

Appendix B – Traffic Methodology Report

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Memorandum

Date: June 06, 2019

To: Hossein Hosseiny, PE – BGE
From: Rhett Dollins, PE, PTOE – Maldonado-Burkett
CC: Mike Zieminski, PE – BGE; Melanie Young, PE, Maldonado-Burkett

Re: Proposed Methodology for Loop 9 Traffic Projections & Analysis

Per the request made by TxDOT at a coordination meeting held on December 11, 2018, Maldonado-Burkett (M-B) proposes the following methodology for the traffic projections and safety & operations analysis to be performed for the Proposed Loop 9 Segment A schematic design phase.

The proposed methodology for the proposed Loop 9 frontage road projections is as follows:

1. M-B received the TransCAD models provided by NCTCOG for the years 2028, 2037, and 2045.
2. From these models, M-B will extract segment volumes for the frontage roads. M-B will also extract turning movement counts at the intersections from these models.
3. M-B will input this data into a base conditions spreadsheet.
4. Using the 2028, 2037, and 2045 years for each segment/turning movement, M-B will calculate an average growth rate. Separate growth rates will be calculated for the north and south sides of each crossing street, to match the NCTCOG model. There will be no “global” rate of growth, but a separate one for each side of each interchange.
5. M-B will apply those growth rates to the 2045 TransCAD values and grow the volumes by 3 years, then by 13 years, to arrive at the 2048 and 2058 volumes.
6. The 2058 volumes will be used for pavement design purposes, not level of service analysis.

Regarding the operational & safety analysis, M-B has reviewed the approved IAJR for Segment II (prepared by Atkins.) M-B proposes to follow their methodology, as follows:

Operational analysis

1. We propose to input the 2028 and 2048 turning movement counts (once approved) into Synchro models for the at-grade intersections of the IH-35E frontage roads with the Loop 9 frontage roads. For the interchanges of IH-35E with Bear Creek Road and Ovilla Road, we propose to use existing (2018) volumes and grow them by the same growth factor calculated for Loop 9 & IH-35E and use those volumes as input into the Synchro models. From those Synchro models we may obtain level of service values.
2. We propose to analyze the proposed IH-35E mainlane segments with HCS. We will perform a basic analysis and a weaving analysis for each segment of interest within our project limits, for No-Build 2028 and the Build 2028 and 2048 design years.

Safety analysis



1. The Segment II IAJR by Atkins compiled and summarized the crash data for the 4 year period prior to their study. They noted that crash rates were well below state-wide averages for similar segments of urban interstate. They also noted that the purpose of the proposed Loop 9 improvement was not to decrease congestion or add capacity, but to provide a regional east-west connector route, the same as our project. They did not propose any safety improvements or analyze expected changes in crash rates due to the proposed project. We propose to follow the same methodology in our IAJR.

Clark Road

The planned future alignment of Clark Road, a north-south arterial street in Cedar Hill, lies approximately 2 miles east of US 67 between Tar Road and Joe Wilson Road. The NCTCOG model shows a connection from Clark Road to the westbound frontage road of Loop 9, but no connection to the eastbound frontage road. The NCTCOG model also does not show any southern extension of Clark Road south of Loop 9, and therefore no traffic volume projections.

After discussion with TxDOT and NCTCOG, M-B was asked to make assumptions to allow the projection of future turning movement volumes for the southern leg of Clark Road. The assumptions and methodology were as follows:

1. Some portion of the northbound volumes currently projected for Tar Road and Joe Wilson Road as they approach Loop 9 from the south will use Clark Road, if it is available to them. Similarly, some portion of the southbound traffic on Tar Road and Joe Wilson Road will use Clark Road to proceed south.
2. Since the NCTCOG model does provide volumes for the northern legs of all three of these arterials, the relative proportion of traffic utilizing Clark Road compared to Tar Road and Joe Wilson Road may be calculated.
3. Once the proportion of traffic on north Clark Road relative to Tar Road and Joe Wilson Road has been calculated, it may be applied to the south leg of Clark Road (south of Loop 9.) In other words, it is assumed that the same proportion of regional traffic that utilizes the northern leg of Clark Road will also utilize the south leg.
4. That proportion was applied to the total traffic on the southern legs of Tar Road and Joe Wilson Road to derive the traffic on the southern leg of Clark Road.
5. The amount of traffic added to the southern leg of Clark Road was subtracted from Tar Road and Joe Wilson Road according to the relative proportions of traffic on each.
6. The volumes of traffic on the segments of the Loop 9 frontage roads connecting those streets was adjusted as well to ensure proper volume balancing across the network.

Traffic Forecast Methodology Checklist

The checklist below identifies the key components of Traffic Forecast Methodology that should be included before submitting a report for QA/QC.



	Content	Check	Note
1.	Complete Traffic Planning and Programming Division (TPP) corridor package included in the submittal. This package is received <i>before working on traffic projections</i> , if no such package was provided ask TxDOT Project Manager to obtain “Consultant Corridor Information Packet” from TPP.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Don’t need to do this as the study corridor (Loop 9 Corridor A) is not an existing facility; information on I-35E are well understood through previous project in the nearby area.
2.	Traffic or population growth factor sources are clearly listed (NCTCOG, TPP, City/County planning reports, etc.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Provided in the NCTCOG Travel Demand Model.
3.	If NCTCOG Travel Demand Model data is used as a source for growth factors and/or ADT, then ask the TxDOT Project Manager to send a query to NCTCOG using TxDOT’s internal query system to verify the cited data.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	NCTCOG model was provided to TxDOT per their request. Model is verified and accepted.
4.	If information about regional growth and traffic generators is cited in the methodology, then sources and citations should be listed in the methodology and attached to the report.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Growth & traffic generators is implicit in the NCTCOG model.
5.	Map of the project along with project limits should be included in methodology/submittal, along with project description that provides information on the number of lanes, project alignment, major cross-streets, length of the project, etc.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Map will be provided by design team.
6.	For the Build case, the methodology report should discuss/mention: traffic generators, origin-destination (OD), traffic assignment, volume balancing etc.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Listed factors are implicit in the NCTCOG model.
7.	If ADT is obtained from the TxDOT statewide planning map, STAARS II or NCTCOG website, the sources should be clearly stated along with the information that identifies the traffic count station location (e.g. intersecting streets, count ID etc.).	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	ADT information is provided in the NCTCOG Travel Demand Model, and is not obtained from the any of the listed sources.
8.	In general, for the projects on major corridors (interstate, freeways, arterials etc.) the report should mention about past and current traffic counts at the existing facility. If there is a mention of previous counts, then the reports should reference the sources and projects for those counts.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Previous traffic counts collected by Maldonado-Burkett, LLC will be attached in the report.



9.	If a traffic count was performed, then the supporting data should be included along with the report.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Previous traffic counts collected by Maldonado-Burkett, LLC will be attached in the report.
10.	Include traffic projections (ADT) for Build and No Build conditions in a line diagram format (also show all cross streets)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	No Build conditions will show zero volume as Loop 9 Corridor A is not an existing facility; Build conditions will show projected traffic volumes.
11.	Attach reviewed line diagram sheets showing traffic projection numbers added correctly between turning and through movements.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Line diagram sheets will be provided with turning movement volumes calculated correctly.

2028 AADT
 2048 AADT
 2058 AADT
 NO NCTCOG DATA
 Intersection











