<table>
<thead>
<tr>
<th>Criteria</th>
<th>Measure</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1.1.1</td>
<td>Provide acceptable</td>
<td>Delay or LOS change in total number of intersections</td>
<td>Change in delay (in minutes) and LOS for intersections with E and F.</td>
<td>Synchro (Microsimulation Software)</td>
<td>◐</td>
</tr>
<tr>
<td>1.1.2</td>
<td>Provide acceptable</td>
<td>V/C change by total number of intersections</td>
<td>Max. V/C (Volume to Capacity Ratio) at each signalized intersection</td>
<td>Synchro (Microsimulation Software)</td>
<td>◐</td>
</tr>
<tr>
<td>1.1.3</td>
<td>Provide acceptable</td>
<td>Queue length changes in total number of intersections - Calculated 50th and 95th percentile queues</td>
<td>Queue length by lane and approach</td>
<td>Synchro (Microsimulation Software)</td>
<td>◐</td>
</tr>
<tr>
<td>1.1.4</td>
<td>Provide or maintain</td>
<td>Change in LOS at merge, diverge and weave locations on limited access roadways</td>
<td>LOS by location</td>
<td>Highway Capacity Software (Annual 2010)</td>
<td>◐</td>
</tr>
<tr>
<td>1.1.5</td>
<td>Provide acceptable</td>
<td>Change in LOS in limited access ramps and highway segments</td>
<td>LOS by location</td>
<td>Highway Capacity Software (Annual 2010)</td>
<td>◐</td>
</tr>
<tr>
<td>1.2</td>
<td>Travel Time</td>
<td>Average vehicular travel time along I-91</td>
<td>Change in travel time along I-91 between two points</td>
<td>TRANSIT/ (Macro Travel Demand Model)</td>
<td>◐</td>
</tr>
</tbody>
</table>

### Travel Time

- **Average vehicular travel time along I-91**: 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.
- **TRANSIT**: Macro Travel Demand Model.
- **NB From CT State Line to Plainfield Street**: AM = 3 min 43 sec, PM = 5 min 42 sec.
- **8 From Plainfield Street to 5 Total Line**: AM = 7 min 37 sec, PM = 7 min 55 sec.
- **NB From CT State Line to Plainfield Street**: AM = 12 seconds faster than No Build, PM = 12 seconds faster than No Build.
- **SB From Plainfield Street to CT State Line**: AM = 12 seconds faster than No Build, PM = 16 seconds faster than No Build.
- **NB From CT State Line to Plainfield Street**: AM = 18 seconds faster than No Build, PM = 26 seconds faster than No Build.
- **SB From Plainfield Street to CT State Line**: AM = 18 seconds faster than No Build, PM = 26 seconds faster than No Build.

### Data

- **Depressed / Same Alignment**: To maintain or improve the conveyance of regional traffic through the corridor, while enhancing the network's connectivity of all modes of transportation into and around the City and its waterfront.

### Highways Operational Functionality

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
<th>Data</th>
<th>Source/Tool</th>
<th>Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MOBILITY AND ACCESSIBILITY</strong></td>
<td>To maintain or improve the conveyance of regional traffic through the corridor, while enhancing the network's connectivity of all modes of transportation into and around the City and its waterfront.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Criteria</td>
<td>Measure</td>
<td>Description</td>
<td>Source/Tool</td>
<td>Data</td>
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<td>-----------------------------------------------------------------------------</td>
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<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>1.2.2</td>
<td>Average vehicular travel times</td>
<td>Change in travel time between A to B travel pairs</td>
<td>TransitCAD (Macro Travel Demand Model/ARCGIS)</td>
<td>No change</td>
</tr>
<tr>
<td></td>
<td>throughout primary study area</td>
<td>Travel time in minutes for a given distance for A to B points (through delay reduction).</td>
<td>MB from E. Springfield St. @ Chester St. to E. Columbus</td>
<td>No change</td>
</tr>
<tr>
<td>1.3.1</td>
<td>Improve access from the downtown urban core to the waterfront (e.g. Connecticut Riverwalk, open space, environmental resources, and activity centers along it)</td>
<td>Change in number of connections between downtown urban core and waterfront</td>
<td>Conceptual Plans / ARCGIS Conceptual Plans</td>
<td>Limited Connections - No change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of connections from downtown urban core, across I-91 and rail line, to the waterfront. This will include euclidian distance to population reached within a 1/4 mile for walking, (biking for 10 miles where feasible) from connection points.</td>
<td>ARCGIS Conceptual Plans / GS data layers for environmental, open space, and activity centers</td>
<td>No change</td>
</tr>
<tr>
<td>1.3.2</td>
<td>Improve access to community resources and social services</td>
<td>Change in number of connections to schools, health care, social services, etc.</td>
<td>ARCGIS Conceptual Plans / GS data layers for environmental, open space, and activity centers</td>
<td>No change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>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.</td>
<td>ARCGIS Conceptual Plans / GS data layers for environmental, open space, and activity centers</td>
<td>No change</td>
</tr>
<tr>
<td>1.3.3</td>
<td>Improve access to goods and commercial activities</td>
<td>Change in number of connections to goods and employment centers</td>
<td>ARCGIS Conceptual Plans / GS data layers for environmental, open space, and activity centers</td>
<td>No change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>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.</td>
<td>ARCGIS Conceptual Plans / GS data layers for environmental, open space, and activity centers</td>
<td>No change</td>
</tr>
<tr>
<td>1.4.1</td>
<td>Improve connections to Union Station</td>
<td>Change in vehicular, bicycle, pedestrian and transit network to promote connectivity to Union Station</td>
<td>ARCGIS Conceptual Plans</td>
<td>No change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>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.</td>
<td>ARCGIS Conceptual Plans</td>
<td>No change</td>
</tr>
<tr>
<td>1.3.5</td>
<td>Provide regional bicycle and pedestrian connectivity</td>
<td>Change in number of connections to regional bicycle and pedestrian facilities</td>
<td>ARCGIS Conceptual Plans</td>
<td>No change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Promote longer distance commuting and recreational trips through improved access to regional bicycle and pedestrian facilities. Change in number of connections (population reached).</td>
<td>ARCGIS Conceptual Plans</td>
<td>No change</td>
</tr>
<tr>
<td>1.4</td>
<td>Mode Shift</td>
<td>Improve access to public transportation or increase in transit services</td>
<td>ARCGIS Conceptual Plans</td>
<td>No change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change in access to or amount of transit services</td>
<td>ARCGIS Conceptual Plans</td>
<td>No change</td>
</tr>
</tbody>
</table>
1.6.2 Improve bicycle and pedestrian modal share

Increase access to 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
- Discuss measure
- ARCGIS Conceptual Plans
- Discussion

Alternatives

Future No-Build

Compared to 2040 No-Build

Depressed / Same Approach

Depressed / New Alignment

Elevated Viaduct

- 54,100 ft of Sidewalk, 26,150 ft of Bike Facilities, 13,180 ft of Shared-Use Paths
- See map "Bicycle, Pedestrian, and Transit Access to Goods and Services (Alternative 1 and 2)" See Map No. 10

- 54,100 ft of Sidewalk, 26,150 ft of Bike Facilities, 13,180 ft of Shared-Use Paths
- See map "Bicycle, Pedestrian, and Transit Access to Goods and Services (Alternative 1 and 2)" See Map No. 10

- 54,100 ft of Sidewalk, 26,150 ft of Bike Facilities, 13,180 ft 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

Identify conflicts between vehicles and bicyclists/pedestrians, mapping of conflict areas.

- Change in number of conflict points between vehicles and bicyclists/pedestrians
- Intersection Plans, Conceptual Plans
- Discussion

Alternatives

Future No-Build

Compared to 2040 No-Build

Depressed / Same Approach

Depressed / New Alignment

Elevated Viaduct

- 15 Conflict Points

- 11 Conflict Points

- 10 Conflict Points

2.1.2 Improve bicycle and pedestrian safety

ACA compliance

ACA Complete Ramps at Primary Study Area Intersections, Improvements to ramps and crossings, Pedestrian Character Times at numerous locations

- Field observations, measurements
- No change
- RRFBs & Detectable Warning Strips (Highway Ramps Where Crosses Exist. See Map No. 1)

Alternatives

Future No-Build

Compared to 2040 No-Build

Depressed / Same Approach

Depressed / New Alignment

Elevated Viaduct

- 16 Weaving Segments, 24 Intersections

- 10 Weaving Segments

- 9 Weaving Segments

2.1.3 Improve pedestrian and bicyclist crossing

Provide safe crossing accommodations at I-91 on and off ramps

- Pedestrian and bicyclist crossing accommodations at intersections with highway off-ramps
- Conceptual Plans

Alternatives

Future No-Build

Compared to 2040 No-Build

Depressed / Same Approach

Depressed / New Alignment

Elevated Viaduct

- All ramps to be improved with safe crossing accommodations

- I-291 WB: 2 Off-Ramps, 3 On-Ramps

- I-391 EB: 2 Off-Ramps, 5 On-Ramps

- I-291 EB: 2 Off-Ramps, 3 On-Ramps

- 30-101 WB: 2 Off-Ramps, 3 On-Ramps

2.1.4 Improve pedestrian and bicyclist crossing

Intersection crossing times for bicycles and pedestrians

- Improved intersection design and adequate crossing time
- Conceptual Plans

Alternatives

Future No-Build

Compared to 2040 No-Build

Depressed / Same Approach

Depressed / New Alignment

Elevated Viaduct

- Providing of same crossing times

- Likely increases in crossing time of 6 intersections

- Likely increases in crossing times at 7 intersections

- Likely increases in crossing times at 7 intersections

2.1.5 Improve pedestrian and bicyclist crossing

- Provision of separated facilities

Alt: Add separated facilities for bicyclists and pedestrians

Alternatives

Future No-Build

Compared to 2040 No-Build

Depressed / Same Approach

Depressed / New Alignment

Elevated Viaduct

- Addition of 13,180 ft of Shared-Use Paths

- Addition of 13,180 ft of Shared-Use Paths

- Addition of 13,180 ft of Shared-Use Paths

2.2 Vehicular Safety

2.2.1 Improve intersection and roadway safety

Reduction of conflict points, based on the reduction of intersections and wooning segments

- Change in number of conflict points between vehicles
- Conceptual Plans

Alternatives

Future No-Build

Compared to 2040 No-Build

Depressed / Same Approach

Depressed / New Alignment

Elevated Viaduct

- 16 Wooning Segments, 24 Intersections

- 9 Wooning Segments, 24 Intersections

- 10 Wooning Segments, 24 Intersections

2.2.2 Improve intersection and roadway safety

Merge / High-Crash locations

- Sighting conditions crash data inventory, new alternatives.
- Conceptual Plans

Alternatives

Future No-Build

Compared to 2040 No-Build

Depressed / Same Approach

Depressed / New Alignment

Elevated Viaduct

- 27 crash clusters identified/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)
- Quality review of improvements (i.e. lighting, open spaces, line of sight) to safety/visibility

Alternatives

Future No-Build

Compared to 2040 No-Build

Depressed / Same Approach

Depressed / New Alignment

Elevated Viaduct

- 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 lighting, redevelopment, connection to river

- New, modern elevated viaduct, improved lighting under viaduct, land-use/redevelopment under less visual obstruction/better visual surveillance

2 ENVIRONMENTAL IMPACTS

To improve the overall environmental quality of the transportation corridor

3.1 Sustainability

3.1.1 Impacts on environmental resources (i.e. wetlands, floodplains, aquifer)

Specific environmental resources impacted or created

- Square footage of specific resource impacted or created
- ARCGIS Conceptual Plans

Alternatives

Future No-Build

Compared to 2040 No-Build

Depressed / Same Approach

Depressed / New Alignment

Elevated Viaduct

- 20,100 sf of 100' FEMA Floodway; 17.9 sf of 500' FEMA Floodway; 1,150,000 SF NHESP Priority Habitat; 26,900 sf of DEP Wetlands. See Maps O15 and O18

- 50,000 sf of 100' FEMA Floodway; 17,000 sf of 500' FEMA Floodway; 1,150,000 SF NHESP Priority Habitat; 26,900 sf of DEP Wetlands. See Maps O15 and O18

- 50,000 sf of 100' FEMA Floodway; 17,000 sf of 500' FEMA Floodway; 1,150,000 SF NHESP Priority Habitat; 26,900 sf of DEP Wetlands. See Maps O17 and O18
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Measure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.2</td>
<td>Inclusion of Sound Development (UO) standards</td>
<td>Net change in pedestrian surface area to facilitate urban/interurban drainage and runoff. Square footage of pedestrian surface area created or removed. ARCGIS Conceptual Plans/GIS data layers for environmental, open space etc.</td>
</tr>
<tr>
<td>3.1.3</td>
<td>Reduction of pavement footprint</td>
<td>Net change in impervious surface area within the I-5 Corridor between East and West Columbia Ave, under existing conditions within the Primary Study Area. Square footage of impervious area created or removed. ARCGIS Conceptual Plans/GIS data layers for environmental, open space etc. Total Impervious = 118 Acres / Total Pervious = 16.9 Acres</td>
</tr>
<tr>
<td>3.2.1</td>
<td>Improve air quality</td>
<td>Health impact to vehicle occupants, bicyclists, and pedestrians. Change in regional NOx, VOC, CO</td>
</tr>
<tr>
<td>3.2.2</td>
<td>Improve air quality</td>
<td>Reduction of greenhouse gas emissions</td>
</tr>
<tr>
<td>3.3.1</td>
<td>Noise impacts</td>
<td>Expected change in distance from roadway experiencing decibel levels above Noise Abatement Criteria impacts to abutting residences and businesses (Expected change in decibel levels or number of vehicles at corridor intersections) Conceptual Alternative Plans, VHB Conceptual Level Noise Assessment Impact distances of 300 - 575 feet (commercial use, &gt;71dB) and 625 - 800 feet (residential use, &gt;66dB). See Map 019 Impact distances of 65 - 300 feet (commercial use, &gt;71dB) and 70 - 615 feet (residential use, &gt;66dB). See Map 020 Impact distances of 65 - 275 feet (commercial use, &gt;71dB) and 70 - 615 feet (residential use, &gt;66dB). See Map 021</td>
</tr>
<tr>
<td>3.3.2</td>
<td>Noise impacts</td>
<td>Expected change in number and type (commercial/residential) of impacted receptors. Conceptual Alternative Plans, VHB Conceptual Level Noise Assessment 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 68 impacted residential receptors. See Map 021 39 impacted commercial receptors and 110 impacted residential receptors. See Map 022</td>
</tr>
</tbody>
</table>

**4. Economic Development Potential**

4.1.1.1 | Fiscal 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 No change | 1,122,880 SF / 25.75 Acres of Accessible Greenspace/Development Land Created | 1,111,400 SF / 25.11 Acres of Accessible Greenspace/Development Land Created | 54,109 SF / 1.24 Acres of Accessible Greenspace/Development Land Created |
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Measure</th>
<th>Description</th>
<th>Data Source/Tool</th>
<th>Future No-Build</th>
<th>Depressed / Same Alignment</th>
<th>Depressed / New Alignment</th>
<th>Elevated/ debased</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1.2</td>
<td>Improve accessibility to potential and existing development parcels</td>
<td>Vehicular, bicycle and pedestrian connections to potential commercial corridors may benefit from bike and pedestrian infrastructure.</td>
<td>ARCGIS Conceptual Plans</td>
<td>6 additional high-quality bike/ped connections to waterfront area</td>
<td>6 additional high-quality bike/ped connections to waterfront area</td>
<td>6 additional high-quality bike/ped connections to waterfront area</td>
<td></td>
</tr>
<tr>
<td>4.1.3</td>
<td>Improved bicycle and pedestrian infrastructure</td>
<td>Studies show that commercial corridors may benefit from bike and pedestrian infrastructure.</td>
<td>ARCGIS Conceptual Plans</td>
<td>54,100 LF of Sidewalk &amp; 26,110 LF of Bike Accommodations</td>
<td>53,100 LF of Sidewalk &amp; 27,000 LF of Bike Accommodations</td>
<td>16,000 LF of Sidewalk &amp; 19,900 LF of Bike Accommodations</td>
<td></td>
</tr>
<tr>
<td>4.1.4</td>
<td>Increase density with mixed, multifamily development</td>
<td>More compact, mixed, and multifamily development patterns tend to improve overall accessibility, increase agglomeration efficiencies, and reduce public service costs.</td>
<td>ARCGIS Conceptual Plans</td>
<td>Increase of 550 persons, 375 households, and 1325 jobs within study area</td>
<td>Increase of 888 persons, 347 households, and 2330 jobs within study area (vs. no-build)</td>
<td>Increase of 104 persons, 51 households, and 136 jobs within study area (vs. no-build)</td>
<td></td>
</tr>
<tr>
<td>4.1.5</td>
<td>Increase new tax generation</td>
<td>Value of land and buildings, or changes in those values.</td>
<td>ARCGIS Conceptual Plans, Municipal Records</td>
<td>Development scenario yields est. $2.2M in annual tax revenue for City of Springfield at full buildout</td>
<td>Development scenario yields est. $3.5M in annual tax revenue for City of Springfield at full buildout</td>
<td>Development scenario yields est. $0.3M in annual tax revenue for City of Springfield at full buildout</td>
<td></td>
</tr>
</tbody>
</table>

### Socio-Economic Impacts

| 4.2.1    | Increase employment | Change in jobs in area | Census, Municipal Sources, Economic Data, ARCGIS Conceptual Plans | Increase of 1255 jobs (vs. no-build) within PSA | Increase of 2310 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 | Census, Municipal Sources | 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 | Census, Municipal Sources, Economic Data, ARCGIS Conceptual Plans | Increase of 200 housing units (vs. no-build) within PSA | Increase of 400 housing units (vs. no-build) within PSA | Increase of 54 housing units (vs. no-build) within PSA |
| 4.2.4    | Increase affordability - housing in proximity to transit | New housing to be developed within close proximity of major transit facilities | Census, Municipal Sources, Economic Data, ARCGIS Conceptual Plans | 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 Increased public service provision

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
<th>Data</th>
<th>Source/Tool</th>
<th>Future No-Build</th>
<th>Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>New tax generation</td>
<td>Change in municipal tax revenue</td>
<td>Census, Municipal Sources, Economic Data, ARCGIS Conceptual Alternative Plans</td>
<td></td>
<td>No change</td>
<td>Development scenario yields est. $2.2M in annual tax revenue at full buildout</td>
</tr>
</tbody>
</table>

#### Discussion
- **Ranking:** 8-12 years minimum
- **Visual perception:** Limited impacts to freight operations which may require minor to moderate mitigation measures.
- **Capital or relocation costs:** Development scenario yields est. $3.5M in potential cost.

### 4.2.6 Promote reduced travel costs

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
<th>Data</th>
<th>Source/Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced costs for bicycle and pedestrians, and potentially transit users - for example, spending for other purposes like housing, transportation, disposable, etc.</td>
<td>Change in transit mode</td>
<td>Census, Municipal Sources, Economic Data, ARCGIS Conceptual Alternative Plans</td>
<td></td>
</tr>
</tbody>
</table>

#### Discussion
- **Ranking:** 10-15 years minimum
- **Visual perception:** Potentially improved walkability/bike-ability, greater extent and continuity of pedestrian environments, greater critical mass of bike/ ped/ and potential transit use.
- **Capital or relocation costs:** Potentially 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

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
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<th>Source/Tool</th>
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</thead>
<tbody>
<tr>
<td>Potential improved connections(Acre/linear feet/Complete Streets or pedestrian corridor) from North End neighborhoods and the Urban Core and Battlefield, Creation of connected/linked open space.</td>
<td>Measurement of connected or linked open spaces</td>
<td>Census, Municipal Sources, Economic Data, ARCGIS Conceptual Alternative Plans</td>
<td></td>
</tr>
</tbody>
</table>

#### Discussion
- **Ranking:** 12-15 years minimum
- **Visual perception:** Potentially improved walkability/bike-ability, greater extent and continuity of pedestrian environments, greater critical mass of bike/ ped/ and potential transit use.
- **Capital or relocation costs:** Potentially improved walkability/bike-ability, greater extent and continuity of pedestrian environments, greater critical mass of bike/ ped/ and potential transit use.

### 4.3 Freight Rail impacts

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
<th>Data</th>
<th>Source/Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction related impacts to freight operations</td>
<td>Displacement or delay on freight movement</td>
<td>ARCGIS Conceptual Plans</td>
<td></td>
</tr>
</tbody>
</table>

#### Discussion
- **Ranking:** 8-12 years minimum
- **Visual perception:** Greater potential impacts to freight operations based on closer proximity of alignment to railroad/YARD which will require more extensive mitigation measures (e.g. temporary tracks, flagmen).
- **Capital or relocation costs:** Greater potential impacts to freight operations which may require minor to moderate mitigation measures.

### 4.4 Parking Impacts

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
<th>Data</th>
<th>Source/Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction/addition of parking spaces</td>
<td>Change in parking spaces</td>
<td>ARCGIS Conceptual Plans (map showing location of parking spaces)</td>
<td>1,768 existing spaces beneath I-91</td>
</tr>
</tbody>
</table>

#### Discussion
- **Ranking:** 10-15 years minimum
- **Visual perception:** Remove highway North & South Garages; net reduction of 700 spaces |

### 5 COMMUNITY EFFECTS

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
<th>Data</th>
<th>Source/Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual impacts</td>
<td>Vertical location of Viaduct</td>
<td>Change in vertical or horizontal alignment in number of feet relative to activity center proxies</td>
<td>ARCGIS Conceptual Plans</td>
</tr>
</tbody>
</table>

#### Discussion
- **Ranking:** 27' Below Ground for 100X; Covered
- **Visual perception:** Vertical change (TFB), higher than existing, reduced number of vertical piers/columns.

### 5.2 Construction Impacts

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
<th>Data</th>
<th>Source/Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impacts to residents, businesses, and visitors</td>
<td>Assumed length of anticipated temporary and permanent closures</td>
<td>ARCGIS Conceptual Plans</td>
<td>Ongoing maintenance and future rehab projects anticipated to be in the 0-5 year range.</td>
</tr>
</tbody>
</table>

#### Discussion
- **Ranking:** 10-15 years minimum
- **Visual perception:** Significant impacts to residents, businesses, and visitors.
- **Capital or relocation costs:** Significant impacts to residents, businesses, and visitors.
- **Operational impacts:** Significant impacts to residents, businesses, and visitors.

### 6 Data

- **Elevated Viaduct**
  - **Depressed / Same Alignment**
    - **25' Below Ground for 1600LF Covered**
      - **Operational impacts**
        - **Change in municipal tax revenue**
          - **Visual Impacts**
            - **Development scenario yields est. $2.2M in potential cost**
        - **Displacement or delay on freight movement**
          - **Visual Impacts**
            - **Development scenario yields est. $3.5M in potential cost**
  - **Source/Tool**
    - 5.2.2
    - 5.2.1
    - 5.1.1
    - 4.4.1
    - 4.3.2
    - 4.2.7
    - 5.2
    - 5.1
    - 4.4
    - 4.3
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Measure</th>
<th>Description</th>
<th>Data</th>
<th>Source/Tool</th>
<th>Future No-build</th>
<th>Alternatives</th>
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<td>Compared to 2040 No-Build</td>
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<td>Ongoing maintenance and future rehab projects anticipated to be in the 0-5 year range.</td>
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<td>12-15 years minimum</td>
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<td>12-15 years minimum</td>
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<td>10-12 years minimum</td>
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<tr>
<td>5.2.3</td>
<td>Maintain access to abutters</td>
<td>Impacts to residents, businesses, and visitors</td>
<td>Assumed</td>
<td>Length of anticipated temporary and permanent closures</td>
<td>ARCGIS Conceptual Plans</td>
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<tr>
<td>5.2.4</td>
<td>Disruption of local businesses</td>
<td>Impacts to residents, businesses, and visitors</td>
<td>Assumed</td>
<td>Length of anticipated temporary and permanent closures; the number and location of businesses and number of employees impacted by closure.</td>
<td>General, Municipal Sources, Economic Data, ARCGIS Conceptual Alternative Plans</td>
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</tr>
<tr>
<td>5.3</td>
<td>Compatibility</td>
<td>Compatibility with local and regional transportation plans, strategic plans and plans of conservation and development</td>
<td>General Compliance with Local and Regional Plans Qualitative - Yes or no</td>
<td>ARCGIS Conceptual Plans</td>
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<tr>
<td>5.4</td>
<td>Environmental Justice Impacts</td>
<td>Availability of jobs in EJ areas</td>
<td>Access to jobs</td>
<td>Reduction in travel time from residential area to downtown business center</td>
<td>ARCGIS Conceptual Alternative Plans</td>
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### 5.3 Compatibility

5.3.1 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
- 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

- General Compliance with MassDOT Qualitative - Yes or No
- ARCGIS Conceptual Plans
- No change
- Conceptual plans meet the latest goals, policies and directives
- Conceptual plans meet the latest goals, policies and directives
- Conceptual plans meet the latest 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
- No change
- Increase of 1323 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 116 jobs (vs. no-build); See Map No. 009 “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 education services
- Qualitative assessment - spatial examination of assets
- ARCGIS Conceptual Alternative Plans
- No change
- Improved bicycle access (within 0.25mi) to 4 libraries, 2 farmers market, 1 middle school within Primary Study Area. No improved access to healthcare facilities. See Map No.011 “Bicycle, Pedestrian, and Transit Access to Public Facilities (Alternatives 1 and 2)”
- Improved bicycle 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.012 “Bicycle, Pedestrian, and Transit Access to Public Facilities (Alternatives 2)”
- Improved bicycle 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.010 “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
- No change
- $4,100 LF of Sidewalk & 28,150 LF of Bike Accommodations
- $5,100 LF of Sidewalk & 27,800 LF of Bike Accommodations
- 6,300 LF of Sidewalk & 15,900 LF of Bike Accommodations
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Measure</th>
<th>Description</th>
<th>Data Source/Tool</th>
<th>Future No-Build</th>
<th>Depressed / Same Alignment</th>
<th>Depressed / New Alignment</th>
<th>Elevated Vehicle</th>
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<td><strong>Alternatives</strong></td>
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<tr>
<td>6.4</td>
<td>Improve local access from downtown urban core to the waterfront [i.e., Connecticut Riverwalk], open space, environmental resources, and activity centers [i.e., Basketball Trail of Fame] in E1 areas</td>
<td>Change in number of connections between downtown and waterfront, to open space, environmental resources, retail, goods and social services, and activity centers in E1 areas</td>
<td>ARCGIS Conceptual Plans</td>
<td>No change</td>
<td>6 additional high-quality bike/ped connections to waterfront area</td>
<td>6 additional high-quality bike/ped connections to waterfront area</td>
<td>6 additional high-quality bike/ped connections to waterfront area or additional connector along waterfront</td>
</tr>
<tr>
<td>6.5</td>
<td>Improve access to community resources and social services in E1 areas</td>
<td>Change in number of connections to schools, health care, social services, etc. in E1 areas. This will include evacuation distance to population reached within a 1/4 mile for walking, (biking for 10 miles where feasible) from connection points</td>
<td>ARCGIS Conceptual Plans</td>
<td>No change</td>
<td>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. 108 “Bicycle, Pedestrian, and Transit Access to Public Facilities (Alternatives 1 and 2)”</td>
<td>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. 108 “Bicycle, Pedestrian, and Transit Access to Public Facilities (Alternatives 1 and 2)”</td>
<td>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)”</td>
</tr>
<tr>
<td>6.6</td>
<td>Improve access to retail, goods, commercial and activity centers in E1 areas</td>
<td>Change in number of connections to goods and employment centers in E1 areas. This will include evacuation distance to population reached within a 1/4 mile for walking, (biking for 10 miles where feasible) from connection points</td>
<td>ARCGIS Conceptual Plans</td>
<td>No change</td>
<td>2 additional bike/ped connections from downtown to North End; 6 additional bike/ped connections from downtown to waterfront. See Map No. 108 “Bicycle, Pedestrian, and Transit Access to Goods and Services (Alternatives 1 and 2)”</td>
<td>2 additional bike/ped connections from downtown to North End; 6 additional bike/ped connections from downtown to waterfront. See Map No. 011 Bicycle, Pedestrian, and Transit Access to Goods and Services (Alternative 1).</td>
<td>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)”</td>
</tr>
<tr>
<td>6.7</td>
<td>Environmental Impacts in E2 areas</td>
<td>Environmental impacts (improvement of air quality and noise impacts in E2 areas)</td>
<td>Quantitative assessment (expected change in decibel levels or number of vehicles at corridor intersections in E2 areas, feet of buffer between vehicular travel and bicycle/pedestrian in E2 areas)</td>
<td>Model CO emissions: +0.65 kg AM / +2.84 kg PM</td>
<td>Model change in CO emissions: +3.74 kg AM / +2.84 kg PM</td>
<td>Model change in CO emissions: +3.74 kg AM / +2.84 kg PM</td>
<td>Model change in CO emissions: +3.74 kg AM / +2.84 kg PM</td>
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### Cost

**Development of Alternative Designs will combine the approach of Feasibility, Creativity, and Long Term Sustainability**

#### 6.1 Construction Costs

<table>
<thead>
<tr>
<th>6.1.1</th>
<th>Order of magnitude implementation cost</th>
<th>Estimated capital costs of construction</th>
<th>Value in 2015 dollars</th>
<th><strong>No Build</strong></th>
<th>Model Conceptual Plans</th>
<th>Model Conceptual Plans</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>ARCGIS Conceptual Plans</strong></td>
<td><strong>$780 million (assumes structural &amp; piers replacement/repair)</strong></td>
<td><strong>$7.76 Billion</strong></td>
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<td></td>
<td><strong>ARCGIS Conceptual Plans</strong></td>
<td><strong>$780 million (assumes structural &amp; piers replacement/repair)</strong></td>
<td><strong>$3.74 Billion</strong></td>
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<tr>
<td></td>
<td><strong>ARCGIS Conceptual Plans</strong></td>
<td><strong>$780 million (assumes structural &amp; piers replacement/repair)</strong></td>
<td><strong>$1.14 Billion</strong></td>
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</table>

#### 6.2 Maintenance Costs

<table>
<thead>
<tr>
<th>6.2.1</th>
<th>Anticipated annual maintenance costs</th>
<th>Estimated cost of maintenance for infrastructure</th>
<th>Value in 2015 dollars</th>
<th><strong>No Build</strong></th>
<th>Model Conceptual Plans</th>
<th>Model Conceptual Plans</th>
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</thead>
<tbody>
<tr>
<td></td>
<td><strong>ARCGIS Conceptual Plans</strong></td>
<td><strong>$800,000/year</strong></td>
<td><strong>$1.75 million/year (est.)</strong></td>
<td><strong>$1.75 million/year (est.)</strong></td>
<td><strong>$1.25 million/year (est.)</strong></td>
<td><strong>$1.25 million/year (est.)</strong></td>
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</table>
### 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**

<table>
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<th>Criteria</th>
<th>Measure</th>
<th>Description</th>
<th>Data</th>
<th>Source/Tool</th>
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<tr>
<th>Alternatives</th>
<th>Future No-Build</th>
<th>Depressed / Same Alignment</th>
<th>Depressed / New Alignment</th>
<th>Elevated Viaduct</th>
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<tr>
<td></td>
<td>Ranking</td>
<td>Discussion</td>
<td>Ranking</td>
<td>Discussion</td>
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- **No Build**
  - 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

- **Depressed / Same Alignment**
  - 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

- **Depressed / New Alignment**
  - 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

- **Elevated Viaduct**
  - Cost (2) Longevity (4) Environmental (2) Annual Maintenance (6) Safety (5) Redevelopment (4) Social (6) = Total of 30
  - Approximate Life Cycle Cost (2075): $3.24 Billion