



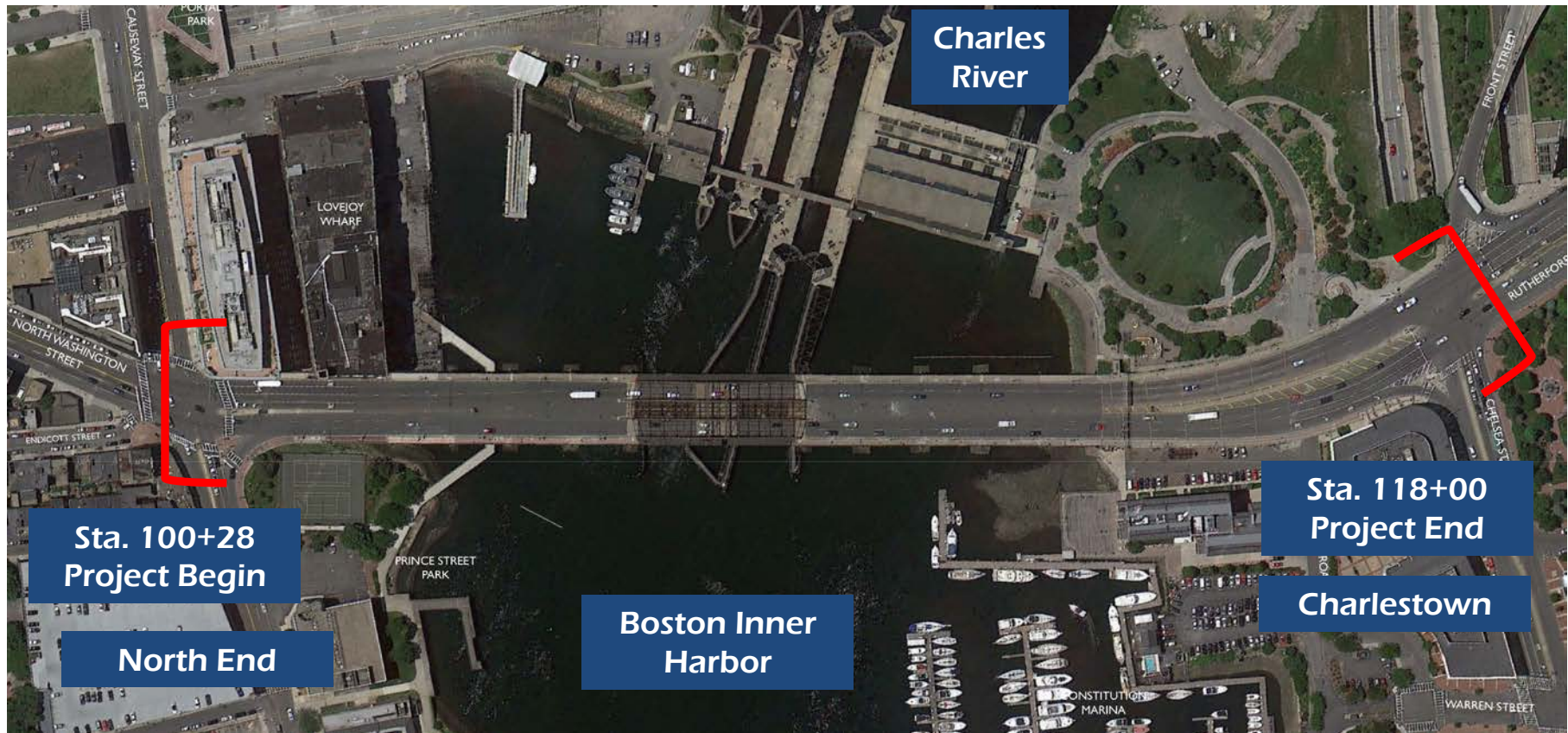
Bridge Replacement Br. No. B-16-016
North Washington Street over the Boston Inner Harbor
Boston | Project File No. 604173



Overview

- 118 year old City of Boston owned and operated bridge has been structurally deficient since 2002
 - Center truss closed since 2003 due to severe deterioration
 - \$1-2 million in annual repair costs
- Replacement is part of the State Transportation Improvement Plan (STIP) of the Boston MPO
 - \$205 million total estimated project costs
 - New bridge will include dedicated walking, biking, & transit facilities.
- \$205 million cost requires MassDOT board vote

Project Area

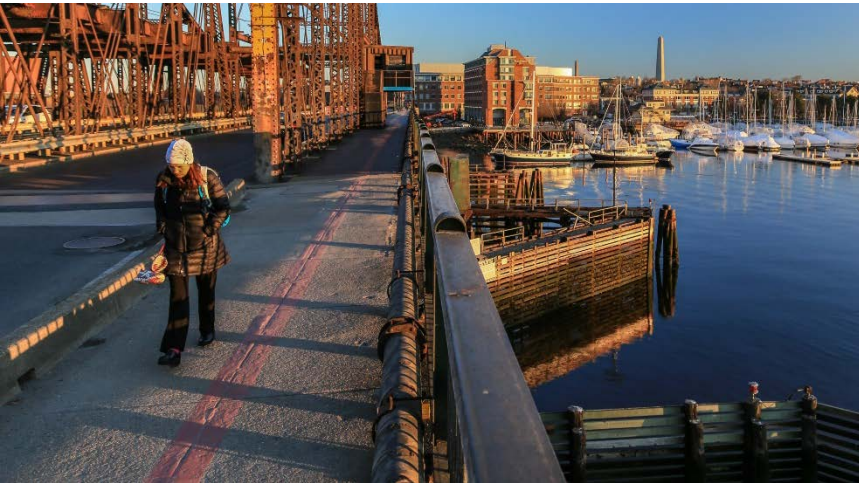
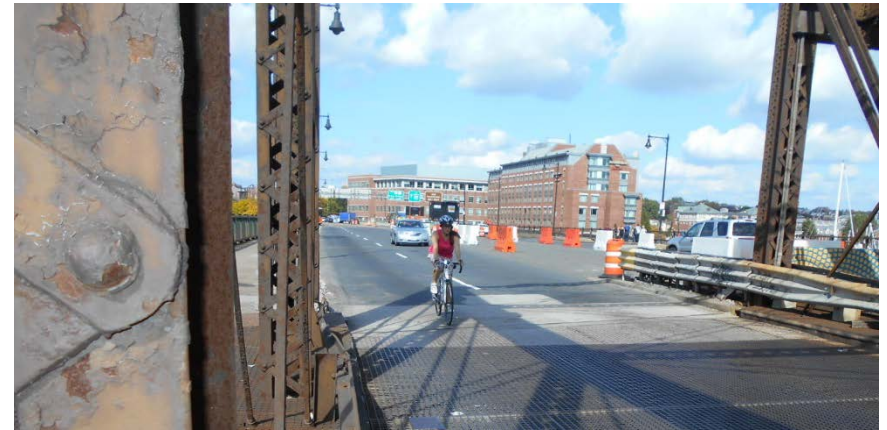


Keany Square to City Square
Project Length = 1772 ft.

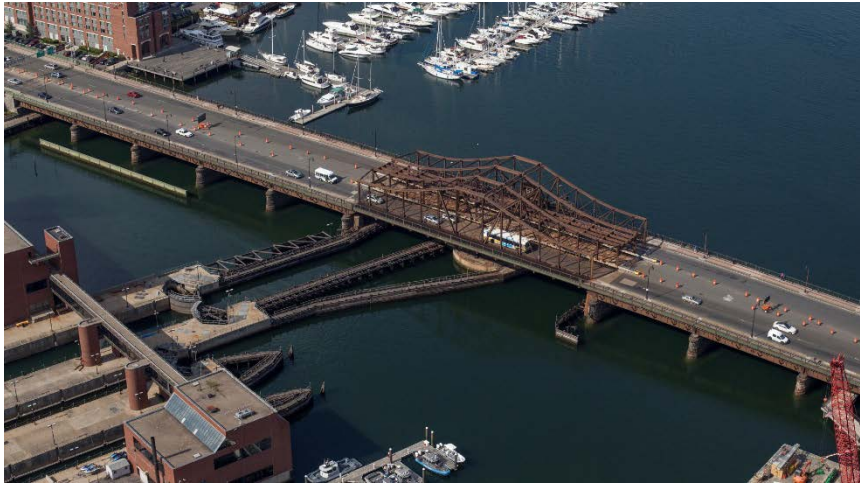
Existing Conditions

- 118 Year Old City of Boston Bridge is in Poor Condition
- Structurally Deficient Since 2002
- Center Truss Bay Closed Since 2003 Due to Deterioration
- \$1m-\$2m Annual Repairs
- 44,000 ADT (2016)
- Boston's Freedom Trail on East Sidewalk
- Identified as area of Significant Transit Delays (Intercity and Local MBTA Bus, Shuttle and Tour Bus Routes)
- No Bike Accommodations
- Major Utility Corridor
- Hazardous Cargo Route
- Flooding of Lovejoy Walkway
- Replacement of National Register-eligible Structure-SHPO recommended Gateway Bridge with Architectural Design Elements, Overlooks and Lighting
- Expanding Business and Residential Community

Existing Conditions (cont.)



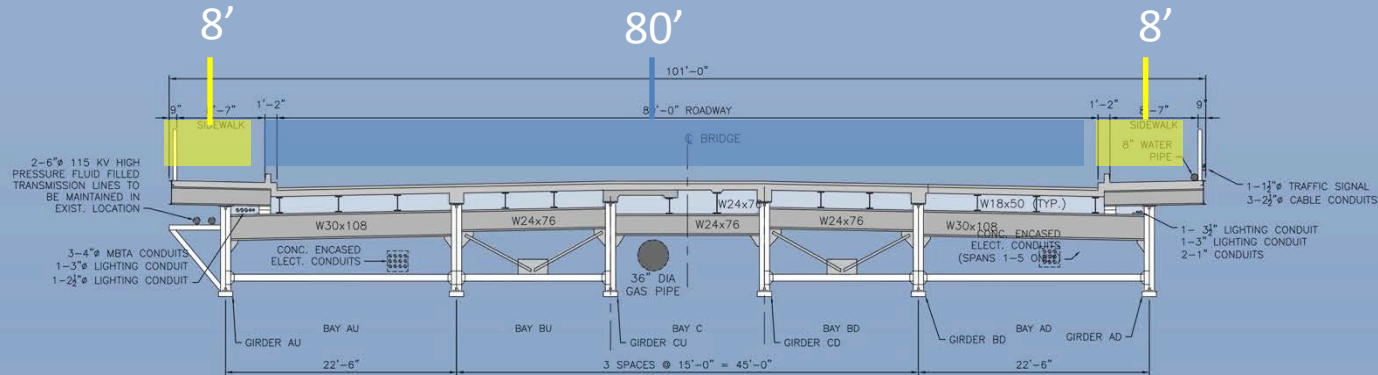
Existing Conditions (cont.)



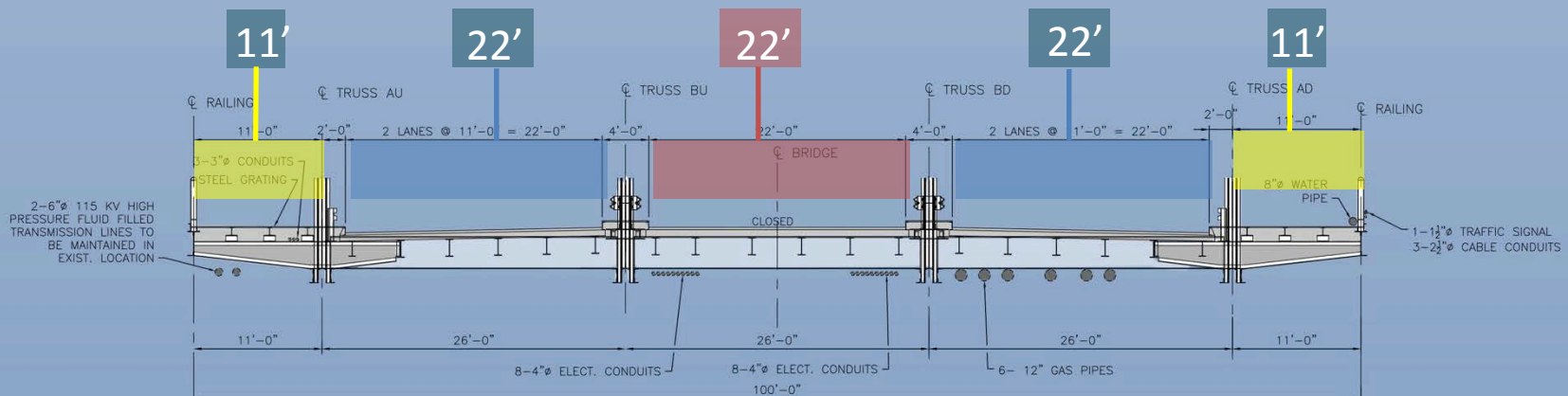
Project Goals

- Replace Structurally Deficient Bridge
- Provide Multi-Modal Bridge as Complete Street over Water (Widen Sidewalks, Separated Bike Lanes, Bus Rapid Transit Lane)
- Improve Deficient Bike and Pedestrian Accommodations
- Improve Intersection Safety and Functionality
- Reduce Flooding to Lovejoy Walkway
- Improve Navigation Channel
- Provide Gateway Bridge with Accommodations to Encourage Use by People of All Ages and Interests
- Maintain Traffic, Navigation, Residential and Economical Needs during Construction

Existing Conditions (cont.)

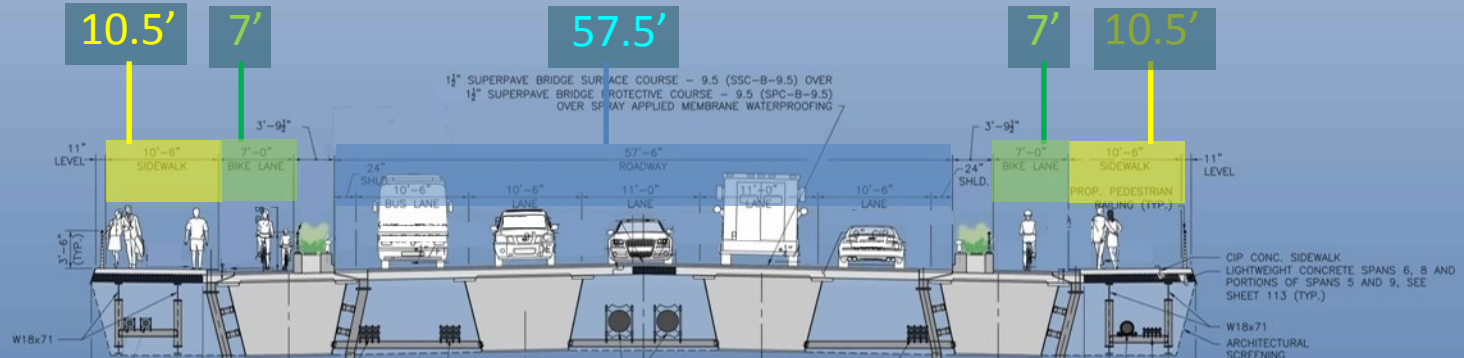


Cross Section - Approach Spans - Looking North

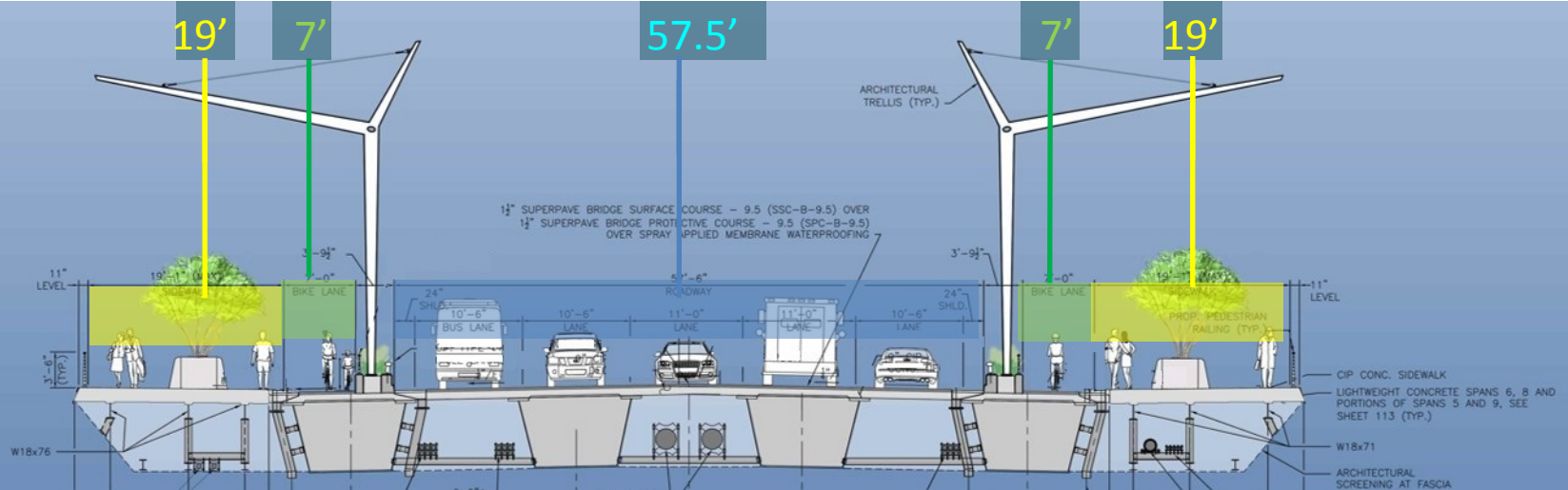


Cross Section - Main Span - Looking North

Proposed Conditions



Cross Section - Approach Spans – Looking North



Cross Section – Main Span – Looking North

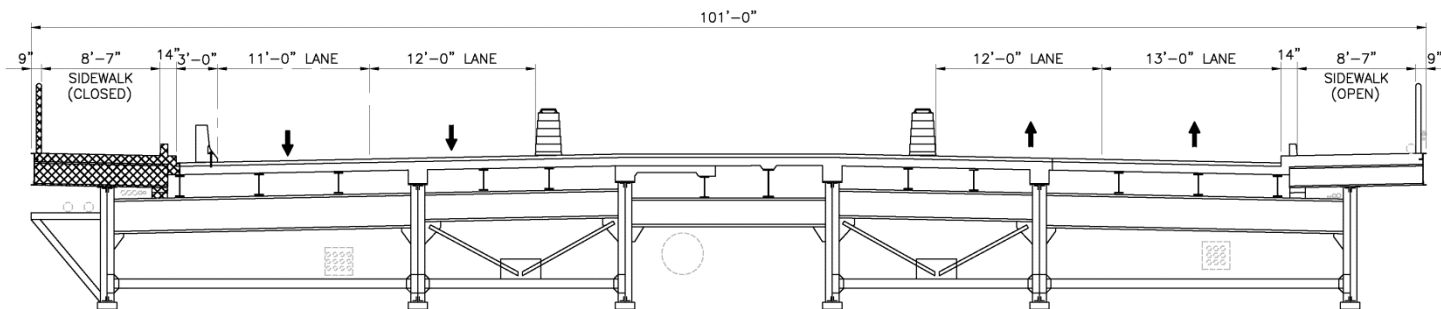
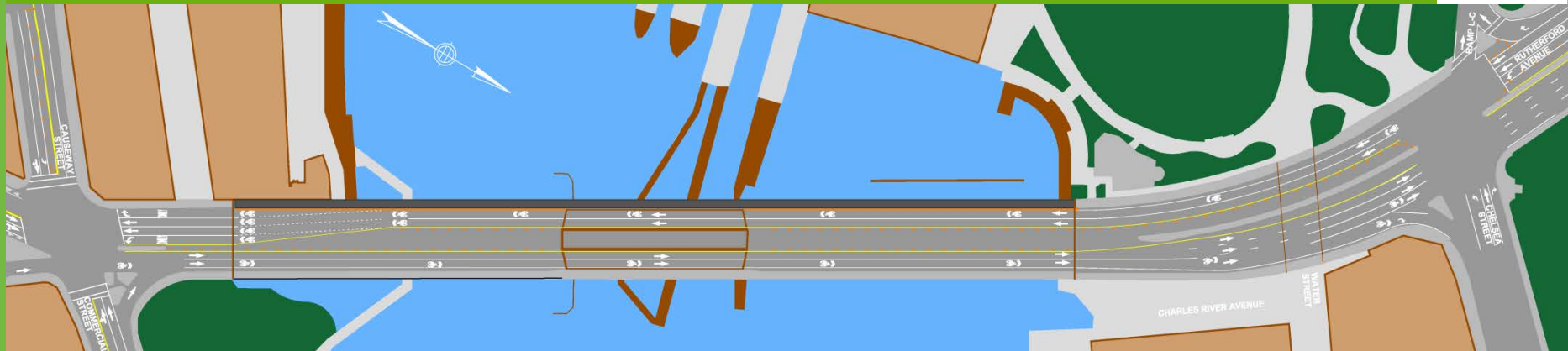
Proposed Conditions (cont.)



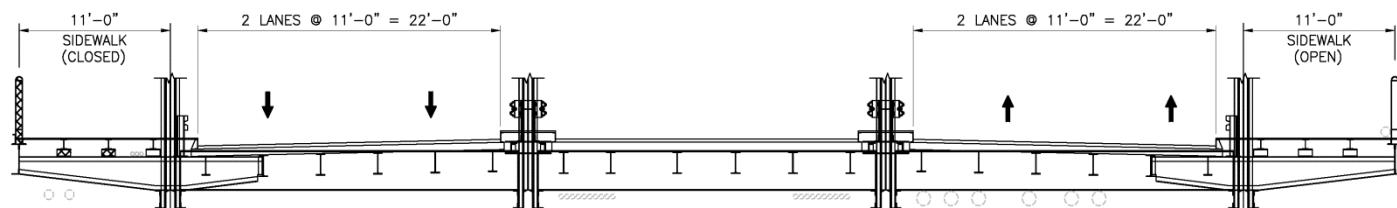
Proposed Conditions (cont.)



Suggested Construction Staging



Existing Cross-Section - Approach Span – Looking North



Existing Cross-Section - Main Truss Span – Looking North

Suggested Construction Staging

Total Project Duration = 5.25 years.

Project will provide for 2 inbound lanes + 1 outbound lane at all times, except for 1 month (Stage 1B).

Project will provide for a minimum of 1 sidewalk + 1 shared use bike lane at all times.

- **Stage 1 A (15 months)**

- Establish Construction Communication and Public Outreach Plan
- Establish Traffic Management Plan
- 2 Travel Lanes Inbound -1 outbound
- 1 Sidewalk and 1 Shared Bike Lane
- Demolish Existing Westerly Sidewalk
- Construct Temporary Utility /Pedestrian Bridge
- Relocate Existing Utilities
- **Stage 1B (1 month)**
- 1 Travel Lane Inbound- 1 outbound
- 1 Sidewalk and 1 Shared Bike Lane
- Demolish Existing Main Truss Span and Replace with 3 Lane Temporary Vehicular Bridge

- **Stage 2 (18 months)**

- 2 travel lanes inbound-1 outbound
- 2 sidewalks and Shared Use Bike Lane
- Demolish and reconstruct westerly half of existing bridge-3 travel lanes

- **Stage 3 (18 months)**

- 2 travel lanes inbound-1 outbound
- 1 sidewalk and Shared Use Bike Lane
- Demolish and reconstruct easterly half of existing bridge

- **Stage 4 (8 months)**

- 2 travel lanes inbound-2 outbound
- 1 sidewalk and 2 shared use bike lanes
- Demolish Temporary Utility Bridge and Reconstruct Permanent westerly sidewalk
- Place utilities in permanent location
- Establish final lane marking configuration

Cost Overview

- When the project was first put into the TIP, the estimated cost for construction was \$116M (25% design)
- Costs have risen substantially although efforts have been made at cost control
 - June 2015 value engineering study
 - November 2016 risk assessment
- City of Boston is contributing \$14.9M
 - Funds will be used for the early completion incentive and non participating items
 - Under 110% agreement, the City of Boston assumes all costs above 10% of total project cost.

Project Cost History

		<u>Office</u>	<u>Total</u>	
<u>Date</u>	<u>Submission</u>	<u>Estimate</u>	<u>Const. Cost</u>	<u>Remarks</u>
Jan 2015	25%	\$116.0	\$135.4	Initial estimate.
Jun 2015	VE/BUE	\$130.0	\$151.3	Increases to many items, particularly demoltion & steel costs (+\$24.0). Decrease to V-pier costs (- \$10.0)
Aug 2016	75%	\$131.4	\$159.4	Incr. to costs for cofferdams, fender system & steel repair item. City contribution increased to \$5.8M for arch. treatements
Fall 2016	post-75%	\$124.5	\$151.0	Design revisions reduced previous estimates for cofferdams & fender system
Apr 2017	100%	\$143.5	\$173.8	Incr. due to premium for accelerated construction to reduce construction duration
Fall 2017	PSE	\$162.0	\$195.1	Incr. to several major items based on ICE, plus escalation

Project Costs

2018 - 2022 CIP	\$150,901,768.00
Office Estimate (advertised)	\$162,050,319.75
Low Bid (J. F. White)	\$176,777,388.50
Contingencies (10%)	\$16,187,956.25
Constr. Engr'g (5%)	\$8,093,978.15
Traffic Police	\$4,200,000.00
Trainees	\$15,000.00
Telephone	\$5,600.00
TOTAL CONST. COST	\$205,279,922.90
Non-Participating (City) Cost	\$14,897,826.00
State/Federal Cost	\$190,382,097.00

Bid/Estimate Comparison

Engineering/Contractor	Estimate/Bid	Difference from Estimate (%)
Office Estimate	\$162,050,320	-
J F White Contracting Co.	\$176,777,389	9.1%
Skanska Barletta JV	\$186,982,010	14.1%
The Middlesex Corp.	\$194,562,571	17.4%
Walsh/SPS JV II	\$197,885,942	18.4%
Average Bid	\$189,051,978	13.6%

Construction Duration

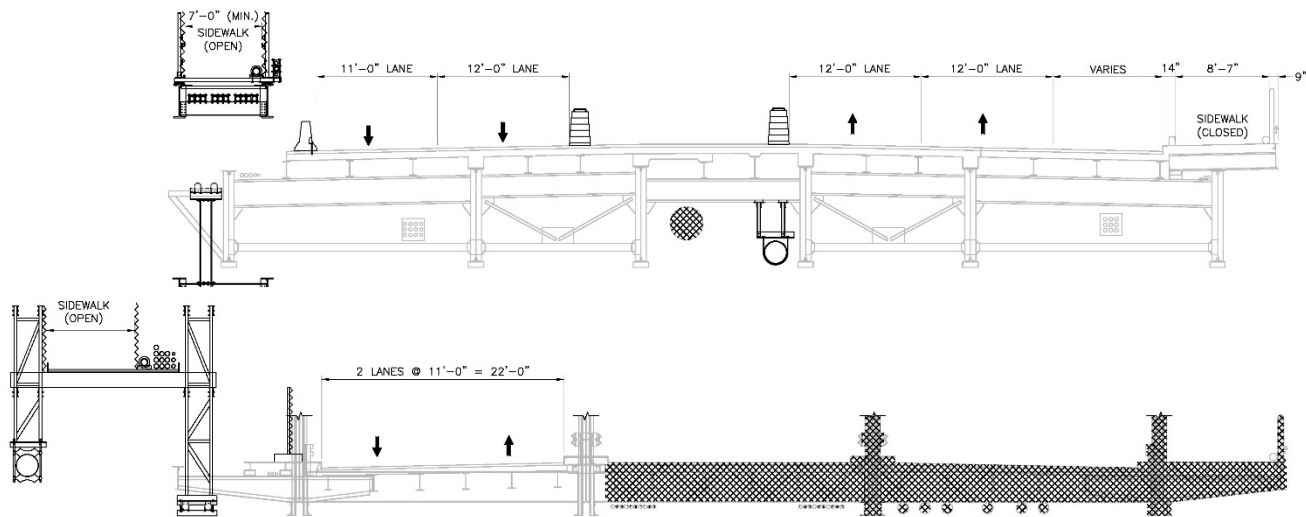
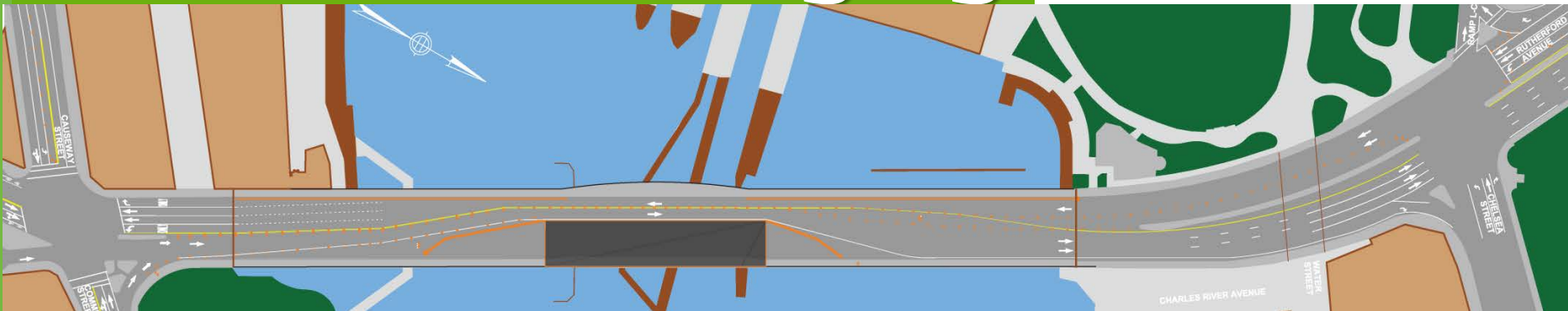
Baseline Construction Duration	
Estimated NTP	May 2018
Construction Duration	1917 Days (5.25 Years)
Milestone MS #01 Contractor Field Completion	August 2023

No Excuse Incentive/Disincentive	
MS #02 Substantial Completion 1827 Days from NTP	\$7,200,000 (MS#2- 180 days) (Nov. 2022)
Disincentive Deduction No Limit	-\$40,000/Day
MS #03 Full Beneficial Use	February 2023



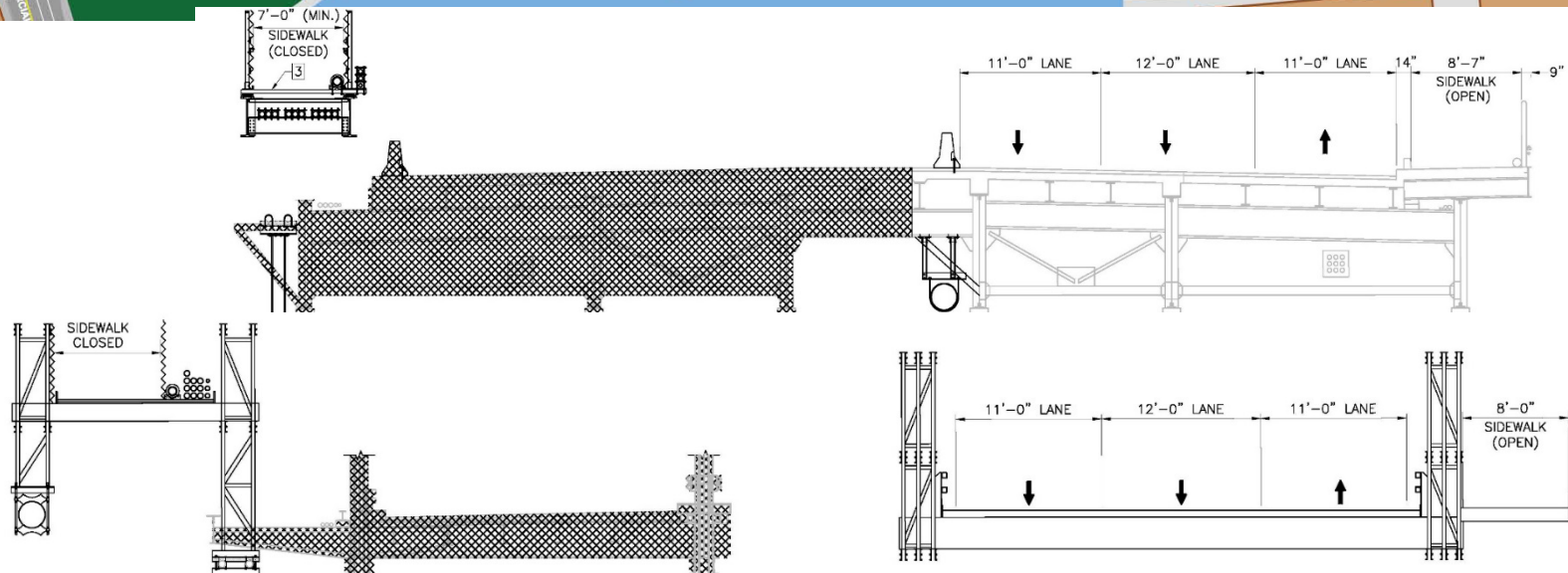
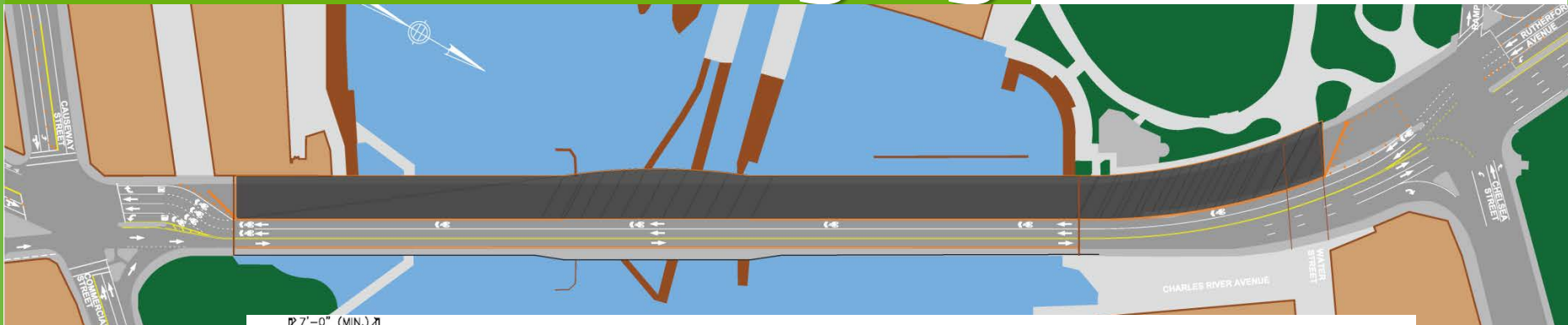
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Construction Staging



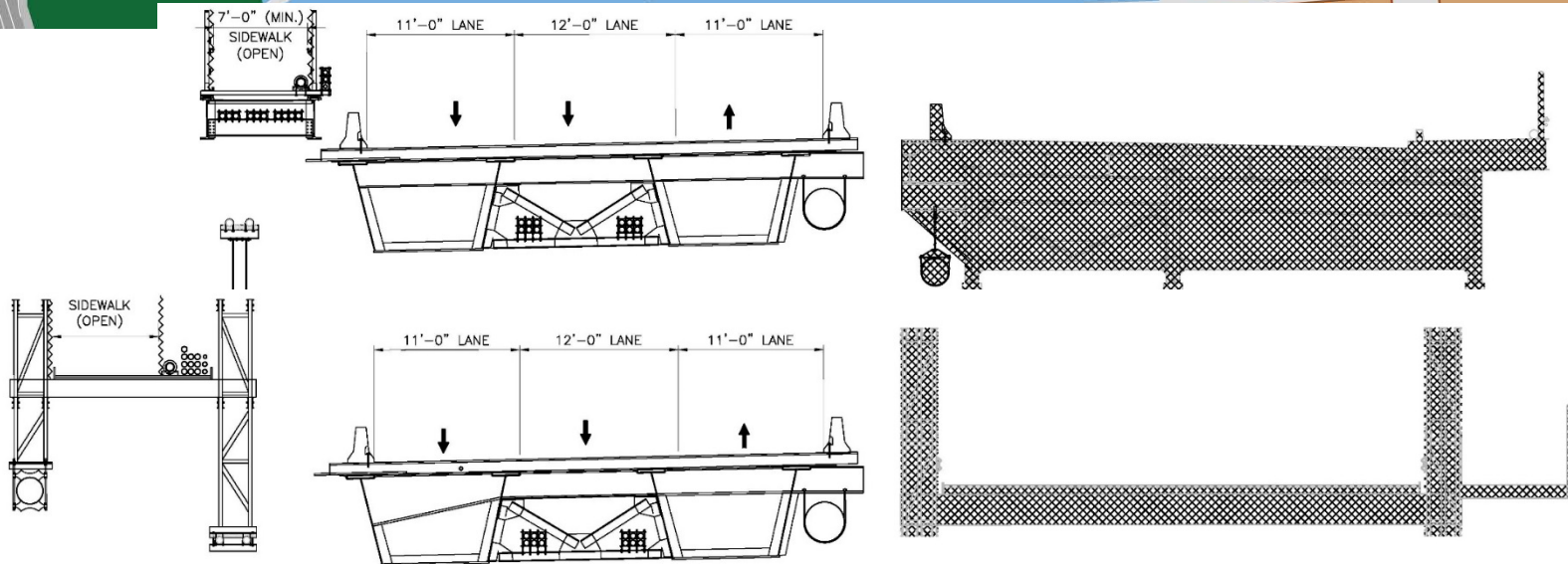
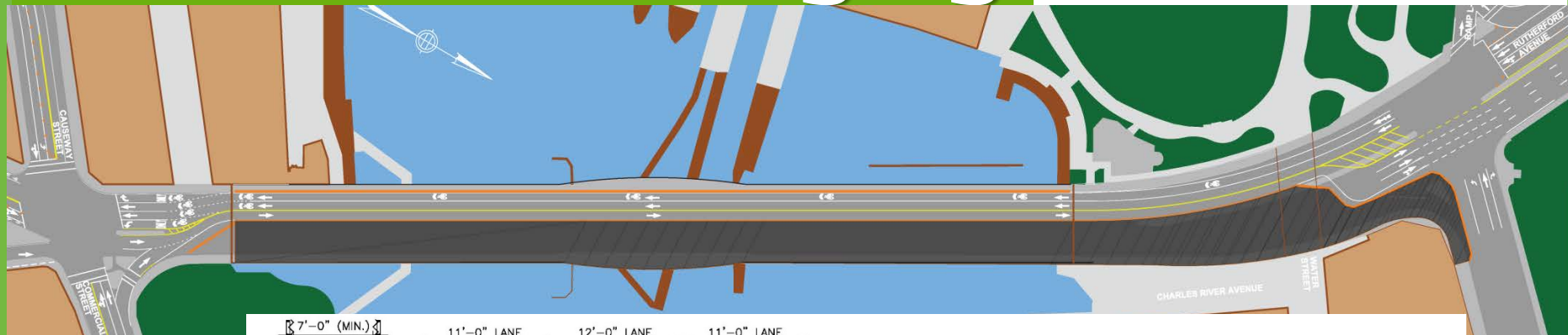
Stage 1B – Dismantle Truss and Install Temporary Bridge – 3 Weeks

Construction Staging



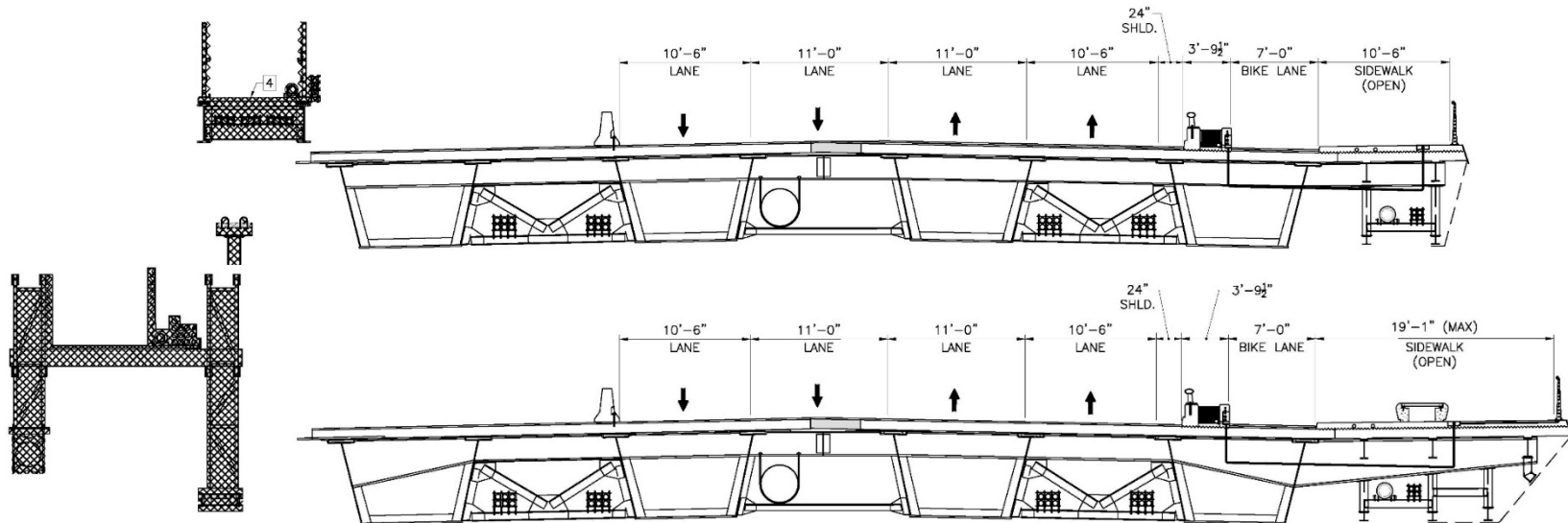
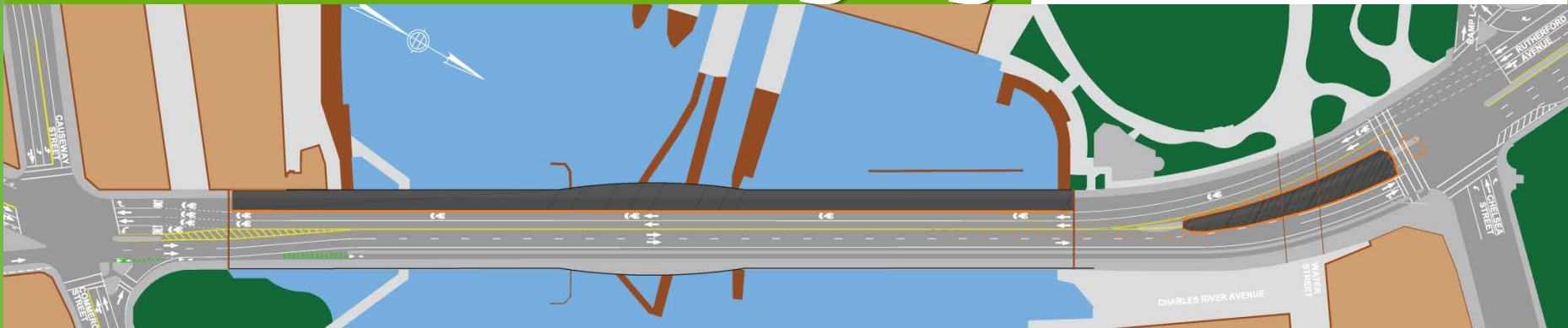
Stage 2 – Construct West Half – 18 Months

Construction Staging



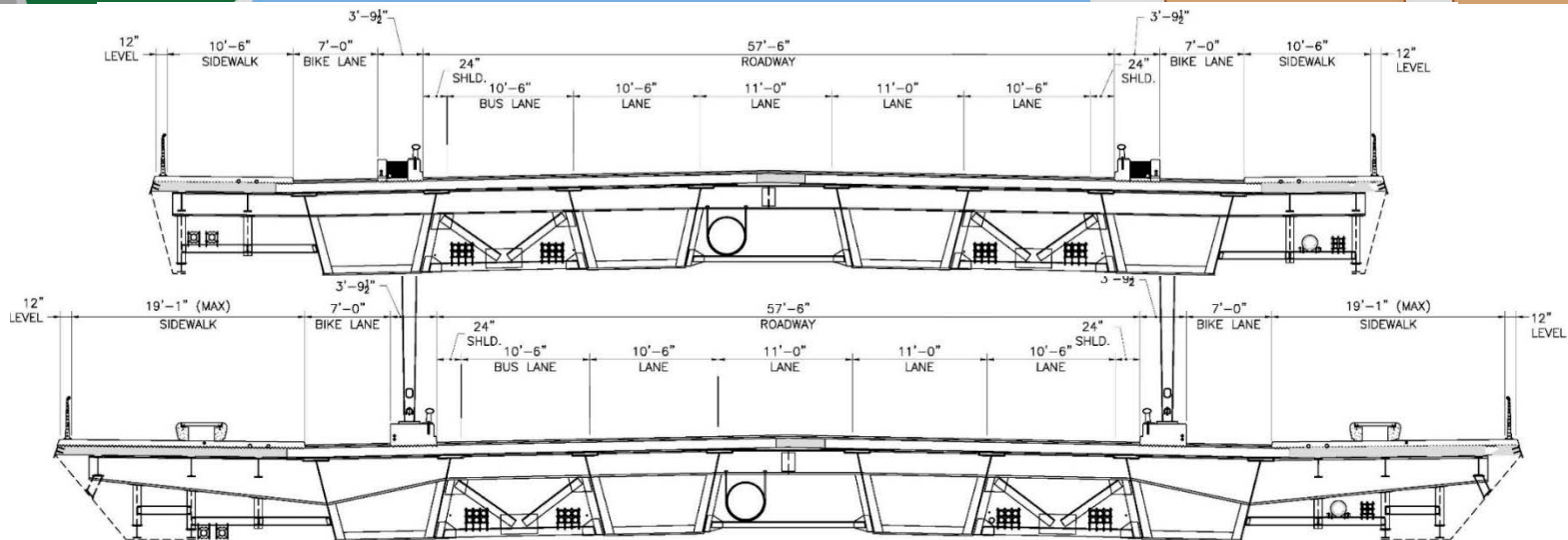
Stage 3 – Construct East Half – 18 Months

Construction Staging



Stage 4A – Remove Utility Bridge and Construct West Sidewalk – 4 Months

Construction Staging



Stage 4B – Finalize Utility Tie-In and Complete West Sidewalk – 4 Months

Value Engineering Study

June 1-5, 2015 Independent Subject Matter Experts

- Evaluate Project Alternatives and Respective Costs
- Traffic Management Considerations
- Marine Work Environment and Foundation Options
- Optimize Construction Schedule and Staging
- Pedestrian, Bicycle, Freedom Trail Accommodation
- Bridge Aesthetics

Cost Estimate/Schedule Determination

- Bottoms Up Estimate 25%, 75%, 100% Design Stage
- Independent Cost Estimate 100% Design Stage
- CTD Schedule- Work Breakdown/Crew Analysis

Risk Assessment Analysis

Conducted Risk Assessment Nov.22, 2016 75% Design
14 Risks Identified and Mitigation reflected at 100%
Further Reviewed August 11, 2017 at PSE