

September 8, 2017

Mr. Michael Clark
Office of Transportation Planning
Massachusetts Department of Transportation
10 Park Plaza, Suite #4150
Boston, MA 02116

**RE: I-91 Working Group Meeting #10 – Evaluation Criteria Workbook Comments
MMI #3869-16-4**

Dear Michael:

We are in receipt of the comments received regarding the above-referenced project and offer the following responses to them:

Comments from Richard Masse (DOT) to Milone & MacBroom Inc.:

- C1. The simulations that were viewed at the end of the meeting, for the I-91 side, in the second half where it moves north from the peanut to focus on the South End bridge rotary, The NB queue at the approach to the rotary seems to grow throughout the simulation and it looks like the approach may be above capacity. Although there is a gap on the rotary coming up right at the end of the simulation, it is unclear that the volume on the approach is going to be able to clear.
- R1. **A slip lane has been added for vehicles heading onto I-91 and East Columbus Avenue, which has alleviated the potential backup under this scenario. Simulations have been revised accordingly.**
- C2. Van – you mentioned something about the volume in the simulation being conservatively large, that you had volumes larger than modeled that were in the simulation, or something like that. Can you please elaborate on that or provide some info for all the approaches to the South End bridge rotary. Is a NB bypass lane needed? SB also looks to be building quite a queue.
Screenshot below.
- R2. **We chose to show a representative clip of the entire "Longmeadow curve section" in a short period of time and to keep the file size manageable. A conservative approach was taken in the analysis by adding vehicles to represent the peak queuing for all ramps and approaches in a short period of time for visualization purposes. We did this to better represent some of the anticipated queuing for the ramps at the "peanut" shaped interchange, which we believe would happen at a different time period than the South End Bridge Rotary section congestion.**

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Comments from Donna Feng (DOT) to Michael Clark (DOT):

- C3. Under 5.2 (Construction Impacts), it's been my experience that a new alignment is the least worst alternative with regards to traffic management. In the evaluation table, Alt 3 is given a ¼ moon (because the duration is shorter?), but I think Alt 2 should be considered less terrible than Alt 1 for Construction Impacts and should rate a ¼ moon.
- R3. While the comment is understood and it is agreed that the levels of construction impacts with both Alternatives 1 and 2 will be extensive, we feel that it cannot be discerned as to which will be worse at this level of design.**

Comments from Gary Roux (Pioneer Valley Planning Commission (PVPC)) to Michael Clark (DOT):

- C4. As I brought up at the last I-91 Viaduct Study Working Group Meeting, I'd like to request that all comments submitted on the workbook be summarized and distributed to the Working Group.
- R4. A comment/response letter has been prepared.**
- C5. I am not sure if this has been addressed at a previous meeting of the Working Group, but it is unclear if some of the options such as the improvements to the South End Bridge and Route 5/57 rotary that are part of each of the alternatives would be considered to be part of the "No Build" alternative as well.
- R5. This option is under consideration by MassDOT as an "Enhanced" No-build. Currently, the No-build Alternative does not include any South End Bridge and Route 5/57 rotary improvements.**
- C6. It has been suggested that the scale used to rate each of the criteria in the matrix are weighted from -2 to 2 points. It would be helpful to have a total score for each of the four alternatives as a whole and for each major topic, i.e. "Mobility and Accessibility", "Safety", etc.
- R6. Totals and subtotals have been tabulated. See comment/response #20.**
- C7. Under criteria 1.1.4 "Provide or maintain acceptable merge, diverge, and weave level of service on I-91 mainline", the Depressed/New Alignment Alternative receives a score of "better" or a "1" despite having an overall listed LOS of "F". This is contrary to the scores of "same" or "0" for the other 3 alternatives. I'd interpret this to be a "worse" or "-1" score given the listed LOS "F" values for the 2 on-ramps.
- R7. The ratings for 1.1.4 were reviewed and left as-is. Please note that the listed level of service (LOS) scores reflect only those locations where LOS is rated as E or worse, not overall LOS across the study area. Alternative 2 (Depressed/New Alignment) has the fewest locations**

projected to experience LOS E/F conditions and therefore scores better (score of 1) in relation to the No-Build and other alternative scenarios.

- C8. Under criteria 1.2.2, the scoring for the Depressed/New Alignment alternatives is listed as a "worse" or "-1" despite it having improved times in the Southbound direction. I would suggest this be scored as "same" or "0" given the modest improvements in one direction. Similarly, the Elevated Viaduct Alternative is scored as a "worse" or "-2" yet results in improvements in travel time for 3 out of 4 of the categories. I believe this should be scored as "better" or "2".
- R8. The ratings for 1.2.2 were reviewed and adjusted in the case of Alternative 3 (Elevated Viaduct). In the case of Alternative 2 (Depressed/New Alignment), the assigned rating reflects the net increase in travel time when averaged across both directions and AM/PM peaks. While the southbound direction is projected to experience faster travel times, the increase in times for the northbound direction is of a greater magnitude, hence the rating of -1 reflecting a small increase in overall travel times throughout the primary study area.**
- C9. Criteria 3.1.1 – the number of square feet of DEP reported wetlands appears to be incorrect in three of the alternatives.
- R9. Square feet of impacted wetlands have been reviewed and revised.**
- C10. Criteria 3.3.2 – Noise Impacts. I would suggest that the Depressed/Same Alignment Alternative only receive a score of "1" given its projected impact on residential receptors.
- R10. The data has been reviewed for 3.3.2. The assigned score reflects a substantial improvement in both residential and total impacted receptors relative to both the projected No-Build and Alternative 3 (Elevated Viaduct) conditions.**
- C11. Criteria 4.2.7 – Improve Social Cohesion. The Elevated Viaduct Option is scored as a "2" under these criteria, yet provides far less greenspace than other alternatives. I would recommend this be scored as a "1".
- R11. The rating has been revised accordingly.**
- C12. Freight Rail Impacts – the descriptions for both of these measures is unclear. Further information should be provided on what mitigation measures may be required for freight rail operations and what defines a "limited", "moderate", and "significant" impact.
- R12. Additional descriptions and examples will be provided in "Discussion" text for each Alternative.**
- C13. Criteria 4.3.1 – Operational Impacts. Each of the alternatives are labeled as having no impacts to freight operations but 3 of them are scored as a "-1". Please provide additional supporting information on this scoring.

- R13. The description will be revised to remove the phrase "no impact", and additional text will be provided to better describe the potential impacts.**
- C14. Criteria 4.3.2 – Implementation Costs. The three Viaduct alternatives are described as having a different level of impact. It would appear the Elevated Viaduct alternative should be scored as a "0" given the projected limited impacts it is expected to have under these criteria.
- R14. Rating has been revised accordingly.**
- C15. Criteria 5.2 Construction Impacts. I would recommend that all of the Viaduct Alternatives be given a score of "worse" or "-2" under all measures for construction impacts. Local residents and businesses have had to endure many significant construction projects such as the I-91 ramp reversal project, the I-91 fiber project, and the current Viaduct improvement project. Any disruption to local businesses and residents has a significant impact that will have negative adverse impacts regardless of the proposed length of time.
- R15. While we understand each of the three Alternatives will have significant impacts, when comparing all aspects of the types of construction, Alternative 3 will have more significant impacts than the no-build conditions in that it would also require new piers and a deck replacement at time of construction. Alternative 1 and Alternative 2 would require significantly more excavation, dewatering, and detouring in order to construct the sunken sections of highway, hence the difference in rating given.**
- C16. Criteria 5.4.4 – Improve local access to the riverfront. I would recommend scoring the Elevated Viaduct alternative as a "2" under this category due to the additional waterfront connector that is part of this alternative.
- R16. The rating has been revised for Alternative 3.**
- C17. Criteria 5.4.7 – Environmental Impacts in EJ areas. The scoring for the alternatives appears to be inconsistent. Both of the Depressed Alternatives are scored as a "1" while the Elevated Alternative is scored as a "0". From the numbers presented in the matrix, it appears the scoring should be a "0" for the Depressed Alternatives and a "1" for the Elevated Alternative as the Elevated Alternatives results in less of an impact.
- R17. The ratings and data have been reviewed and revised to reflect the overall balance of impacts from both air quality and noise emissions. Across all alternatives, the magnitude of changes in vehicle miles traveled (VMT)/air quality emissions relative to the no-build scenario is relatively small. Alternatives 1 and 2 are projected to produce greater air quality impacts but lesser noise impacts while the inverse is true of Alternative 3. For these reasons, the impacts of each alternative from a combined air quality/noise standpoint were assessed as neutral.**

C18. Criteria 6.1.1 – Order of magnitude of implementation cost. The cost estimates are presented on 2017 dollars. While this is helpful, FHWA requires all project cost estimates to include an inflation factor to the actual year of construction. This inflation factor is currently 4% / year for the regional Transportation Improvement Plan (TIP) and Regional Transportation Plan (RTP). It would be helpful to have additional information on potential inflation impacts on these cost estimates including information on a more realistic rate of inflation that might be appropriate for this type and scale of transportation improvement.

R18. Criteria 6.1.1 – The order-of-magnitude construction cost for each was determined using the year 2017 dollar values, not the year 2015; this has been revised. Although an inflation rate could be used in this evaluation, it was determined that a similar comparison could be drawn by using the year 2017 values or inflated values for some future construction year.

Criteria 6.2.2 – While we recognize the FHWA inflation rate is 4%, we also recognized that rate is used for relatively short-term (several years) budgetary planning for TIP and RTP purposes. We chose to use an inflation rate of 3% as an average inflation rate to allow for fluctuation in inflation over 55 years, reflecting the life-cycle costs. Although no rate can be predicted in certainty, for the purposes of this study, a 3% rate was used to reflect inflation annually to the year 2075.

Comments from Rana Al-Jammal (PVPC):

C19. The evaluation criteria description text is very difficult to read due to the use of bright blue (cyan) color as text color. I recommend using all black text in the body of this study's documentation to achieve the accessibility high contrast standard. Printing the document in grayscale did not solve the issue because the text appeared faded which made it difficult to see.

R19. The color of the text has been revised.

C20. When the ranking points are tallied for all three alternatives, as they stand currently, the following outcome was achieved. Since there were 62 items to be ranked which could achieve a maximum of 2 points each, the base total amounted to 124. Dividing the total Point score by the base total Points achievable yielded the following percentages of potential improvements compared to the Future No Build Scenario. While this is what the top of the matrix indicates, it was not clear from the criteria description in the workbook whether each ranking was in comparison to the No Build. It would be helpful to explain this in advance of the matrix presentation.

Future No Build: 0

Alternative 1: 53 Points, 43%

Alternative 2: 47 Points, 38%

Alternative 3: 35 Points, 28%

- R.20 All three alternatives should be compared to the No-build option, not against one another. A total and subtotal per category have been tabulated and are included below (and will be presented in a similar format in Chapter 4).

TOPIC AREA	Scenario			
	No-Build	Alt. 1	Alt. 2	Alt. 3
MOBILITY AND ACCESSIBILITY	0	14	10	13
SAFETY	1	13	13	14
ENVIRONMENTAL EFFECTS	0	7	7	3
LAND USE AND ECONOMIC DEVELOPMENT	0	19	18	11
COMMUNITY EFFECTS	0	4	4	7
COST	1	-1	-1	-1
TOTAL	2	56	51	47

Comments from Laura Hanson (DOT) to Richard Masse (DOT), Donna Feng (DOT), & Patrick Paul (DOT):

- C21. I agree with Rich's comments regarding South End Bridge Rotary simulation that shows a large queue for NB traffic entering the rotary. Perhaps M&M should use current traffic volumes for a more realistic view, and share the new simulation?
- R21. Refer to prior Rich Masse comments and responses (C1, C2, R1, and R2).
- C22. After review of the data tables it is interesting that a goal of MassDOT for increasing bike/ped/transit modes of transportation are not really differentiated in the spreadsheet. The three alternatives show the same score in 12 sections with regard to these modes and safety (1.3.2/ 1.3.3/ 1.3.5/ 1.4.1/ 1.4.2/ 2.1.1/ 2.1.2/ 2.1.3/2.1.5/2.2.1/ 2.2.2/ 2.3.1,) Is there another way to represent the data to be more helpful? Alt 1 moves ahead from Alt 2 & 3 mainly in Travel Time (Sections 1.2.1 and 1.2.2), where several questions were raised, and may further influence outcome. Alt 3 moves down from Alt 1 & 2 mainly in Economic Development (Section 4), which makes sense. Alt 1 scores the best overall but may be influenced by Public Health data.
- R22. When considering bicycle, pedestrian, and transit travel, it has been assumed and figured into the concepts that all roadways that would be impacted by a project will be brought up to meet or exceed current or future MassDOT design standards for bicycle, pedestrian, and transit accommodations. The bulk of the improvements that are not related to on-road accommodations would occur over the top of the sunken highway in Alternatives 1 and 2 and in more limited portions under the viaduct in Alternative 3.
- C23. At the end of the 6/28/2017 meeting, it was suggested to extend the project deadline to Oct 2017, and hold another Working Group meeting (Sept 2017?). I concur with this suggestion for

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three reasons: see new simulation at rotary, answer questions from 6/28/17 (meeting #10), and discuss influence and share the public health data/ scoring with the group, get a summary of the overall outcome of this study.

R23. The simulations completed to date will be reviewed and modified per several comments discussed in this letter. However, no new simulations will be completed per budget limitations. MassDOT will provide further discussion to the Working Group regarding the public health outcomes and DPH involvement.

If you have any further questions or comments, please do not hesitate to contact me.

Very truly yours,

MILONE & MACBROOM, INC.

A handwritten signature in dark ink, appearing to read 'Mark Arigoni', with a long horizontal flourish extending to the right.

Mark Arigoni, L.A., Principal
Massachusetts Regional Manager

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