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Massachusetts Department of Transportation
Highway Division

Sumner Tunnel Restoration Project

ABC Briefing

12-14-2022

Project File No. 606476

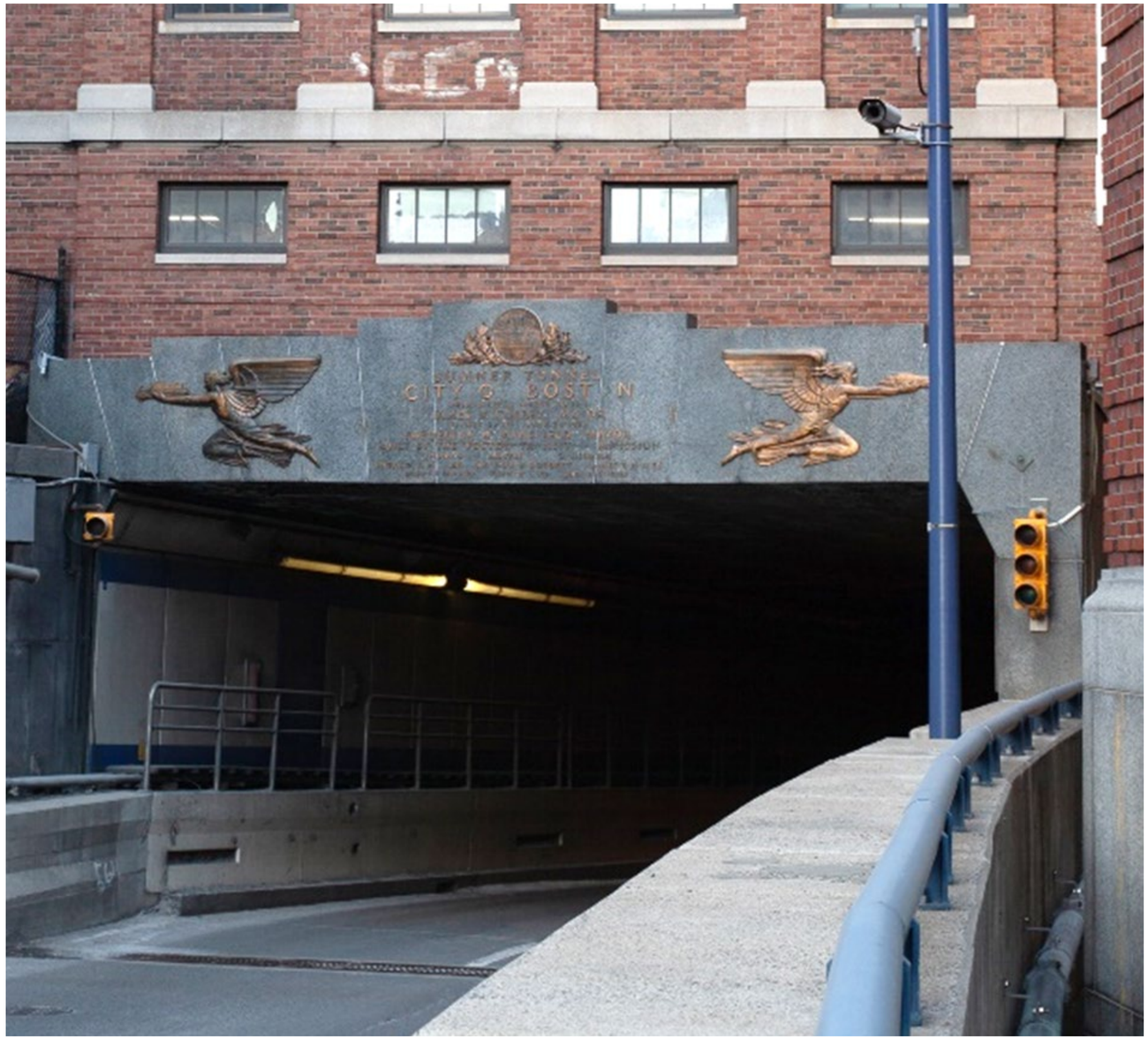
Agenda

01 Project Overview

02 Why a Four Month Shutdown?

03 Impacts and Mitigation

04 How Will We Keep the Public Informed?



Why is Restoring the Tunnel Important?

In 2018, MassDOT identified the Sumner Tunnel as the highest priority project in the Metropolitan Highway System

- Major transportation route for regional traffic
- Connects East Boston and Logan Airport to Downtown Boston
- Links Route 1A to I-93 and Storrow Drive
- Carried over 39,000 vehicles a day in 2019

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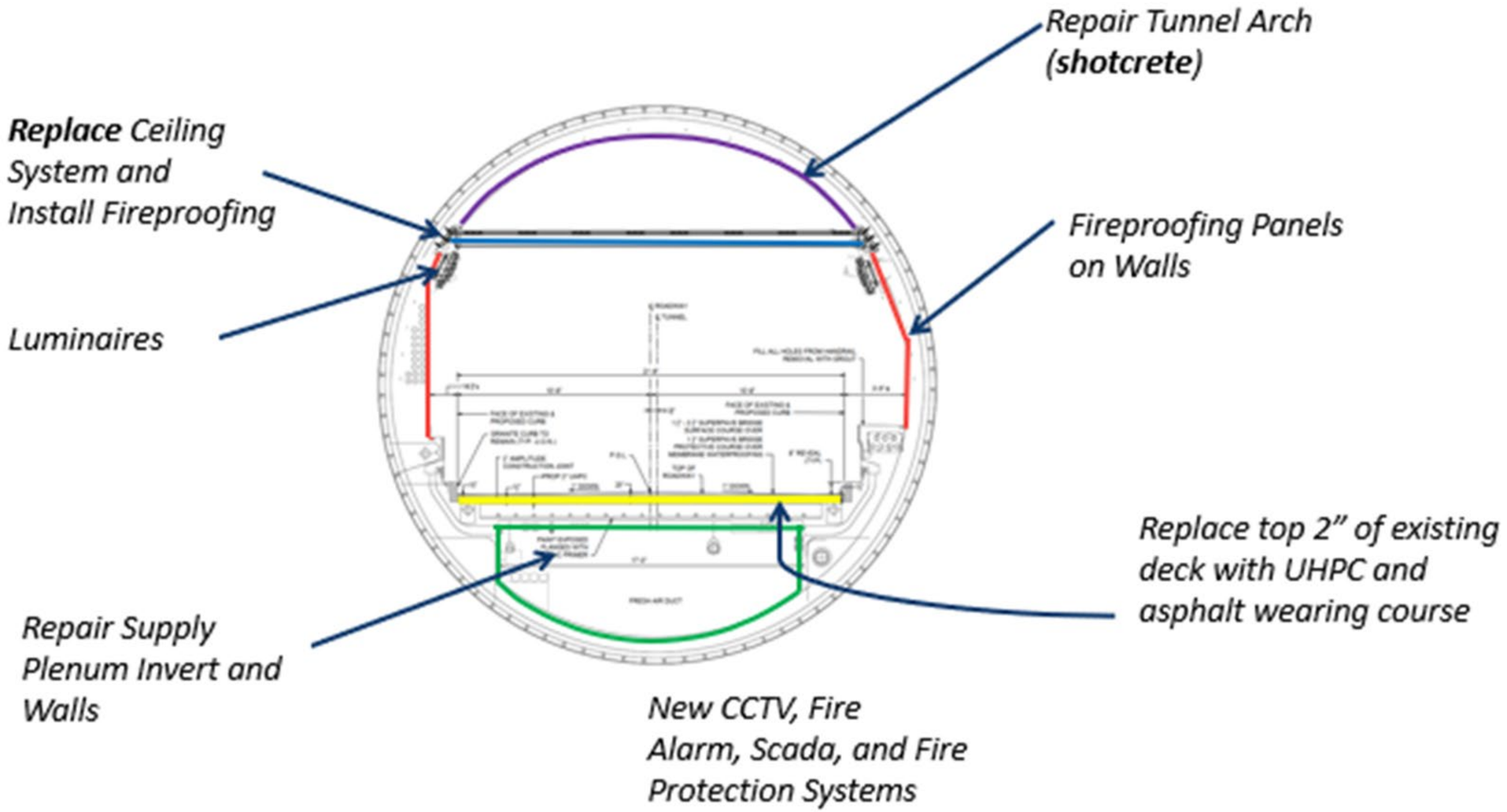
Condition of Tunnel Prior to Restoration Project

Spalled concrete, corroded rebar, and rusted support beams

Project Goals

- Remove and replace the tunnel ceiling and repair overhead arch
- Demolish and replace the tunnel deck and roadway surface
- Repair tunnel walls and install painted fireproof panels
- Install new LED lights inside tunnel
- Upgrade CCTV and fire alarm systems
- Install new utility conduits and cables under the bridge deck

Typical Restoration Work Cross-Section



Construction Phases

PHASE 01

Spring 2022-2023

- Remove deteriorating railings and wall panels and relocate communication lines
- Rehabilitate low-point water pump stations*`
- Upgrade tunnel vent buildings

PHASE 02

Summer 2023

- Install new utility conduits and cables
- Complete work on tunnel entrances
- Repair tunnel walls, install painted fireproof panels
- Hydro demo of concrete slab; mill/pave roadway
- Finish upgrading CCTV and fire alarm systems
- Ornamental fixtures taken down for

PHASE 03

Fall 2023

- Replace tunnel ceiling and overhead arch; install 1200’ of drop ceiling

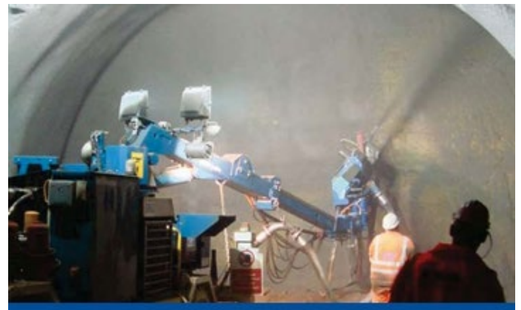
Four Month Closure

- Limited to timeframe necessary for decking and ceiling work
- Once decking work begins there will be no driving surface
- Reduces, risk, and long-term disruptions to abutters and regional traffic
- Maintains high productivity of work
- Ensures high quality of restoration work
- Minimizes temperature and weather impacts to construction
    - Concrete
    - Shotcrete
    - Coating Systems

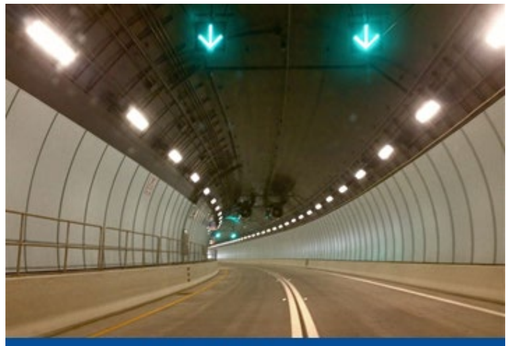

Winter Ice


Robot Hydro Demo Wall


Slab Hydro Demolition


Shotcrete Repairs


Slab Waterproofing


Final Product

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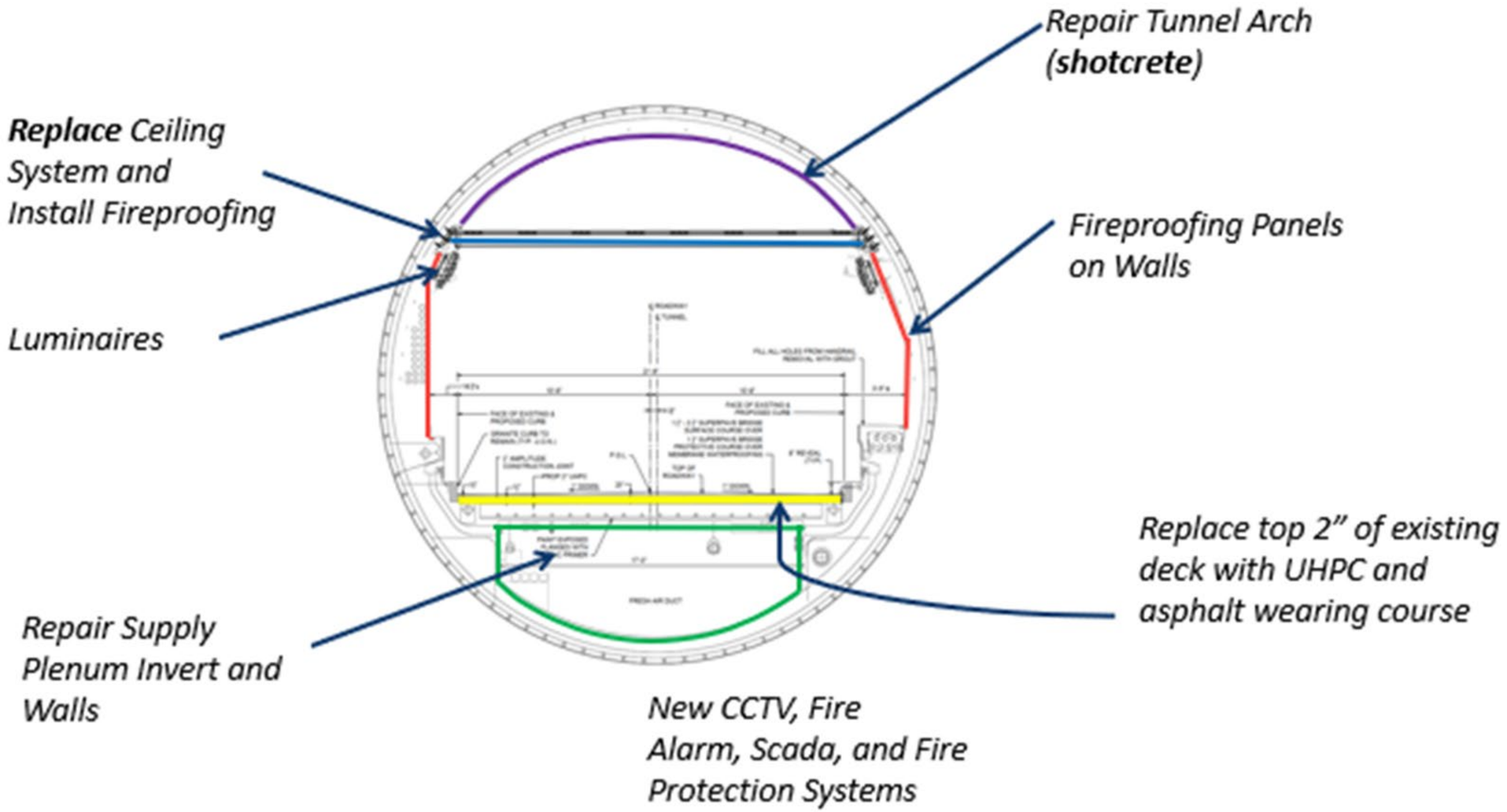
Typical Restoration Work Cross-Section



Anticipated Traffic Diversions

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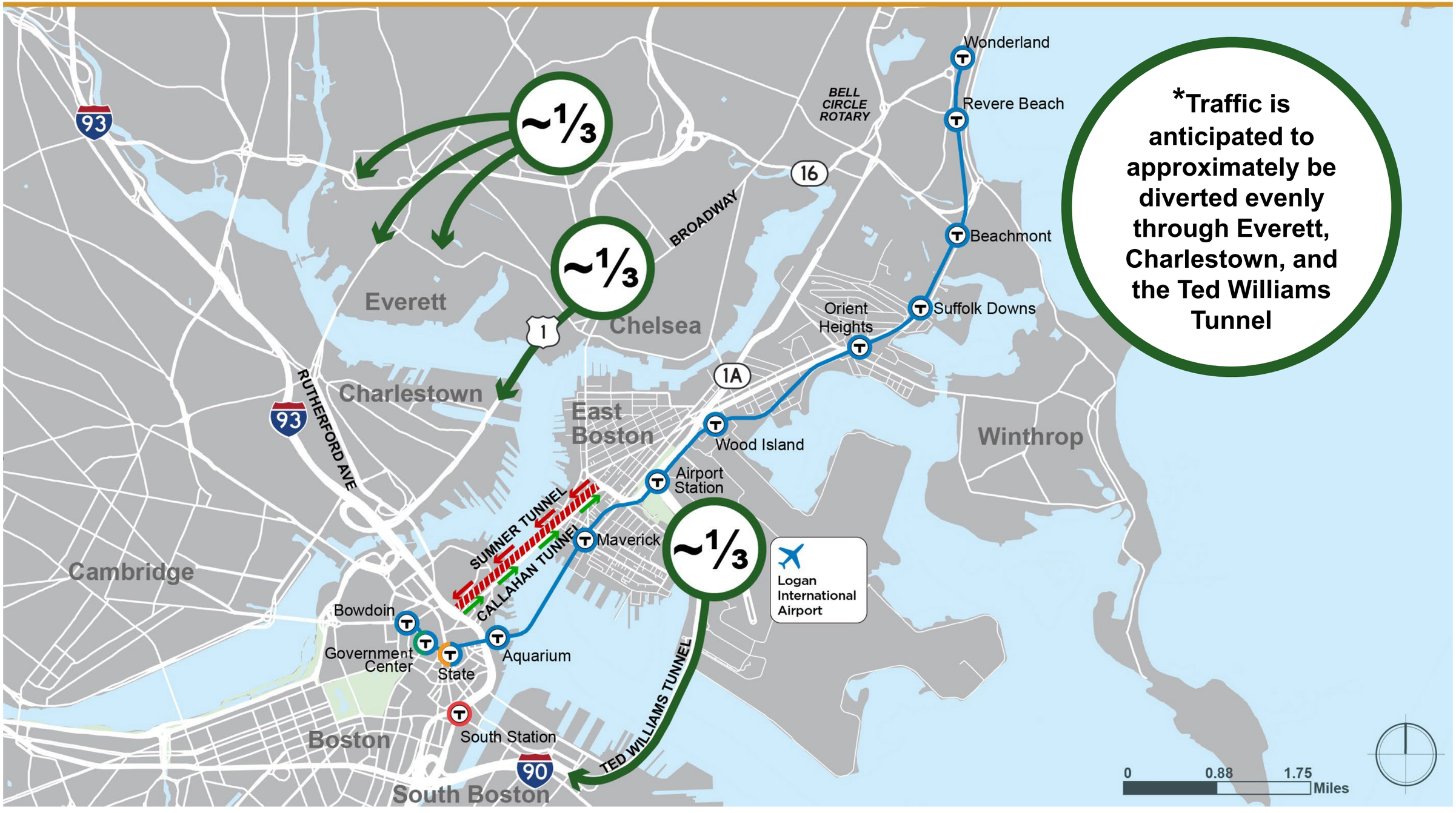
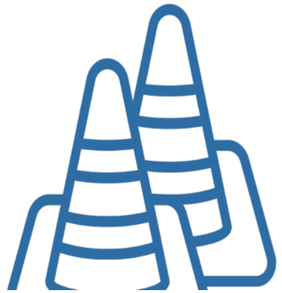


Phase 3: Traffic Impacts and Mitigation Strategies

Ongoing community engagement

Safety:
Contingency plans and ongoing coordination with Boston Fire, Police, Emergency Services, and Hospitals



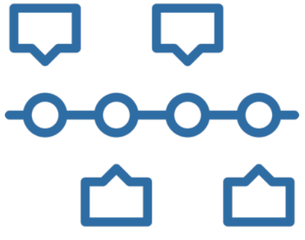
Real time and on the ground traffic monitoring and detour modification when needed

Two-way communication with the public via dedicated project email and hotline

Coordination with the MBTA to ensure public transit options

Ferry service from East Boston for duration of project

Coordination with GPS companies



Updating the public throughout the project timeline

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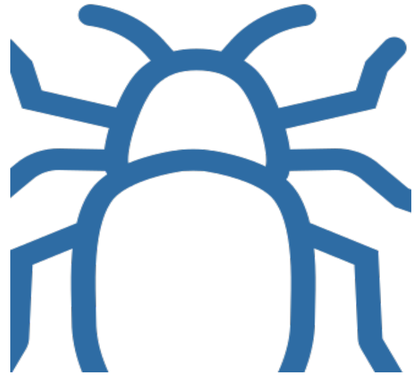
Mitigation of Environmental and Community Impacts

Contractor is required to dispose of runoff and materials offsite

Noise and Dust Monitoring

- Most work is within the tunnel; minimal impacts
- Noise monitoring meets City of Boston and MassDOT standards
- Control methods to keep dust within the tunnel work zone



Contractor is required to address pests and follow standards set by MassDOT

MassDOT Public Engagement Goals

- **Provide consistent project updates**
  - Website, Gov Delivery, and social media
- **Equitable outreach**
  - Project materials will be translated, and abutters will receive additional outreach
- **Provide timely responses to inquiries**
  - Respond to email inquiries and hotline calls within 24 hours
- **Evaluate effectiveness of outreach and modify if needed**
  - Through regular internal meetings
- **Collaborate with stakeholders**
  - Provide briefings and two-way communication

What Public Outreach Will be Conducted Prior to Phase 2

Meetings	Direct Outreach	Provide Information
• Virtual legislative briefings • Virtual stakeholder and community group briefings • Virtual public meetings	• Neighborhood pop-ups • Informational posters throughout the region • Emails to EZ-Pass holders • Outreach to Logan Express, Regional Bus Companies, and Rental Car Agencies • Outreach to abutters and diverse community groups • Outreach to businesses	• Update project website • Provide regular project and traffic updates via email listserv • MassDOT social media posts • Press briefings • Press releases • Newspaper notices

Appendix

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East Boston to Downtown - Closure Detour

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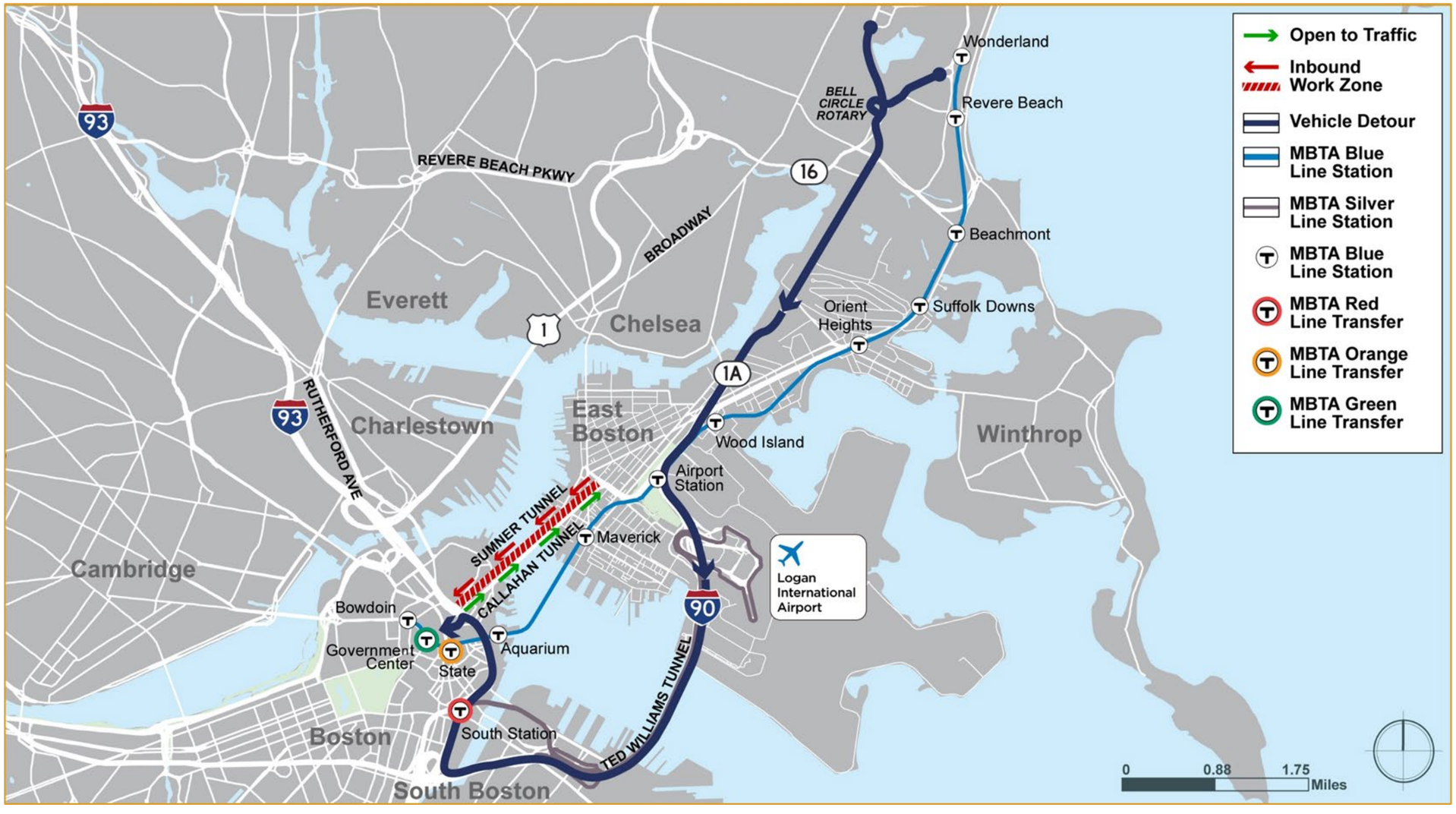
Logan Airport to Downtown - Closure Detour

Revere to Downtown - Closure Detour



Logan Airport to I-93 North – Closure Detour

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Appendix – Traffic Terms

***Actuated Signals**: A traffic signal that uses some type of detection system to aid in effectively processing traffic. Layman's term = Smart Lights.

***Adaptive Signals:** Adjusts the timing of red, yellow and green lights to accommodate changing traffic patterns and ease traffic congestion.

***Capacity:** The theoretical or calculated value of how many vehicles can accommodate a specific area during a specified time period, usually measured as "vehicles per lane per hour" or "total vehicles entering an intersection per hour."

***Concurrent Pedestrian Phasing:** The crosswalk parallel to the current thru movement gets the walk.

***Crash Cluster:** A grouping of crashes that are combined into clusters based on fixed distance between crashes.

***Crash Rate:** Represents number of crashes per million entering vehicles.

***Cycle:** The total time to complete one sequence of signalization for all movements at an intersection. In an actuated controller unit, the cycle is a complete sequence of all signal indications.

***Cycle Failure:** When a traffic signal is unable to process the amount of vehicles queued at the intersection. Vehicles waiting at the back of the line will have to sit through multiple cycles before being able to proceed through the intersection.

***EPDO:** Equivalent Property Damage Only (EPDO) value. A severity weighted number representing crashes in a given location over a certain period of time.

***Exclusive Pedestrian Phase:** When actuated by a pedestrian, or in some urban cases always part of the signal cycle, all possible pedestrian movements are allowed. All vehicle movements get a red signal.

***HSIP:** Highway Safety Improvement Program (HSIP). Funding source for high crash locations. HSIP qualifications are top 5% crash locations in each Regional Planning Association (RPA).

***Level of Service:** Level of Service (LOS). A qualitative measure used to relate the quality of motor vehicle traffic service. LOS is used to analyze roadways and intersections by categorizing traffic flow and assigning quality levels of traffic based on performance measure like vehicle speed, density, congestion, etc.

***Lead / Lag:** Defines the left turn phasing in a signal. Lead/Lead = both direction left turn start before the thru movement. Lead/Lag = one direction gets the left before the thru while the other direction gets the left with the thru after the opposing directions traffic stops. Lag/Lag = both directions get the left after the thru movements go.

***PDO:** Property Damage Only (PDO). A crash that results only in property damage with no injuries.

***Phasing:** The right-of-way, yellow change, and red clearance intervals in a cycle that are assigned to an independent traffic movement or combination of traffic movements.

***Protected / Permissive Left:** Protected Left turn phasing is when a signal only allows lefts to occur when no conflicts exist (e.g. when the opposite direction has a red or when opposite thru traffic has a red and opposing left turns are allowed to go as well.) Protected permissive left is when a signal gives a protected phase and then permits lefts when the opposite direction has a green. Left turning vehicles must yield to the thru traffic. Permissive only is when left turning vehicles must always yield to thru opposing traffic.

***Queue:** Line of vehicles waiting at a traffic light. Queue length represents the total distance occupied by the vehicles waiting in line.

***RRFB:** Rectangular Rapid Flashing Beacon (RRFB). A type of enhanced pedestrian crossing device that employs traditional pedestrian crossing signs with flashing beacons, which should only flash when actuated by pedestrians, to alert drivers.

***Road User Cost:** Additional costs borne by motorists as a result of work zone activity. The computation process is based on the assessment of mobility, safety, environmental, business, and local community impacts resulting from the work zone activities of a roadway project.

***Split Phasing:** A type of signal phasing scheme which separates vehicle conflicts by assigning the right-of-way sequentially to the two opposing approaches.

***Travel Time Delay:** Calculated difference in time between the actual travel time through an area and what the travel time would be if there was no congestion.

***V/C (Volume / Capacity Ratio):** A ratio of the number of vehicles compared to the capacity or an intersection or road segment. A V/C over “1” means the intersection cannot handle the amount of vehicles entering and will result in cycle failure.

***Yellow / Red Clearance:** Amount of time given to the yellow timing and all red timing to ensure vehicles are adequately cleared from the intersection before conflicting movements can occur.

Appendix – Bridge Terms

***Abutment:** The end support of the bridge. Helps support lateral pressure.

***Bridge Inspection:** Bridge Inspections are done to assure the safety of the traveling public on bridges, achieve and maintain compliance with the National Bridge Inspection Standards (NBIS), and identifying deficiencies to determine maintenance activities on and/or rehabilitation/replacement of structures. Typically, routine bridge inspections are performed every two years.

***Deck:** Driving surface portion of the bridge, usually comprised of concrete.

***Deep Foundations:** A type of foundation that transfers the load of the bridge deep within the earth, sometimes to bedrock.

***Drilled Shaft:** Deep foundations that are created by drilling down and filling in with reinforced concrete.

***Driven Piles:** A column (either reinforced concrete or steel) that is driven into the ground meant to help support the weight of the bridge. Driven methods can be hammering or vibratory.

***Girder:** A large iron or steel beam or compound structure used for building bridges and the framework of large buildings.

***Load Rating:** Determines the safe load carrying capacity of newly built and existing bridges. Load ratings are performed to evaluate and determine substandard bridges requiring posting, and to provide a means of determining the bridges requiring rehabilitation or replacement. Additionally, FHWA requires reporting of bridge load ratings on an annual basis.

***Micropiles / Minipiles:** These are piles less than 12in in diameter and are drilled and grouted in place.

***Piers:** A solid support designed to sustain vertical pressure. Placed along the span of the bridge to support it.

***Span:** A length of bridge between piers or abutments.

***Superstructure:** Supports immediately beneath the driving surface, usually comprising of steel or concrete beams.

***Substructure:** Foundation and supporting columns and piers.

***Structurally Deficient:** A structurally deficient bridge is one for which the deck, the superstructure, or the substructure are rated in condition 4 or less on a scale of 0-9 (0 being the lowest rating, and 9 being the best rating). Structurally deficiency does not necessarily imply that a bridge is unsafe. It does, however, mean that a structure has deteriorated to the point of needing repairs to prevent vehicular weight restrictions on it.