I-91 Viaduct Study

Springfield, Massachusetts

Working Group Meeting #10

UMASS Springfield – Tower Square
Springfield, Massachusetts

June 28, 2017

Milone & MacBroom

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Welcome & Introductions

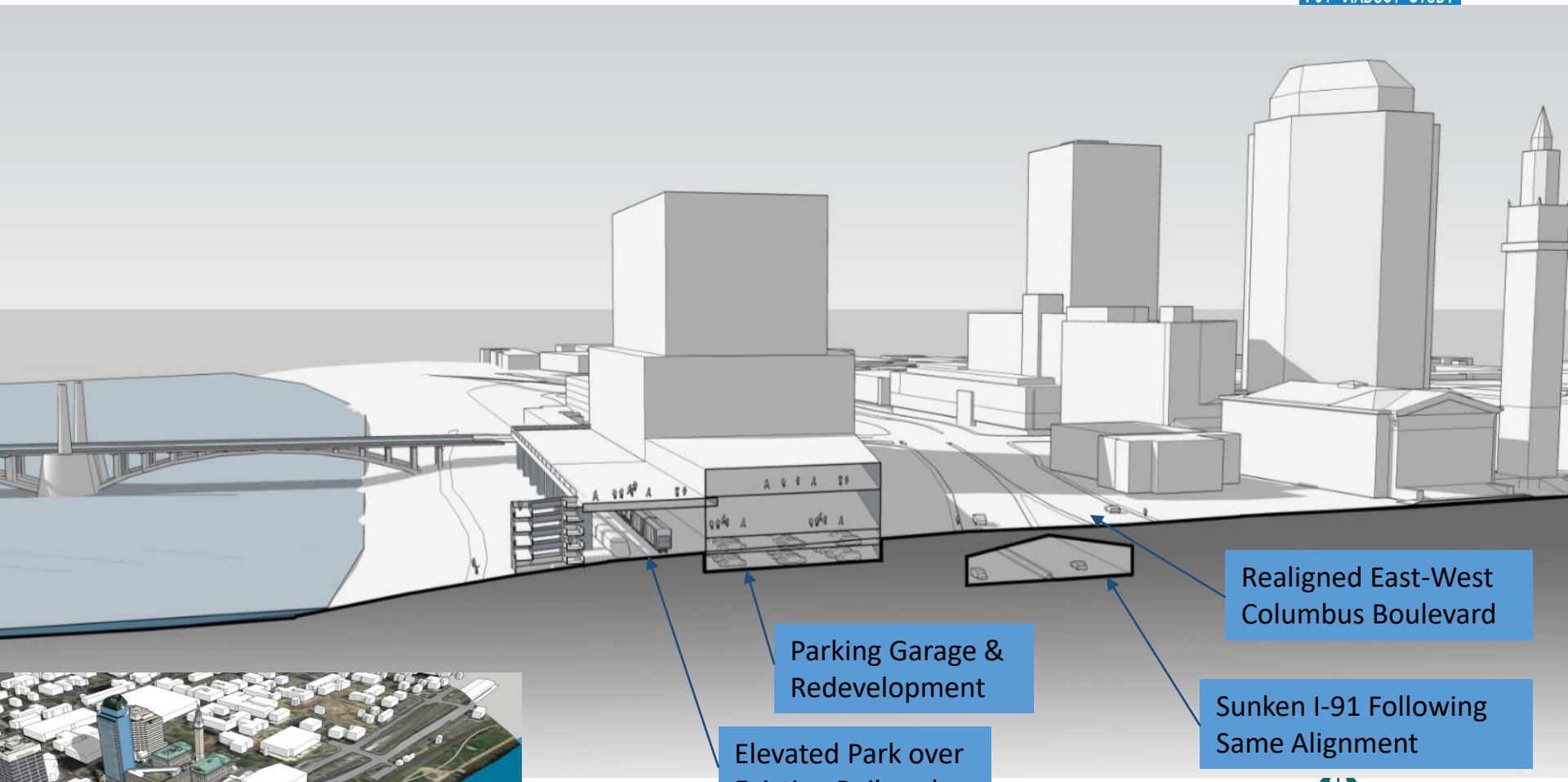
- Ethan Britland – Project Manager (MassDOT)
- Michael Clark – Transportation Planner (MassDOT)
- Mark Arigoni, L.A. – Principal-in-Charge (MMI)
- Van Kacoyannakis, P.E. – Traffic (MMI)
- Tim Baird, AICP – Planner (MMI)
- John Hoey - QA/QC (MMI)
- Sarah Paritsky – Public Involvement (Regina Villa)

Agenda

- Welcome and Introductions
- Three Alternatives
- Evaluation Criteria (Presentation & Workbook Walk Through)
  - Evolution of Evaluation Criteria
  - Evaluation of No-Build & the (3) Alternatives
  - Discussion of Ratings
- Discussion of Recommendations
- Next Steps/Process

Conceptual Planning Study: This graphic represents a hypothetical development scenario that could be representative of potential future development along the I-91 Viaduct Corridor and is shown for general informational purposes. Any actual future development that occurs along this corridor may vary from this conceptual representation.

I-91 VIADUCT STUDY



Alternative #1

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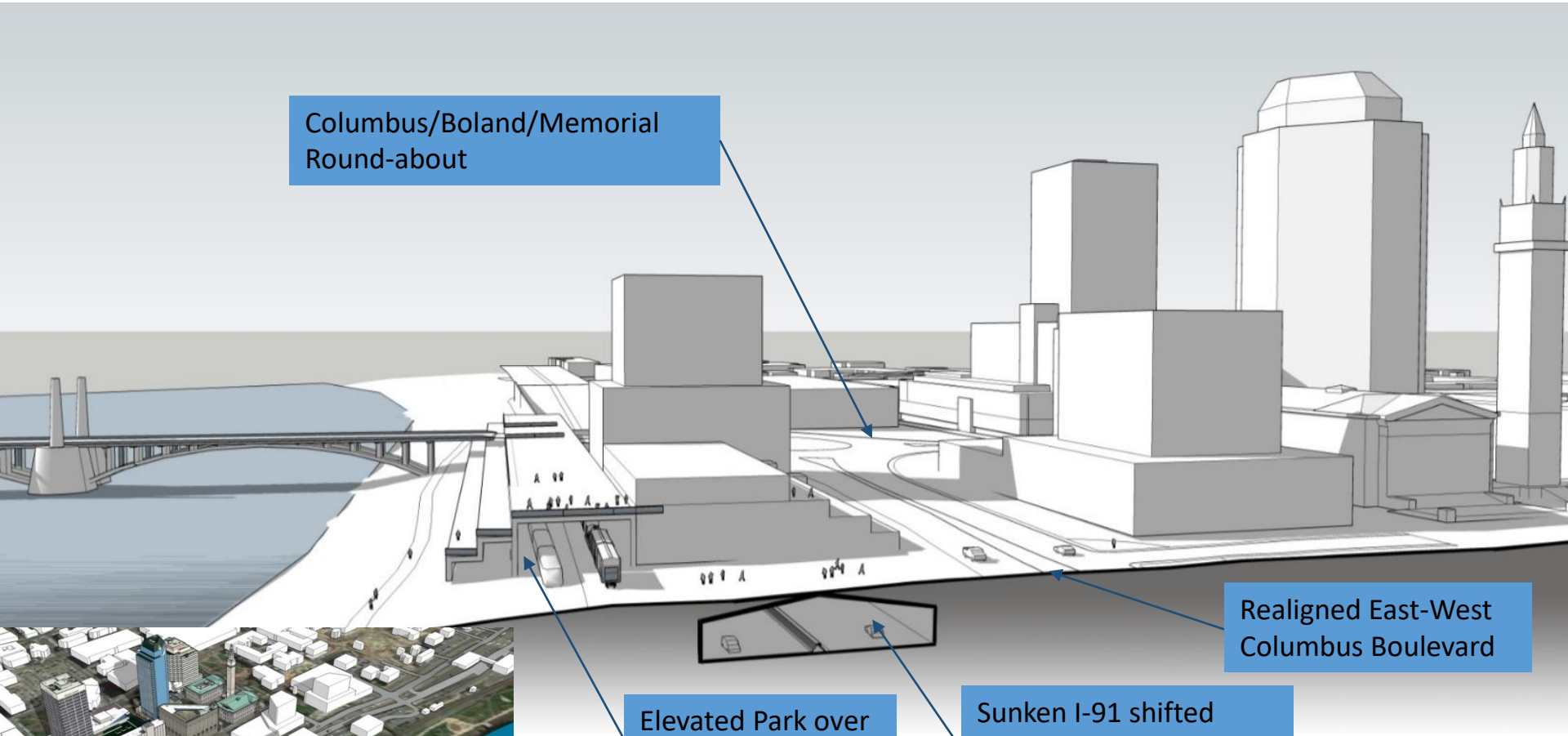

Alternative #2

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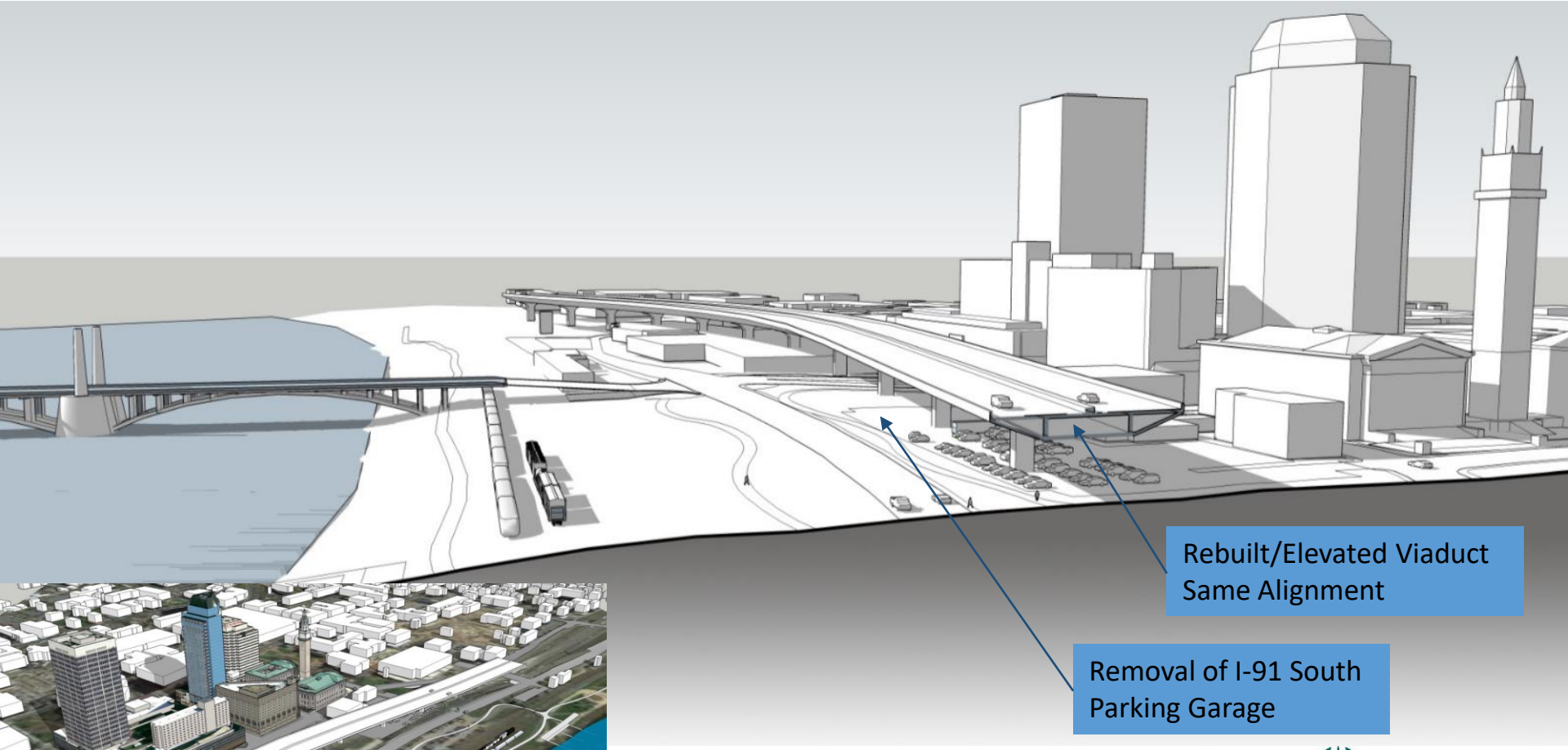
I-91 VIADUCT STUDY



Alternative #3

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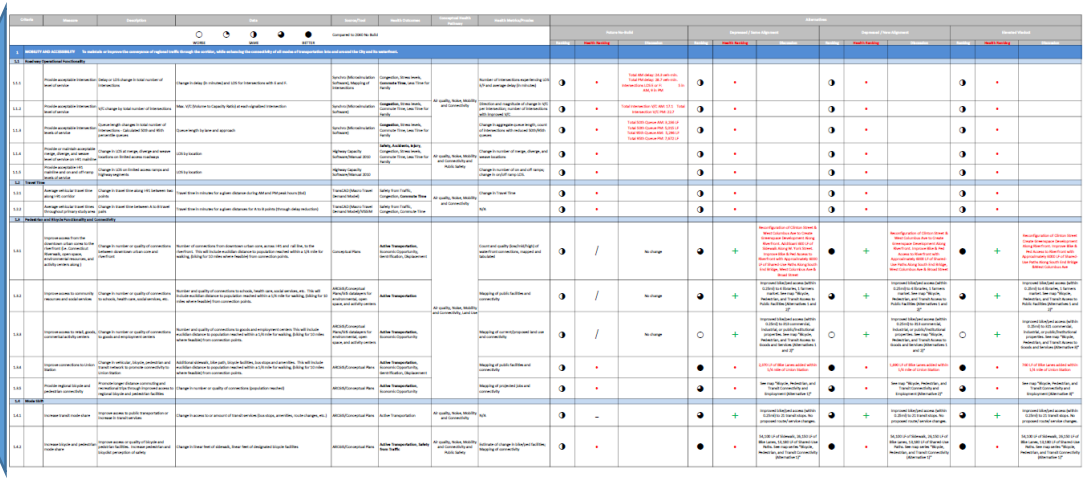
Evolution of Evaluation Criteria

- Completion of Comprehensive Evaluation Criteria & Ratings
  - Mobility & Accessibility, Safety, Environmental Effects
    - Additional Air & Noise Analysis Completed
  - Land Use & Economic Development
  - Community Effects, and Cost

- MASSDOT & MASSDPH Coordination Continues

Refinement of Evaluation Criteria

- Mobility & Accessibility
- Safety
- Environmental Effects
- Land Use & Economic Development
- Community Effects
- Cost

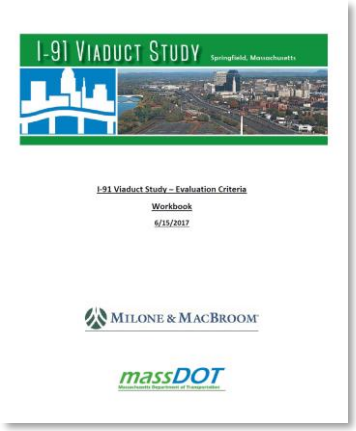


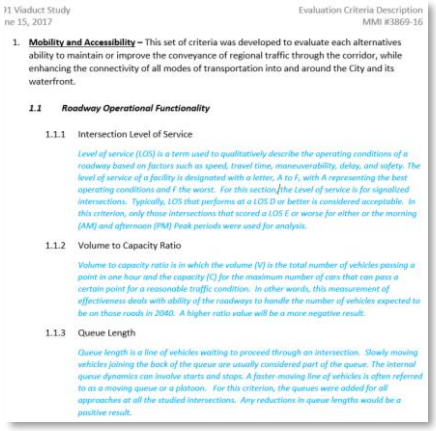
Criteria	Measure	Description	Data	Source/Tool	Health Outcomes	Transportation Health Indicators	Health Metrics/Proxies	Alternatives											
			○ NO DATA ◔ ◑ LOW ◕ ● DETAILED	Compared to 2040 No Build				Future No-Build			Depressed / Zero Alignment			Elevated Viaduct		
								Ranking	Health Ranking	Discussion	Ranking	Health Ranking	Discussion	Ranking	Health Ranking	Discussion
1	MOBILITY AND ACCESSIBILITY To maintain or improve the convenience 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 Performance															
1.1.1	Provide acceptable intersection level of service	Delay or v/c% change in total number of intersections	Change in delay (in minutes) and v/c% for intersections with E and F	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 v/c% and average delay (in minutes)	◑	•	Total AM delay: 24.4 veh-min. Total PM delay: 38.7 veh-min. Intersections: v/c% AM: 2.0; v/c% PM: 2.6 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) of 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 v/c% (in percent)	◑	•	Total Intersection V/C AM: 17.1 Total Intersection V/C PM: 13.7	◑	•		◑	•	
1.1.3	Provide acceptable intersection level 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: 6,298 LF Total 95th Queue AM: 9,496 LF Total 50th Queue PM: 5,496 LF Total 95th Queue PM: 7,672 LF	◑	•		◑	•	
1.1.4	Provide or maintain acceptable level of service (LOS) for weave/merge/diverge	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, Public Safety	Change in number of merge, diverge, and weave locations	◑	•		◑	•		◑	•	
1.1.5	Provide acceptable LOS, capacity and overall efficiency levels of service	Change in LOS on limited access ramps and highway segments	LOS by location	Highway Capacity Software/Manual 2010			Change in number of on and off ramps; change in on/off ramp LOS	◑	•		◑	•		◑	•	
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 (TBD)	Trans2Cast (Macro Travel Demand Model)	Safety from Traffic, Congestion, Commute Time	Air quality, Noise, Mobility and Connectivity	Change in Travel Time	◑	•		◑	•		◑	•	
1.2.2	Average vehicular travel time throughout primary study area	Change in travel time between A to B travel points	Travel time in minutes for a given distance for A to B points (through delay reduction)	Trans2Cast (Macro Travel Demand Model)/VISSIM	Safety from Traffic, Congestion, Commute Time		N/A	◑	•		◑	•		◑	•	
1.3	Pedestrian and Bicycle Functionality and Connectivity															
1.3.1	Improve access from the downtown urban core to the Riverfront (i.e. Connecticut River, Riverfront Park, Riverfront Recreation, and activity centers along I-)	Change in number or quality 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 auxiliary distance to population reached within a 1/4 mile for walking, 1/2 mile for 10 miles where headed 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 expanded connections, mapped and calculated	◑	/	No change	●	+	Reconfiguration of Clinton Street & West Columbus due to Create Greenspace Development along Riverfront. Addition of 1/2 of Sidewalk along W. York Street, Improve Block 8. Net Approximately 4000 LF of Sidewalk Use Paths along South End Bridge, West Columbus Ave & Broad Street	●	+	Reconfiguration of Clinton Street & West Columbus due to Create Greenspace Development along Riverfront. Addition of 1/2 of Sidewalk along W. York Street, Improve Block 8. Net Approximately 4000 LF of Sidewalk Use Paths along South End Bridge, West Columbus Ave & Broad Street
1.3.2	Improve access to community resources and social services	Change in number or quality of connections to schools, health care, social services, etc.	Number and quality of connections to schools, health care, social services, etc. This will include auxiliary distance to population reached within a 1/4 mile for walking, 1/2 mile for 10 miles where headed from connection points.	ARCGIS/Conceptual Plans/Web databases for social services, open space, and activity centers	Active Transportation		Mapping of public facilities and connectivity	◑	/	No change	◕	+	Improved bike/ped access (within 1/2 mile) to 4 libraries, 1 farmers market, 1 school, 1 park, Pedestrian, and Transit Access to Public Facilities (Alternatives 1 and 2)	◕	+	Improved bike/ped access (within 1/2 mile) to 4 libraries, 1 farmers market, 1 school, 1 park, Pedestrian, and Transit Access to Public Facilities (Alternatives 1 and 2)
1.3.3	Improve access to retail, goods, commercial activity centers	Change in number or quality of connections to goods and employment centers	Number and quality of connections to goods and employment centers. This will include auxiliary distance to population reached within a 1/4 mile for walking, 1/2 mile for 10 miles where headed from connection points.	ARCGIS/Conceptual Plans/Web databases for social services, open space, and activity centers	Active Transportation, Economic Opportunity		Mapping of current/proposed land use and connectivity	◑	/	No change	○	+	Improved bike/ped access (within 1/2 mile) to 1 retail, 1 industrial, or public/institutional properties. See map "Bicycle, Pedestrian, and Transit Access to Goods and Services (Alternatives 1 and 2)"	○	+	Improved bike/ped access (within 1/2 mile) to 1 retail, 1 industrial, or public/institutional properties. See map "Bicycle, Pedestrian, and Transit Access to Goods and Services (Alternatives 1 and 2)"
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 auxiliary distance to population reached within a 1/4 mile for walking, 1/2 mile for 10 miles where headed from connection points.	ARCGIS/Conceptual Plans	Active Transportation, Economic Opportunity, Gentrification, Displacement		Mapping of public facilities and connectivity	◑	•		●	•	1,000 LF of Bike Lanes added within 1/4 mile of Union Station	●	•	500 LF of Bike Lanes added within 1/4 mile of Union Station
1.3.5	Provide regional bicycle and pedestrian connectivity	Provide longer distance connecting and recreational trips through improved access to regional bicycle and pedestrian facilities	Changes in number or quality of connections (population reached)	ARCGIS/Conceptual Plans	Active Transportation, Economic Opportunity		Mapping of projected jobs and connectivity	◑	•		◑	•	See map "Bicycle, Pedestrian, and Transit Connectivity and Employment (Alternative 1)"	◑	•	See map "Bicycle, Pedestrian, and Transit Connectivity and Employment (Alternative 1)"
1.4	Mode Shift															
1.4.1	Increase transit mode share	Improve access to public transportation or increase in transit services	Changes in access to or amount of transit services (bus stops, amenities, route changes, etc.)	ARCGIS/Conceptual Plans	Active Transportation	Air quality, Noise, Mobility and Connectivity	N/A	◑	–		◕	+	Improved bike/ped access (within 0.25 mile to 21 transit stops. No proposed route/service changes.	◕	+	Improved bike/ped access (within 0.25 mile to 21 transit stops. 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 bicycle 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	Indicator of change in bike/ped facilities, Mapping of connectivity	●	•	56,100 LF of Sidewalk, 16,150 LF of Bike Lanes, 12,500 LF of Shared Use Paths. See map series "Bicycle, Pedestrian, and Transit Connectivity (Alternative 1)"	●	•	56,100 LF of Sidewalk, 16,150 LF of Bike Lanes, 12,500 LF of Shared Use Paths. See map series "Bicycle, Pedestrian, and Transit Connectivity (Alternative 1)"	●	•	56,100 LF of Sidewalk, 16,150 LF of Bike Lanes, 12,500 LF of Shared Use Paths. See map series "Bicycle, Pedestrian, and Transit Connectivity (Alternative 1)"

A lot of Detail – too much to present on a screen

Evaluation Criteria Work Book

A workbook was developed to function as a stand alone document that provides support information along with the actual Evaluation Criteria. The support information is intended to assist in the understanding of the Detailed Evaluation Criteria and includes the Criteria, Descriptions, Ratings, and Mapping.





1. **Mobility and Accessibility** – This set of criteria was developed to evaluate each alternatives ability 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 Intersection Level of Service

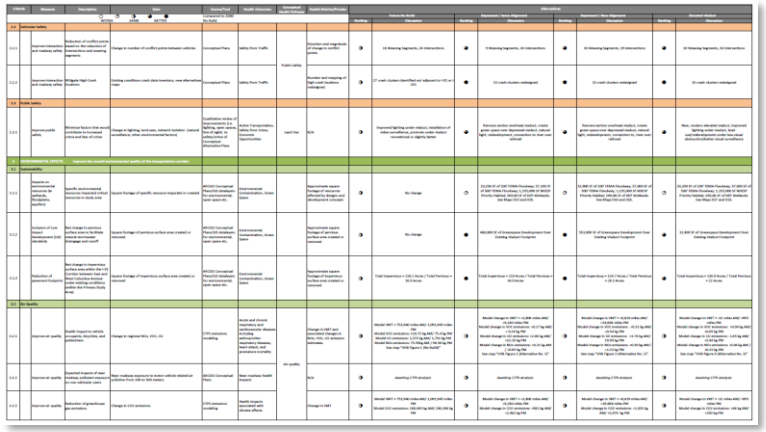
Level of service (LOS) is a term used to qualitatively describe the operating conditions of a roadway based on factors such as speed, travel time, maneuverability, delay, and safety. The level of service of a facility is designated with a letter, A to F, with A representing the best operating conditions and F the worst. For this section, the Level of service is for signalized intersections. Typically, LOS that performs at a LOS D or better is considered acceptable. In this criterion, only those intersections that scored a LOS E or worse for either or the morning (AM) and afternoon (PM) Peak periods were used for analysis.

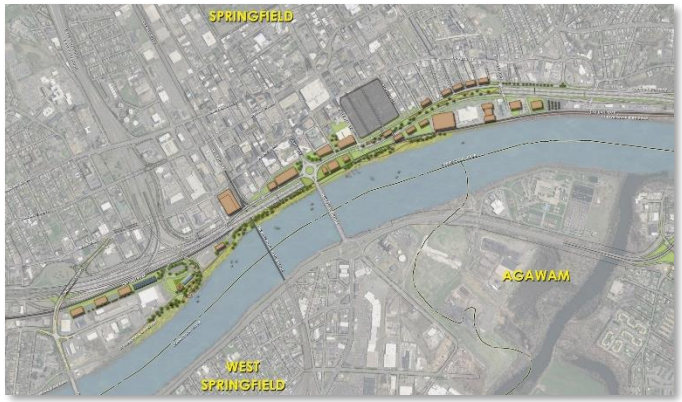
1.1.2 Volume to Capacity Ratio

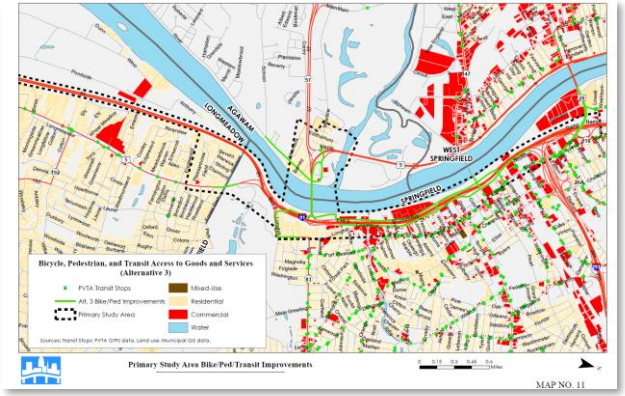
Volume to capacity ratio is in which the volume (V) is the total number of vehicles passing a point in one hour and the capacity (C) for the maximum number of cars that can pass a certain point for a reasonable traffic condition. In other words, this measurement of effectiveness deals with ability of the roadways to handle the number of vehicles expected to be on those roads in 2040. A higher ratio value will be a more negative result.

1.1.3 Queue Length

Queue length is a line of vehicles waiting to proceed through an intersection. Slowly moving vehicles joining the back of the queue are usually considered part of the queue. The internal queue dynamics can involve starts and stops. A faster-moving line of vehicles is often referred to as a moving queue or a platoon. For this criterion, the queues were added for all approaches at all the studied intersections. Any reductions in queue lengths would be a positive result.







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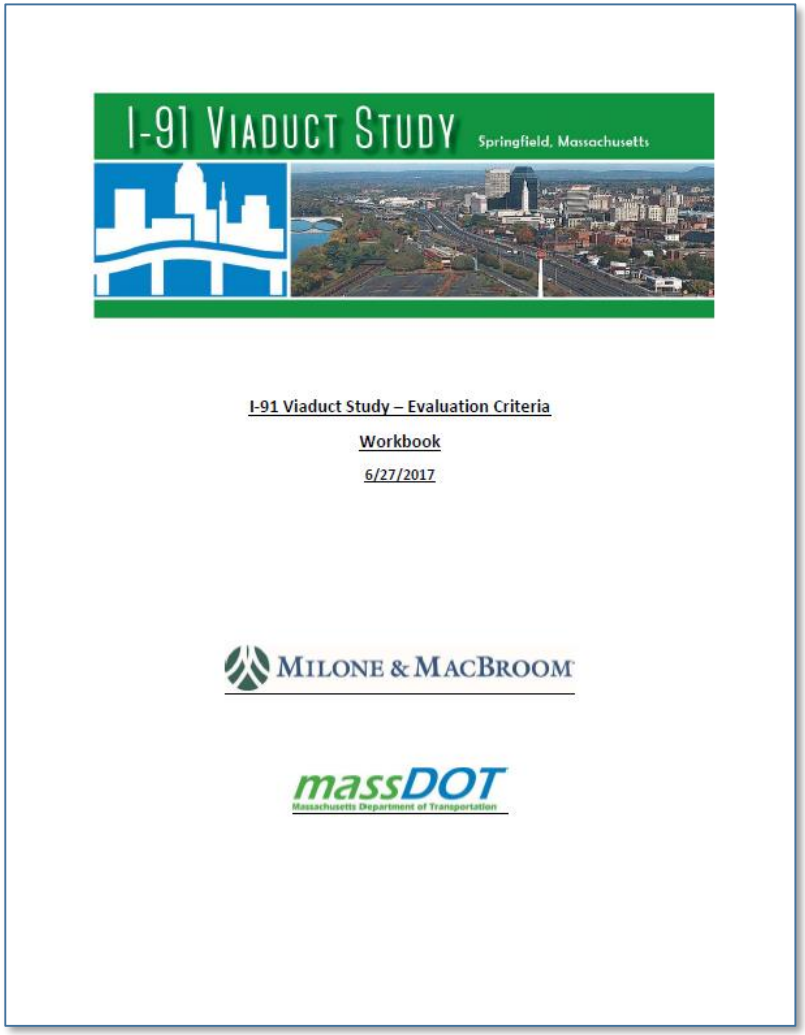
Evaluation Criteria Work Book

The Evaluation consists of a rating system that provides a value to each criteria. The alternatives have been assessed based upon the criteria and a value/rating has been given for each alternative and the no-build. These ratings are based upon the information provided and can be either qualitative, quantitative, or both.

Harvey Ball System

Ranking	Symbol	
2	●	Better
1	◕	Same-Better
0	◑	Same
-1	◔	Same-Worse
-2	○	Worse

Evaluation Criteria Work Book


I-91 VIADUCT STUDY Springfield, Massachusetts

I-91 Viaduct Study – Evaluation Criteria

Workbook

6/27/2017

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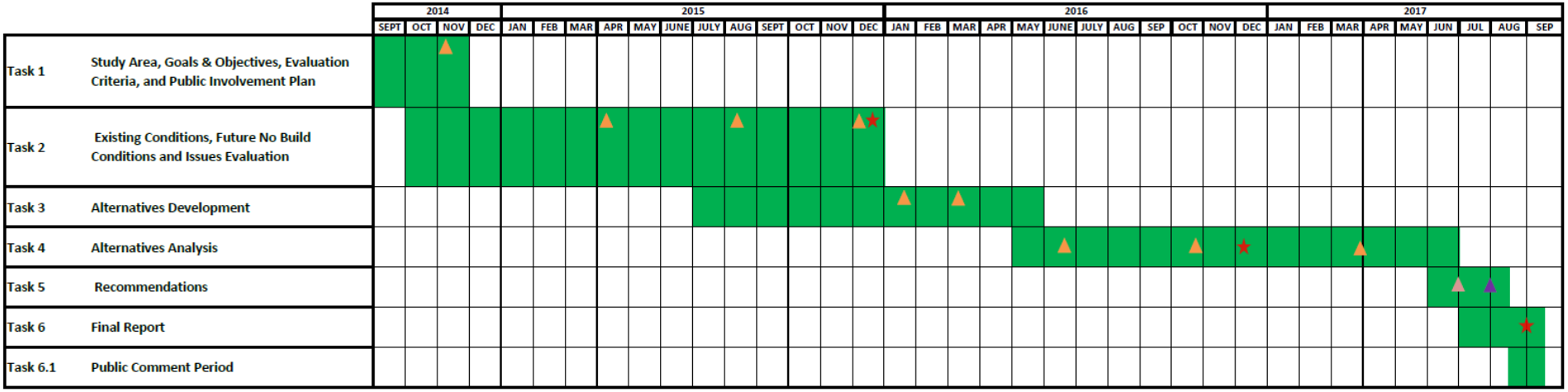
Project Schedule



Working Group Meeting

Public Meeting

Working Group Meeting #10

Working Group Meeting #11

Project Extension to October 2017

Next Steps

- Recommend Preferred Alternative
- Additional Working Group Meeting
- Final Public Informational Meeting
- Final Report & Public Comment Period

Questions & Comments

Contacts:

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Study Website Link:
www.massdot.state.ma.us/i91viaductstudy

THANK YOU FOR YOUR PARTICIPATION