MEMORANDUM

DATE: Monday, March 31, 2014
TO: Karl F. Dean, Mayor of Nashville
FROM: Mark Sturtevant, Amp Project Manager, Nashville MTA
Steve Goodreau, Principal, CDM Smith
RE: Potential revisions to the Amp

As you know, CDM Smith has contracted with the MTA Board of Directors to provide engineering services for the final design phase of the Amp. In doing so, CDM Smith is working closely with the Amp project team at the MTA.

OVERVIEW OF PROPOSED CHANGES

In response to both technical and neighborhood concerns with the project, many of which were gleaned through the community meetings held in January, you asked us to explore two changes to the section of the route that runs from the I-40 overpass near downtown Nashville to the western terminus of the route at St. Thomas West near White Bridge Road:

(1) **BRT lite from I-440 to White Bridge Road:** You asked us to review the use of Bus Rapid Transit without dedicated lanes—known locally as "BRT Lite."

(2) **Mixed traffic BRT from I-40 to the Broadway/West End split:** You asked us to determine whether running the buses in mixed traffic would be acceptable for this section of the corridor. This short section would reconnect to dedicated BRT lanes on both ends.

Given that we are still in Project Development, with the majority of our design and engineering work and environmental analysis still to be done, now is an optimal time to consider these kinds of revisions. In fact, as we have initiated the Project Development process, we have identified other technical challenges with the project that may require additional revisions, *e.g.*, relocating stations in order to comply with ADA requirements prior to completing design and engineering.

Over the course of this year, we will undertake two subsequent parts of the Federal Transit Administration's (FTA) Project Development process: (1) the completion of the Environmental Review process required under the National Environmental Policy Act (NEPA) and (2) an updated rating and evaluation of the project under FTA criteria prior to receiving a construction grant agreement that commits federal funds for construction. Any revisions to the design and function of the Amp must both be acceptable under NEPA and maintain the project's eligibility for federal funding under the FTA's rating and evaluation criteria.

OUTLINE OF FUTURE ANALYSIS

A. NEPA Review Process

Under NEPA, the FTA directs communities undertaking a major transit construction project, such as the Amp, to consider the project's social and environmental consequences, among other things. The Amp's NEPA process has been underway for more than a year.

As part of this process, we are studying the potential impacts that the Amp, as currently designed, could have on factors such as infrastructure development, economic prosperity, health and environmental protection, community and neighborhood preservation and quality of life. Any revisions to the Amp's design and function would need to undergo this same analysis. A summary of these analyses will be included in a formal Environmental Assessment, which will then become available for public review and comment prior to the environmental finding being published in the *Federal Register*.

Public participation is a critical component of the NEPA process, which specifically allows for the consideration of a range of reasonable modifications to a proposed transit system in light of community concerns.

B. Scoring under the FTA's Rating and Evaluation Criteria

The FTA reevaluates all Small Starts projects prior to awarding construction grants. It will not enter into a construction grant agreement with the MTA unless the Amp continues to obtain at least a Medium overall rating under its statutory evaluation criteria. Such an agreement is necessary if the Amp is to receive the federal funding that is a necessary component of this project.

Among other things, the FTA's statutory evaluation criteria include factors such as the project's ability to increase potential riders' mobility, *i.e.*, its speed, efficiency and predictability, and its cost-effectiveness. Any revisions to the Amp's function or its route will need to survive analysis under these criteria and others. Information relevant to this analysis is highlighted below.

(1) Potential impact on riders' mobility

Traveling in mixed traffic along sections of the route will reduce the Amp's speed, efficiency and predictability. These negative effects may be mitigated, however, by a number of potential engineering solutions, as outlined below.

Typical bus speeds are shown in the table below:

Bus Speed Comparison (Peak Periods)		
Type of Transit	Example Street	
	Average Bus Speed (mph)	Change v. Existing Service
Existing Local Service	8.7	n/a
BRT Lite/Express Bus	10.3	18%
Curbside-Running BRT	13.5	55%
Center-Running BRT	15.9	83%

Our current traffic analysis shows travel time from St. Thomas West to Bridgestone Arena as follows:

Travel Time Summary

Travel times reported from Saint Thomas Hospital to Bridgestone Arena

	Without "AMP"	With "AMP"	
Time Period	Car Travel Time	Car Travel Time	BRT Travel Time
2012	16:30	NA	NA
2016	32:25	27:51	16:57
2022	37:10	31:22	16:57

We will undertake a new traffic analysis that will identify increased travel times. Based on typical bus speeds noted above, if the proposed changes are implemented, the Amp's expected travel time from St. Thomas Hospital to Bridgestone Arena is anticipated to be approximately 21 minutes, which is a 25% increase over the original plan. This estimate, however, will need to be confirmed through an updated traffic analysis. Note that if the Amp vehicle were to get stuck in the congested traffic at the highway interchanges, the travel time could increase over the 21 minutes.

A number of engineering solutions, however, may mitigate the use of non-dedicated lanes in some areas. Among them are the following:

- **Queue jumping:** The use of queue jumping gives preference to buses at intersections by providing shoulder areas for buses to pass queued vehicles.

- **Transit signal priority (TSP) at intersections:** TSP utilizes GPS technology so that the traffic signal knows when a bus is coming and adjusts cross-street and pedestrian signal phases to provide longer green or advanced green lights that allow buses to get through the signal. This also aids through traffic.

(2) Impact on the Amp's cost-effectiveness

Revisions to the Amp's design and function could impact both the overall cost of the project and the number of people who will ride it. Both of these factors are relevant to the FTA's analysis of a project's cost-effectiveness.

As originally designed, the Amp included approximately 80% dedicated lanes. Revisions of the sort described above could reduce that amount to approximately 50-55%. This change may alter the number of buses necessary to maintain the desired headway, which could affect operational costs.

Additionally, such revisions would likely result in different capital costs and ridership estimates than originally anticipated. Such factors will be key components of our future analysis, as they will impact the project's score in the FTA's Rating and Evaluation process.

RECOMMENDATION AND TIMELINE

It is our recommendation that we include the two potential route revisions described above in our work as we move forward with NEPA and completing the Project Development processes, keeping in mind that any revisions must both meet NEPA requirements and maintain the Amp's eligibility for federal funding. We have been in contact with FTA officials for their input and guidance and will continue to keep them apprised of our work throughout this process.

As always, we will keep you informed of our progress. We plan to present you with updated design plans that reflect the revisions by Fall 2014.