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DATE: April 13, 2010

TO: Mike Herring, CA

FROM: Mike Geisel, DPPW *moz*

SUBJECT: Planning and Public Works Committee
VISSIM Traffic Model



As you know, during 2007 the Public Works/Parks Committee directed Staff to initiate a complete update of the City's traffic model, as well as to analyze a series of suggested regional improvements to the transportation infrastructure as proposed by Sachs Properties. As you may also recall, this was a significant effort since it involved the purchase of a completely new software platform as well as to update, validate, and re-calibrate the traffic model. This work was completed in 2009 and is being used by the Department for a variety of purposes including development review.

The transportation modeling results for the proposed regional infrastructure has been shared with the Missouri Department of Transportation and St. Louis County Department of Highways and traffic. Subsequently, both agencies have expressed their support for inclusion of these improvements in the metropolitan transportation improvement plans considered by East-West Gateway, who ultimately assigns priorities for federal funding participation.

This memorandum is simply intended to provide an information update to the Planning and Public Works Committee. Staff will provide a brief presentation describing the identified improvements, process and status of the model.

attachments

Cc Brian McGownd, Public Works Director\City Engineer
Aimee Nassif, Planning and Development Services Director
Susan Mueller, Principal Engineer

MEMORANDUM

Department of Planning and Public Works



DATE: March 30, 2010

TO: Aimee Nassif, AICP
Planning and Development Services Director

FROM: Susan Mueller, PE, PTOE *S Mueller*
Principal Engineer

RE: City of Chesterfield Traffic Model and System Improvements

This is an overview of Chesterfield's recently completed Traffic Network and Traffic Model utilizing VISUM software technology. VISUM is a regional transportation modeling software that predicts the operational impact of major transportation system changes or improvements.

The City of Chesterfield retained the services of George Butler Associates (GBA) to convert and update our base network model with revised street data and land uses using system conditions as of December, 2007. GBA used actual traffic counts to calibrate the base model so that it replicated the traffic volume, flow rate and delay characteristics of our primary road system as of December, 2007. This base calibrated model was extrapolated to 2020 to develop a Near Term Improvements (NTI) model. It was then taken to a full build out condition to develop a City Ultimate Planned [CUP] model. These networks included City, St. Louis County (STLCTY), and Missouri Department of Transportation (MODOT) programmed improvements as well as certain private development improvements planned within Chesterfield. The VISUM traffic model contains demographic and business data to develop trip generation, trip distribution, and trip mode selection choices for the community. The CUP model includes traffic volumes that are projected at ultimate land use and build out of developable land within our city limits, including the background traffic generated from local area sources outside of the city limits.

Upon completion of the CUP model, GBA evaluated 8 isolated major geometric improvements to the primary road system and 9 combinations of major geometric improvements for a total of 17 geometric improvement alternatives. The improvements were scored by evaluating average vehicle delay and traffic flow rates at 15 nearby major intersections. These intersections were assessed by comparison of Peak Hour Volume to Capacity Ratio, Vehicle Delay Time and

Entering Vehicle Volume criteria. Scores were assigned to each of these criteria, and are listed in Table 1, Page 8 of the GBA report.

The individual and combined scores were tabulated by combining the criteria scores of all 15 intersections for each of the 17 alternatives in Table 2 on Page 9 of the GBA report. Positive scores for an alternative indicate an improvement in overall traffic operations while negative scores denote reductions in level of service or operation. The relative level of operational improvement generated by each alternative, its constructability and its feasibility were then given comprehensive review and consideration.

After in depth study and comparison, the overall findings of the modeling and improvement scoring resulted in the following roadway modification recommendation:

- A Single Point Urban Interchange at Chesterfield Parkway East with I-64,
- A Texas U-Turn Bridge at Chesterfield Parkway West with I-64,
- Burkhardt Place Extension
- Swingley Ridge Extension
- North and South Outer 40 Drive Extensions between Olive/Clarkson and Chesterfield Parkway East

The results and benefits of this operational analysis and the resulting improvement recommendations were shared with representatives from STLCTY Department of Highways and Traffic, and MODOT in late 2009. We received the support of both STLCTY and MODOT in endorsing these proposed regional improvements. I have attached a copy of a letter dated December 21, 2009 from Stephanie Leon Streeter, Deputy Director of St. Louis County Highways and Traffic to the East-West Gateway Council of Governments in support of these proposed improvements.

East-West Gateway has agreed to perform a preliminary evaluation of those State owned system improvement projects from the GBA recommendations as well as the MODOT planned Baxter Road projects. The preliminary evaluation scores will be compared to other improvement projects already in the LRTP. This preliminary evaluation will provide us with some insight for the likelihood that these projects will be included in the next update of the Long Range Transportation Plan (LRTP).

The projects receiving preliminary evaluation at East-West Gateway are:

- Texas U-Turn overpass of US 40/61 (Between North and South Outer 40 Rd of US 40/61 at Chesterfield Parkway West)
- Burkhardt Place Overpass of US 40/61 (Between Burkhardt Place and North Outer 40 Road)
- New North and South Outer 40 connections and New Interchange (Chesterfield Parkway East at US 40/61 to Olive/Clarkson)
- New Baxter Road Overpass (Construct overpass of US 40/61 to carry Baxter Road)
- New Interchange (Baxter road interchange at US 40/61)
- Extension of N and S Outer 40 road (Between Baxter Road and Chesterfield Parkway West)

The update of the LRTP entitled Legacy 2035 is scheduled for completion in June 2011. The internet link to view the draft version of this document is <http://www.ewgateway.org/pdffiles/library/trans/legacy2035/legacy2035.pdf>

East – West Gateway also suggested that the Local System improvements may be eligible for Transportation Improvement Program (TIP) federal funding.

These Local System improvements from the GBA report are:

- Single Point Urban Interchange at Chesterfield Parkway East with I-64,
- Burkhardt Place Extension
- Swingley Ridge Extension

The TIP consists of a four-year program. Each year the TIP is modified by adding a new fourth year and advancing the first of its future years to current status. The internet link to view the 2010-2013 TIP program is <http://www.ewgateway.org/trans/tip/tip.htm>