

# Public Informational Meeting

## Rehabilitation of the River Street and Western Avenue Bridges

Tuesday, March 9, 2010

6:30 PM - 8:00 PM

Morse Elementary School

40 Granite Street

Cambridge, MA

River Street and Western Avenue  
Bridge Rehabilitation Project  
Public Information Meeting  
March 9, 2010



# Agenda

- Review of the Patrick-Murray Accelerated Bridge Program
- River Street General Information, Conditions, and Rehabilitation
- Western Avenue General Information, Conditions and Rehabilitation
- Traffic Considerations and Timeline
- Discussion

# Patrick-Murray Accelerated Bridge Program

## 2009 Program Overview

- **Authorization:**
  - Chapter 233 of the Acts of 2008
  - Program must be complete by 2016
- **Program Goals:**
  - Improve the Condition of the Commonwealth's Bridges
  - Stimulate Economic Development and Job Creation
  - Save Money by Completing Projects Sooner
  - Complete Projects Efficiently and Innovatively
  - Provide Access and Opportunity for all
  - Manage with Transparency and Accountability

# Patrick-Murray Accelerated Bridge Program

## Program Overview- 8 years only

- **Size and Scope**

- **Former MassHighway: \$2.078 billion**

- rehabilitation or replacement of 189 bridges

- preservation of 305 bridges

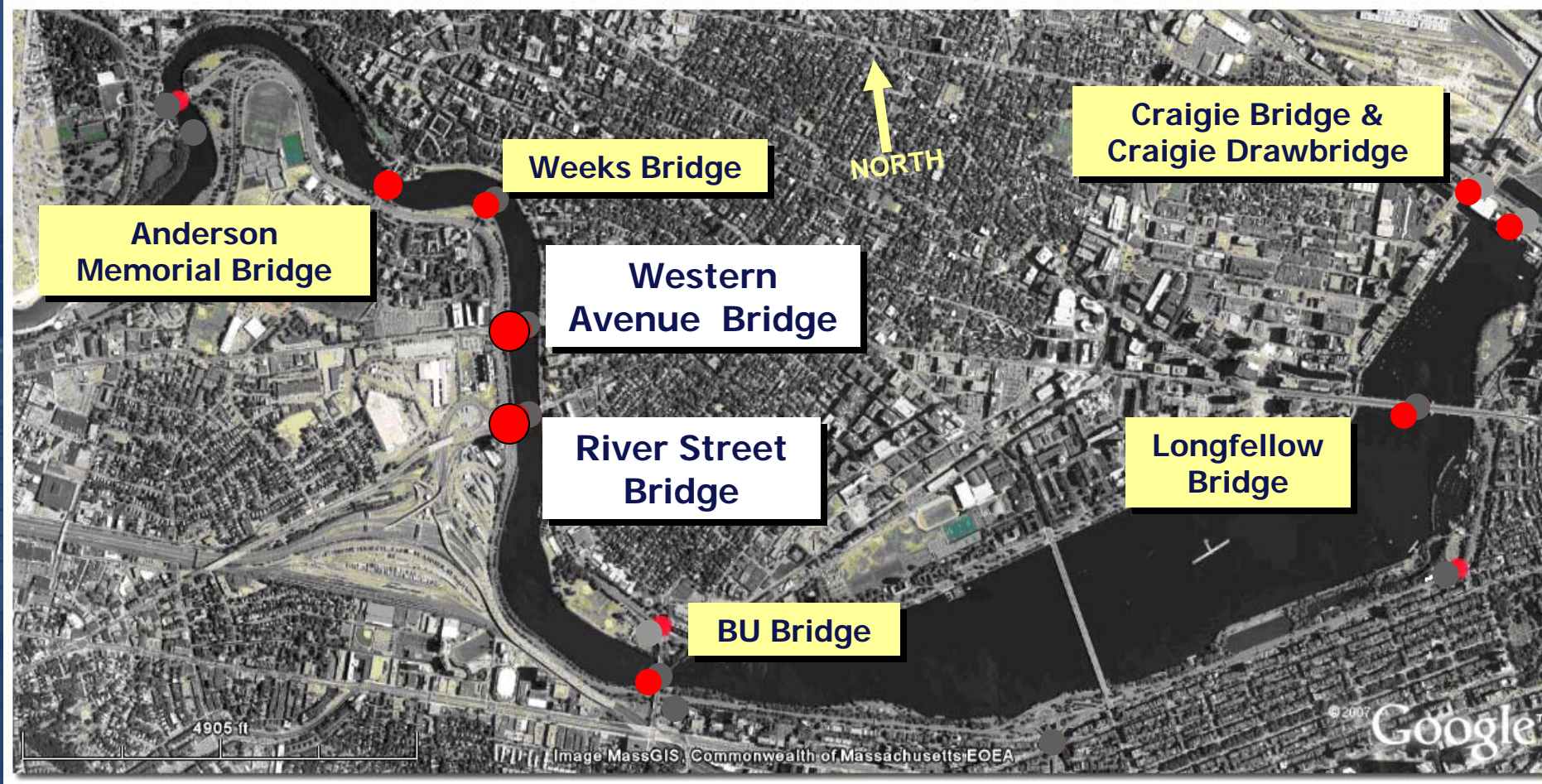
- **Former DCR: \$906 million**

- rehabilitation or replacement of 29 bridges

- preservation of 50 bridges

**MassDOT Total Program: \$2,984,000,000**

# Project Location



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# River Street Bridge

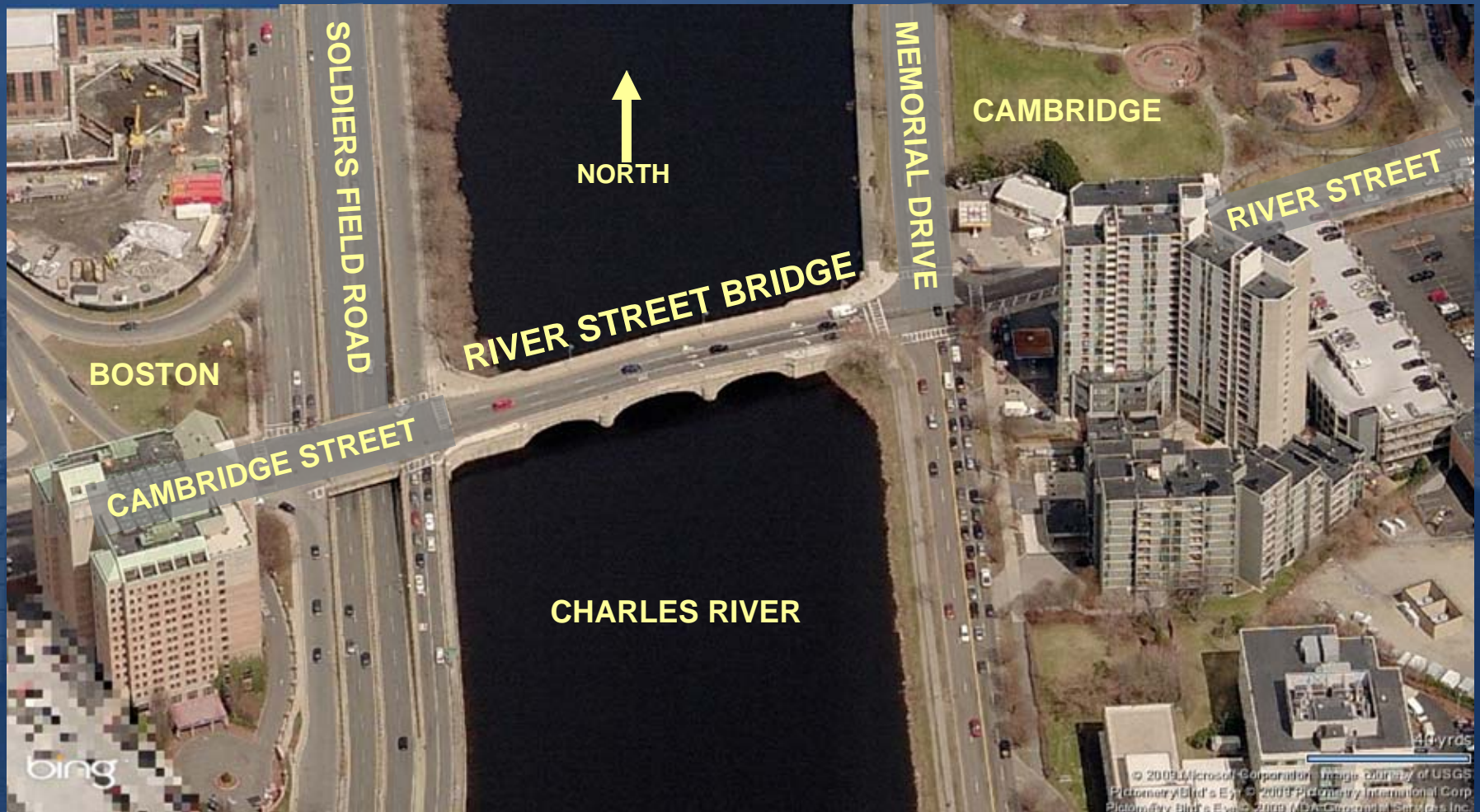
- Constructed in 1925
- Earth-Filled Reinforced Concrete Arch Bridge
- 3 Spans
- Roadway Surface Rehabilitation in 1981



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# River Street Bridge

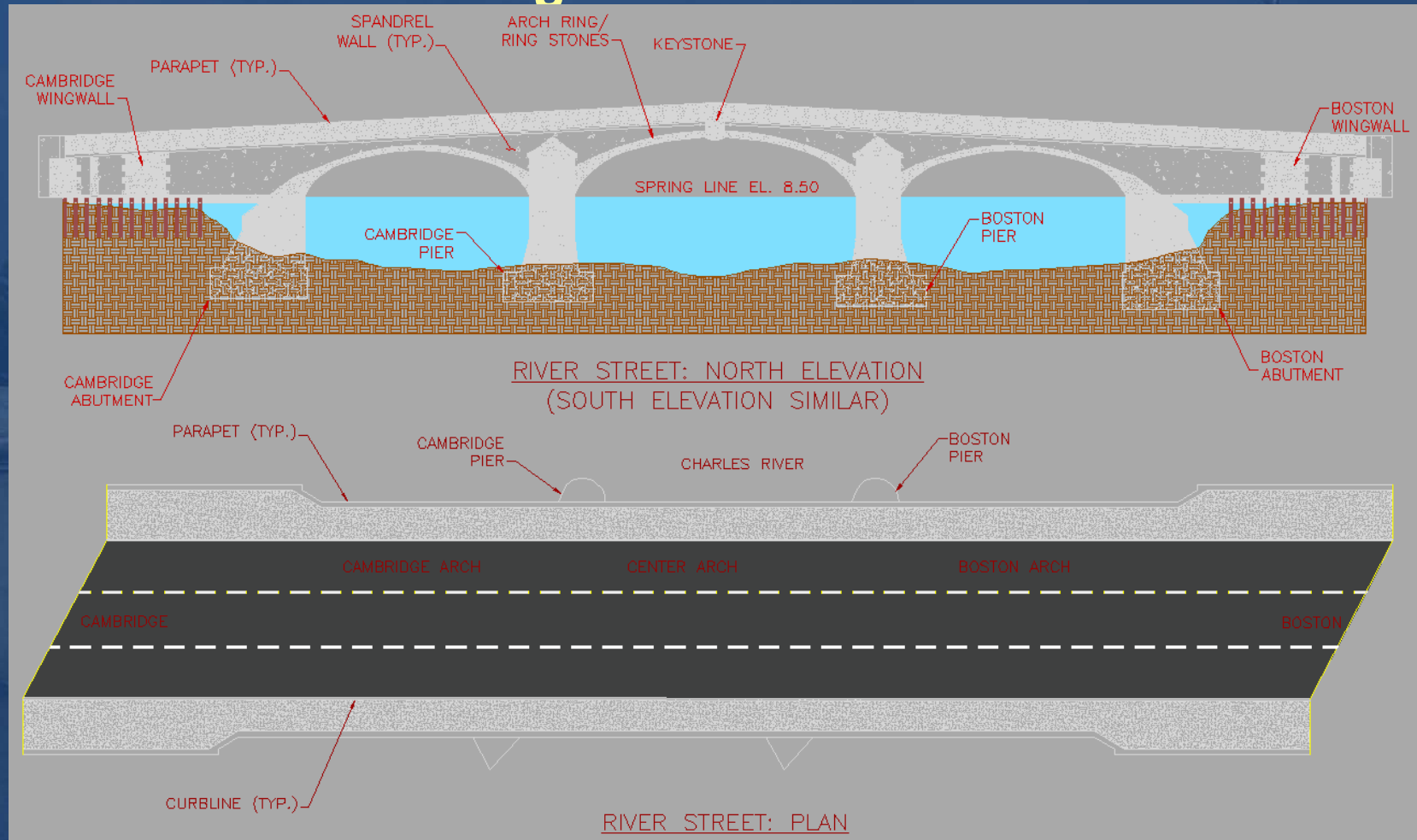


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# River Street Bridge

## Existing Plan and Elevation

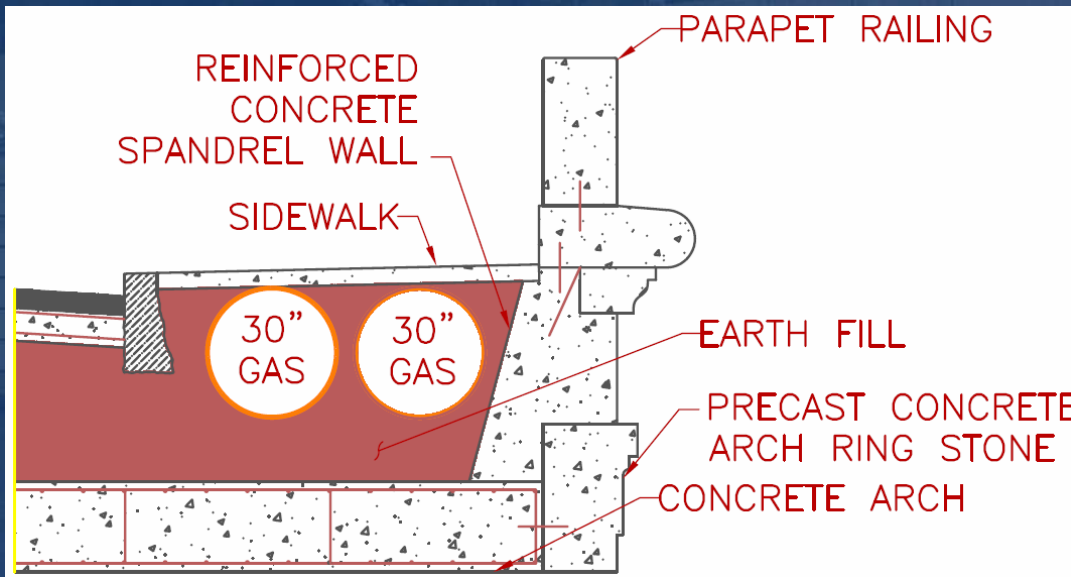
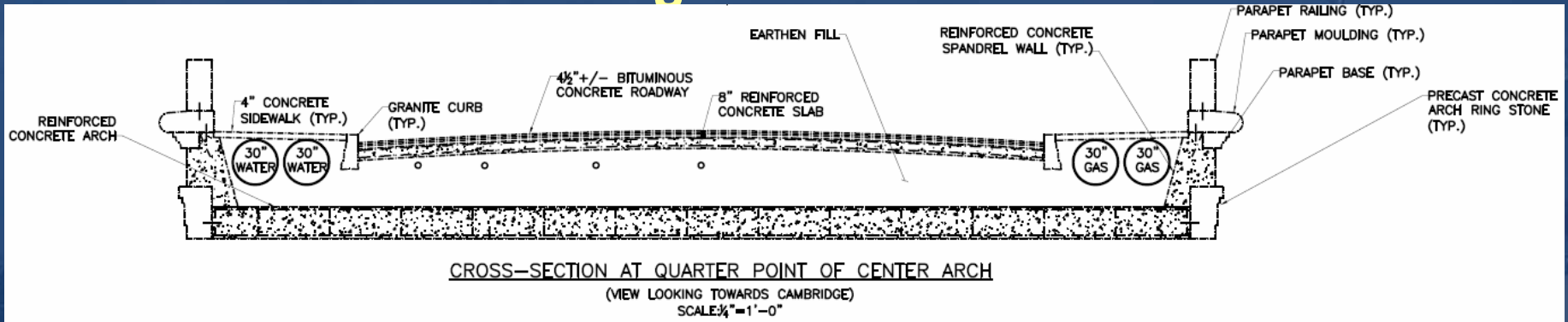


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# River Street Bridge

## Existing Cross-Section



Existing Cross Section through Parapet, Spandrel Wall, Arch Ring, Sidewalk, Roadway, and Utilities.

Existing Conditions will need to be Upgraded from Original Design to meet current load and vehicular impact requirements.

# River Street Bridge

## Existing Conditions



- Separation of the Arch Ring Stones from the Concrete Arch
- Separated Stones Present Falling Hazard
- Up to 3" of Separation in some locations



- Deterioration of Parapet
- Visible Efflorescence from Water Intrusion
- Significant Concrete Deterioration on Piers and Spandrel Walls

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# River Street Bridge

## Existing Conditions



- Misalignment of the Parapet (Railing) over the Arch Crown, due to Spandrel Wall Movement
- Current Design offers very little resistance to Lateral Movement at the Parapet, particularly near Crowns of the Arches



Deterioration present throughout the exposed concrete surfaces

# River Street Bridge

## Existing Conditions



- Cross-Slope deterioration at Sidewalks contribute to water intrusion damage.
- As Ring Stones continue to separate, this condition will deteriorate.

- Significant Spalling on the Arch Barrels.
- Conditions will continue to deteriorate without rehabilitation and may effect load capacity.



# River Street Bridge

## Existing Conditions

(From 2009 Inspection Report)

Bridge Component	Condition
Sidewalks and Parapets (Railing)	POOR
Arch/ Arch Ring	POOR
Spandrel Walls	FAIR
Substructure	FAIR
Piers	FAIR

# River Street Bridge

## Rehabilitation

- Spandrel Walls, Parapets, Ring Stones, and Sidewalks will be removed and replaced.
- Sidewalks, Parapets, and Spandrel Walls will be updated to current codes and standards.
- Installation of a new drainage system
- Update Roadway Geometry
- Rehabilitate the Soldiers Field Road Underpass under River Street.

# River Street Bridge



*Rendering of Rehabilitated Bridge (Looking Northeast to Cambridge)*

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# Western Avenue Bridge



- Constructed in 1924
- Earth-Filled Reinforced Concrete Arch Bridge
  - 3 Spans
- Roadway Surface Rehabilitation in 1981

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# Western Avenue Bridge

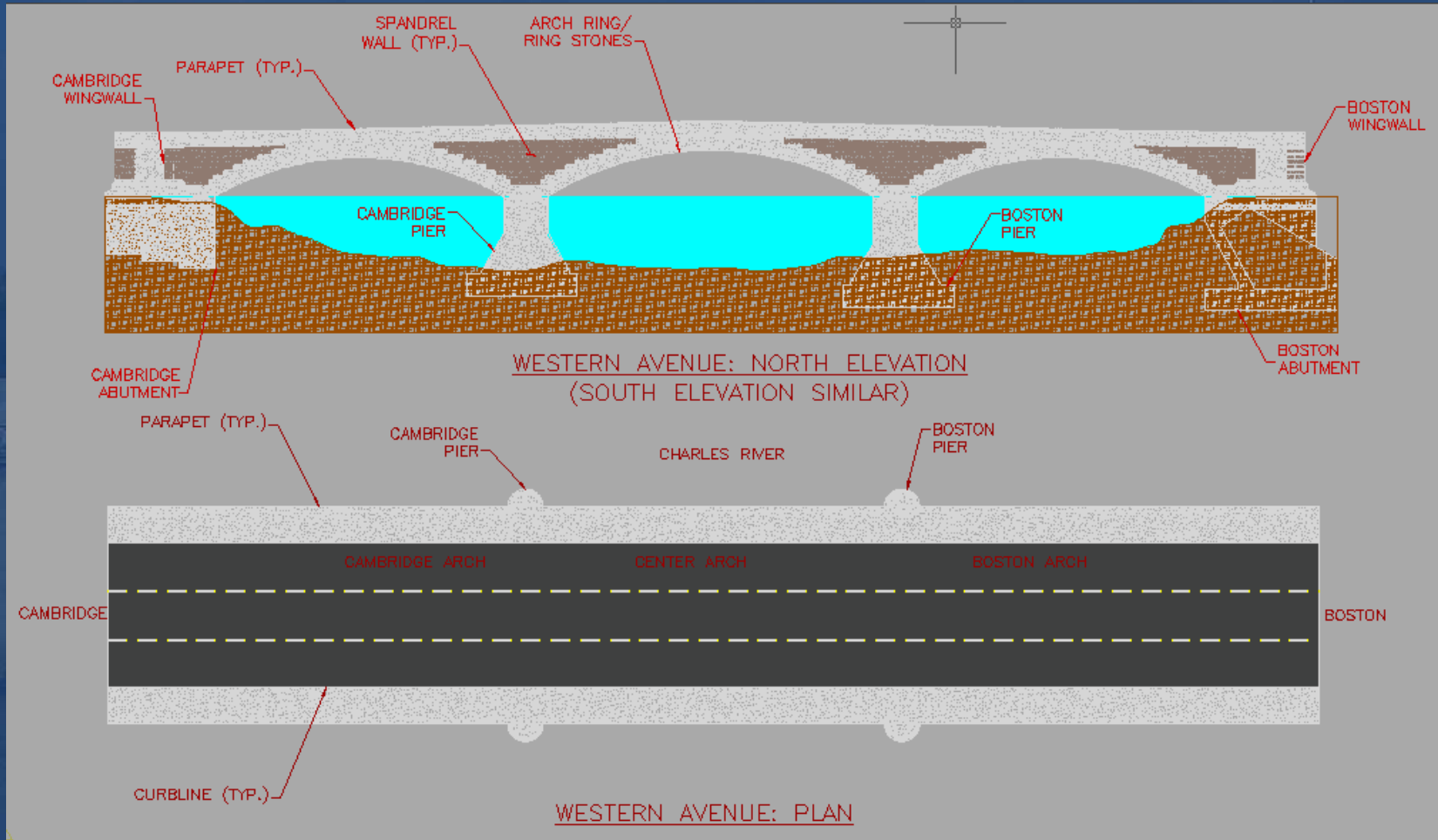


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# Western Avenue Bridge

## Existing Plan and Elevation

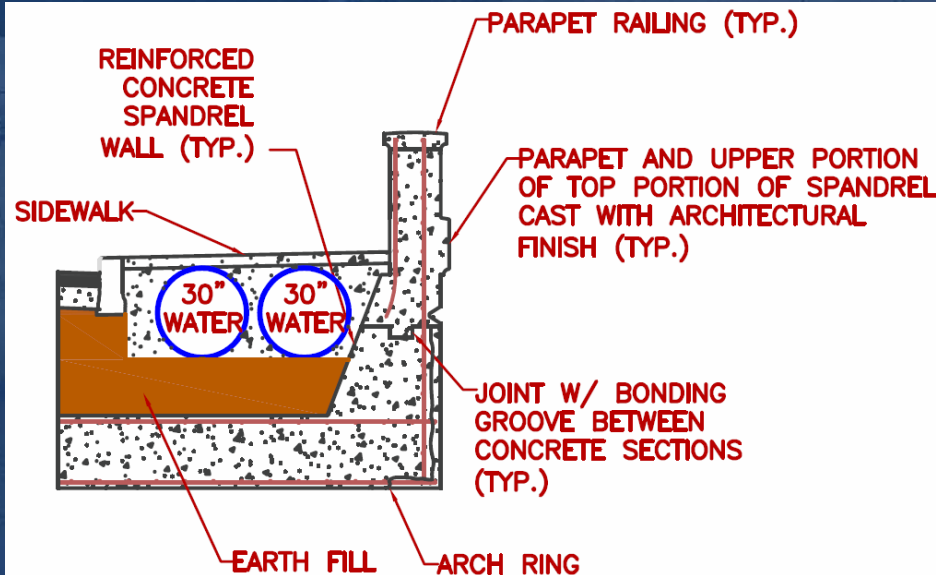
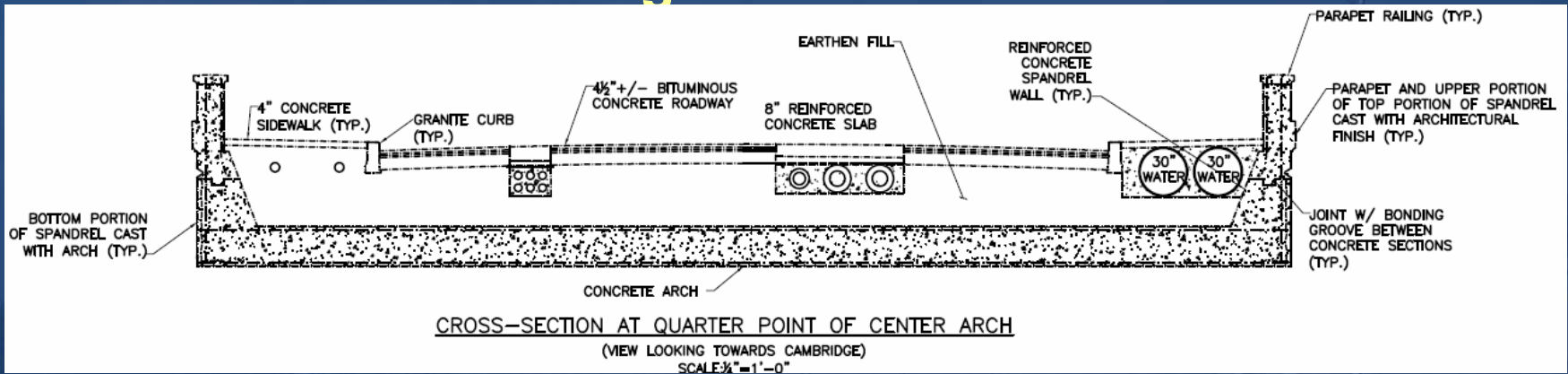


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# Western Avenue Bridge

## Existing Cross-Section



- Existing Cross Section through Parapet, Spandrel Wall, Arch Ring, Sidewalk, Roadway, and Utilities.
- Existing Conditions will need to be Upgraded from Original Design to meet current load and vehicular impact requirements.

# Western Avenue Bridge

## Existing Conditions



- Severe Efflorescence and Cracking particularly on Cambridge Side
- Map Cracking and Concrete Deterioration present throughout Parapets, Wing walls, and Spandrel walls

# Western Avenue Bridge

## Existing Conditions



- Efflorescence and Cracking in the Cambridge Arch suggests water intrusion
- Location of cracking and efflorescence is near the two 30" Water Mains (Possible Leak)

Severe Spalling near the interface between the Structural Concrete and the Architectural Concrete



# Western Avenue Bridge

## Existing Conditions



The Arch Barrels are in generally Good Condition

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# Western Avenue Bridge

## Existing Conditions

(From 2007 Inspection Report)

Bridge Component	Condition
Sidewalks and Parapets (Railing)	POOR
Arch/ Arch Ring	FAIR
Spandrel Walls	FAIR
Substructure	SATISFACTORY
Piers	SATISFACTORY

# Western Avenue Bridge

## Rehabilitation

- Spandrel Walls, Parapets, Ring Stones, and Sidewalks will be removed and replaced.
- Sidewalks, Parapets, and Spandrel Walls will be updated to current codes and standards.
- Installation of a new drainage system
- Update Roadway Geometry
- Rehabilitate the Soldiers Field Road Underpass under Western Avenue.

# Western Avenue Bridge



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Image USDA Farm Service Agency  
Image MassGIS, Commonwealth of Massachusetts EOE

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*Rendering of Rehabilitated Bridge (Looking North along Charles River)*

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# Traffic Considerations

- **Current Conditions**

- **40' wide roadway with two 8.5' sidewalks.**
- **Three vehicular lanes of traffic in one direction.**

- **Evaluate maintaining the same level of vehicular capacity while introducing a bike lane.**

- **Maintain a comfortable pedestrian environment by providing updated sidewalks.**

- **Maintain waterway access.**

# Possible Multi-Modal Traffic Environment



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# Boston Bike Network



- Redesigning 10 miles of Boston streets to be retrofitted with bikeways.
- Pedestrian and bike access analysis will be coordinated with the Charles River Basin Wide Bike Study

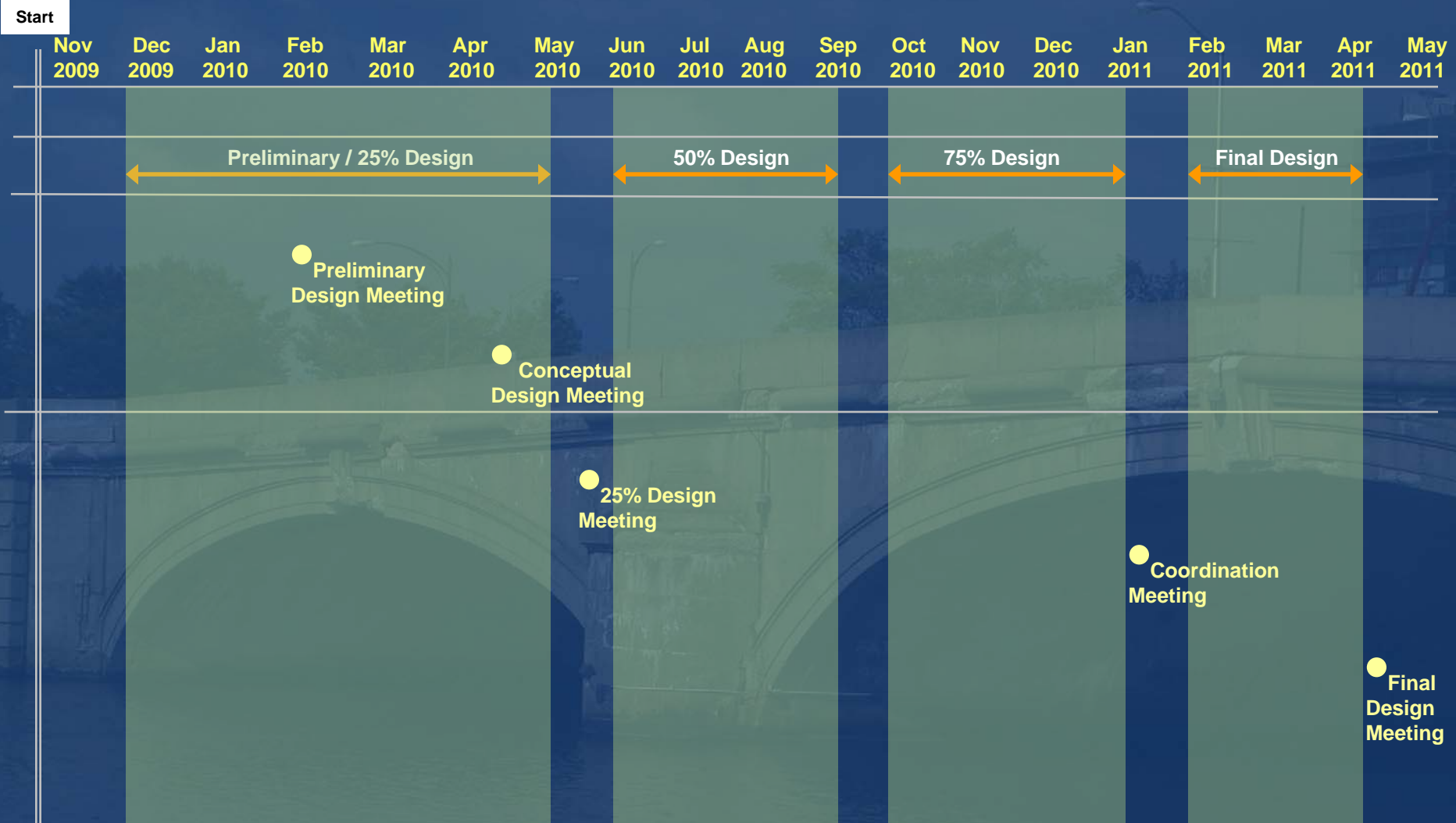
# Western Avenue Bicycle and Pedestrian Accommodations



- Analyzing multi-modal traffic conditions
- Designing bicycle lanes on bridges
- Redesigning key intersections to provide safe bicycle and pedestrian crossings.
- Ped & Bike traffic during construction

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# Design Timeline



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# Estimated Construction Timeline



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# To submit comments or request more information, please contact:

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Director of Accelerated Bridge Program  
Massachusetts Department of Transportation - Highway Division  
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617-973-7800

To be added to the project distribution database, please contact:

Stephanie Boundy, Public Outreach Coordinator  
MassDOT, Accelerated Bridge Program  
617-973-8049 or [Stephanie.Boundy@state.ma.us](mailto:Stephanie.Boundy@state.ma.us)

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# For More Information

ABP website:

[www.mass.gov/acceleratedbridges](http://www.mass.gov/acceleratedbridges)

For news and updates visit our website

[www.mass.gov/massdot](http://www.mass.gov/massdot),

blog at

[www.mass.gov/blog/transportation](http://www.mass.gov/blog/transportation)

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