

Criteria	Measure	Description	Data	Source/Tool	Health Outcomes	Conceptual Health Pathway	Health Metrics/Proxies	Alternatives								
<div><div><div></div><div></div><div></div><div></div><div></div></div><div>WORSE<div></div>SAME<div></div>BETTER<div></div></div></div> Compared to 2040 No Build								Future No-Build		Depressed / Same Alignment		Depressed / New Alignment		Elevated Viaduct		
								Ranking	Discussion	Ranking	Discussion	Ranking	Discussion	Ranking	Discussion	
1	MOBILITY AND ACCESSIBILITY To maintain or improve the conveyance of regional traffic through the corridor, while enhancing the connectivity of all modes of transportation into and around the City and its waterfront.															
1.1	Roadway Operational Functionality															
1.1.1		Provide acceptable intersection level of service	Delay or LOS change in total number of intersections	Change in delay (in minutes) and LOS for intersections with E and F. See Map Nos. 1, 2 and 3.	Synchro (Microsimulation Software), Mapping of intersections	Congestion, Stress levels, Commute Time, Less Time for Family	Air quality, Noise, Mobility and Connectivity	Number of Intersections experiencing LOS E/F and average delay (in minutes)	🟡	Total AM delay: 9.32 veh-min. Total PM delay: 13.99 veh-min. Intersections LOS E/F: 5in AM, 9 in PM	🟢	Total AM delay: 2.58 veh-min. Total PM delay: 14.16 veh-min. Intersections LOS E/F: 2 in AM, 9 in PM	🟡	Total AM delay: 7.29 veh-min. Total PM delay: 23.08 veh-min. Intersections LOS E/F: 4 in AM, 10 in PM	🟡	Total AM delay: 11.19 veh-min. Total PM delay: 12.18 veh-min. Intersections LOS E/F: 5 in AM, 9 in PM
1.1.2		Provide acceptable intersection level of service	V/C change by total number of intersections	Max. V/C (Volume to Capacity Ratio) at each signalized Intersection	Synchro (Microsimulation Software)	Congestion, Stress levels, Commute Time, Less Time for Family		Direction and magnitude of change in V/C per intersection; number of intersections with improved V/C	🟡	Average App. V/C AM: 0.3571 Average App. V/C PM: 0.4747	🟡	Average App. V/C AM: 0.381 Average App. V/C PM: 0.473	🟢	Average App. V/C AM: 0.4150 Average App. V/C PM: 0.5220	🟡	Average App. V/C AM: 0.376 Average App. V/C PM: 0.475
1.1.3		Provide acceptable intersection levels of service	Queue length changes in total number of intersections - Calculated 50th and 95th percentile queues	Queue length by lane and approach	Synchro (Microsimulation Software)	Congestion, Stress levels, Commute Time, Less Time for Family		Change in aggregate queue length, count of intersections with reduced 50th/95th queues	🟡	Total 50th Queue AM: 16,618 LF Total 50th Queue PM: 25,939 LF Total 95th Queue AM: 27,916 LF Total 95th Queue PM: 40,325 LF	🟢	Total 50th Queue AM: 22,731 LF Total 50th Queue PM: 32,292 LF Total 95th Queue AM: 36,400 LF Total 95th Queue PM: 49,900 LF	🟢	Total 50th Queue AM: 22,860 LF Total 50th Queue PM: 30,928 LF Total 95th Queue AM: 36,029 LF Total 95th Queue PM: 47,217 LF	🟢	Total 50th Queue AM: 22,172LF Total 50th Queue PM: 34,011 LF Total 95th Queue AM: 35,620 LF Total 95th Queue PM: 50,846 LF
1.1.4		Provide or maintain acceptable merge, diverge, and weave level of service on I-91 mainline	Change in LOS at merge, diverge and weave locations on limited access roadways	LOS by location	Highway Capacity Software/Manual 2010	Safety, Accidents, Injury, Congestion, Stress levels, Commute Time, Less Time for Family	Air quality, Noise, Mobility and Connectivity and Public Safety	Change in number of merge, diverge, and weave locations	🟡	<u>LOCATIONS:</u> Interstate 91 NB between Route 5 On-Ramp and Exit 2 - Longmeadow, MA: AM E, PM E Interstate 91 Exit 3 Off-ramp, between Route 5 SB off-ramp to East Columbus Avenue from South End Bridge, on-ramp to I-91 NB, off-ramp to East Columbus Avenue: AM E West Columbus Avenue SB between I-91 SB Off-ramp, I-91 SB On-Ramp and On-ramp to South End Bridge WB: PM F Interstate 291 EB Ramp from I-91SB between the Route 20 On-ramp and the Exit 2 Off-ramp: AM E, PM E Interstate 91 NB between East Columbus Avenue On-ramp and Exit 8 On-ramp I291 EB: AM E, PM E Interstate 91 SB between On-ramp from East Columbus Avenue and Exit Off-ramp Route 5 SB in Longmeadow, MA: AM E, PM F	🟡	<u>LOCATIONS:</u> Interstate 91 NB from South End Bridge to Broad Street: AM F, PM, F Interstate 91 SB from Union Street to South End Bridge: AM E, PM E Interstate 291 WB from Liberty Street to Exits 1 and 2: AM F Interstate 291 EB from Interstate 91 to Liberty Street: AM F, PM F Interstate 91 NB from Union Street to Interstate 291: AM F, PM F	🟢	<u>LOCATIONS:</u> Interstate 291 EB from Interstate 91 to Liberty Street: PM F Interstate 291 WB from Dwight Street on-ramp Interstate 91 NB: AM F, PM F	🟡	<u>LOCATIONS:</u> Interstate 91 NB from South End Bridge to Broad Street: AM F, PM F Interstate 91 SB from Union Street to South End Bridge: AM E, PM E Interstate 291 WB from Liberty Street to Exits 1 and 2: AM F Interstate 291 EB from Interstate 91 to Liberty Street: AM F, PM F Interstate 91 NB from Union Street to Interstate 291: AM F, PM F
1.1.5		Provide acceptable I-91 mainline and on and off-ramp levels of service	Change in LOS on limited access ramps and highway segments	LOS by location	Highway Capacity Software/Manual 2010	Congestion, Stress levels, Commute Time, Less Time for Family		Change in number of on and off ramps; change in on/off ramp LOS.	🟡	<u>RAMPS</u> I-91 Exit 1 and 2 Interchange US Route 5 NB On-ramp to I-91 NB: PM E I-91 Exit 3 Interchange I-91 SB On-ramp from West Columbus Avenue: PM F I-91 / I-291 Interchange - I-291 SB Ramp to I-91 NB: AM F, PM F <u>MAINLINE</u> All D or better	🟢	<u>RAMPS</u> All LOS D or better <u>MAINLINE</u> All D or better	🟢	<u>RAMPS</u> All LOS D or better <u>MAINLINE</u> All D or better	🟢	<u>RAMPS</u> All LOS D or better <u>MAINLINE</u> All D or better
1.2	Travel Time															
1.2.1		Average vehicular travel time along I-91 corridor	Change in travel time along I-91 between two points	Travel time in minutes for a given distance during AM and PM peak hours. See Map Nos. 4 and 5.	TransCAD (Macro Travel Demand Model)	Safety from Traffic, Congestion, Commute Time	Air quality, Noise, Mobility and Connectivity	Change in Travel Time	🟡	<u>NB From CT State Line to Plainfield Street</u> AM = 7 min 43 sec PM = 8 min 42 sec <u>SB From Plainfield Street to CT State Line</u> AM = 7 min 37 sec PM = 7 min 55 sec	🟢	<u>NB From CT State Line to Plainfield Street</u> AM = 18 seconds faster than No Build PM = 56 seconds faster than No Build <u>SB From Plainfield Street to CT State Line</u> AM = 11 seconds faster than No Build PM = 26 seconds faster than No Build	🟡	<u>NB From CT State Line to Plainfield Street</u> AM = 14 seconds slower than No Build PM = 12 seconds slower than No Build <u>SB From Plainfield Street to CT State Line</u> AM = 11 seconds faster than No Build PM = 25 seconds faster than No Build	🟢	<u>NB From CT State Line to Plainfield Street</u> AM = 18 seconds faster than No Build PM = 56 seconds faster than No Build <u>SB From Plainfield Street to CT State Line</u> AM = 10 seconds faster than No Build PM = 26 seconds faster than No Build
1.2.2		Average vehicular travel times throughout primary study area	Change in travel time between A to B travel pairs	Travel time in minutes for a given distances for A to B points (through delay reduction). See Map Nos. 6 and 7.	TransCAD (Macro Travel Demand Model)/VISSIM	Safety from Traffic, Congestion, Commute Time		N/A	🟡	<u>NB from E. Columbus @ Union St. to Springfield St. @ Chestnut St.</u> AM = 3 min 43 sec PM = 4 min 20 sec <u>SB from Springfield St. @ Chestnut St. to E. Columbus @ Union St.</u> AM = 4 min 11 sec PM = 4 min 17 sec	🟢	<u>NB from E. Columbus @ Union St. to Springfield St. @ Chestnut St.</u> AM = 18 seconds faster than No Build PM = 15 second slower than No Build <u>SB from Springfield St. @ Chestnut St. to E. Columbus @ Union St.</u> AM = 25 seconds faster than No Build PM = 53 seconds faster than No Build	🟢	<u>NB from E. Columbus @ Union St. to Springfield St. @ Chestnut St.</u> AM = 45 seconds slower than No Build PM = 1 min 18 seconds slower than No Build <u>SB from Springfield St. @ Chestnut St. to E. Columbus @ Union St.</u> AM = 29 seconds faster than No Build PM = 43 seconds faster than No Build	🟡	<u>NB from E. Columbus @ Union St. to Springfield St. @ Chestnut St.</u> AM =42 seconds faster than No Build PM = 4 seconds slower than No Build <u>SB from Springfield St. @ Chestnut St. to E. Columbus @ Union St.</u> AM = 25 seconds faster than No Build PM = 55 seconds faster than No Build

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<div><div><div>○</div><div>◐</div><div>◑</div><div>◒</div><div>◓</div></div><div>WORSE</div><div>SAME</div><div>BETTER</div></div> Compared to 2040 No Build								Ranking	Future No-Build Discussion	Ranking	Depressed / Same Alignment Discussion	Ranking	Depressed / New Alignment Discussion	Ranking	Elevated Viaduct Discussion	
1.3	Pedestrian and Bicycle Functionality and Connectivity															
1.3.1		Improve access from the downtown urban core to the riverfront (i.e. Connecticut Riverwalk, open space, environmental resources, and activity centers along )	Change in number of connections between downtown urban core and riverfront	Number of connections from downtown urban core, across I-91 and rail line, to the riverfront. This will include euclidian distance to population reached within a 1/4 mile for walking, (biking for 10 miles where feasible) from connection points.	Conceptual Plans	Active Transportation, Economic Opportunity, Gentrification, Displacement	Air quality, Noise, Mobility and Connectivity, Land Use	Count and quality (low/mid/high) of waterfront connections, mapped and tabulated	◐	Limited Connections - No change	◑	Reconfiguration of Clinton Street & West Columbus Ave to Create Greenspace Development Along Riverfront. Additional 600 LF of Sidewalk Along W. York Street. Improve Bike & Ped Access to Riverfront with Approximately 6000 LF of Shared-Use Paths Along South End Bridge, West Columbus Ave & Broad Street	◑	Reconfiguration of Clinton Street & West Columbus Ave to Create Greenspace Development Along Riverfront. Improve Bike & Ped Access to Riverfront with Approximately 6000 LF of Shared-Use Paths Along South End Bridge, West Columbus Ave & Broad Street	◑	Reconfiguration of Clinton Street Create Greenspace Development Along Riverfront. Improve Bike & Ped Access to Riverfront with Approximately 6000 LF of Shared-Use Paths Along South End Bridge & West Columbus Ave
1.3.2		Improve access to community resources and social services	Change in number of connections to schools, health care, social services, etc.	Number of connections to schools, health care, social services, etc. This will include euclidian distance to population reached within a 1/4 mile for walking, (biking for 10 miles where feasible) from connection points.	ARCGIS Conceptual Plans/GIS data layers for environmental, open space, and activity centers	Active Transportation		Mapping of public facilities and connectivity	◐	No change	◑	Improved bike/ped access (within 0.25mi) to 4 libraries, 1 farmers market, 1 middle school within Primary Study Area. No improved access to healthcare facilities. See map "Bicycle, Pedestrian, and Transit Access to Public Facilities (Alternatives 1 and 2)" See Map No. 8	◑	Improved bike/ped access (within 0.25mi) to 4 libraries, 1 farmers market, 1 middle school within Primary Study Area. No improved access to healthcare facilities. See map "Bicycle, Pedestrian, and Transit Access to Public Facilities (Alternatives 1 and 2)" See Map No. 8	◑	Improved bike/ped access (within 0.25mi) to 4 libraries, 1 farmers market, 1 middle school within Primary Study Area. No improved access to healthcare facilities. See map "Bicycle, Pedestrian, and Transit Access to Public Facilities (Alternative 3)" See Map No. 9
1.3.3		Improve access to retail, goods, commercial activity centers	Change in number of connections to goods and employment centers	Number of connections to goods and employment centers. This will include euclidian distance to population reached within a 1/4 mile for walking, (biking for 10 miles where feasible) from connection points.	ARCGIS Conceptual Plans GIS data layers for environmental, open space, and activity centers	Active Transportation, Economic Opportunity		Mapping of current/proposed land use and connectivity	◐	No change	◑	Improvements to bike/ped access (such as enhanced sidewalks, Bike Accomodations, longer walk times, countdown heads, lead pedestrian intervals, and/or exclusive pedestrian phases) within 0.25mi of 313 commercial, industrial, or public/institutional properties within Primary Study Area. See map "Bicycle, Pedestrian, and Transit Access to Goods and Services (Alternatives 1 and 2)" See Map No. 10	◑	Improvements to bike/ped access (such as enhanced sidewalks, Bike Accomodations, longer walk times, countdown heads, lead pedestrian intervals, and/or exclusive pedestrian phases) within 0.25mi of 313 commercial, industrial, or public/institutional properties within Primary Study Area. See map "Bicycle, Pedestrian, and Transit Access to Goods and Services (Alternatives 1 and 2)" See Map No.10	◑	Improvements to bike/ped access (such as enhanced sidewalks, Bike Accomodations, longer walk times, countdown heads, lead pedestrian intervals, and/or exclusive pedestrian phases) within 0.25mi of 321 commercial, industrial, or public/institutional properties within Primary Study Area. See map "Bicycle, Pedestrian, and Transit Access to Goods and Services (Alternative 3)" See Map No. 11
1.3.4		Improve connections to Union Station	Change in vehicular, bicycle, pedestrian and transit network to promote connectivity to Union Station	Additional sidewalk, bike path, bicycle facilities, bus stops and amenities. This will include euclidian distance to population reached within a 1/4 mile for walking, (biking for 10 miles where feasible) from connection points.	ARCGIS Conceptual Plans	Active Transportation, Economic Opportunity, Gentrification, Displacement		Mapping of public facilities and connectivity	◐	No change	◑	2,370 LF of Bike Accomodations added within 1/4 mile of Union Station	◑	1,690 LF of Bike Accomodations added within 1/4 mile of Union Station	◑	760 LF of Bike Accomodations added within 1/4 mile of Union Station
1.3.5		Provide regional bicycle and pedestrian connectivity	Promote longer distance commuting and recreational trips through improved access to regional bicycle and pedestrian facilities	Change in number of connections (population reached)	ARCGIS Conceptual Plans	Active Transportation, Economic Opportunity		Mapping of projected jobs and connectivity	◐	No change	◑	2 additional bike/ped connections from downtown to North End; 6 additional bike/ped connections from downtown to waterfront. See map "Bicycle, Pedestrian, and Transit Connectivity and Employment (Alternative 1)" See Map No. 12	◑	2 additional bike/ped connections from downtown to North End; 6 additional bike/ped connections from downtown to waterfront. See map "Bicycle, Pedestrian, and Transit Connectivity and Employment (Alternative 2)" See Map No. 13	◑	2 additional bike/ped connections from downtown to North End; 6 additional bike/ped connections from downtown to waterfront; additional north/south connector along waterfront. See map "Bicycle, Pedestrian, and Transit Connectivity and Employment (Alternative 3)" See Map No. 14
1.4	Mode Shift															
1.4.1		Increase transit mode share	Improve access to public transportation or increase in transit services	Change in access to or amount of transit services	ARCGIS Conceptual Plans	Active Transportation	Air quality, Noise, Mobility and Connectivity	N/A	◐	No change	◑	Improved bike/ped access (within 0.25mi) to 21 transit stops, providing enhanced first/last mile access to existing transit service. No proposed route/ service changes.	◑	Improved bike/ped access (within 0.25mi) to 21 transit stops, providing enhanced first/last mile access to existing transit service. No proposed route/ service changes.	◑	Improved bike/ped access (within 0.25mi) to 21 transit stops, providing enhanced first/last mile access to existing transit service. No proposed route/ service changes.
1.4.2		Increase bicycle and pedestrian mode share	Improve access or quality of bicycle and pedestrian facilities. Increase pedestrian and bicyclist perception of safety	Change in linear feet of sidewalk, linear feet of designated bicycle facilities	ARCGIS Conceptual Plans	Active Transportation, Safety from Traffic	Air quality, Noise, Mobility and Connectivity and Public Safety	Estimate of change in bike/ped facilities; Mapping of connectivity	◐	No change	◑	54,100 LF of Sidewalk, 26,150 LF of Bike Accomodations, 13,180 LF of Shared-Use Paths. See map "Bicycle, Pedestrian, and Transit Access to Goods and Services (Alternatives 1 and 2)" See Map No. 10	◑	54,100 LF of Sidewalk, 26,150 LF of Bike Accomodations, 13,180 LF of Shared-Use Paths. See map "Bicycle, Pedestrian, and Transit Access to Goods and Services (Alternatives 1 and 2)" See Map No. 10	◑	54,100 LF of Sidewalk, 26,150 LF of Bike Accomodations, 13,180 LF of Shared-Use Paths. See map "Bicycle, Pedestrian, and Transit Access to Goods and Services (Alternative 3)" See Map No. 11
2	SAFETY To create a safer and more user friendly pedestrian and bicycle system through and across the transportation corridor															
2.1	Pedestrian and Bicycle Safety															
2.1.1		Improve bicycle and pedestrian safety	Minimize conflicts (between Bike/Peds & Vehicles)	Change in number of conflict points between vehicles and bicycles or pedestrians, mapping of conflict points .	Intersection Plans, Conceptual Plans	Active Transportation, Safety from Traffic	Mobility and Connectivity and Public Safety	Change in conflict points, mapping of conflict points	◐	11 Conflict Points Exist	◑	Conflict Points Reduced to 10 locations	◑	Conflict Points Reduced to 10 locations	◑	Conflict Points Reduced to 10 locations
2.1.2		Improve bicycle and pedestrian safety	ADA compliance	ADA Compliant Ramps at Primary Study Area Intersections, Improvements to ramps and Crossings, Pedestrian Clearance Times at numerous locations	Field observations, measurements			Intersections modified to ADA compliance.	◐	No change	◑	RRFBs & Detectable Warning Strips @ Highway Ramps Where Crosswalks Exist. See Map No.1	◑	RRFBs & Detectable Warning Strips @ Highway Ramps Where Crosswalks Exist. See Map No.2	◑	RRFBs & Detectable Warning Strips @ Highway Ramps Where Crosswalks Exist. See Map No.3
2.1.3		Improve bicycle and pedestrian safety	Provide safe crossing accommodations at I-91 on and off-ramps	Pedestrian and bicyclist crossing provisions at intersections with highway off-ramps	Conceptual Plans			On/off ramps modified with safe crossing accommodations.	◐	I-91 NB: 6 On-Ramps, 6 Off-Ramps I-91 SB: 6 On-Ramps, 5 Off-Ramps I-291 EB: 3 Off-Ramps, 2 On-Ramps I-291 WB: 3 Off-Ramps, 2 On-Ramps	◑	All ramps to be improved with safe crossing accommodations: I-91 NB: 4 On-Ramps, 4 Off-Ramps I-91 SB: 3 On-Ramps, 4 Off-Ramps I-291 EB: 3 Off-Ramps, 2 On-Ramps I-291 WB: 2 Off-Ramps, 3 On Ramps	◑	I-91 NB: 2 On-Ramps, 3 Off-Ramps I-91 SB: 3 On-Ramps, 3 Off-Ramps I-291 EB: 3 Off-Ramps, 2 On-Ramps I-291 WB: 2 Off-Ramps, 3 On Ramps	◑	I-91 NB: 4 On-Ramps, 4 Off-Ramps I-91 SB: 3 On-Ramps, 4 Off-Ramps I-291 EB: 3 Off-Ramps, 2 On-Ramps I-291 WB: 2 Off-Ramps, 3 On Ramps
2.1.4		Improve bicycle and pedestrian safety	Improve intersection crossing times for bicycles and pedestrians	Improved intersection design and adequate crossing timing	Intersection Plans, Conceptual Plans/Synchro			Count of intersections with likely increase or decrease in crossing times.	◐	No change in crossing times	◐	Likely increases in crossing times at 6 intersections	◐	Likely increases in crossing times at 6 intersections	○	Likely increases in crossing times at 7 intersections
2.1.5		Improve bicycle and pedestrian safety	Provision of separated facilities	Additional pedestrian corridors and/or bicycle facilities created and separated from typical on-street situation	Conceptual Plans			Air quality, Noise, Active Transportation, Safety from Traffic	Mapping of improved corridors	◐	No change	◑	Addition of 13, 180 LF of Shared-Use Paths	◑	Addition of 13, 180 LF of Shared-Use Paths	◑

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2.2	Vehicular Safety							Ranking		Ranking		Ranking		Ranking		
2.2.1		Improve interaction and roadway safety	Reduction of conflict points - based on the reduction of intersections and weaving segments	Change in number of conflict points between vehicles	Conceptual Plans	Safety from Traffic	Public Safety	Direction and magnitude of change in conflict points		16 Weaving Segments, 24 intersections		9 Weaving Segments, 24 Intersections		10 Weaving Segments, 19 intersections		10 Weaving Segments, 24 Intersections
2.2.2		Improve interaction and roadway safety	Mitigate High Crash locations	Existing conditions crash data inventory, new alternatives maps	Conceptual Plans	Safety from Traffic		Number and mapping of high crash locations redesigned		27 crash clusters identified on/ adjacent to I-91 or I-291		15 crash clusters redesigned		15 crash clusters redesigned		15 crash clusters redesigned
2.3	Public Safety															
2.3.1		Improve public safety	Minimize factors that would contribute to increased crime and fear of crime	Change in lighting, land uses, network isolation (natural surveillance, other environmental factors)	Qualitative review of improvements (i.e. lighting, open spaces, line of sight) to safety/crime of Conceptual Alternative Plans	Active Transportation, Safety from Crime, Economic Opportunities	Public Safety	N/A		Improved lighting under viaduct, installation of video surveillance, promote under viaduct recreational or slightly better		Remove section overhead viaduct, create green space over depressed viaduct, natural light, redevelopment, connection to river over railroad		Remove section overhead viaduct, create green space over depressed viaduct, natural light, redevelopment, connection to, river over railroad		New, modern elevated viaduct, improved lighting under viaduct, land-use/redevelopment under less visual obstruction/better visual surveillance
3	ENVIRONMENTAL EFFECTS		Improve the overall environmental quality of the transportation corridor													
3.1	Sustainability															
3.1.1		Impacts on environmental resources (i.e. wetlands, floodplains, aquifers)	Specific environmental resources impacted critical resources in study area	Square footage of specific resource impacted or created	ARCGIS Conceptual Plans/GIS data layers for environmental, open space etc.	Environmental Contamination, Green Space	Environmental Contamination	Approximate square footage of resources affected by designs and development concepts		No change		20,200 SF of 100' FEMA Floodway; 57,100 SF of 500' FEMA Floodway; 1,155,000 SF NHESP Priority Habitat; 26,900 SF of DEP Wetlands. See Maps 015 and 018.		33,900 SF of 100' FEMA Floodway; 57,000 SF of 500' FEMA Floodway; 1,155,000 SF NHESP Priority Habitat; 26,900 SF of DEP Wetlands. See Maps 016 and 018.		20,200 SF of 100' FEMA Floodway; 57,000 SF of 500' FEMA Floodway; 1,155,000 SF NHESP Priority Habitat; 26,900 SF of DEP Wetlands. See Maps 017 and 018.
3.1.2		Inclusion of Low Impact Development (LID) standards	Net change in pervious surface area to facilitate natural stormwater drainage and runoff	Square footage of pervious surface area created or removed	ARCGIS Conceptual Plans/GIS data layers for environmental, open space etc.	Environmental Contamination, Green Space	Environmental Contamination	Approximate square footage of pervious surface area created or removed		No change		Up to 468,800 SF of Greenspace Development Over Existing Viaduct Footprint		Up to 553,800 SF of Greenspace Development Over Existing Viaduct Footprint		Up to 13,800 SF of Greenspace Development Over Existing Viaduct Footprint
3.1.3		Reduction of pavement footprint	Net change in impervious surface area within the I-91 Corridor between East and West Columbus Avenue under existing conditions (within the Primary Study Area)	Square footage of impervious surface area created or removed	ARCGIS Conceptual Plans/GIS data layers for environmental, open space etc.	Environmental Contamination, Green Space	Environmental Contamination	Approximate square footage of impervious surface area created or removed		Total Impervious = 136.1 Acres / Total Pervious = 16.9 Acres		Total Impervious = 118 Acres / Total Pervious = 34.9 Acres		Total Impervious = 124.7 Acres / Total Pervious = 28.3 Acres		Total Impervious = 130.9 Acres / Total Pervious = 22 Acres
3.2	Air Quality															
3.2.1		Improve air quality	Health impact to vehicle occupants, bicyclists, and pedestrians	Change in regional NOx, VOC, CO	CTPS emissions modeling	Acute and chronic respiratory and cardiovascular diseases including asthma/other respiratory diseases, heart attack, and premature mortality	Air quality	Change in VMT and associated changes in NOx, VOC, CO emission estimates.		Model VMT = 753,940 miles AM/ 1,091,945 miles PM Model VOC emissions: 110.73 kg AM/ 75.4 kg PM Model CO emissions: 1,573 kg AM/ 1,753 kg PM Model NOx emissions: 75.55kg AM / 96.56 kg PM		Model change in VMT = +3,808 miles AM/ +9,240 miles PM Model change in VOC emissions: +0.17 kg AM/ + 0.24 kg PM Model change in CO emissions: +2.66 kg AM/ +12.26 kg PM Model change in NOx emissions: +0.21 kg AM / +0.65 kg PM		Model change in VMT = +6,619 miles AM/ +19,668 miles PM Model change in VOC emissions: +0.31 kg AM/ +0.54 kg PM Model change in CO emissions: +3.74 kg AM/ 19.99 kg PM Model change in NOx emissions: +0.30 kg AM / +1.13 kg PM		Model change in VMT = -32 miles AM/ +955 miles PM Model change in VOC emissions: +0.04 kg AM/ +0.05 kg PM Model change in CO emissions: -1.65 kg AM/ +2.84 kg PM Model change in NOx emissions: -0.04 kg AM / +0.15 kg PM
3.2.2		Improve air quality	Reduction of greenhouse gas emissions	Change in CO2 emissions	CTPS emissions modeling	Health impacts associated with climate effects		Change in VMT		Model VMT = 753,940 miles AM/ 1,091,945 miles PM Model CO2 emissions: 188,445 kg AM/ 280,386 kg PM		Model change in VMT = +3,808 miles AM/ +9,240 miles PM Model change in CO2 emissions: +981 kg AM/ +2,462 kg PM		Model change in VMT = +6,619 miles AM/ +19,668 miles PM Model change in CO2 emissions: +1,825 kg AM/ +5,978 kg PM		Model change in VMT = -32 miles AM/ +955 miles PM Model change in CO2 emissions: +66 kg AM/ +393 kg PM

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SAME									Discussion									Ranking		Discussion		Ranking		Discussion	
BETTER									Ranking									Discussion		Ranking		Discussion			
Compared to 2040 No Build																									
3.3	Noise																								
3.3.1		Noise impacts	Impacts to abutting residences and businesses (Expected change in decibel levels or number of vehicles at corridor intersections)	Expected change in distance from roadway experiencing decibel levels above Noise Abatement Criteria	Conceptual Alternative Plans, VHB Conceptual Level Noise Assessment	Myocardial infarction, Stroke, Ischaemic heart disease, Hypertension, Respiratory system diseases in children, Annoyance, Sleep loss, Mental health	Noise	Change in distance from alignment experiencing given noise level		Impact distances of 350 - 575 feet (commercial use, >71dB) and 625 - 800 feet (residential use, >66db). See Map 019		Impact distances of 65 - 300 feet (commercial use, >71dB) and 70 - 730 feet (residential use, >66db) See Map 020		Impact distances of 65 - 275 feet (commercial use, >71dB) and 70 - 615 feet (residential use, >66db). See Map 021		Impact distances of 65 - 465 feet (commercial use, >71dB) and 70 - 800 feet (residential use, >66db). See Map 022									
3.3.2		Noise impacts		Expected change in number and type (commercial/residential) of impacted receptors.	Conceptual Alternative Plans, VHB Conceptual Level Noise Assessment	Myocardial infarction, Stroke,Ischaemic heart disease, Hypertension, Respiratory system diseases in children, Annoyance, Sleep loss, Mental health		Change in numbers of residences and businesses impacted	88 impacted commercial receptors and 240 impacted residential receptors. See Map 019	42 impacted commercial receptors and 88 impacted residential receptors. See Map 020	36 impacted commercial receptors and 69 impacted residential receptors. See Map 021	39 impacted commercial receptors and 110 impacted residential receptors. See Map 022													
4	LAND USE AND ECONOMIC DEVELOPMENT To design transportation based improvements that create beneficial land use opportunities for the City and the region that promote both access to open space and new opportunities for economic development																								
4.1	Economic Development Potential																								
4.1.1		Parcel growth - increase in available land suitable for private, institutional, or public development	Land area created for development or open space	Change in square feet/acreage by land use type - residential, commercial, recreational, open space. Population reached within a 1/4 mile for walking, (biking for 10 miles where feasible).	ARCGIS Conceptual Plans	Green Space, Economic Opportunity, Gentrification, Displacement	Economic Opportunity	Estimated change in developable land area in waterfront and Columbus Avenue areas		No change		1,120,800 SF / 25.73 Acres of Accessible Greenspace/Development Land Created		1,111,400 SF / 25.51 Acres of Accessible Greenspace/Development Land Created		54,100 SF / 1.24 Acres of Accessible Greenspace/Development Land Created									
4.1.2		Improve accessibility to potential and existing development parcels	Vehicular, bicycle and pedestrian connections to potential development parcels (Studies show that commercial corridors may benefit from bike and ped infrastructure)	Connections to existing and parcels provided	ARCGIS Conceptual Plans	Active Transportation, Economic Opportunity, Gentrification, Displacement		Count and quality (low/mid/high) of waterfront/ development area connections, mapped and tabulated		No change		6 additional high-quality bike/ped connections to waterfront area		6 additional high-quality bike/ped connections to waterfront area		6 additional high-quality bike/ped connections to waterfront area w/ additional connector along waterfront									
4.1.3		Improved bicycle and pedestrian infrastructure	Studies show that commercial corridors may benefit from bike and ped infrastructure	Connections to existing and proposed development parcels provided	ARCGIS Conceptual Plans	Active Transportation, Economic Opportunity, Gentrification, Displacement		Change in count/ length of complete streets segments of commercial corridors in study area		No change		54,100 LF of Sidewalk & 26,150 LF of Bike Accomodations		53,100 LF of Sidewalk & 27,000 LF of Bike Accomodations		16,000 LF of Sidewalk & 19,900 LF of Bike Accomodations									
4.1.4		Increase density with more intensified development	More compact, mixed, connected land use development patterns tend to improve overall accessibility, increase agglomeration efficiencies, reduce public service costs	Increases in households, jobs, and businesses within study area	ARCGIS Conceptual Plans	Active Transportation, Economic Opportunity, Gentrification, Displacement		Estimated change in households, jobs, and businesses from development scenarios		No change		Increase of 550 persons, 271 households, and 1325 jobs within study area (vs. no-build)		Increase of 888 persons, 347 households, and 2330 jobs within study area (vs. no-build)		Increase of 104 persons, 51 households, and 136 jobs within study area (vs. no-build)									
4.1.5		Incur new tax generation	Value of land and buildings, or changes in those values	Increase in property values and property taxes generated within study area (accruing to Springfield)	ARCGIS Conceptual Plans, Municipal records	Improve municipal services that improve health		N/A		No change		Development scenario yields est. \$2.2M in annual tax revenue for City of Springfield at full buildout		Development scenario yields est. \$3.5M in annual tax revenue for City of Springfield at full buildout		Development scenario yields est. \$0.3M in annual tax revenue for City of Springfield at full buildout									
4.2	Socio-Economic Impacts																								
4.2.1		Increase employment	Change in jobs in area	Net changes in jobs post project	Census, Municipal Sources, Economic Data, ARCGIS Conceptual Alternative Plans	Chronic stress, chronic diseases, overall morbidity and mortality	Land Use	Estimate of new jobs to City of Springfield from development scenarios		No change		Increase of 1325 jobs (vs. no-build) within PSA		Increase of 2330 jobs (vs. no-build) within PSA		Increase of 136 jobs (vs. no-build) within PSA									
4.2.2		Increase population	Change in number of people living in area	Net changes in population post project	Census, Municipal Sources	Efficiency of service delivery	Land Use	Estimate of new residential population to Springfield from development scenarios		No change		Increase of 550 persons (vs. no-build) within PSA		Increase of 888 persons (vs. no-build) within PSA		Increase of 136 persons (vs. no-build) within PSA									
4.2.3		Increase housing	Number of new housing units	New housing starts	Census, Municipal Sources, Economic Data, ARCGIS Conceptual Plans	Active transportation, gentrification	Land Use	Estimate of new housing units to Springfield from development scenarios		No change		Increase of 285 housing units (vs. no-build) within PSA		Increase of 460 housing units (vs. no-build) within PSA		Increase of 54 housing units (vs. no-build) within PSA									

Criteria		Measure	Description	Data	Source/Tool	Health Outcomes	Conceptual Health Pathway	Health Metrics/Proxies	Alternatives							
									Future No-Build		Depressed / Same Alignment		Depressed / New Alignment		Elevated Viaduct	
									Ranking	Discussion	Ranking	Discussion	Ranking	Discussion	Ranking	Discussion
4.2.4		Improve affordability - housing in proximity to transit	New housing to be developed within close proximity of major transit facilities	Euclidian distance from Union Station (Transportation Hub) to housing units reached within a 1/4 mile for walking	Census, Municipal Sources, Economic Data, ARCGIS Conceptual Alternative Plans	Limits exposure to environmental toxins that impact health; reduces stress from financial burden and control over ones environment, particularly to vulnerable populations, including the elderly, people with disabilities, and homeless individuals and families.	Land Use	Estimate of change in housing units proximate to Union Station	●	No change	●	No direct change in housing units within 0.25mi walk radius.	●	160,000 SF development within 0.25mi walk radius could include approx. 100 housing units with bicycle/pedestrian connectivity to Union Station.	●	No direct change in housing units within 0.25mi walk radius.
4.2.5		Improved public service provision	New tax generation	Change in municipal tax revenue	Census, Municipal Sources, Economic Data, ARCGIS Conceptual Alternative Plans	Improve municipal services that improve health	Land Use	Estimate of revenue from development scenarios	●	No change	●	Development scenario yields est. \$2.2M in annual tax revenue at full buildout	●	Development scenario yields est. \$3.5M in annual tax revenue at full buildout	●	Development scenario yields est. \$0.3M in annual tax revenue at full buildout
4.2.6		Promote reduced travel costs	Reduced costs for bicycle and pedestrians, and potentially transit users - frees up spending for other purposes like housing, necessities, disposable, etc.	Change in transit mode	Census, Municipal Sources, Economic Data, ARCGIS Conceptual Alternative Plans	Reducing travel costs allows money to then be used to support healthier expenditures	Land Use	N/A	●	No change	●	Significantly improved walkability/ bike-ability, greater extent and continuity of pedestrian environments, greater critical mass of bike/ ped/ and potential transit use	●	Significantly improved walkability/ bike-ability, greater extent and continuity of pedestrian environments, greater critical mass of bike/ ped/ and potential transit use	●	Significantly improved walkability/ bike-ability, greater extent and continuity of pedestrian environments, greater critical mass of bike/ ped/ and potential transit use
4.2.7		Improve social cohesion	Potential improved connections (Acre/linear feet Complete Streets or pedestrian corridor) from North End neighborhoods and the Urban Core and Riverfront; Creation of connected/linked open space.	Measurement of connected or linked open spaces (Square Footage/Acreage) from population centers to activity centers.	Census, Municipal Sources, Economic Data, ARCGIS Conceptual Alternative Plans	Expected impacts to chronic diseases, Expected impacts to social determinants/cohesion, mental health	Land Use	Count of new or newly connected open spaces in study area; Change in count of Complete Streets and/or bike/ped connections to North End	●	No change	●	2 additional bike/ped connections to North End; 6 additional high-quality bicycle and pedestrian connections to waterfront; additional 468,800 SF of greenspace over existing viaduct footprint	●	2 additional bike/ped connections to North End; 6 additional high-quality bicycle and pedestrian connections to waterfront; additional 553,800 SF of greenspace over existing viaduct footprint	●	2 additional bike/ped connections to North End; 6 additional high-quality bicycle and pedestrian connections to waterfront; additional 13,800 SF of greenspace over existing viaduct footprint
4.3	Freight Rail Impacts															
4.3.1		Operational impacts	Construction related impacts to freight operations	Displacement or delay on freight movement	ARCGIS Conceptual Plans	Air Quality, Environmental Contamination	Air Quality and Noise, Land Use	N/A	●	Potential impacts to freight operations which will require mitigation measures.	●	Potential impacts to freight operations which will require mitigation measures.	○	Potential impacts to freight operations which will require mitigation measures.	●	Potential impacts to freight operations which will require mitigation measures.
4.3.2		Implementation costs	Capital or relocation costs	Displacement or delay on freight movement	ARCGIS Conceptual Plans	Air Quality, Environmental Contamination	Air Quality and Noise, Land Use	N/A	●	Limited impacts to freight operations	●	Moderate impacts based on East/West Columbus Ave. underpass widening and covering of railroad in vicinity of public esplanade	○	Significant impacts based on East/West Columbus Ave underpass widening, alignment change of I-91, covering of railroad in the vicinity of public esplanade	●	Limited impacts to freight operations
4.4	Parking Impacts															
4.4.1		Impacts to parking under I-91	Reduction/addition of parking spaces	Change in parking spaces	ARCGIS Conceptual Plans (map showing locations of parking spaces)	Air Quality, Active Transportation, Green Space	Air Quality and Noise, Land Use	Change in parking spaces	●	1,768 existing spaces beneath I-91	●	Remove highway North & South Garages with new parking location; net reduction of 700 spaces	●	Remove highway North & South Garages with new parking location; net reduction of 700 spaces	○	Remove highway South Garage, maintain North Garage; net reduction of 1,100 spaces
5	COMMUNITY EFFECTS		Minimize temporary impacts to all stakeholders, while understanding and maximizing the future benefits of a completed project													
5.1	Visual Impacts															
5.1.1		Visual perception of I-91 Viaduct	Vertical location of Viaduct (Visual perception of I-91 Viaduct)	Change in vertical or horizontal alignment in number of feet relative to activity center proxies.	ARCGIS Conceptual Plans	Mental Health	N/A	N/A	○	No change - Remains Visual/Physical Barrier	●	25' Below Ground for 1600LF Covered	●	25' Below Ground for 1600LF Covered	●	Vertical change (TBD), higher than existing, reduced number of vertical piers/columns
5.2	Construction Impacts															
5.2.1		Construction duration	Impacts to residents, businesses, and visitors	(Assumed) Length of anticipated temporary and permanent closures	ARCGIS Conceptual Plans	Air Quality, Active Transportation, Safety from Traffic, Environmental Contamination, Access to Healthy Affordable Foods	Mobility and Connectivity, Public Safety, Economic Opportunity	N/A	●	Ongoing maintenance and future rehab projects anticipated to be in the 0-5 year range.	○	10-15 years minimum	○	10-15 years minimum	●	8-12 years minimum

Criteria		Measure	Description	Data	Source/Tool	Health Outcomes	Conceptual Health Pathway	Health Metrics/Proxies	Alternatives							
<div><div><div>○</div><div>◐</div><div>◑</div><div>◒</div><div>◓</div></div><div>WORSE</div><div>SAME</div><div>BETTER</div></div>									Compared to 2040 No Build							
									Ranking	Future No-Build Discussion	Ranking	Depressed / Same Alignment Discussion	Ranking	Depressed / New Alignment Discussion	Ranking	Elevated Viaduct Discussion
5.2.2		Lane closures and detours	Impacts to residents, businesses, and visitors	(Assumed) Length of anticipated temporary and permanent closures	ARCGIS Conceptual Plans	Air Quality, Active Transportation, Safety from Traffic, Environmental Contamination, Access to Healthy Affordable Foods	Mobility and Connectivity, Public Safety, Economic Opportunity	N/A	◑	Ongoing maintenance and future rehab projects anticipated to be in the 0-5 year range.	○	12-15 years minimum	○	12-15 years minimum	◐	10-12 years minimum
5.2.3		Maintenance of access to abutters	Impacts to residents, businesses, and visitors	(Assumed) Length of anticipated temporary and permanent closures	ARCGIS Conceptual Plans	Air Quality, Active Transportation, Safety from Traffic, Environmental Contamination, Access to Healthy Affordable Foods		N/A	◑	Ongoing maintenance and future rehab projects anticipated to be in the 0-5 year range.	○	12-15 years minimum	○	12-15 years minimum	◐	10-12 years minimum
5.2.4		Disruption of local businesses	Impacts to residents, businesses, and visitors	(Assumed) Length of anticipated temporary and permanent closures(At minimum, the number and location of businesses and number of employees impacted by closure.	Census, Municipal Sources, Economic Data, ARCGIS Conceptual Alternative Plans	Active Transportation, Economic Opportunity, Access to Healthy Affordable Foods		N/A	◑	Ongoing maintenance and future rehab projects anticipated to be in the 0-5 year range.	○	8-10 years	○	8-10 years	◐	5-8 years
5.3	Compatibility															
5.3.1		Compatibility with local and regional transportation plans, strategic plans and plans of conservation and development	Compatibility with local and regional transportation plans, strategic plans and plans of conservation and development	General Compliance with Local and Regional Plans Qualitative - Yes or no	ARCGIS Conceptual Plans	Green Space, Affordable Housing, Gentrification, Economic Opportunity	Land Use, Economic Opportunity	Qualitative assessment of compatibility	◑	No change	●	Strongly supports Rebuild Springfield Plan; aligned with Longmeadow, West Springfield, Agawam, and regional plans	●	Strongly supports Rebuild Springfield Plan; aligned with Longmeadow, West Springfield, Agawam, and regional plans	●	Strongly supports Rebuild Springfield Plan; aligned with Longmeadow, West Springfield, Agawam, and regional plans
5.3.2		Consistency with MassDOT goals, policies, and directives	Consistency with MassDOT goals, policies, and directives	General Compliance with MassDOT Qualitative (Yes or No)	ARCGIS Conceptual Plans	N/A	N/A	Qualitative assessment of compatibility	◑	No change	◐	Conceptual plans meet the latest goals, policies and directives	◐	Conceptual plans meet the bids & goals, policies and directives	◐	Conceptual plans meet the bids & goals, policies and directives
5.4	Environmental Justice Impacts															
5.4.1		Availability of jobs in EJ areas	Access to jobs	Reduction in travel time from residential area to downtown business center	ARCGIS Conceptual Alternative Plans	Active Transportation, Economic Opportunity	Land Use, Economic Opportunity	Estimate of new jobs from development scenarios; Mapping of current/proposed land use and connectivity	◑	No change	●	Increase of 1325 jobs (vs. no-build); See Map No. 010"Bicycle, Pedestrian, and Transit Access to Goods and Services (Alternatives 1 and 2)"	●	Increase of 2330 jobs (vs. no-build); See Map No. 010 "Bicycle, Pedestrian, and Transit Access to Goods and Services (Alternatives 1 and 2)"	◒	Increase of 136 jobs (vs. no-build); See Map No. 011"Bicycle, Pedestrian, and Transit Access to Goods and Services (Alternative 3)"
5.4.2		Availability of education and health services in EJ areas	Access to community services	Qualitative assessment - spatial examination of the community assets	ARCGIS Conceptual Alternative Plans	Access to care, economic opportunity		Mapping of public facilities and connectivity	◑	No change	◒	Improved bike/ped access (within 0.25mi) to 4 libraries, 1 farmers market, 1 middle school within Primary Study Area. No improved access to healthcare facilities. See Map No.008 "Bicycle, Pedestrian, and Transit Access to Public Facilities (Alternatives 1 and 2)"	◒	Improved bike/ped access (within 0.25mi) to 4 libraries, 1 farmers market, 1 middle school within Primary Study Area. No improved access to healthcare facilities. See Map No.8 "Bicycle, Pedestrian, and Transit Access to Public Facilities (Alternatives 1 and 2)"	◒	Improved bike/ped access (within 0.25mi) to 4 libraries, 1 farmers market, 1 middle school within Primary Study Area. No improved access to healthcare facilities. See Map No.009 "Bicycle, Pedestrian, and Transit Access to Public Facilities (Alternative 3)"
5.4.3		Mobility impacts in EJ areas	Access to transportation modes	Qualitative assessment - spatial examination of the transportation modes	ARCGIS Conceptual Alternative Plans	Active Transportation		Estimate of change in bike/ped facilities; Mapping of connectivity;Change in parking spaces	◑	No change	●	54,100 LF of Sidewalk & 26,150 LF of Bike Accomodations	●	53,100 LF of Sidewalk & 27,000 LF of Bike Accomodations	●	16,000 LF of Sidewalk & 19,900 LF of Bike Accomodations



Criteria		Measure	Description	Data	Source/Tool	Health Outcomes	Conceptual Health Pathway	Health Metrics/Proxies	Alternatives							
<div><div><div></div><div></div><div></div><div></div><div></div></div><div>WORSE<div></div>SAME<div></div>BETTER<div></div></div></div> Compared to 2040 No Build									Ranking	Future No-Build Discussion	Ranking	Depressed / Same Alignment Discussion	Ranking	Depressed / New Alignment Discussion	Ranking	Elevated Viaduct Discussion
5.4.4		Improve local access from the downtown urban core to the riverfront (i.e. Connecticut Riverwalk), open space, environmental resources, and activity centers (i.e. Basketball Hall of Fame) in EJ areas	Change in number of connections between downtown and riverfront, to open space, environmental resources, retail, goods and social services, and activity centers in EJ areas	Number of connections across I-91 and rail line, to open space, environmental resources, and activity centers in EJ areas. This will include euclidian distance to population reached within a 1/4 mile for walking, (biking for 10 miles where feasible) from connection points.	ARCGIS Conceptual Plans	Active Transportation, Green Space, Safety from Traffic. Social Cohesion. Economic Opportunity.	Land Use, Economic Opportunity	Count and quality (low/mid/high) of waterfront connections, mapped and tabulated	<div></div>	No change	<div></div>	6 additional high-quality bike/ped connections to waterfront area	<div></div>	6 additional high-quality bike/ped connections to waterfront area	<div></div>	6 additional high-quality bike/ped connections to waterfront area w/ additional connector along waterfront
5.4.5		Improve access to community resources and social services in EJ areas	Change in number of connections to schools, health care, social services, etc. in EJ areas	Number of connections to schools, health care, social services, etc. in EJ areas. This will include euclidian distance to population reached within a 1/4 mile for walking, (biking for 10 miles where feasible) from connection points.	ARCGIS Conceptual Plans	Active Transportation. Safety from Traffic. Social Cohesion. Economic Opportunity.		Mapping of public facilities and connectivity	<div></div>	No change	<div></div>	Improved bike/ped access (within 0.25mi) to 4 libraries, 1 farmers market, 1 middle school within Primary Study Area. No improved access to healthcare facilities. See Map No. 008 "Bicycle, Pedestrian, and Transit Access to Public Facilities (Alternatives 1 and 2)"	<div></div>	Improved bike/ped access (within 0.25mi) to 4 libraries, 1 farmers market, 1 middle school within Primary Study Area. No improved access to healthcare facilities. See Map No. 008 "Bicycle, Pedestrian, and Transit Access to Public Facilities (Alternatives 1 and 2)"	<div></div>	Improved bike/ped access (within 0.25mi) to 4 libraries, 1 farmers market, 1 middle school within Primary Study Area. No improved access to healthcare facilities. See Map No. 009 "Bicycle, Pedestrian, and Transit Access to Public Facilities (Alternative 3)"
5.4.6		Improve access to retail, goods, commercial activity centers in EJ areas	Change in number of connections to goods and employment centers in EJ areas	Number of connections to goods and employment centers in EJ areas. This will include euclidian distance to population reached within a 1/4 mile for walking, (biking for 10 miles where feasible) from connection points.	ARCGIS Conceptual Plans	Active Transportation. Safety from Traffic. Social Cohesion. Economic Opportunity.		Mapping of current/proposed land use and connectivity	<div></div>	No change	<div></div>	2 additional bike/ped connections from downtown to North End; 6 additional bike/ped connections from downtown to waterfront. See Map No.010 "Bicycle, Pedestrian, and Transit Access to Goods and Services (Alternatives 1 and 2)"	<div></div>	2 additional bike/ped connections from downtown to North End; 6 additional bike/ped connections from downtown to waterfront. See Map No.010 "Bicycle, Pedestrian, and Transit Access to Goods and Services (Alternatives 1 and 2)"	<div></div>	2 additional bike/ped connections from downtown to North End; 6 additional bike/ped connections from downtown to waterfront; additional north/south connector along waterfront. See Map No. 011 "Bicycle, Pedestrian, and Transit Access to Goods and Services (Alternative 3)"
5.4.7		Environmental Impacts in EJ areas	Environmental Impacts (Improvement of air quality and noise impacts in EJ areas)	Quantitative assessment (Expected change in decibel levels or number of vehicles at corridor intersections in EJ areas. Feet of buffer between vehicular travel and bicycle/pedestrians in EJ areas)	ARCGIS Conceptual Alternative Plans	Environmental Contamination, Air Quality, Noise		Change in VMT and associated changes in NOx, VOC, CO emission estimates.	<div></div>	Model VMT = 753,940 miles AM/ 1,091,945 miles PM Model VOC emissions: 110.73 kg AM/ 75.4 kg PM Model CO emissions: 1,573 kg AM/ 1,753 kg PM Model NOx emissions: 75.55kg AM / 96.56 kg PM Impact distances of 350 - 575 feet (commercial use, >71dB) and 625 - 800 feet (residential use, >66db)	<div></div>	Model change in VMT = +3,808 miles AM/ +9,240 miles PM Model change in VOC emissions: +0.17 kg AM/ + 0.24 kg PM Model change in CO emissions: +2.66 kg AM/ +12.26 kg PM Model change in NOx emissions: +0.21 kg AM / +0.65 kg PM Impact distances of 65 - 300 feet (commercial use, >71dB) and 70 -730 feet (residential use, >66db)	<div></div>	Model change in VMT = +6,619 miles AM/ +19,668 miles PM Model change in VOC emissions: +0.31 kg AM/ +0.54 kg PM Model change in CO emissions: +3.74 kg AM/ 19.99 kg PM Model change in NOx emissions: +0.30 kg AM / +1.13 kg PM Impact distances of 65 - 275 feet (commercial use, >71dB) and 70 - 615 feet (residential use, >66db)	<div></div>	Model change in VMT = -32 miles AM/ +955 miles PM Model change in VOC emissions: +0.04 kg AM/ +0.05 kg PM Model change in CO emissions: -1.65 kg AM/ +2.84 kg PM Model change in NOx emissions: -0.04 kg AM / +0.15 kg PM Impact distances of 65 - 465 feet (commercial use, >71dB) and 70 - 800 feet (residential use, >66db)
6	COST	Development of Alternative Designs will combine the approach of Feasibility, Creativity, and Long Term Sustainability														
6.1	Construction Costs															
6.1.1		Order of magnitude implementation cost	Estimated capital costs of construction	Value in 2015 dollars	ARCGIS Conceptual Plans	Economic Opportunity	N/A	N/A	<div></div>	\$750 million (assumes structural & piers replacement/repair)	<div></div>	\$3.78 Billion	<div></div>	\$3.74 Billion	<div></div>	\$3.14 Billion
6.1.2		Right-of-way impact	Impact to abutting right-of-way	Square footage/Acres Impacted	ARCGIS Conceptual Plans	Active Transportation		N/A	<div></div>	No Impact	<div></div>	Approximately 34 AC Affected, See Map No. 023	<div></div>	Approximately 39 AC Affected, See Map No. 024	<div></div>	Approximately 31.4 AC Affected, See Map No. 025
6.2	Maintenance Costs															
6.2.1		Anticipated annual maintenance costs	Estimated cost of maintenance for infrastructure	Value in 2015 dollars	ARCGIS Conceptual Plans	Economic Opportunity, Safety from Crime	N/A	N/A	<div></div>	\$500,000/year	<div></div>	\$1.75 million/year (est.)	<div></div>	\$1.75 million/year (est.)	<div></div>	\$1.25 million/year (est.)
6.2.2		Life-cycle Cost-Benefit Analysis	Cost-Benefit Analysis: Including Construction Cost, Longevity of structure, Environmental, Annual Maintenance, Safety, Redevelopment Potential, Social/EJ	Cumulative Approach to Analysis considering Quantitative and Qualitative assessment of life-cycle elements based upon a value of 1-10, with 10 being extremely positive, 5 being no change and 1 being an extremely negative score when considering all described elements.	ARCGIS Conceptual Plans/Cost opinions Evaluation Criteria	Economic Opportunity, Safety from Crime, Environmental, Social/EJ		N/A	<div></div>	Cost (5) Longevity (3) Environmental (3) Annual Maintenance (5) Safety (2) Redevelopment (2) Social (5) = Total of 25 Approximate Life Cycle Cost (2075) \$1.62 Billion	<div></div>	Cost (1) Longevity (7) Environmental (7) Annual Maintenance (4) Safety (7) Redevelopment (8) Social (8) = Total of 42 Approximate Life Cycle Cost (2075) \$3.88 Billion	<div></div>	Cost (1) Longevity (7) Environmental (7) Annual Maintenance (4) Safety (6) Redevelopment (8) Social (8) = Total of 41 Approximate Life Cycle Cost (2075) \$3.84 Billion	<div></div>	Cost (2) Longevity (4) Environmental (3) Annual Maintenance (6) Safety (5) Redevelopment (4) Social (6) = Total of 30 Approximate Life Cycle Cost (2075) \$3.24 Billion