post with Metal Handrail - Elevation

Option 3E: Painted Metal Cap as an Additive Material



Sidewalk View



Elevation at Single Light Pole



Elevation at Double Light Pole



Concrete Post with Metal Handrail - Elevation



Existing Concrete



Potential Paint Color