



To: Richard A. Dimino,  
Chief Executive Officer  
A Better City

From: Ruth M. Bonsignore, P.E.

CC: Tom Ryan, ABC

Date: July 24, 2018

Re: Northern Avenue Bridge

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**Background** The South Boston Waterfront Sustainable Transportation Plan (SBWSTP) recommended the replacement or rehabilitation of the Old Northern Avenue Bridge in recognition of the importance of this gateway linking the established urban core of downtown Boston with the quickly growing South Boston Waterfront area. Specifically, the SBWSTP recommended to:

In the Short-term (0 to 3 years):

Advance the design to rehabilitate or replace the Northern Avenue Bridge to accommodate pedestrians, bicyclists, and peak directional vehicular traffic.

In the Medium-term (3 to 10 years):

Reconstruct the Northern Avenue Bridge and its connections to Atlantic Avenue and the Rose Kennedy Greenway.

**Study  
Rationale**

First and foremost, the SBWSTP identified that the Fort Point Channel and Reserved Channel limit connectivity from the west and underscore the importance of existing connections at Seaport Boulevard, Congress and Summer Streets, and restoring the connection at Northern Avenue to improve the quality of the pedestrian connections to the Downtown.

Second, the SBWSTP studied options to improve overall regional access including various roadway circulation changes and new connections. (See the attached Technical Memorandum entitled, "Potential Changes to Traffic Circulation within the South Boston Waterfront"). This analysis examined a one-way vehicular option which could be inbound or peak directional with two-way bicycle and pedestrian accommodations. The results of the modelling showed that reopening the Northern Avenue Bridge to vehicular traffic would further reduce two-way traffic volumes on Seaport Boulevard by about 400 vehicles during the morning peak hour and 450 vehicles during the evening peak hour. This shift in demand would provide some relief to the critical Seaport Boulevard/Atlantic Avenue/Purchase Street intersection while also measurably reducing conflicts for all users (pedestrians, bicyclists and vehicles) at the Sleeper/Seaport Boulevard intersection. In the long-term, vehicular access on the bridge holds open the potential to improve transit connectivity

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between the Waterfront and the Blue and Orange Lines, as well as to/from North Station.

Finally, the South Boston Waterfront Sustainable Transportation Plan modelled the potential demands and travel time savings associated with 37 different roadway improvement ideas. (See the attached Technical Memorandum entitled, “Study Area Roadway Alternatives White Paper”). The analysis of the northern Avenue connection (so-called Alternative R-22) showed that an estimated 45,000 peak period vehicle person-trips during 2035 will desire to make the connection between the Waterfront and points north. The model found that allowing peak directional access on the bridge could provide over \$900,000 annually in travel time savings. It should be noted that travel time savings alone did not warrant the replacement of the bridge; however, taken with the other two value contributions, described above, justified its inclusion in the SBWSTP recommendations.

Accordingly, the benefits of the new Northern Avenue Bridge as summarized in the Plan are that it:

- Provides direct pedestrian/bicycle connection to Greenway/Financial District;
- Provides potential to relieve pedestrian conflicts at Seaport Boulevard/Sleeper Street intersection; and
- Provides relief valve for vehicles exiting the SBW and improves operations along the surface artery.



To: South Boston Waterfront  
Interagency Working Group

Date: December 16, 2014

Memorandum

Project #: 12624.00

From: Laura Castelli

Re: Potential Changes to Traffic Circulation within the South Boston  
Waterfront

A total of 37 discrete roadway alternatives were identified for the South Boston Waterfront Sustainable Transportation Plan (SBW STP). The development and evaluation of these alternatives is summarized in the Study Area Roadway Alternatives White Paper (see Appendix I2). This technical memorandum further discusses roadway alternatives R-11 (Directional and Temporal lane management on the Moakley, Congress Street, and Summer Street bridges), R-27a (Seaport Boulevard/Congress Street one-way clockwise circulation), and R-27b (Seaport Boulevard/Congress Street one-way counterclockwise circulation) specifically.

### Alternative R-11a-c – Directional and Temporal Lane Management on Fort Point Channel Bridges

Three R-11 alternatives were tested to assess the viability of directional or time of day traffic restrictions over the Fort Point Channel bridges at Seaport Boulevard (Moakley Bridge), Congress Street, and Summer Street. Table 1 presents the peak hour traffic flow by direction for each bridge crossing. It should be noted that Seaport Boulevard and Summer Street each provide two travel lanes per direction, while Congress Street provides one travel lane per direction.

**Table 1 – Fort Point Bridge Crossing Traffic Volumes**

Bridge	Morning Peak Hour		Evening Peak Hour	
	Eastbound	Westbound	Eastbound	Westbound
Seaport Boulevard	1,190	985	875	1,260
Congress Street	555	455	555	450
Summer Street	1,225	765	1,090	945

The existing traffic volumes on each bridge were reviewed with respect to number of travel lanes available to determine whether there is an opportunity to change the traffic pattern on any of the bridges to one-way or to change direction by time of day. Using Seaport Boulevard as an example, if the bridge were to be one-way eastbound during the morning and one-way westbound during the evening, the Congress and Summer Street bridges (or other roadways in the study area) would have to accommodate 985 additional vehicles during the morning and 875 additional vehicles during the evening. A review of the volumes shows that they are fairly evenly distributed during both peak hours, with heavy opposite-to-peak traffic flows making it difficult to redistribute the number of lanes on the bridge. Volumes are also balanced geographically, with no one bridge carrying a bigger or lesser burden than the others, based on the number of travel lanes available. Congested locations west of the Fort Point Channel, along Atlantic Avenue and Purchase Street, reduce the ability to effectively receive additional lanes and/or peak period demands. Further, projected demand shifts would result in circuitous routing throughout the South Boston Waterfront roadway network, resulting in other localized operational issues. For these reasons, changing the directionality of any of the bridges, permanently or by time of day, was not recommended.



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A secondary analysis was completed for Summer Street and Seaport Boulevard to determine the effect, if any, constructing a new vehicle bridge south of Summer Street and/or reopening the Northern Avenue Bridge would have on lane management.

A new vehicle bridge south of Summer Street was tested as network-level alternative by modifying the roadway network to account for proposed change using the detailed subarea model developed for this study (details of the subarea model framework are summarized under separate cover). The analysis showed a new bridge was likely to reduce two-way traffic volumes by only about 150 vehicles from the Summer Street Bridge during each peak hour. This reduction would not be sufficient to change the findings of the lane management analysis.

Promising candidate circulation changes were revealed at the Seaport Boulevard intersection with Oliver Street and Northern Avenue. It was noted that a key issue impacting traffic flow along Seaport Boulevard is poor traffic operations at the intersection of Purchase Street/Atlantic Avenue/I-90 North and Seaport Boulevard/Oliver Street. Suggested modifications to improve operations at this location include:

- Converting Oliver Street to one-way eastbound from Purchase Street to Atlantic Avenue
- Modifications to signal timing and phasing
- Adds capacity to Purchase Street off-ramp and westbound Seaport Boulevard
- Improves truck access to Port
- Improves pedestrian crossings

Reopening the Northern Avenue Bridge to vehicular traffic would further reduce two-way traffic volumes on Seaport Boulevard by about 400 vehicles during the morning peak hour and 450 vehicles during the evening peak hour. While reopening the bridge is not required to as part of the Seaport Boulevard/Atlantic Avenue/Purchase Street modifications, this would alleviate some additional congestion from Seaport Boulevard. However, the reduction would not be sufficient to change the findings of the lane management analysis.

### **Alternative R-27a-b – Seaport Boulevard/Congress Street One-way Traffic Circulation**

The feasibility of converting Seaport Boulevard and Congress Street into a one-way pair between B Street (which would also become one-way) and D Street (which would remain two-way) was considered to determine whether as one-way streets, the number of travel lanes on either roadway could be reduced. Reducing the number of travel lanes could allow for a Bus Rapid Transit (BRT) or bus only lane and provide space for expanded pedestrian and bicycle accommodations. The desire to provide exclusive transit lanes and/or expanded pedestrian and bicycle accommodations has been discussed in the Commonwealth Flats area (by Massport) for some time. Both R-27 alternatives were considered network-level alternatives and were first tested by modifying the roadway network to account for proposed directionality changes under each alternative using the detailed 2035 subarea model developed for this study. Details of the subarea model framework are summarized in Appendix E. To complement the results of this effort (discussed below), key intersections were also tested as local alternatives.



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### **Clockwise Traffic Circulation**

During the morning peak hour, the 2035 network level analysis for this alternative showed approximately 1,150 vehicle trips per hour (vph) on Congress Street (one-way westbound), 1,700 vph on Seaport Boulevard (one-way eastbound), and 1,850 vph on B Street (one-way southbound). During the evening peak hour, these volumes were estimated to be 1,250, 1,800, and 1,350 vph respectively. The existing four-lane cross-sections would still be required along each roadway corridor in order to effectively process the forecasted traffic demands, particularly at the signalized intersections of Seaport Boulevard at B Street, Seaport Boulevard at D Street, Congress at B Street and Congress at D Street.

To understand the magnitude of turning traffic at these four critical intersections and the lane geometry likely required to accommodate demands, VHB assigned the 2035 traffic volumes to specific turning movements under each alternative (a specific origin-destination study of volumes at each location was not performed therefore exact adjustments could not be made). The following were noted as critical turning movement volumes that would govern operations at the intersection:

- B Street right-turns to Seaport Boulevard - 725 vph in the morning and 815 vph in the evening
- Seaport Boulevard right-turns to D Street – 965 vph in the morning and 1,410 vph in the evening
- B Street left-turns to the I-93 ramps at Congress Street – 850 vph in the morning and 1,085 vph in the evening

The magnitude of these turning movements would require a minimum of double turn lanes and possible triple turn lanes at these locations, which would limit the ability to provide reduced cross-sections on Congress Street and Seaport Boulevard and could impact property or open space on B and D Streets. As importantly, such significantly high right-turns also impact pedestrian operations and would require changes to traffic signal phasing, which could add delay and congestion along all roadways. For these reasons, this alternative was dismissed from consideration.

### **Counterclockwise Traffic Circulation**

During the morning peak hour, the 2035 network level analysis for this alternative showed approximately 2,300 vph on Congress Street (one-way eastbound), 1,000 vph on Seaport Boulevard (one-way westbound), and 1,500 vph on B Street (one-way northbound). During the evening peak hour, these volumes were estimated to be 2,100, 1,100, and 1,800 vph respectively. The existing four-lane cross-sections would still be required along each roadway corridor in order to effectively process the forecasted traffic demands, particularly at the signalized intersections of Seaport Boulevard at B Street, Seaport Boulevard at D Street, Congress at B Street and Congress at D Street.

Similar to R-27a, to understand the magnitude of turning traffic at these four critical intersections and the lane geometry likely required to accommodate them, the 2035 traffic volumes to specific turning movements under each alternative (a specific origin-destination study of volumes at each location was not performed therefore exact adjustments could not be made). The following were noted as critical turning movement volumes that would govern operations at the intersection:



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- B Street left-turns to Congress Street - 830 vph in the morning and 880 vph in the evening
- Congress Street left-turns to D Street – 765 vph in the morning and 760 vph in the evening
- D Street left-turns to Seaport Boulevard – 1,325 vph in the morning and 1,145 vph in the evening
- Seaport Boulevard left-turns to B Street – 635 vph in the morning and 645 vph in the evening

The magnitude of these turning movements would require triple left turn lanes at most locations, which would limit the ability to provide reduced cross-sections on Congress Street and Seaport Boulevard and could impact property or open space on B and D Streets. Impacts to traffic signal phasing would also be required, which could add delay and congestion along all roadways. For these reasons, this alternative was dismissed from consideration.



To: South Boston Waterfront  
Interagency Working Group

Date: November 25, 2014

Memorandum

Project #: 12624.00

From: Nicolette Hastings, P.E.

Re: South Boston Waterfront Sustainable Transportation Plan  
Study Area Roadway Alternatives White Paper

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## Introduction

A total of 37 discrete roadway alternatives were identified for the South Boston Waterfront Sustainable Transportation Plan (SBW STP). Nine of these alternatives are assumed to be advanced independent of the study as part of separate, on-going efforts. The remaining alternatives were developed, evaluated, and compared as outlined in this memorandum.

The transportation plan considers principally two types of roadway alternatives: localized and network-level actions. These actions are evaluated using different analytic methods/tools including travel demand forecasting and traffic operations software. Several alternatives were only evaluated qualitatively. A summary matrix and graphics are attached to this memorandum which outline and discretely screen the roadway alternatives.

## Background

The Central Transportation Planning Staff (CTPS) regional travel demand model was used to understand existing and forecast 2035 travel demands and patterns through the interaction of land uses and transportation supply. VHB developed a detailed roadway network – or subarea model – for the South Boston Waterfront study area. VHB disaggregated CTPS's TAZs and vehicle trip tables to better represent access/egress locations within the local network. Many of the TAZs were structured to represent the locations of existing and future parking garages and surface lots.

Estimated land use changes were translated into multimodal demands (vehicular, transit, and walk trips) on the study area's transportation system (accounting only for planned infrastructure improvements) and analyzed to identify highway and street-related needs.

Using the more detailed and refined sub-area model, VHB was able to test the effects of potential roadway improvements, as discussed below. Detailed descriptions of the travel demand model methodology and planned infrastructure projects are included under separate covers.

## Local Alternatives

Localized alternatives (primarily isolated intersection) were evaluated using standard level of service/traffic engineering methodology and tools (e.g. Synchro or SimTraffic). Modifications to geometry and/or signal timings were modeled in Synchro and outputs were reviewed. The results of these analyses were fed into larger evaluation criteria or performance metrics summarizing the improvement's targeted market and annual user cost savings. An annualized conceptual cost estimate was also developed for each alternative.

Six alternatives were developed that are projected to have a localized benefit only:

- R-6: Restripe Ramp DB (D Street on-ramp to I-90 EB & WB)



- R-6a: Eliminate D Street northbound left-turn to Ramp DB
- R-7: Disincent truck traffic on Seaport Boulevard
- R-10: Improve signal coordination/progression
- R-13: Local intersection improvements
- R-18: Improve access/egress: Atlantic Ave

The targeted market for each alternative includes the 2035 baseline demand (AM + PM peak period vehicle-person trips) assumed to be impacted or benefited. For localized alternatives, the market was assumed to be AM and PM peak hour vehicle trips on the affected roadway links converted to peak period vehicle-person trips assuming a vehicle occupancy rate (VOR) of 1.21 and a peak period factor of 0.35, consistent with the CTPS regional travel demand model's AM + PM peak period vehicle person trips.

For localized alternatives, annual user cost savings were estimated using AM and PM peak hour average network delay per vehicle – output from Synchro. These delays were converted to hours and multiplied by the AM and PM peak period vehicle-person trips, respectively. The alternative delays were compared to the 2035 baseline (No-Build) delays to develop a time savings (or impacts) by peak period. The AM and PM peak period time savings were summed and translated to an annual time savings estimate (in hours) based on factors provided by CTPS<sup>1</sup>. The annual time savings were converted to user cost savings, based on CTPS value of time of \$12.00 in 1991 dollars, converted to \$20.99 in 2014 dollars. Positive user costs indicate time savings while negative user costs indicate that an alternative increases travel time.

Order of magnitude conceptual costs were developed for each alternative. Where available, cost estimates were based on readily available published data for alternatives that are currently being planned. Cost estimates for Alternatives R-6, R-6a, R-7, R-10, and R-13 were assumed to consist of a one-time expenditure. The cost for Alternative R-18 was annualized over an assumed useful life of 5 years using a 5 percent interest rate.

## Network-Level Alternatives

The analyses of network-level actions relied more heavily on the subarea model. The proposed network changes including capacity enhancements, directionality modifications and/or new or revised connections were discretely coded in the subarea model for each alternative. Details of the subarea model framework are summarized under separate cover.

Fifteen roadway alternatives were developed that are projected to have broader implications, including network-level traffic effects:

- R-1: Redesign E St; E St and Cypher St truck connections

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<sup>1</sup> CTPS Factors: 2.08 to convert from AM + PM peak period to daily; 340.45 to convert from daily to annual.



- R-2: Reopen Dorchester Avenue
- R-3: New channel crossing
- R-4 Truck connections: Cypher St, E St, Haul Rd/Drydock Ave/ Pappas Way
- R-12a: Neighborhood connections - D Street/E Street
- R-12b: Neighborhood connections - L Street
- R-15: A St widening for 3rd/4th lane
- R-16: Foundry St ramp connection to West 4th St Bridge
- R-22: Reconstruct Northern Avenue Bridge
- R-23c: South Boston Bypass Road – Limited access: Cypher St to West Service Road
- R-23d: South Boston Bypass Road – AM Peak EB unrestricted
- R-23e: South Boston Bypass Road – PM Peak WB unrestricted
- R-23f: South Boston Bypass Road – Restrictions lifted
- R-27a: Seaport Boulevard/Congress Street one-way clockwise circulation
- R-27b: Seaport Boulevard/Congress Street one-way counterclockwise circulation

Similar to the local alternatives, targeted markets and annual user cost savings were evaluated and conceptual cost estimates were developed and annualized, as appropriate, for each network-level alternative.

The targeted market summarizes the 2035 baseline demand assumed to be impacted or benefited by a given alternative. For each alternative, the vehicle-person trip table (AM + PM peak period vehicle-person trips) summarized by aggregate areas consistent with the transit alternatives analysis were reviewed. An evaluation of whether each aggregate area would be impacted by an alternative was made based on the projected model impacts of the given alternative. This evaluation resulted in the targeted market, total AM and PM peak period person trips by vehicle.

Alternative R-12a: Neighborhood connections D Street/E Street involves removing an existing "circuit breaker" on D Street. Since, this alternative is projected to have a fairly localized impact only; AM and PM peak hour vehicle trips were converted to peak period vehicle-person trips assuming a vehicle occupancy rate (VOR) of 1.21 and a peak period factor of 0.35 to ascertain the affected market.

For each network-level alternative, user cost savings were evaluated based on vehicle-hours traveled – output from the subarea model. Based on the congested volumes and travel times during the morning and evening peak hours, total Vehicle Hours Traveled (VHT) were calculated for each alternative for the roadways in the SBW study area and the rest of South Boston. The estimation of additional peak hour VHT over the 2035 Base scenario indicates the loss of productivity/time for the motoring public resulting from the alternative; reduced VHT indicates time savings. The estimated increase in morning and evening peak hour VHT were summed and then converted into estimated three-hour peak period VHT assuming a peak period factor of 0.35. The time savings were translated to an annual time



savings estimate (in hours) and user cost savings using the same methodology as the local alternatives, discussed above.

Order of magnitude conceptual costs were developed for each alternative based on the methodology discussed above. Cost estimates for Alternatives R-12a, R-12b, R-20, and R-23c through R-23f were assumed to consist of a one-time expenditure. The costs for the remaining network-level alternatives were annualized over the assumed useful life of the project using a 5 percent interest. For minor signal retiming and/or restriping projects (R-15, R-27a, and R-27b) a useful life of 5 years was assumed. A 20 year useful life was assumed for general roadway projects (R-1, R-4, and R-16) and a 50 year useful life was assumed for alternatives involving new bridges (R-3 and R-22).

### **Other Alternatives**

A higher level, qualitative screening was performed to evaluate several alternatives due to analysis limitations within the project scope and/or fatal flaws identified early in the screening process.

Alternatives R-11a, b, c involve lane management options, including the reversal of lanes in order to temporarily increase the capacity of congested roads across the Fort Point Channel, mitigate traffic congestion during rush hours, and emergency evacuation. Three principle issues resulted in the dismissal of all of these options. First, directional volumes are fairly evenly distributed in AM and PM peak hours on all three Fort Point crossings; these heavy opposite-to-peak flows make it difficult to redistribute lanes on the bridge. Second, congested locations (especially west of the Fort Point Channel) were found to be unable to effectively receive additional lanes and/or peak period traffic demands. Lastly, projected demand shifts would result in circuitous routing throughout the South Boston Waterfront roadway network, resulting in other operational issues. While lane management options were dismissed on the Summer Street, Congress Street, and Seaport Boulevard bridges, there appears to be an opportunity for a reversible lane on a reconstructed Northern Avenue bridge which would allow eastbound access into the South Boston Waterfront in the morning and westbound egress from the district in the evening. This reversible lane could accommodate latent demand on the Seaport Boulevard, particularly during the critical evening peak period.

Alternative R-20 seeks to address lane management issues along I-90 eastbound prior to the Ted Williams Tunnel (TWT) by extending the South Boston on-ramp as an add-a-lane, merging it with the HOV and State Police ramp, and then merging prior to the TWT. Analysis of this alternative is not appropriate with standard traffic software applications; however, the alternative eliminates two friction points along I-90 eastbound (including the State Police ramp) and is expected to benefit operations along this segment at a minimal cost. Alternative R-20 was recommended as a short-term improvement.

Alternative R-21 involves opening HOV lanes from the I-93 northbound mainline, I-93 northbound Frontage Road, and/or Kneeland Street to I-90 eastbound to general traffic. While the HOV has reserve capacity (as identified during the Callahan Tunnel closure), increased use of the HOV lane to I-90 eastbound may contribute to breakdown of mainline flow during peak periods and impact the egress capacity of the South Boston Waterfront. As such, this alternative was dismissed.



Alternatives R-23a: South Boston Bypass Road – No-Action and R-23b: South Boston Bypass Road – Transit both involve no change to current South Boston Bypass Road restrictions. Namely, the roadway is restricted to commercial vehicles only in both directions; both alternatives would maintain this restriction. Alternative R-23b involves potential routing of transit services along this corridor; no measurable impact to operations is anticipated as a result of this option due to the small increase in projected demand.

## **Performance Metrics**

A series of metrics were developed to evaluate and screen each roadway alternative, based on estimated annual user cost savings and conceptual costs.

### **Benefit/Cost Factor**

The first metric used to compare alternatives was a benefit/cost factor which compares the annual user cost savings to the conceptual cost (annualized if appropriate). Factors greater than 1.0 indicate that the annual benefits of an alternative outweigh the relative cost; alternatives with factors less than 1.0 are not cost effective. Eleven roadway alternatives had benefit/cost factors greater than 1.0; four had factors between 1.0 and 0.0; and four had negative factors (due user cost impacts). Factors could not be calculated for the remaining alternatives.

### **Conceptual Cost Tier**

Conceptual costs were also compared for all transit and roadway discrete alternatives. Similar to the user cost comparison, tiers corresponding to natural breaks in conceptual costs were developed:

- Low Cost: Alternatives with conceptual costs less than \$250,000;
- Moderate Cost: Alternatives with conceptual costs between \$250,000 and \$2,500,000; and
- High Cost: Alternatives with conceptual costs greater than \$2,500,000.

All roadway alternatives considered fell into the low or moderate cost tiers, with the exception of Alternative R-22: Reconstruct Northern Avenue Bridge which was categorized as a high cost option.

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## Attachments

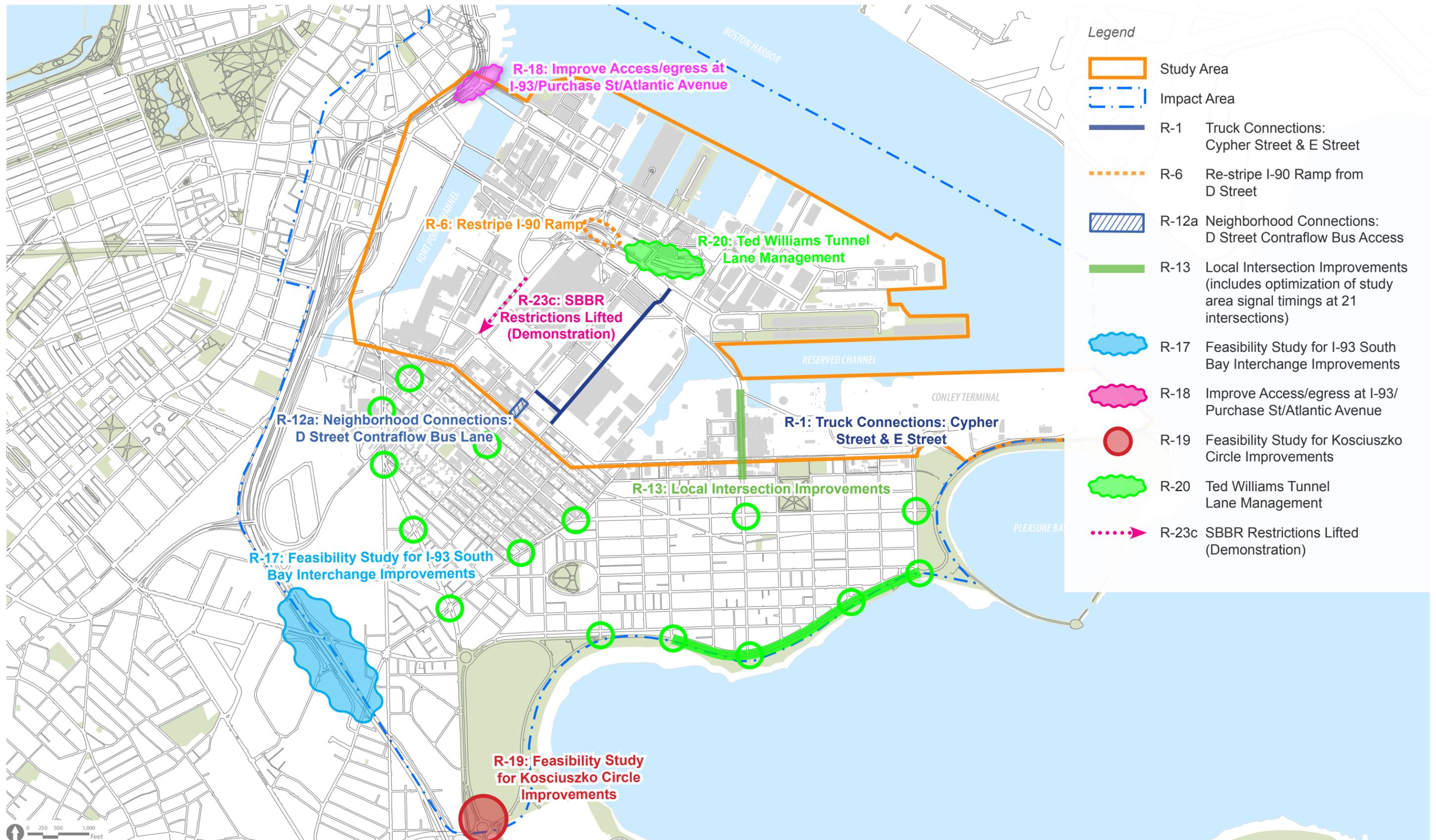
- Roadway Alternatives Discrete Screen Matrix
- Discrete Roadway Alternatives Graphics

Roadway Alternatives			Discrete Alternative Screening									
ID	Alternative	Description	Targeted Market (AM + PM Veh-Person Trips)	Total Annual Travel Time Savings	Annual User Cost Savings	Conceptual Cost (Annualized as Applicable)	Benefit/Cost Factor	Conceptual Cost Tier	Notes	Result of Screening	Timeframe	
R-1	E St and Cypher St truck connections	Extend Cypher St to E St Realign E St opposite Pumhouse Rd and extend to Summer St	11,410 (impacted corridors only)	10,620	\$222,870	\$775,000	0.29	Moderate	Improves multimodal conditions along D St Improves connectivity to Haul Road. See R-4	Recommended. Combine with R-4.	Short-term (0-3)	
R-2	Reopen Dorchester Ave	Reopen Dorchester Ave from Summer St over the Fort Point Channel, providing unrestricted access to some or all modes.	18,620	negligible	negligible	unknown	n/a	n/a	Pedestrian/bicycle connectivity benefits. Absorbs SBW through traffic currently travelling east-west on Summer St bridge and north-south on A St..	Recommended.	Medium-term (3-10)	
R-3	New channel crossing	New Fort Point Channel crossing south of Summer St and in the vicinity of Binford St providing access to some or all modes. Assuming Dorchester Ave open.	18,880	11,420	\$239,740	\$548,000	0.44	Moderate	Limited vehicular benefit. Consider providing transit and/or pedestrian/bicycle connection only.	Dismissed.	n/a	
R-4	Truck connections: Cypher St, E St, Haul Rd/Drydock Ave/ Pappas Way	Provide new connections from Haul Rd to Drydock Ave./Pappas Way Assumes extension of Cypher St to E St and E St to Summer St opposite Pumhouse Rd (R-1)	49,050	92,050	\$1,932,210	\$368,000	5.25	Moderate	Enhances east-west mobility and access to the BMIP.	Recommended.	Medium-term (3-10)	
R-5	New signal at on Summer St at Dedicated Freight Corridor (DFC)	New signal at the intersection of Summer St and the DFC, funded by the DFC project.	Project included as part of 2035 No-Build Conditions for South Boston Waterfront Sustainable Transportation Plan.							No action required.	Anticipated Completion: Late 2016	
R-6	Restripe Ramp DB (D St on-ramp to I-90 EB & WB)	Restripe and sign ramp DB to clearly delineate two travel lanes - one for I-90 eastbound and one for I-90 westbound.	5,305 (ramp volume only)	negligible	negligible	\$2,000	n/a	Low	Traffic management improvement only.	Recommended.	Short-term (0-3)	
R-6a	Eliminate D St left-turn to Ramp DB	Eliminate northbound D St left-turn to ramp DB.	12,100 (D St volume only)	4,070	\$85,400	\$25,000	3.42	Low	Redistributes traffic from problematic move to Haul Road, which has reserve capacity.	Recommended.	Medium-term (3-10)	
R-7	Disincent truck traffic on Seaport Blvd	Prohibit trucks on Seaport Blvd between Congress St and D St..	6,725 (Seaport Blvd volume only)	-1,320	-\$27,800	\$500	-55.60	Low	Increased travel time and emissions for truck traffic with limited benefit to general Seaport Blvd traffic and difficult to enforce. Impacts Congress St, D St, and D St southbound left-turn at Seaport Blvd	Dismissed.	n/a	
R-8	Richards St improvements	Improvements to Richards St associated with State St development.	Project included as part of 2035 No-Build Conditions for South Boston Waterfront Sustainable Transportation Plan.							Provides direct connection between A St and Cypher St. Potential future connection to South Boston Bypass Road.	No action required.	Complete
R-9	Pappas Way	Massport project that consists of Pappas Way reconstruction between Summer St and West First St, including a new sidewalk.	Project included as part of 2035 No-Build Conditions for South Boston Waterfront Sustainable Transportation Plan.							Enhances pedestrian mobility and the pedestrian environment along the Reserve Channel path. Improved vehicle connection.	No action required.	Complete
R-10	Improve signal coordination/progression	Signal timing and offset improvements along the Seaport Blvd, Congress St, and D St corridors to improve peak period progression and coordination.	49,050	4,730	\$99,200	\$51,000	1.95	Low	Assumes one-time signal optimization; ideally should be conducted every ~5 years. Discarded in favor of R-13 (more comprehensive improvement)	Dismissed (in favor of R-13).	n/a	
R-11a	Summer St Bridge: Directional and temporal lane management	Contraflow lane reversal - the reversal of lanes in order to temporarily increase the capacity of congested roads - on the Fort Point Channel crossings to mitigate traffic congestion during rush hours and emergency evacuation.	Directional volumes evenly distributed in AM and PM peak hours on Summer St bridge; heavy opposite-to-peak flows make it difficult to redistribute lanes on the bridge. Congested locations (especially west of the Fort Point Channel) unable to effectively receive additional lanes and/or peak period traffic demands. Projected demand shifts would result in circuitous routing throughout the South Boston Waterfront roadway network, resulting in other operational issues.							Dismissed.	n/a	
R-11b	Congress St Bridge: Directional and temporal lane management	Contraflow lane reversal - the reversal of lanes in order to temporarily increase the capacity of congested roads - on the Fort Point Channel crossings to mitigate traffic congestion during rush hours and emergency evacuation.	Directional volumes evenly distributed in AM and PM peak hours on Congress St bridge; heavy opposite-to-peak flows make it difficult to redistribute lanes on the bridge. Congested locations (especially west of the Fort Point Channel) unable to effectively receive additional lanes and/or peak period traffic demands. Projected demand shifts would result in circuitous routing throughout the South Boston Waterfront roadway network, resulting in other operational issues.							Dismissed.	n/a	
R-11c	Seaport Blvd Bridge: Directional and temporal lane management	Contraflow lane reversal - the reversal of lanes in order to temporarily increase the capacity of congested roads - on the Fort Point Channel crossings to mitigate traffic congestion during rush hours and emergency evacuation.	Directional volumes evenly distributed in AM and PM peak hours on Seaport Blvd bridge; heavy opposite-to-peak flows make it difficult to redistribute lanes on the bridge. Congested locations (especially west of the Fort Point Channel) unable to effectively receive additional lanes and/or peak period traffic demands. Projected demand shifts would result in circuitous routing throughout the South Boston Waterfront roadway network, resulting in other operational issues. Also considered in combination with R-22; potential opportunity for a reversible lane on a reconstructed Northern Avenue bridge.							Dismissed (in favor of R-18).	n/a	
R-12a	Neighborhood connections D St./E St.	Eliminate D St circuit breaker between W 1st St and W 2nd St; evaluate impact on E St.	5,100 (D St and E St volume only)	1,610	\$33,820	\$150,000	0.23	Low	Small benefits. Consider contraflow NB BRT lane	Recommended for contraflow bus access.	Short-term (0-3)	

Roadway Alternatives			Discrete Alternative Screening								
ID	Alternative	Description	Targeted Market (AM + PM Veh-Person Trips)	Total Annual Travel Time Savings	Annual User Cost Savings	Conceptual Cost (Annualized as Applicable)	Benefit/Cost Factor	Conceptual Cost Tier	Notes	Result of Screening	Timeframe
R-12b	Neighborhood connections L St.	Install circuit breaker on L St between E. 1st and E. 2nd (one-way SB)	17,145	-20,070	-\$421,260	\$125,000	-3.37	Low	Induces cut-through traffic on South Boston neighborhood local St.s, including: M St, K St and H St.	Dismissed.	n/a
R-13	Local intersection improvements	Optimization of study area signal timings. Revise signal phasing at D St at I-90 ramp. Revise striping on Summer St/L St at West 1st St.	49,050	86,640	\$1,818,600	\$70,000	25.98	Low	Splits and offsets optimized at 21 locations. D St and L St improvements.	Recommended.	Short-term (0-3)
R-14	Northern Ave realignment and associated improvements	Realign Northern Ave east-west, extend East Service Rd, and reconstruct intersection. Sleeper St and Thompson Place one-way pairs. Installation of three new traffic signals.	Project assumed to be advanced independent of the South Boston Waterfront Sustainable Transportation Plan Alternatives. See attached plan.						Completed St network enhances access to Fan Pier, Seaport Square, and Pier 4 developments.	No action required.	Anticipated Completion: December 2017
R-15	A St widening for 3rd/4th lane	Widen A St from Congress St to W 2nd St to a 3 or 4 lane cross-section.	23,915	40,030	\$840,200	\$121,000	6.94	Low	Recommended alternative R-2: Dorchester Ave Reopening removes through traffic from A St. Consider turn lanes at key intersections instead.	Dismissed widening. Provision of turn lanes for access to development parcels recommended.	Long-term (10-20+)
R-16	Foundry St ramp connection to West 4th St Bridge	Ramp connection from Foundry St SB to West 4th St WB to enhance access to Foundry St parcels.	16,625	95,430	\$2,003,110	\$160,000	12.52	Low	Significant impacts anticipated to adjacent land uses. No Foundry St public right-of-way south of West 4th St; minimum 450 ft ramp required (~20 ft elevation difference). Redundant connection to Dorchester Ave.	Dismissed.	n/a
R-17	Improve access/egress: South Bay Interchange	Improvements to address congestion on the I-93 southbound and adjacent Frontage Rd in the vicinity of the South Bay interchange	Project outside of study area. Concept being developed by MassDOT to improve I-93 southbound flow and extend HOV lane limits.							No action required.	Medium-term (3-10)
R-18	Improve access/egress: Atlantic Ave	Convert Oliver St to one-way EB from Purchase St to Atlantic Ave Reconstruct Northern Ave Bridge as one-way WB Modify signal timings and phasing	35,780	348,400	\$7,312,900	\$133,000	54.98	Low	Adds 115 vph capacity exiting the SBW (PM peak hour) Adds 380 vph capacity to the I-93 SB Purchase St off-ramp (PM peak hour)	Recommended.	Short-term (0-3)
R-19	Improve access/egress: Kosciuszko (Columbia Road) Circle (DCR)	Grade separation concept developed at Kosciuszko Circle.	Project outside of study area. Improvements to be developed by others.							No action required.	Medium-term (3-10)
R-20	Ted Williams Tunnel lane management	Address lane management issues along I-90 EB prior to the TWT by extending the South Boston on-ramp as an add-a-lane, merging it with the HOV and State Police ramp, and then merging prior to the TWT.	3,165	Unknown	Unknown	\$50,000	n/a	Low	Requires Federal process for approval	Recommended.	Medium-term (3-10)
R-21	HOV lane use: Kneeland St - TWT/I-93 SB & I-93 NB Frontage Rd - TWT	Open HOV lanes to general traffic: Kneeland St to TWT/I-93 SB I-93 NB Frontage Rd to TWT	Increased use of HOV lane to I-90 EB causes breakdown of mainline flow and impacts the egress capacity of the South Boston Waterfront. Weekday evening peak hour use of the HOV lane observed during the Callahan Tunnel closure peaked at approximately 720 vph on Thursday evening and 825 vph on Friday evening.							Dismissed.	n/a
R-22	Northern Ave Bridge	Reconstruct Northern Ave bridge over Fort Point Channel providing access to some or all modes.	45,300	44,190	\$927,640	\$2,739,000	0.34	High	Provides direct pedestrian/bicycle connection to Greenway/Financial District; potential to relieve pedestrian conflicts at Seaport Blvd/Sleeper St Provides relief valve for vehicles exiting the SBW and improves operations along the surface artery.	Recommended.	Medium-term (3-10)
R-23	South Boston Bypass Rd (SBBR) alternatives	See below.	See below.								
R-23a	SBBR-1: No-Action	Maintain access restriction (No-Action). SBBR EB and WB restricted to commercial vehicles 24/7	This is the 2035 Baseline condition for the SBBR.						AM: EB Travel Time = 124 sec; WB Travel Time = 145 sec PM: EB Travel Time = 123 sec; WB Travel Time = 154 sec	No action required.	n/a
R-23b	SBBR-2: Transit	Limited access: Commercial and transit (BRT corridor) vehicles only.	This is the 2035 Baseline condition for the SBBR.						AM: EB Travel Time = 124 sec; WB Travel Time = 145 sec PM: EB Travel Time = 123 sec; WB Travel Time = 154 sec	No action required.	n/a
R-23c	SBBR-3: Portion unrestricted	Limited access: Cypher St to West Service Rd unrestricted 24/7. SBBR commercial vehicle restriction from I-93 to Cypher St to remain.	6,785	51,800	\$1,087,220	\$105,000	10.35	Low	SBBR mainline under capacity; travel time impacts of 10 sec or less in both directions during both peak hours. Other actions to maintain operations.	Recommended as MassDOT pilot project.	Medium-term (3-10)

Roadway Alternatives			Discrete Alternative Screening									
ID	Alternative	Description	Targeted Market (AM + PM Veh-Person Trips)	Total Annual Travel Time Savings	Annual User Cost Savings	Conceptual Cost (Annualized as Applicable)	Benefit/Cost Factor	Conceptual Cost Tier	Notes	Result of Screening	Timeframe	
R-23d	SBBR-4a: AM Peak EB unrestricted	Restrictions lifted AM Peak Period EB only from I-93 to West Service Rd. SBBR WB restriction to remain during AM peak period. SBBR EB & WB restriction to remain all other times of the day.	8,560	30,740	\$645,250	\$105,000	6.15	Low	SBBR mainline under capacity; travel time impacts of 10 sec or less in both directions during both peak hours. Other actions to maintain operations.	Recommended as MassDOT pilot project.	Medium-term (3-10)	
R-23e	SBBR-4b: PM Peak WB unrestricted	Restrictions lifted PM Peak Period WB only from West Service Rd to I-93 SBBR EB restriction to remain during PM peak period. SBBR EB & WB restriction to remain all other times of the day.	7,940	22,040	\$462,670	\$105,000	4.41	Low	SBBR mainline under capacity; travel time impacts of 10 sec or less in both directions during both peak hours. Other actions to maintain operations.	Dismissed.	n/a	
R-23f	SBBR-4c: Unrestricted	Restrictions lifted along entire length, 24/7. Consider tolls with alternative pricing or free for car pools.	23,915	140,080	\$2,940,200	\$105,000	28.00	Low	SBBR mainline under capacity; EB travel time increases or less than 20 sec; WB travel time impacts of 10 sec or less. Other actions needed to maintain operations. SBBR vulnerable to cut-through for traffic destined to I-90 EB/TWT during I-93 NB congestion.	Dismissed.	n/a	
R-24	Dedicated Freight Corridor – Conley Terminal	Massport is constructing 2/3-mile dedicated truck haul Rd (Dedicated Freight Corridor) to accommodate projected growth at Conley Terminal and remove all container truck traffic from East First St and portions of Summer St.	Project included as part of 2035 No-Build Conditions for South Boston Waterfront Sustainable Transportation Plan.							No action required.	Anticipated Completion: Late 2016	
R-25	Commercial loading docks	Evaluate siting of future commercial loading docks.	The siting and design of all future commercial loading docks should be in accordance with BTD's Service & Loading and/or Driveway Guidelines, as appropriate. Where applicable, design of commercial loading docks and adjacent sidewalk features such as St trees should refer to information provided in the Boston Complete St.s Guidelines regarding sidewalks.							No action required.	On-going	
R-26	Freight rail connection to BMIP	Freight rail connection via "Track 61," paralleling the Bypass and Haul Roads from South Bay Junction to Drydock Ave./BMIP.	Freight access to be maintained.							Limited use currently.	No action required.	n/a
R-27a	Congress St./Seaport Blvd one-way circulation - clockwise	One-way clockwise circulation on Congress St., B St and Seaport Blvd..	49,050	-123,600	-\$2,594,450	\$519,000	-5.00	Moderate	High diverted traffic volumes; vehicular travel lane reduction unlikely. Impacts to D St corridor. Increased right-turns result in increased pedestrian conflicts.	Dismissed.	n/a	
R-27b	Congress St./Seaport Blvd one-way circulation - counterclockwise	One-way counterclockwise circulation on Congress St., B St and Seaport Blvd..	49,050	-178,690	-\$3,750,640	\$582,000	-6.44	Moderate	High diverted traffic volumes; vehicular travel lane reduction unlikely. Impacts to D St corridor. Increased left-turns result in increased vehicular conflicts and delay.	Dismissed.	n/a	

# Recommended Alternatives - Best Performing Roadway Options (Short-term)



# Recommended Alternatives - Best Performing Roadway Options (Medium to Long-term)

