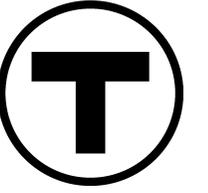


# Massachusetts Bay Transportation Authority

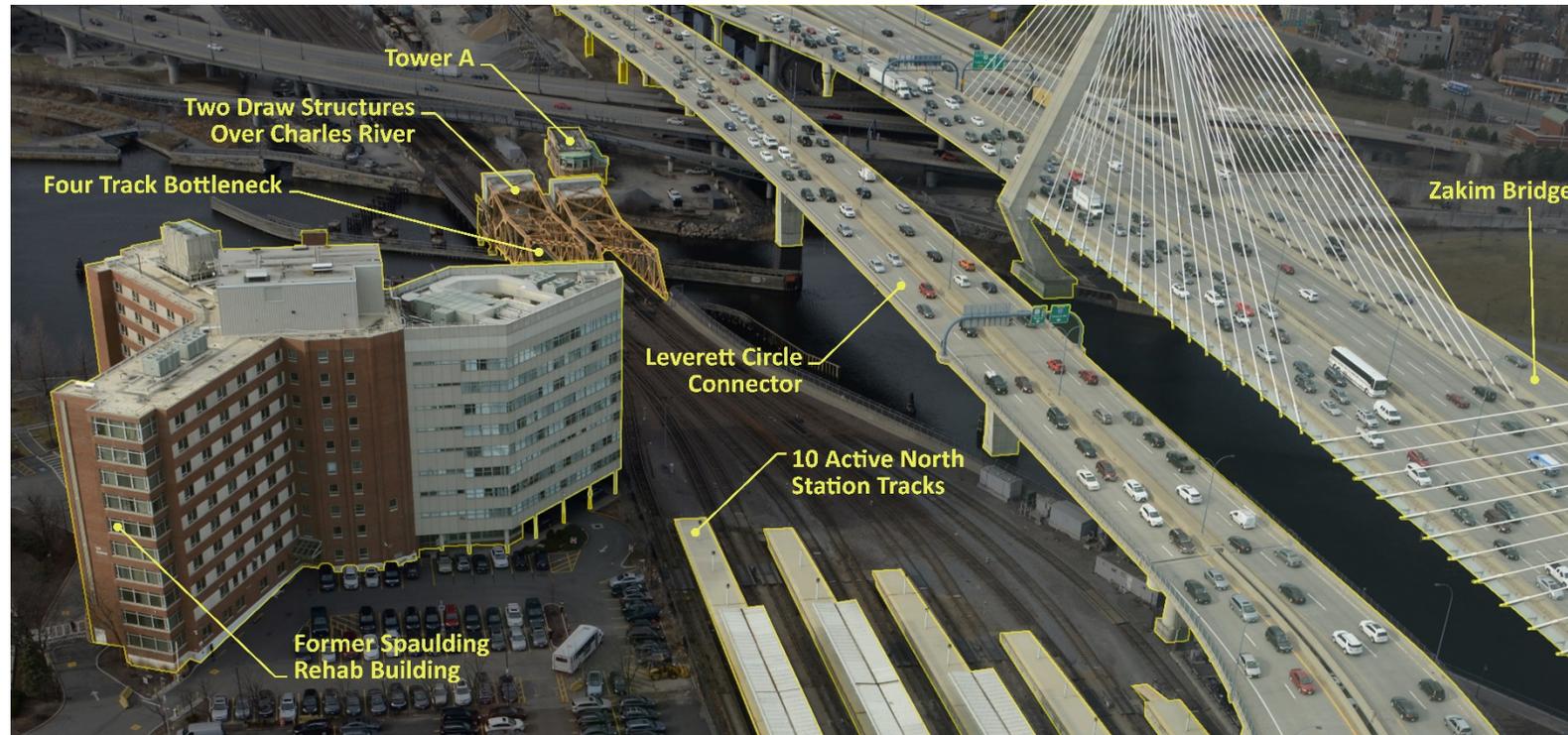
## **MBTA Contract No. H32PS01: Engineering Services for North Station Draw 1 Bridge Replacement and Associated Track and Signal Upgrades**

August 12, 2019

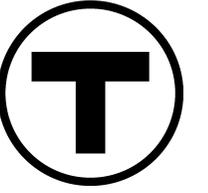


## OVERVIEW

Today's board action will provide for Design, Bid, and Construction Phase Services for the replacement of the North Station Draw 1 Bridge and associated track and signal upgrades.



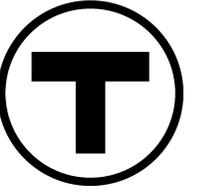
View of North Station Draw 1 Bridges over the Charles River (Looking North)



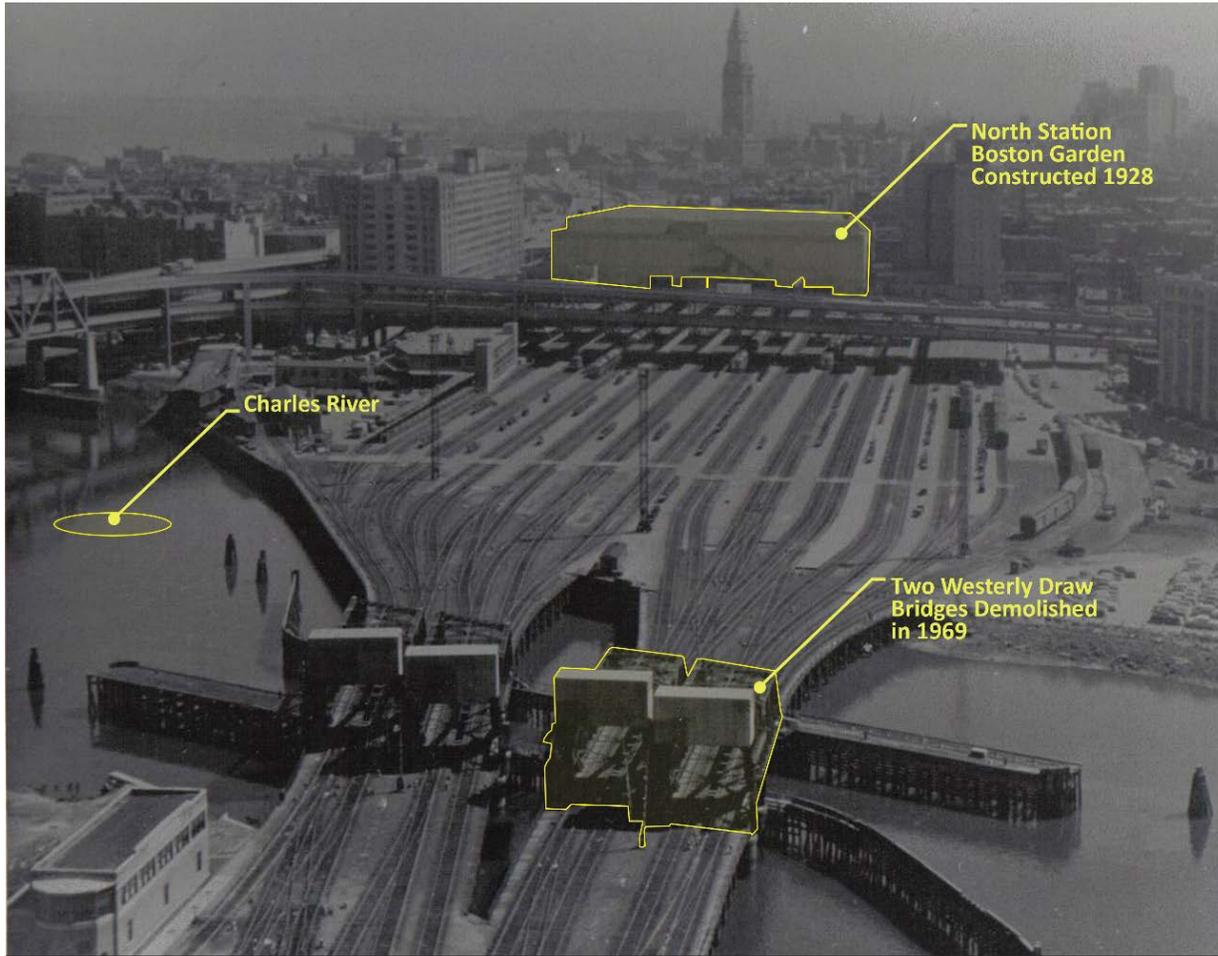
## Project Background

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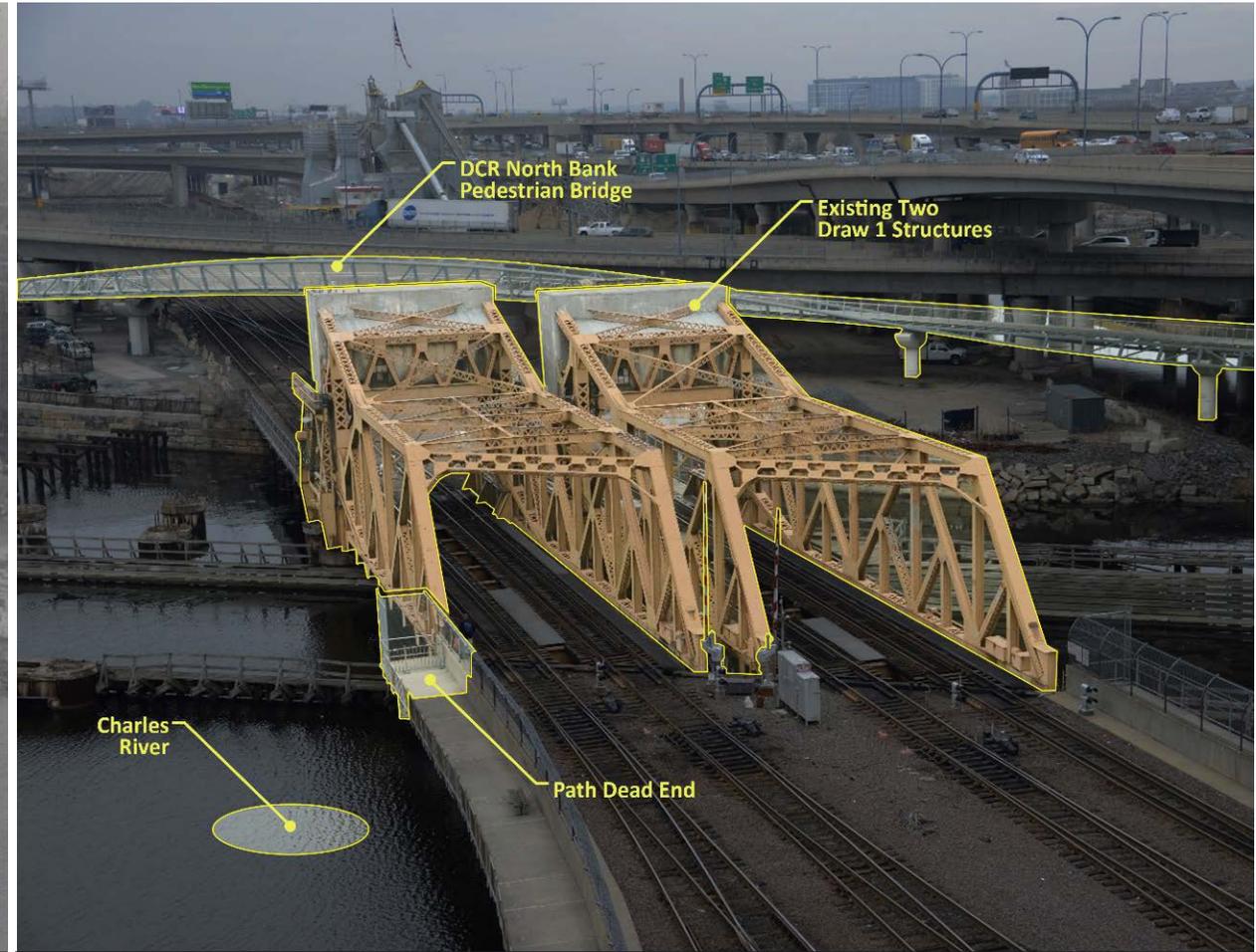
- Originally, Draw 1 consisted of four steel bascule bridges which were built in 1930.
- In 1969, the two westerly bascule superstructures were dismantled.
- Currently, North Station Draw 1 consists of two adjacent two-track drawbridge spans, with a timber trestle approach structure to the north and a precast concrete approach structure to the south. The structures span the Charles River in Boston.
- North Station currently consists of ten active station tracks and five platforms that serve the North Side of the commuter rail system and Amtrak's Downeaster.
- About 300 trains go into and out of North Station's railyard every day and cross the Draw 1 structures.
- There are approximately 3100 bridge openings per year.



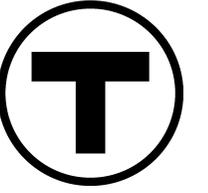
# Project Background



Original Four Steel Bascules Carrying 8 Tracks over the Charles River



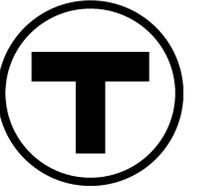
Current Two Steel Bascules Carrying 4 Tracks over the Charles River



## Project Background

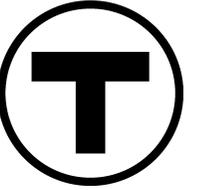
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- In 2007, the construction of the North Station Expansion Project was completed. The re-designed station had 12 tracks constructed, but only 10 tracks and five platforms were made active for passenger service.
- In 2015, an operational planning analysis was performed to model the track capacity at North Station. The analysis concluded the total number of tracks over the Charles River should be increased from four to six.
- In 2018, the construction of a “temporary” drawbridge control office for the bridge operator was completed.
  - The existing Signal Control Tower A, built in 1930, is in extremely poor condition and is past its useful life. However, it was left in place to continue to house the bridge control equipment.



## Project Background



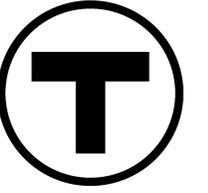


## Project Elements

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Project elements include:

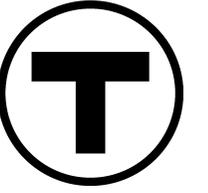
- Replacing the existing four-track North Station Draw 1 Bridges with a **six-track crossing** over the Charles River
  - Two or more new bridges are being considered
- Expanding the number of tracks crossing the Charles River by **connecting Tracks 11 and 12 at North Station to the rail infrastructure** north of bridges
- Upgrading the existing signal system to a **modern microprocessor-based system**
- Providing a system to **remotely control the bridge** from the Commuter Rail Operations Control center
- Completing the design of the **DCR South Bank Pedestrian span** over the Charles River connecting shared use paths currently located on the north and south banks.



## Scope of Services

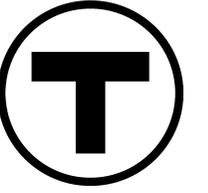
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- Management of complex, specialized design activities of multiple disciplines
- Staged demolition of the existing drawbridges, approach spans, and Tower A while minimizing impacts to rail operations
- Construction Planning and Methods
- Construction Staging and Constructability including 3D modeling
- Code Compliance, Safety, and Security
- Historic Assessment
- Environmental Approvals and Permits
- Extreme Weather and Climate Change Resiliency
- Agency and Stakeholder Coordination
- Public Outreach
- Cost Estimating and Scheduling



## Project Benefits

- Increased passenger and overall system safety
- Improved rail operational reliability and system redundancy
- Reduced life cycle maintenance costs
- Increased safety and security throughout the entire rail yard
- Improved storm water management by controlling direct discharges into the Charles River
- Installation of new duct banks and trough systems
- Upgraded signal system integrated with ATC and PTC systems, which will facilitate the construction staging of the tracks
- Safe, accessible pedestrian path linking the existing parks and connecting communities on each side of Charles River
- Reduced noise and fumes from trains idling at North Station
- Potential for future track expansion improvements north of FX Interlocking
- Provision of a safe and durable bridge fender system
- Potential for Future Electrification identified by MBTA Rail Vision



## Project Impacts

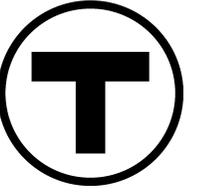
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### Railroad Operations Requirements:

- Bridge, track, and signal construction shall be done without interruption to existing rail service.
- All track work shall be done during night and weekend outages with all ten tracks operational for each weekday morning commute.
- Trains shall continue to operate during all phases of construction.
- There shall be a minimum of four tracks over the Charles River in service at all times.

### Other Considerations:

- Some platforms may require shortening to accommodate temporary alignment of tracks during construction.
- The Charles River waterway must be maintained during construction.
- Delay construction of the DCR's proposed South Bank Pedestrian Bridge over the North Station Tracks.
- Temporary easements will be required for site access and laydown areas.
- Mitigation plan will be required for removal of historic Drawbridges and Tower A



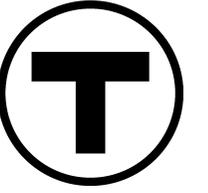
## Delivery of Scope of Services

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The services will be delivered on a Task Order basis by Phase. Project Phases for this project are defined to be:

- Phase I      Pre-Design
- Phase II     Preliminary Design (15% - 30%)
- Phase III    Design Development (30% - 75%)
- Phase IV    Final Design (75% - PSE)
- Phase V     Bid Phase
- Phase VI    Construction Phase Services (\*)

(\*) Subject to securing construction funding



## Request of the Fiscal and Management Control Board

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Staff request that the Fiscal and Management Control Board authorize the MBTA General Manager, or his designee, to execute MBTA Contract No. H32PS01: Engineering Services for North Station Draw 1 Bridge Replacement (B-16-479) and Associated Track and Signal Upgrades with STV, Inc. for an amount not to exceed \$38,000,000.