

Footbridge Replacement- Endorsement of Preferred Alignment Town of Boothbay Harbor, ME

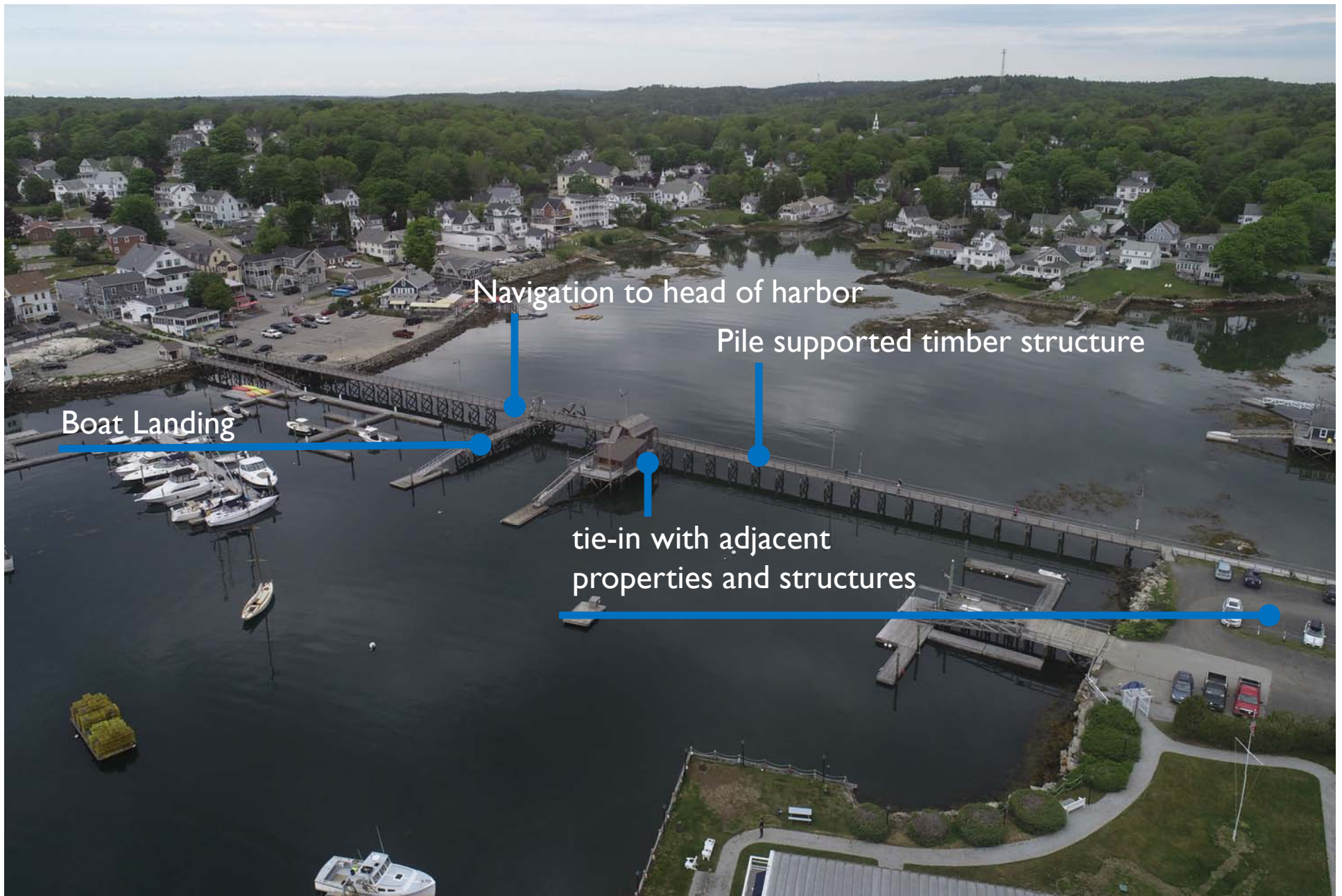
Jan 13, 2020



Presentation Outline

1. Existing Bridge Overview
2. Why Replacement?
3. Design Development/Value Engineering
 - a. Typical Section
 - b. Design Loading
 - c. Bridge Alignment
 - d. Bridge Rail
 - e. Bridge Overlooks
 - f. Construction Phasing
4. Project Cost
5. Timeline and Next Steps

1. Existing Bridge Overview



THE
FOOTBRIDGE
1901

NO
SKATEBOARDING
OR BICYCLING
OR BICYCLE RACING





Aerial Photo

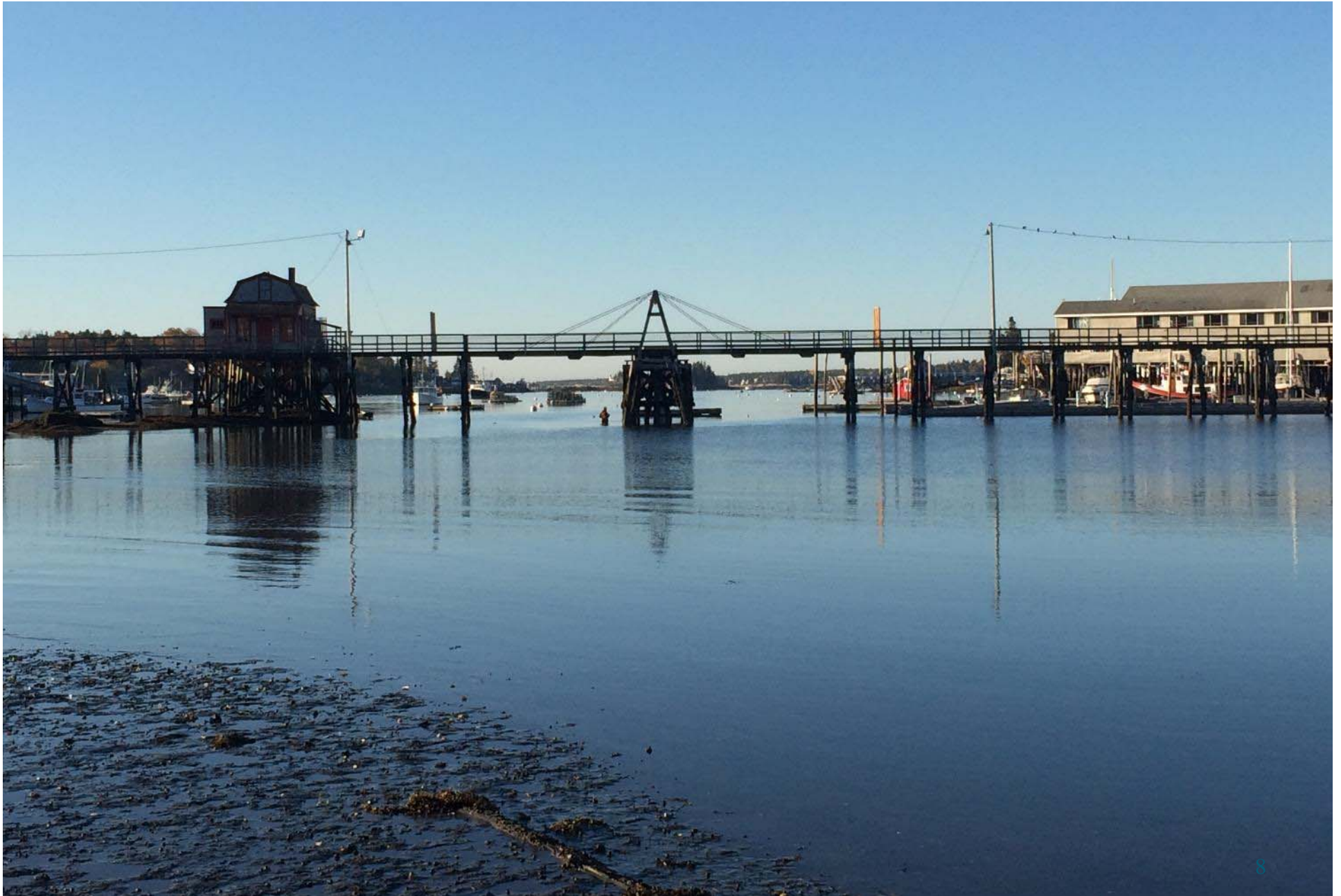
Alignment



Substructure



Navigation Channel



Footbridge House



2. Why Replacement?

- The existing Bridge is Structurally Deficient
- The existing Swing Span is non-functioning.
- The existing bridge is below the 100-year flood elevation.
- There are Code Compliant issues with the existing bridge.
- Utilities are not flood proofed



**Top of Deck @ Swing Span
EL 9.47' (NAVD88)**

BFE = 11.0'

HAT = 6.4'

MHHW = 4.5'

PROJECT ELEVATIONS (BY DATUM)

ELEVATION	CHART	NAVD88	Notes
	(ft)	(ft)	
Base Flood Elevation	16.2	11.0	FEMA FIRM, ZONE VE (East)
	16.2	11.0	FEMA FIRM, ZONE AE (West)
Stillwater Elevations	16.3	11.1	0.2% Annual Chance
	14.9	9.7	1.0% Annual Chance
	14.4	9.2	2.0% Annual Chance
	13.4	8.2	10% Annual Chance
Storms of Record	14.2 +/-	9.0 +/-	Jan 4, 2018 "Bomb Cyclone"
	13.9	8.7	Feb 7, 1978 "Blizzard of '78"
Highest Annual Tide	11.6	6.41	2017 MEDEP Predictions
MHHW	9.73	4.54	DERIVED FROM NOAA VDATUM VERTICAL DATUM TRANSFORMATION TOOL AT FOOTBRIDGE LOCATION
MHW	9.30	4.12	
NAVD88	5.19	0.00	
NGVD29	4.48	-0.71	
MLW	0.36	-4.83	
MLLW	0.00	-5.19	

1. BASE FLOOD INFORMATION TAKEN FROM FEMA FLOOD INSURANCE RATE MAP
2. HIGHEST ANNUAL TIDE TAKEN FROM MAINE DEP PUBLISHED PREDICTIONS
3. TIDAL INFORMATION FOR BOOTHBAY HARBOR DERIVED FROM NOAA VDATUM TOOL
4. BLIZZARD OF '78 WATER ELEVATION PER USGS WATER RESOURCES INVESTIGATION 79-61 REPORT
5. 2018 BOMB CYCLONE ELEVATION ESTIMATED BY CORRELLATION OF PHOTOS WITH SURVEY DATA



*February 11, 2016 High Tide
(Photo: LCPRC)*



*November 16, 2016 High Tide
(Photo: LCPRC)*



*January 4, 2018
(Photo: Tom Woodin)*

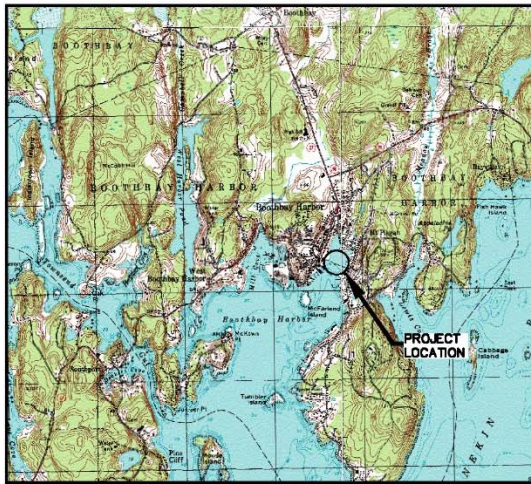
3. Design Development/Value Engineering

- Typical Section
- Design Loading
- Bridge Alignment
- Structure Type
- Bridge Railing & Lighting
- Construction Phasing

Design Development

FOOTBRIDGE RECONSTRUCTION

BOOTHBAY HARBOR MAINE
PROJECT NO. 16-60

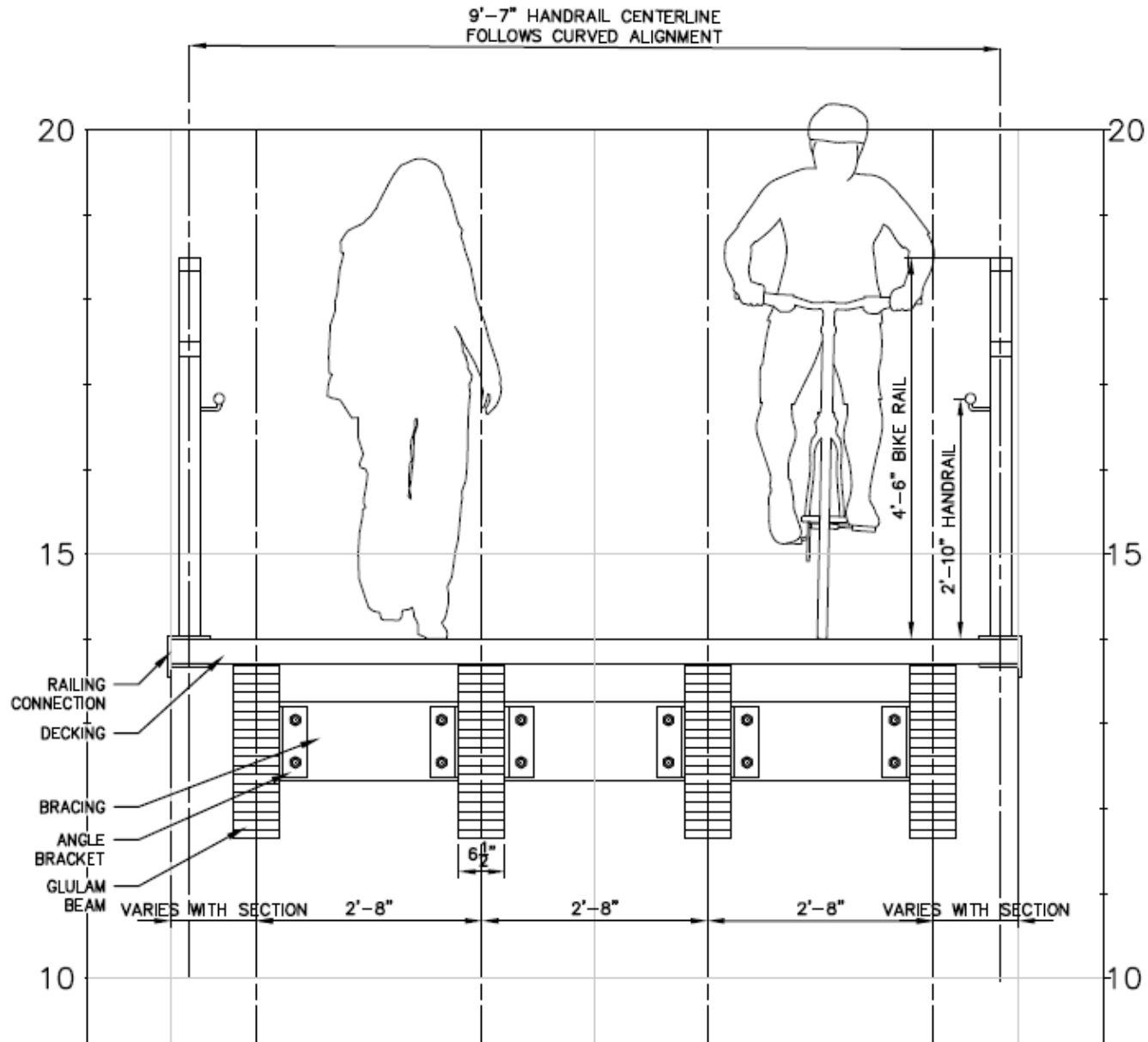


USGS LOCATION MAP

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
C-1	COVERSHEET
C-2	NOTES & SCHEDULES
C-3	PROJECT LAYOUT GEOMETRY
C-4	BID ITEM SUMMARY SHEET
C-5	CONSTRUCTION PHASING PLAN
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Typical Section



Design Loading



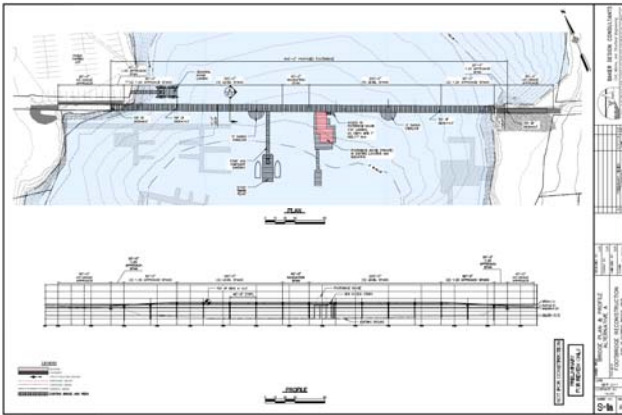
C3.1-1—Live Load of 50 psf



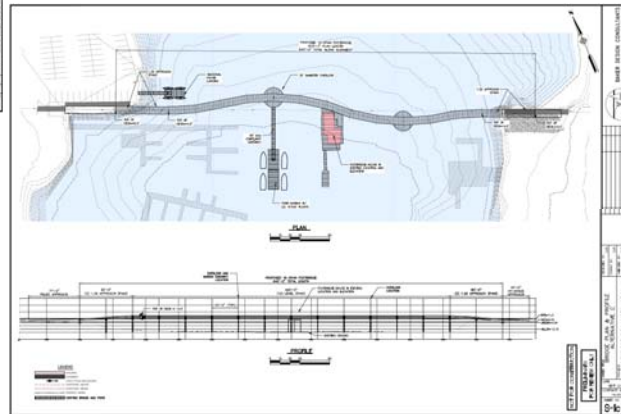
C3.1-3—Live Load of 150 psf

Bridge Alignment

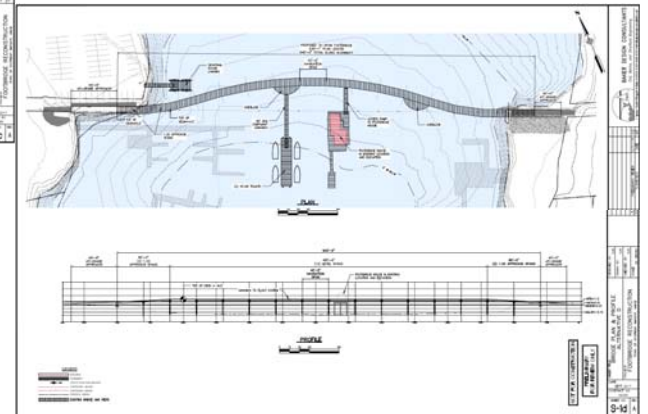
Concept Option 1



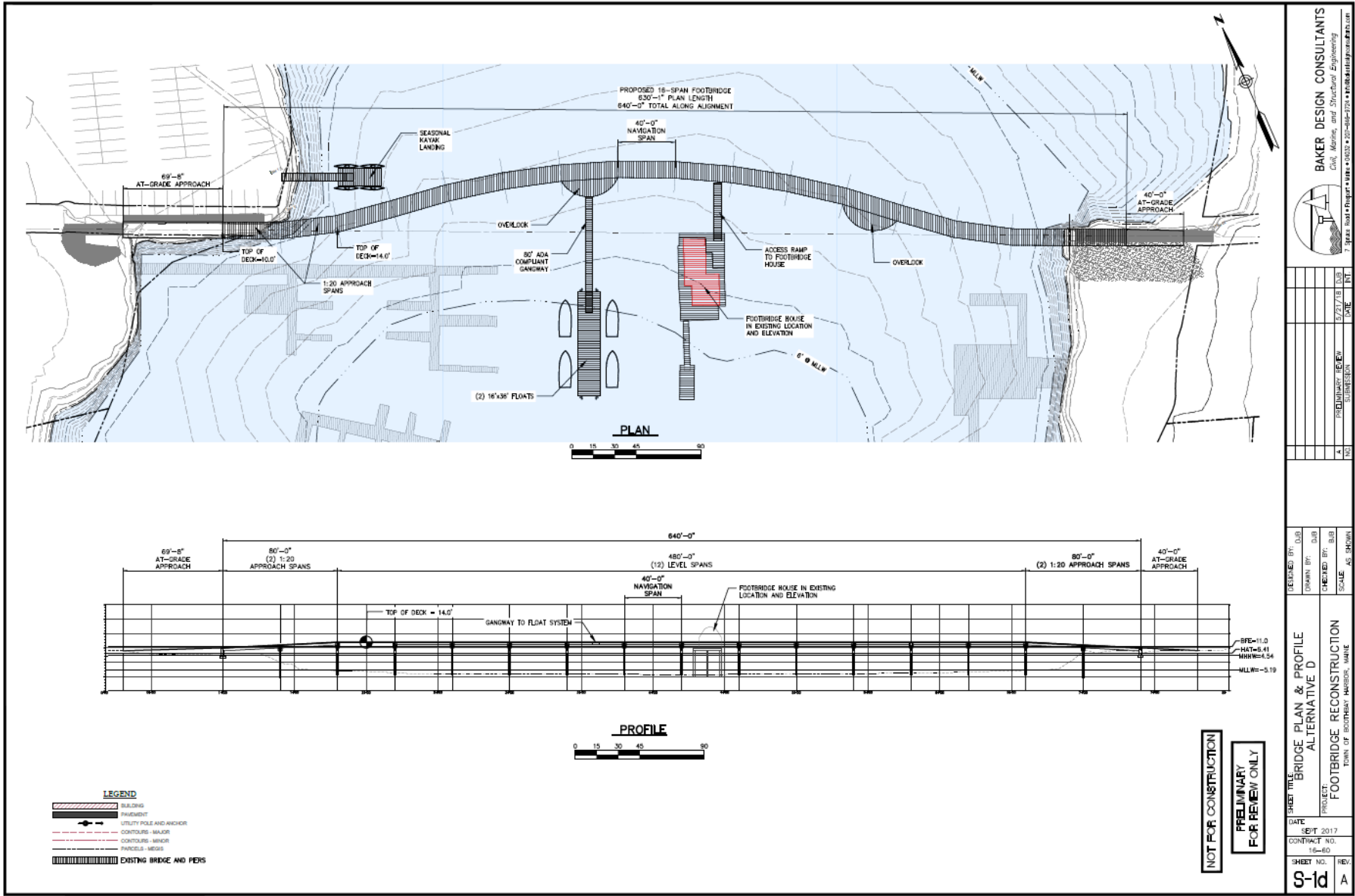
Concept Option 2



Concept Option 3



Preferred Concept

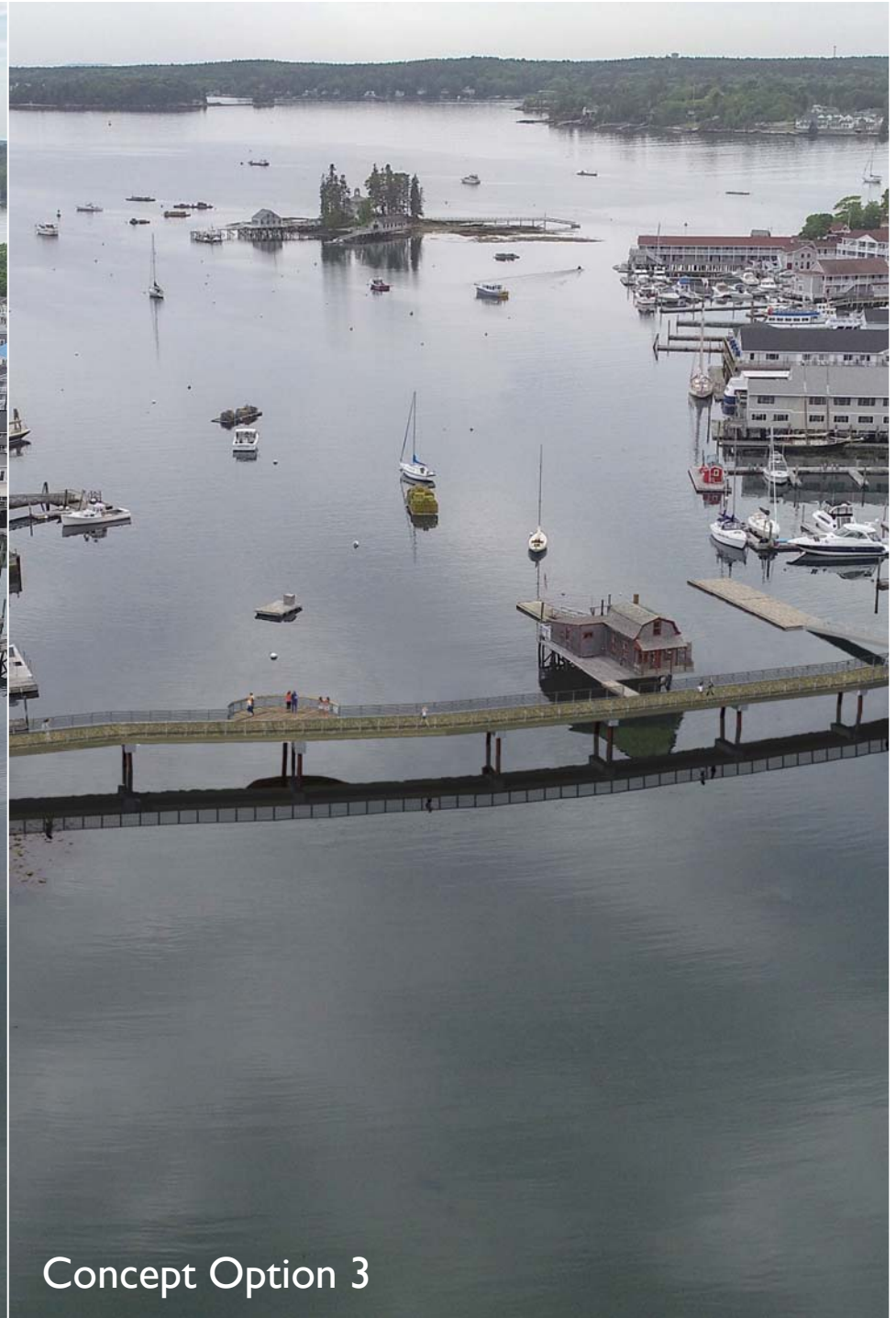






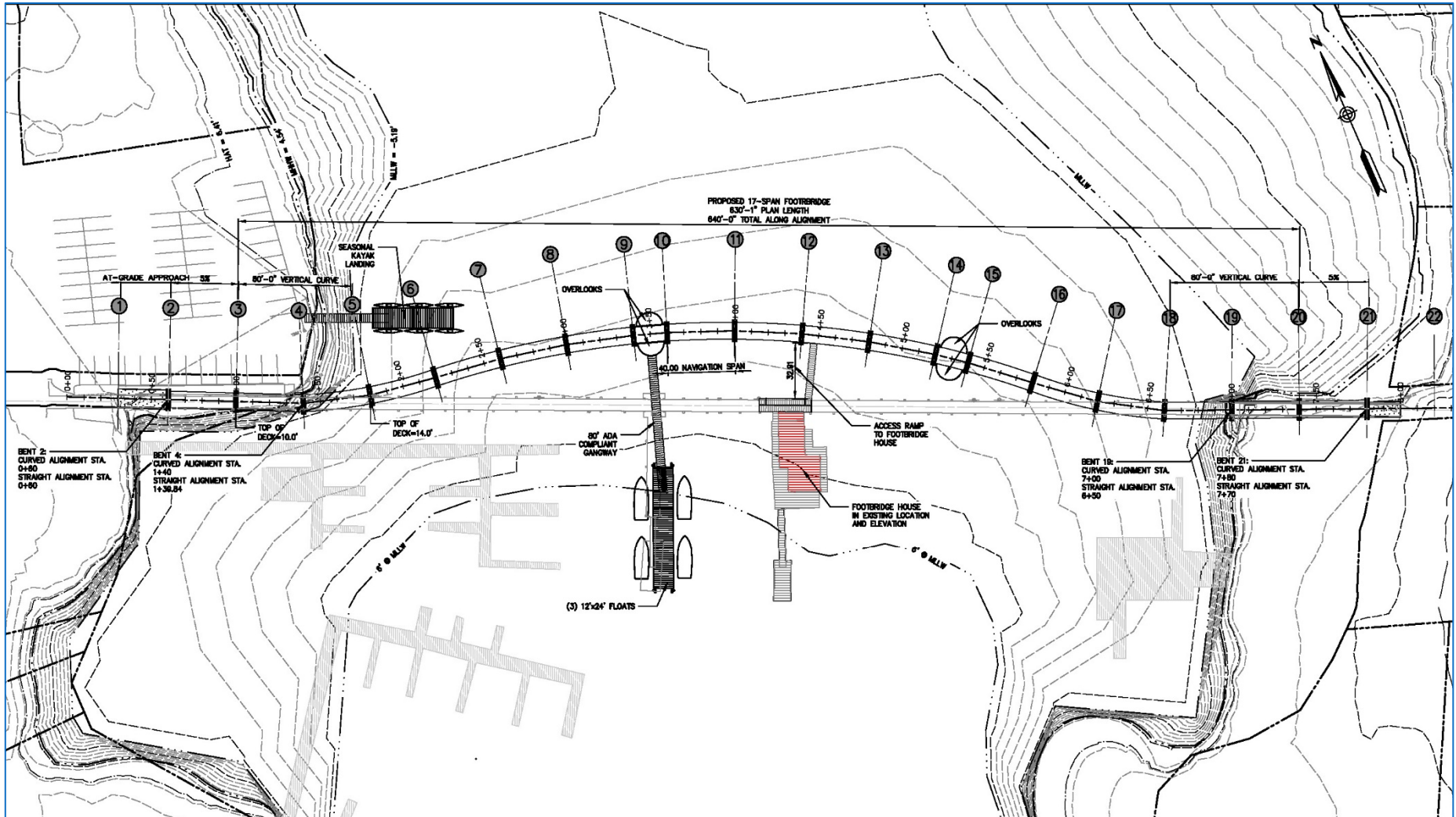


Existing

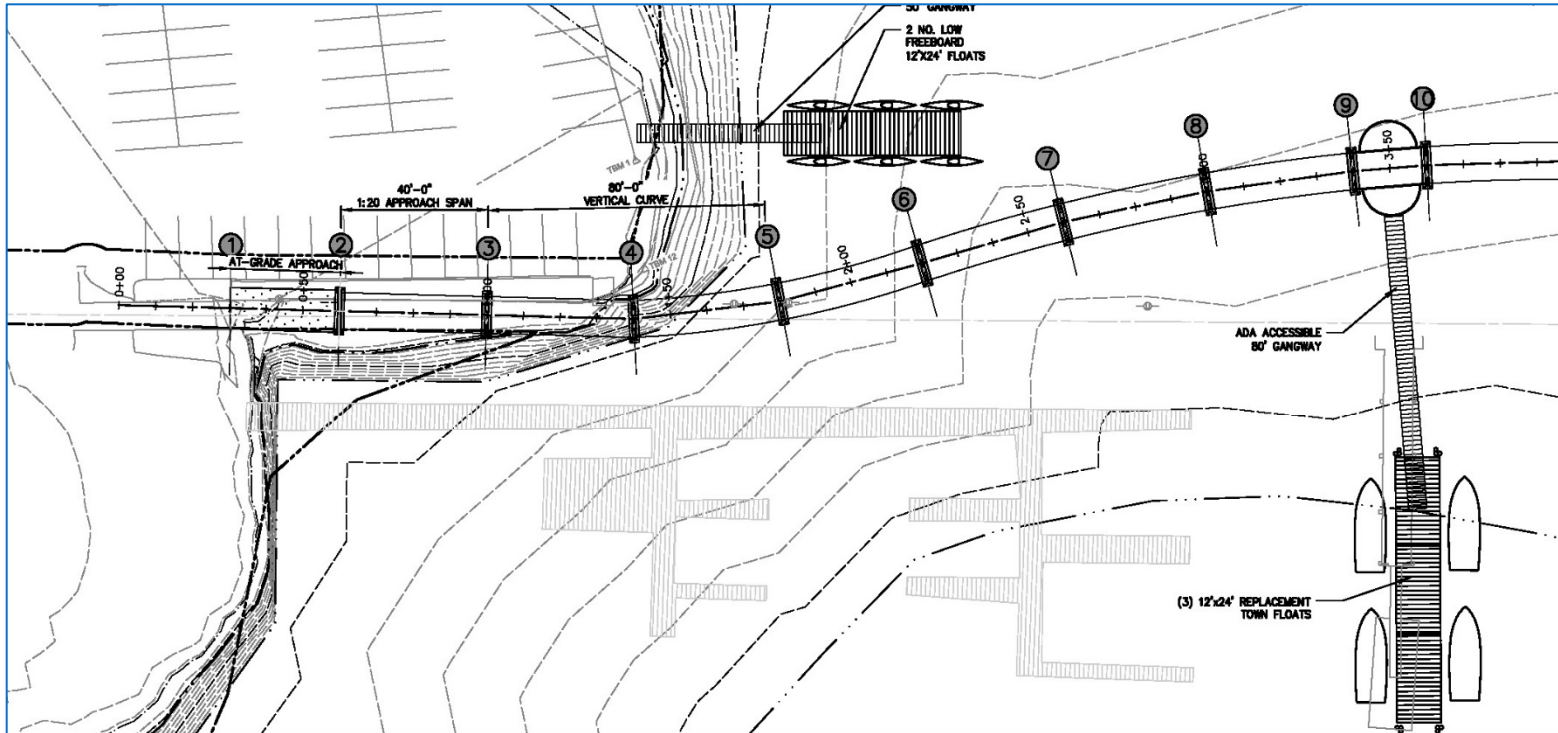


Concept Option 3

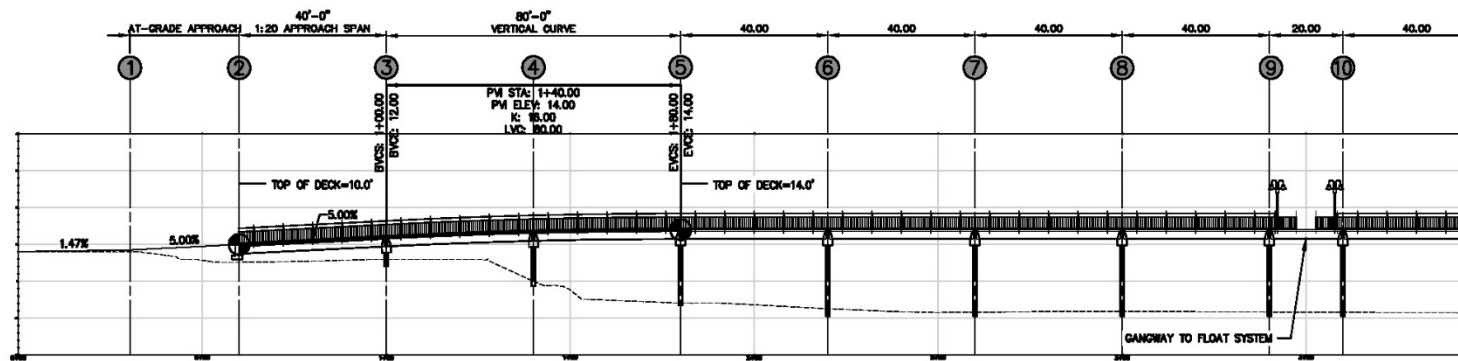
Recommended Alignment



West Approach

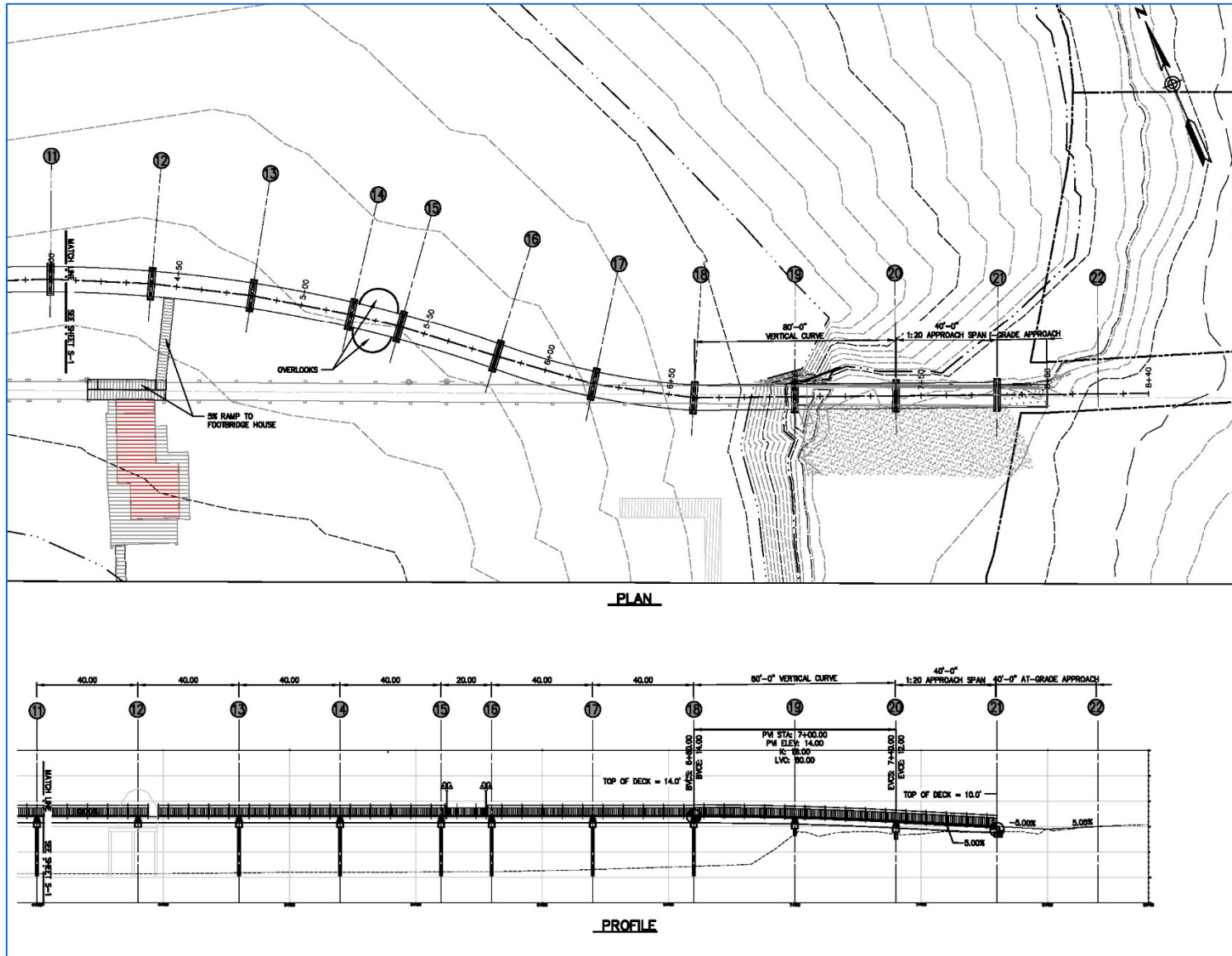


PLAN

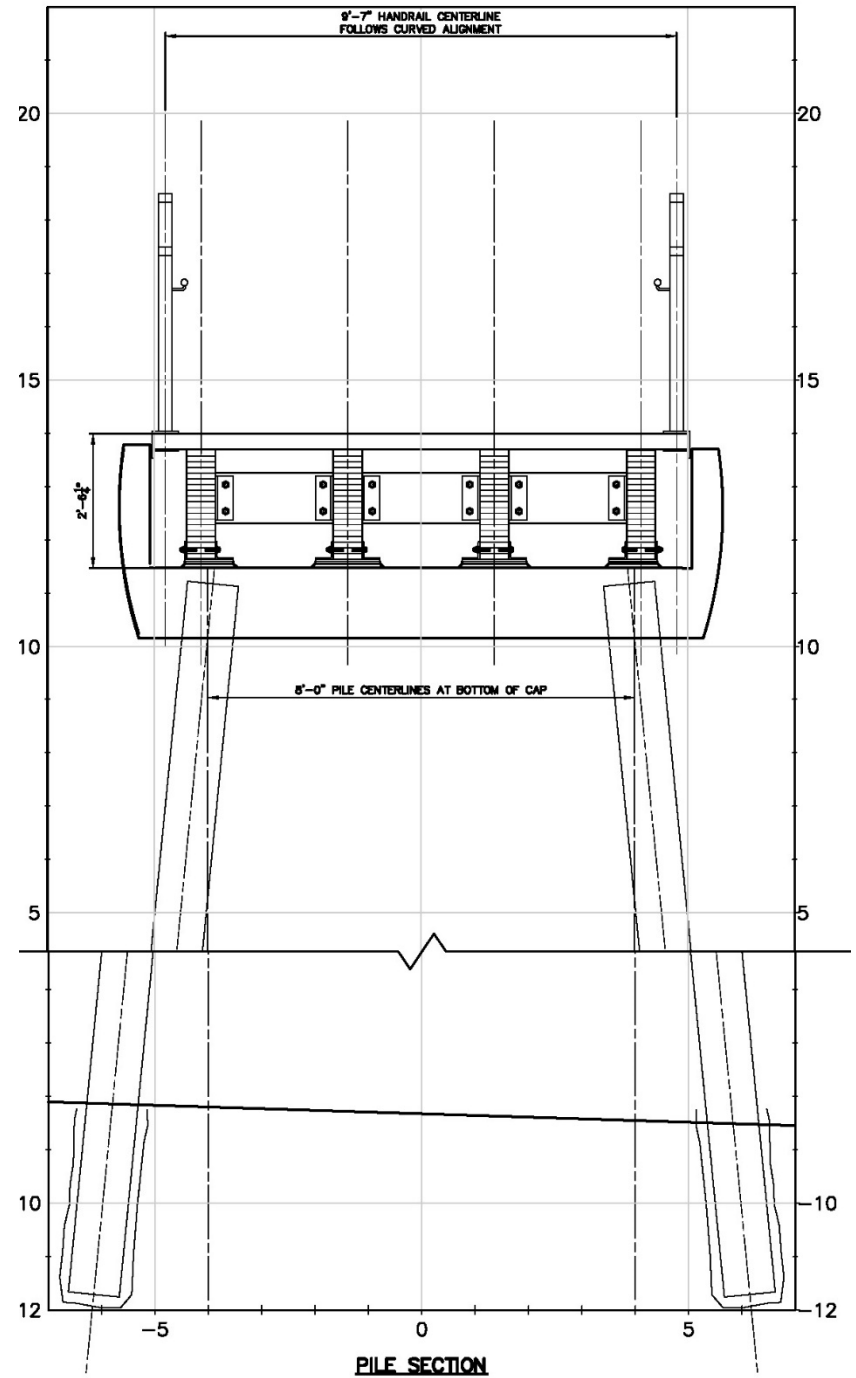


PROFILE

East Approach



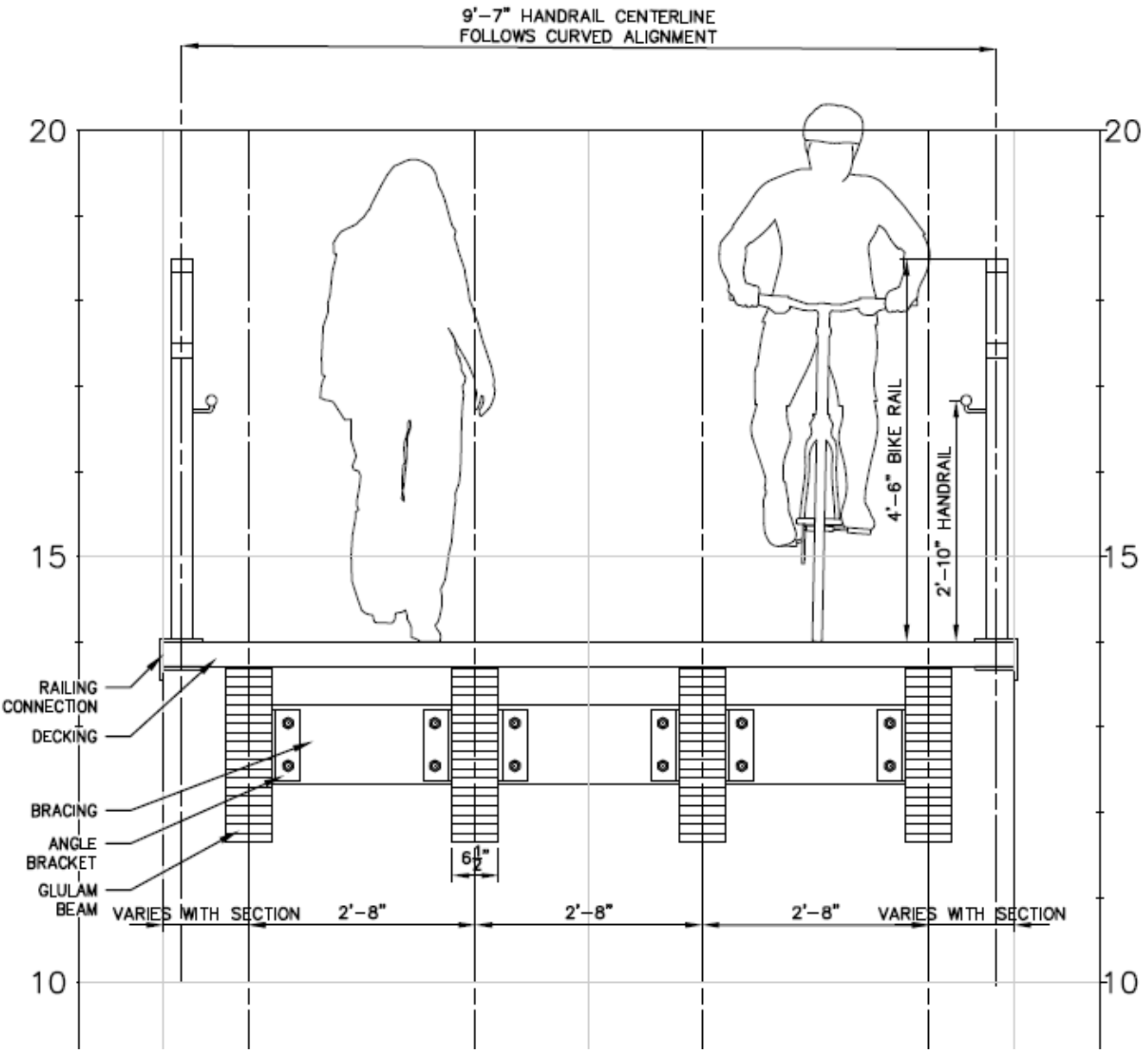
Structure Type



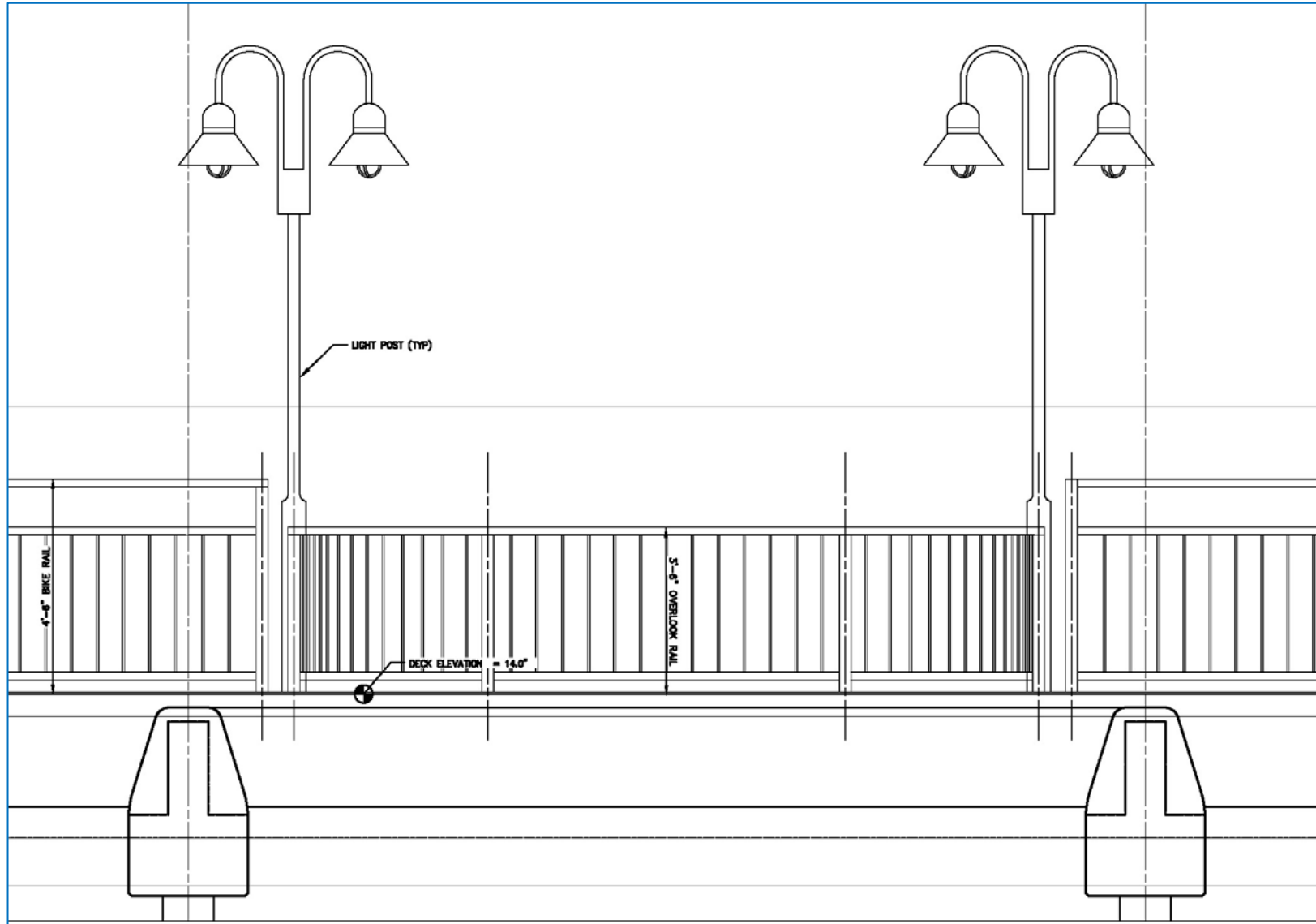
Bridge Railing-Existing



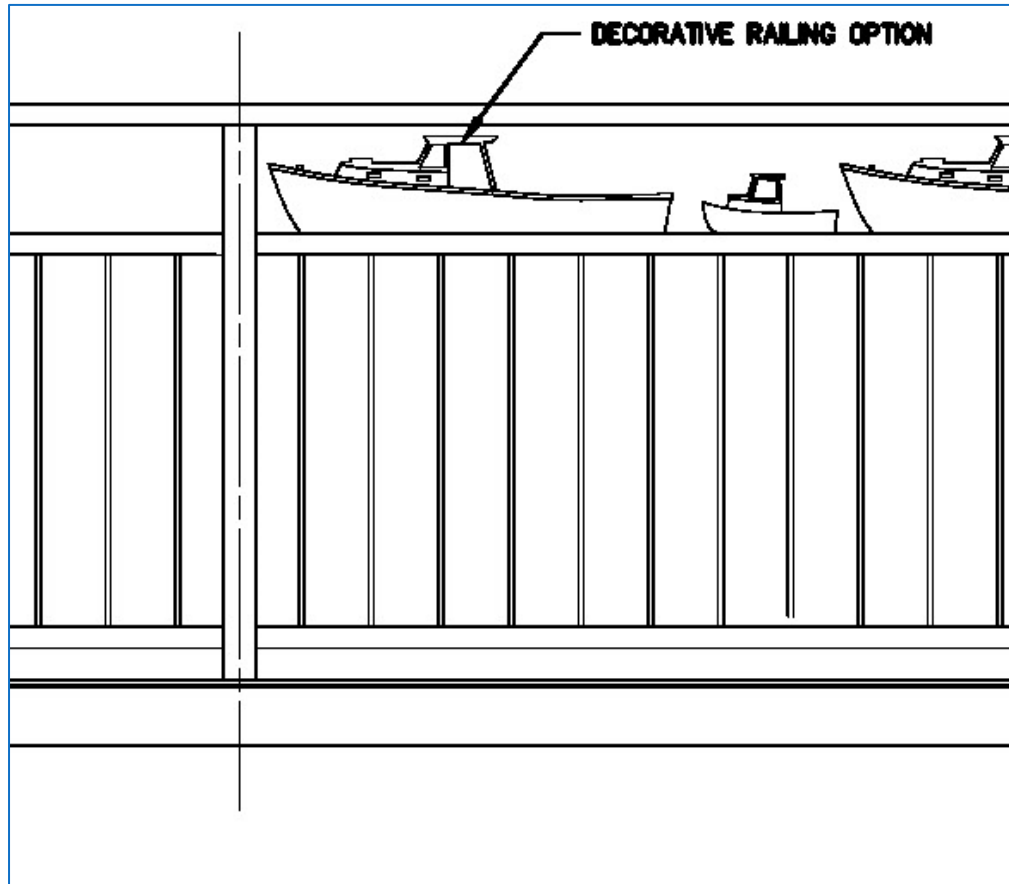
Bridge Railing- Proposed



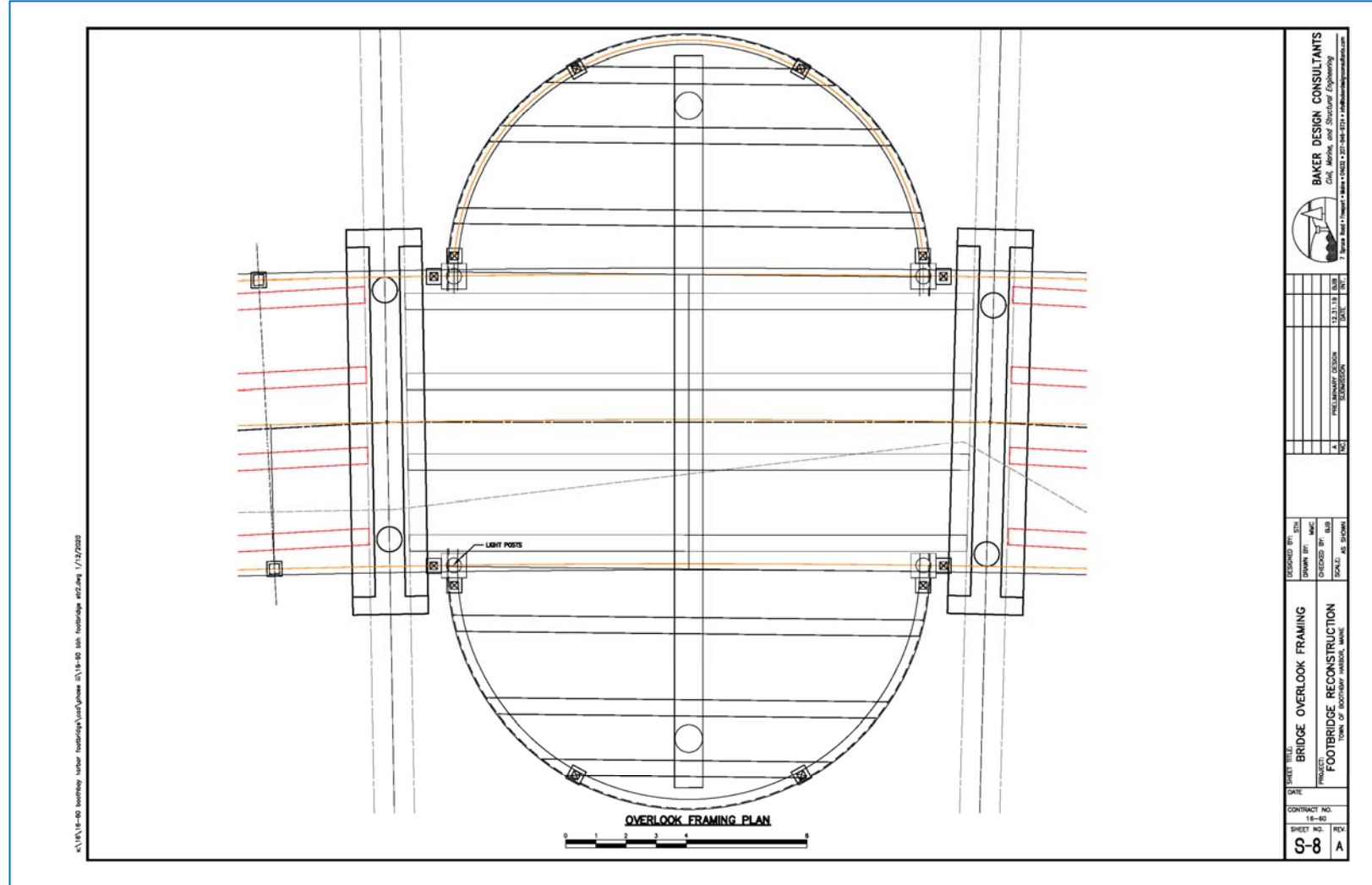
Bridge Railing and Lighting



Railing Finistration



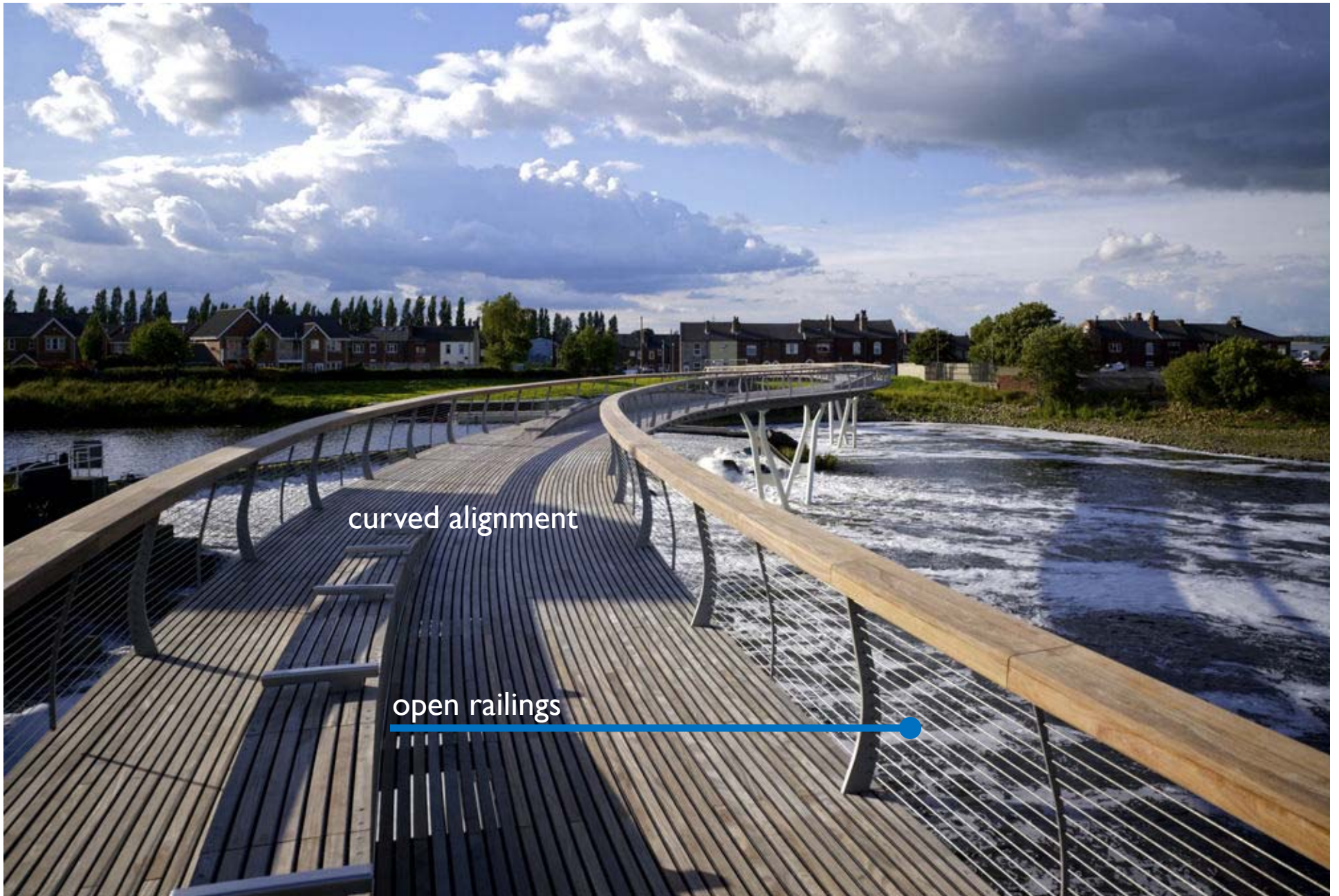
Bridge Overlook



Railing & Lighting Options



Cable Railing Option



5. Project Cost Curved Bridge Glulam Beams Option

Preliminary PS&E					1/13/2020
Bid Item	Description	Quantity	Unit	Unit Cost	Total Cost
BASE BID					
1	Mobilization & Demobilization	1	LS	\$ 78,750	\$ 78,750
2	Demolition & Disposal of Existing Pier	1	LS	\$ 126,000	\$ 126,000
3	Bridge Abutment & Wingwalls	1	LS	\$ 19,975	\$ 19,975
4	Bridge Piles	40	EA	\$ 12,584	\$ 503,372
5	Bridge Pile Caps	18	CY	\$ 6,214	\$ 111,861
6	Bridge Superstructure	1	LS	\$ 871,656	\$ 871,656
7	Bridge Rail	1452	LF	\$ 158	\$ 228,690
8	Footbridge House Access	1	LS	\$ 21,973	\$ 21,973
9	Approach	1	LS	\$ 14,915	\$ 14,915
10	Utilities	1	LS	\$ 143,821	\$ 143,821
Total Base Bid Items					\$ 2,121,012
ALTERNATE BID ITEMS					
A1	Add Overlooks	2	EA	\$ 70,628.05	\$ 141,256
A2	Main Float and ADA Gangway	1	LS	\$ 119,264.62	\$ 119,265
A3	Kayak Float System	1	LS	\$ 63,046.72	\$ 63,047
Total Alternate Bid Items					\$ 323,567
Total Base Bid + Alternate Bid Items					\$ 2,444,580
			10% Contingency		\$ 244,458
Construction Total					\$ 2,689,038
Construction Engineering					\$ 147,791
Project Budget					\$ 2,836,828

6. Timeline and Next Steps

- Jan 2020 -Get approval for Recommended Option
- Feb 2020 –Submit Environmental Permits
- May 2020 -Obtain Town Meeting Funding Approval
- June 2020 -Obtain Funding approval from Maine DOT construction in 2020.
- Nov 2020 -Complete Permitting and Final Design
- 2021 -Construct Replacement Bridge

Preferred Design Alignment

- Key Items Considered
 - Navigation span requirements
 - Bridge aesthetics and material preferences
 - Overlook and Town Dock design
 - Proximity to Footbridge House
 - Harbor Views
 - Constructability

Footbridge Replacement Endorsement of Preferred Alignment

Town of Boothbay Harbor, Maine

Board of Selectmen Meeting
January 13, 2020



Questions, contact:

Barney Baker, PE

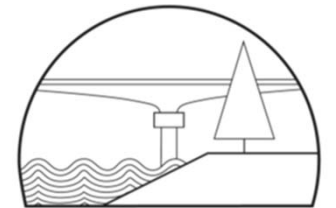
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