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MEMORANDUM

To: Jason Jaggi, AICP (City of Creve Coeur)
Whitney Kelly, AICP (City of Creve Coeur)

From: J. Kyle Evans, P.E., PTOE
Mike Erdtmann, P.E.

Date: April 14, 2020

Subject: Proposed QuikTrip Development – Traffic Impact Study Review

As requested, GBA staff has completed a review of the traffic impact study report submitted in association with the proposed development of QuikTrip #613, located in Creve Coeur, Missouri in the southwest quadrant of Olive Boulevard and Graeser Road/Dautel Lane. The study was prepared by CBB Transportation Engineers and Planners and submitted in January 2020.

It is our understanding from the report that the proposed QuikTrip #613 store will replace an existing commercial property in the southwest corner of the intersection and share an access point with the neighboring existing commercial building that will remain to the west of the study property. The proposed improvements are shown in **Figures 1, 2, and 3** of the report.

The project involves the removal of the existing commercial property and construction of a 4,993 square foot (SF) convenience store with 16 vehicle-fueling positions (vfp).

The project is proposed to be completed in a single phase, with analysis completed for the 2020 Baseline Conditions and 2020 Build Conditions.

Access to the site will be accomplished through the existing full access site driveway shared with the neighboring property (Side-Street Stop), an existing central site driveway (Right-In/Right-Out) and Graeser Road at the existing site driveway (Side-Street Stop). The report mentioned one additional study intersection "Graeser Road at Proposed QuikTrip North Driveway (Side-Street Stop)" that was not included in the output or shown on the site plan.

The trip assignment was based on the existing trip volumes from the study area intersections. It is our opinion that this approach is a valid application.

As part of this study, CBB utilized trip generation estimates based upon data collected at several similar facilities within the St. Louis metropolitan area. These rates were compared to the Institute of Transportation Engineer's (ITE) "Trip Generation Manual, Tenth Edition for Land Use 945 – Gasoline Station with Convenience Store. A comparison of the rates between ITE's manual and the field collected counts shows a significant increase in total trips during the AM peak hour and a small to modest increase in the mid-day and PM Peak periods.

One item of note is that the study used a higher than documented “pass-by trip” rate. This results in fewer new trips being generated by the proposed development. However, the overall number of trips to/from the QT site is higher than the documented values associated with the ITE Trip Generation Manual. While these rates result in more trips than the ITE forecast, their application has been approved in other studies by the City and MoDOT. It is our opinion that the local trip rates are appropriate to use in this study given the data was collected locally at potentially similar facilities.

Based upon the trip generation rates for local gas stations with convenience store and accounting for both the construction of the new development and removal of the existing commercial building, the development is forecasted to increase development generated trips to the site by 158, 129 and 139 trips in the morning, midday and evening peak hours, respectively. Of these trips, the inbound versus outbound number of trips were calculated based upon ITE’s percentages (51% in/ 49% out for the morning, midday and evening peaks). The trip generation forecasts are shown in Table 3 on page 11 of the report.

The traffic impact study stated the site-generated traffic was assigned to the adjoining roadway system based on existing traffic patterns within the study area. The new trips are shown in Exhibit 3 on page 13. As seen in the exhibit, the study assumes that the eastbound right-in, right-out driveway on Olive Boulevard and the full access driveway on Graeser Road will be the primary access points with most trips utilizing these intersections.

The 2020 Baseline and Build conditions Synchro outputs were reviewed to determine the impact of the development with improvements proposed in the study. The list of improvements is found in the executive summary as well as the report. With the stated improvements, the development is not expected to have an unfavorable impact on the surrounding roadway network. In most cases, the improvements provide more favorable conditions than the background scenario with regard to reducing delays and queues.

Table 5, on Page 21 of the report, shows an increase in delays, reduction in LOS and queuing lengths that almost double along NB Graeser Road at the Olive Boulevard signalized intersection. *We recommend further discussion related to the impact of potentially blocking access to the through/right turn lane due to queues from the left turn movements and potential mitigation strategies to address these items. The Synchro results show the queues associated with the northbound left turns will block off the through/right turn lane in all three peak hour scenarios.*

The study shows that the baseline plus build condition traffic volumes warrant an auxiliary right turn lane at both the Site Central Right-In/Right-Out drive and the intersection of Olive Boulevard with Graeser Road. Based on geometric constraints, the right turn lane is proposed to only be added at the signalized intersection. *We recommend further discussion related to the impacts on eastbound operations, if it is not being constructed at both warranted locations. The report currently states that the operations analysis was completed with both right turn lanes being implemented.*

As previously noted, the traffic analysis was completed for the 2020 Baseline Condition and the 2020 Build Condition. The study noted some deficiencies at specific approaches to the various study area intersections in both the Baseline and Build Conditions, but no future analysis was completed to determine if any of these locations will have anticipated service failures in the near-term future.

Summary of TIS Review

As requested, GBA staff has completed a review of the traffic impact study report submitted in association with the proposed QuikTrip #613 Gas Station and Convenience Store, located in Creve Coeur, Missouri in the southwest quadrant of the Olive Boulevard and Graeser Road/Dautel Lane intersection.

It is our understanding from the report that the proposed development is to occur in a single phase, replacing existing uses on the site. The planned improvements are shown in Figures 1, 2 and 3 of the report.

The development is expected to be completed in 2020 and include a 4,993 square foot (s.f.) convenience store with 16 vehicle-fueling positions (vfp). The redevelopment would replace an existing commercial building approximately 7,800 s.f. in size. Forecasted trips accounted for the construction of the new QuikTrip store and removal of the commercial building.

Access is proposed via three "existing" driveways. The Olive Boulevard Existing West Site Driveway/St. Vincent DePaul Driveway (Side-Street Stop), Olive Boulevard Existing Central Site Driveway/Proposed QuikTrip Driveway (Right-In/Right-Out), and the Graeser Road Existing East Site Driveway/Proposed QuikTrip South Driveway (Side-Street Stop). Traffic coming from Olive Boulevard utilizing the Proposed South Driveway will do so by traveling through the existing signalized intersections of Olive Boulevard at Graeser Road/Dautel Lane. The Existing West Site Driveway entrance on Olive Boulevard will remain a full movement access point per a cross-access agreement with the neighboring commercial building on separate lot(s) of the development.

Below is a summary of comments from the traffic impact study review:

1. The study proposed the use of local trip rates for the gas station with convenience store with a higher than normal pass-by trip application. While these rates result in fewer new trips than the ITE forecast, their application has been approved in other studies by the City and MoDOT. It is our opinion that the local trip rates are appropriate to use in this study given the data was collected locally at potentially similar facilities and the overall generated trips are conservative in nature.
2. Based upon the trip generation rates for gas station with convenience store with 16 vfp, the development is forecasted to increase trips to the site by 158, 129 and 139 trips in the morning, midday and evening peak hours, respectively. Based on the existing trip distribution and proposed trip assignment rates, there will be approximately 5 new trips assigned to Graeser Road south of the proposed development. Most of the vehicles traveling to and from the development will be pass-by trips already on the roadway.

Below is a summary of recommendations from the traffic impact study review:

3. It is recommended that additional analysis be completed on the interaction of the Proposed QuikTrip South Driveway with regards to the northbound approach to the signalized intersection at Olive Boulevard and Graeser Road. Queue lengths within the report suggest that access to the northbound through/right lane along Graeser Road could be restricted due to the reported northbound left turn queues. Additional mitigation strategy recommendations should be proposed for reducing impacts to the NB Graeser Road approach at Olive Boulevard.
4. The 2020 Background and Forecasted Synchro files were reviewed to determine the impact of the development with improvements proposed in the study. With the stated improvements, the development is not expected to have an unfavorable impact on the surrounding roadway network. It is recommended that the operations at the existing West Site driveway and existing Central Site/Proposed QuikTrip entrance be reviewed for impacts without the warranted right turn lane as part

of the analysis, since the site plans don't show the installation of that turn lane due to geometric constraints.

5. It is recommended to review the impacts of accommodating a north/south pedestrian crossing at the signalized intersection of Olive Boulevard and Graeser Road/Dautel Lane. The signalized intersection to the west, at Schulte Road does not provide north/south crossings which could lead to unfavorable pedestrian movements.

cc: file