

# **SOUTH BOSTON WATERFRONT – EMERGENCY ACCESS RAMP SILVER LINE**

---

# South Boston Waterfront – Emergency Access Ramp

## Overview

- MassDOT and the MBTA have completed their evaluation of the Emergency Access Ramp for use by the current Silver Line Fleet.

### Conclusion:

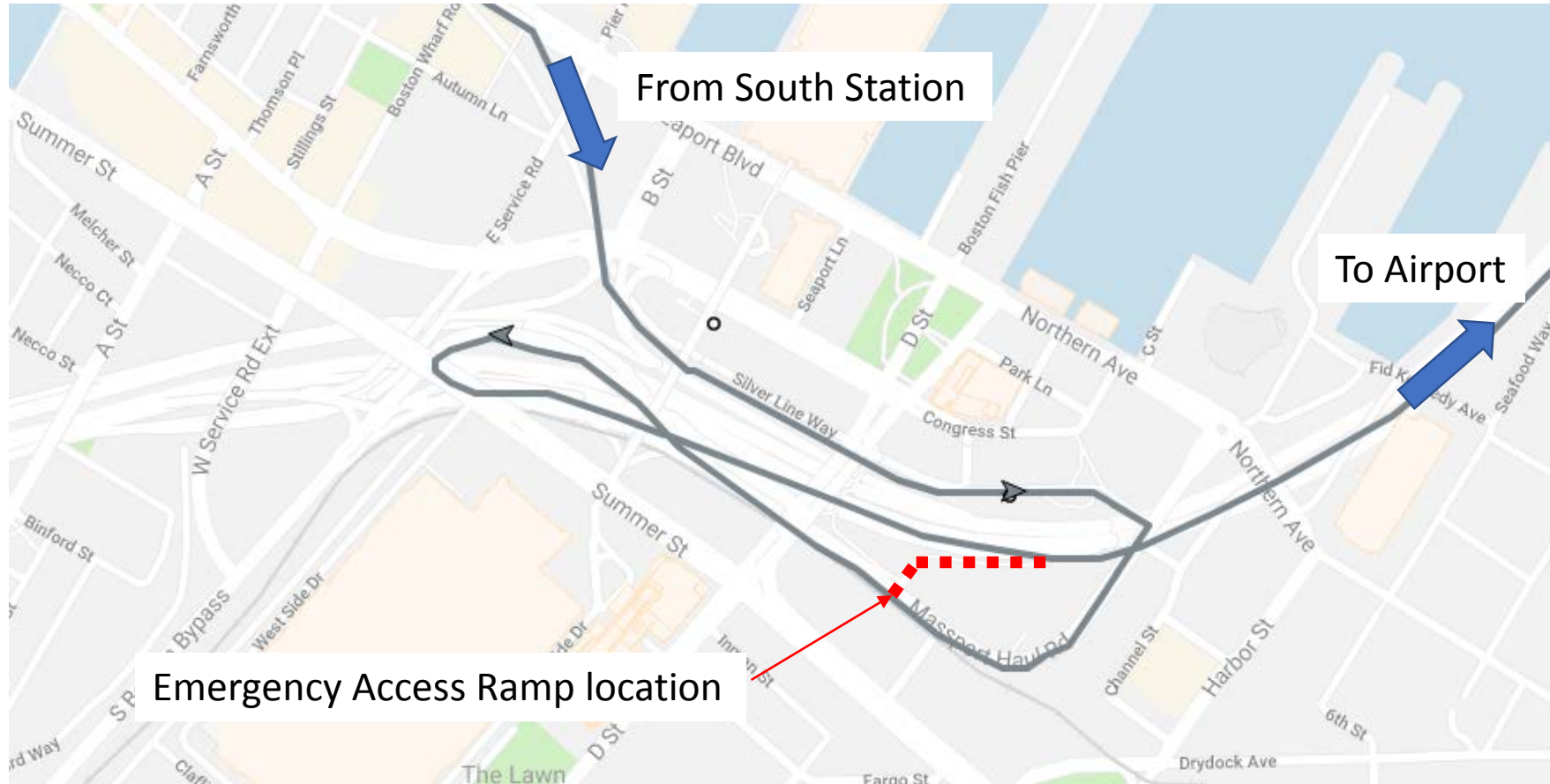
- Emergency Access Ramp is **not safe** for use under many conditions
- Use of the ramp, when safe, would likely produce a time saving for Silver Line passengers
- MBTA and MassDOT Highway Division are working together to develop and deliver a solution for Silver Line buses to **safely use** the ramp in order to provide customers with improved service (shorter run times)

# South Boston Waterfront – Emergency Access Ramp

## **Background**

- Silver Line buses are routed on surface streets in the South Boston Waterfront to access I-90
- An emergency access ramp exists near Highway Operations Center and State Police barracks
- This ramp, if utilized by the Silver Line buses, could improve run times especially during heavy congestion

# South Boston Waterfront – Emergency Access Ramp Background







South Boston Waterfront – Emergency Access Ramp  
**Existing Conditions**

# South Boston Waterfront – Emergency Access Ramp

## **Existing Conditions**

- Emergency access ramp **was not designed/constructed** as a transportation facility; was designed for emergency operations only
- Physical and operational constraints currently prevent ramp access:
  - Limited sight lines from the ramp to I-90 due to height of adjacent wall, curve of I-90, and approach grade on the ramp
  - Acceleration rates of dual-mode articulated buses are less than other buses
  - Regular bi-directional ramp use by emergency and maintenance vehicles
  - Inability to communicate and coordinate ramp usage between buses and other vehicles



# South Boston Waterfront – Emergency Access Ramp – **Existing Conditions**

## Safety Concerns

- Bus while on ramp has **limited visibility** of on-coming traffic
- **Bus must stop at the end of ramp** to determine if safe to proceed
- **Inadequate acceleration distance** from stop to merging with on-coming traffic at posted highway speed
- Modeling and preliminary testing have determined that ramp is only safe to use when traffic is at a speed of 30 mph or below



Driver's View Stopped at Bottom of the Ramp

# South Boston Waterfront – Emergency Access Ramp

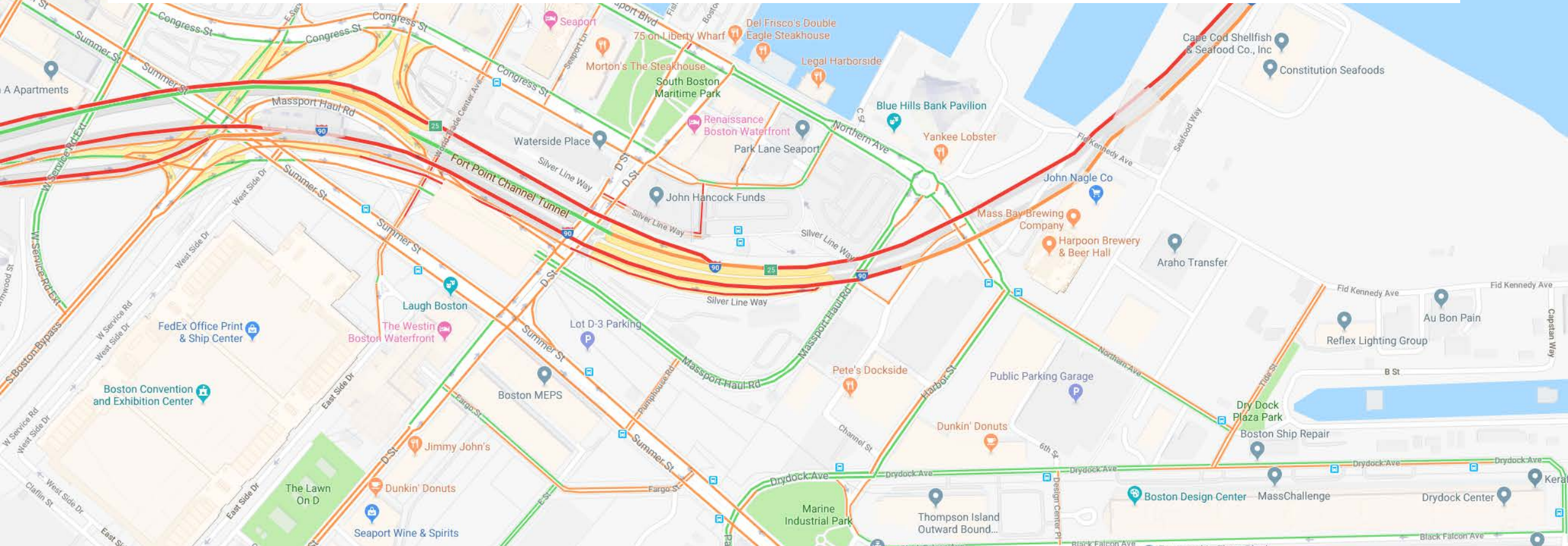
## **Existing Conditions**

- Proposing an Intelligent Transportation Systems solution to overcome these obstacles
- Plan developed in close coordination between MassDOT Highway Division, MBTA, and Office of Transportation Planning (OTP)





# South Boston Waterfront – Emergency Access Ramp Overview – Afternoon Congestion



**Typical Traffic – Wednesdays at 4:00 PM**



# South Boston Waterfront – Emergency Access Ramp **Overview – Afternoon Congestion**



**Typical Traffic – Afternoon, July 2018**

# South Boston Waterfront – Emergency Access Ramp

## **Benefits of Proposed Operations**

- Goal is to provide a service that will be the safest and fastest possible.
- TWT eastbound is congested between 3-6 PM
- Estimated **10+ minute savings** during the PM peak period on days with the highest congestion, resulting in significant improvement in peak hour reliability
- Travel time savings will improve service for customers on the SL1 and SL3

**SILVER LINE SL1 / SL3**

# South Boston Waterfront – Emergency Access Ramp

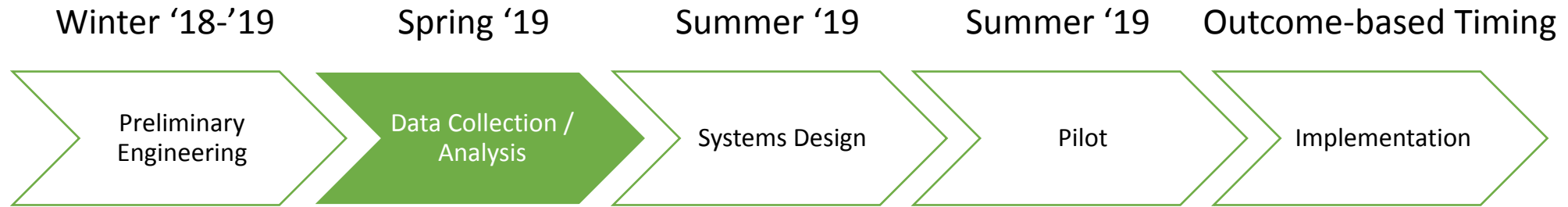
## **Timeline / Next Steps**

- Preliminary engineering work coordinated with MBTA in January 2019
- Consultant (AECOM) is collecting and analyzing available speed data for I-90 to determine required number and type of roadway sensors
  - Timeline for procurement and installation of ITS equipment to be based on these requirements
- System shall interface with Highway Operations Center, MBTA, and State Police for emergency override
- Install traffic monitoring equipment to collect and validate data (temporary and permanent)
- Next steps are systems design, test with MBTA, construction, and implementation



# South Boston Waterfront – Emergency Access Ramp

## **Timeline / Next Steps**



# South Boston Waterfront – Emergency Access Ramp Appendix



I-90 EB Speed > 30 MPH

The image is an aerial photograph of the South Boston Waterfront area. It shows a multi-lane highway (I-90) running horizontally across the top half of the frame. A yellow line, representing the Silver Line bus route, enters from the bottom right, curves around the highway, and exits towards the top left. A red octagonal stop sign is located at a point where the yellow line crosses a road. Text boxes and arrows indicate bus operations and traffic conditions.

Most hours of the day, Silver Line buses would bypass ramp, as occurs today.

South Boston Waterfront – Emergency Access Ramp

## Proposed Operations – Normal Operations



If ramp is clear, bus proceeds to the bottom of the ramp.

I-90 EB Speed  $\leq$  30 MPH

SL1 / SL3



SL1 / SL3



South Boston Waterfront – Emergency Access Ramp  
**Proposed Operations – Ramp Open**



After bus stops at the bottom of the ramp, the bus merges onto the highway.

I-90 EB Speed  $\leq 30$  MPH

SL1 / SL3

SL1 / SL3

South Boston Waterfront – Emergency Access Ramp  
**Proposed Operations – Ramp Open**



If the ramp is in use, or in an emergency condition, bus waits at the top until the contraflow traffic has passed or the emergency override is removed.

I-90 EB Speed  $\leq 30$  MPH

Tow

MSP

SL1 / SL3

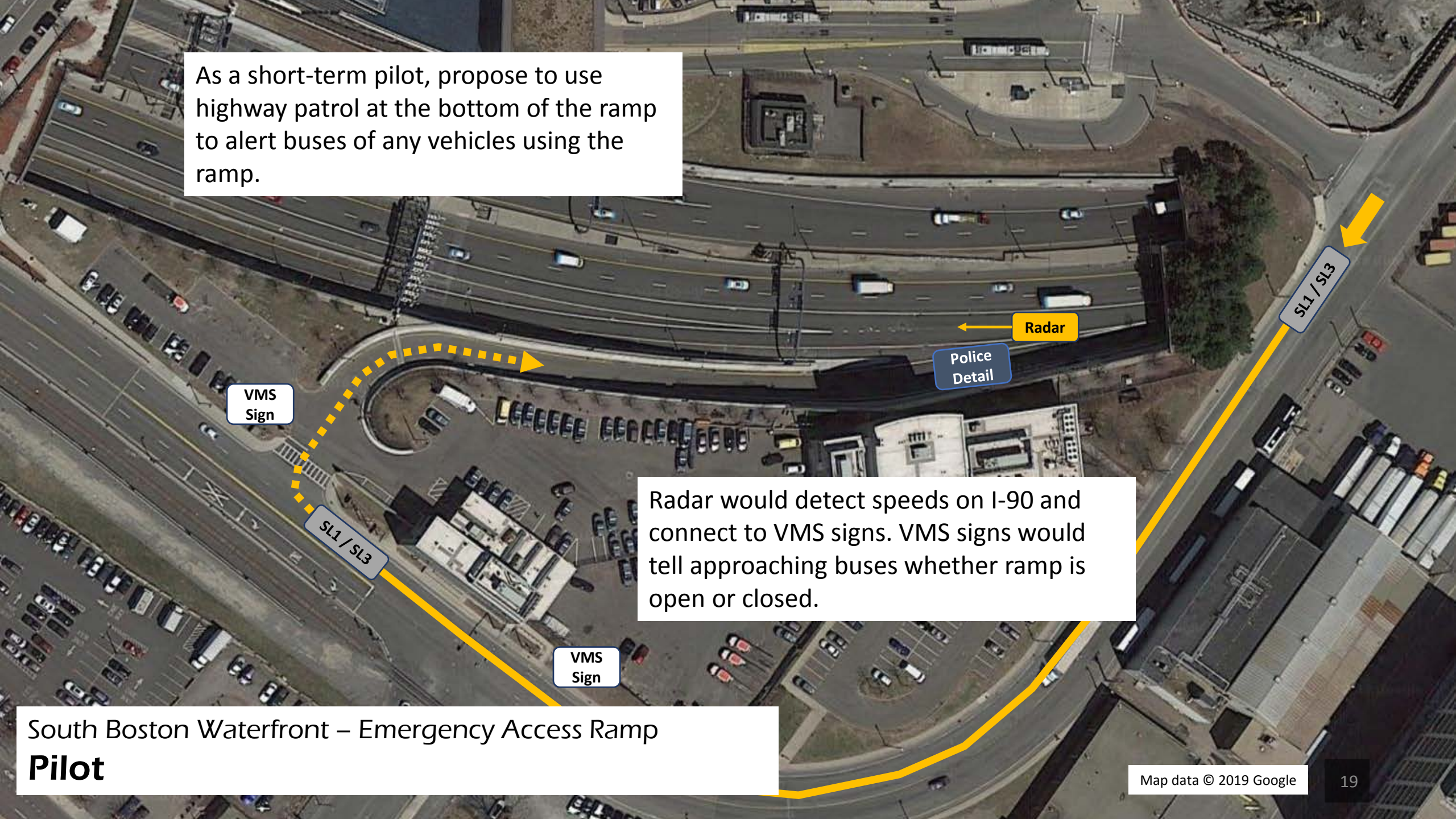
SL1 / SL3

Gates at the top and bottom of the ramp could be used to further enforce ramp traffic restrictions.

## South Boston Waterfront – Emergency Access Ramp Proposed Operations – Ramp Obstructed



As a short-term pilot, propose to use highway patrol at the bottom of the ramp to alert buses of any vehicles using the ramp.



Radar would detect speeds on I-90 and connect to VMS signs. VMS signs would tell approaching buses whether ramp is open or closed.

## South Boston Waterfront – Emergency Access Ramp Pilot