DMJM HARRIS | AECOM

May 7, 2008

SUBJECT: **REVIEW AND SUMMARY OF HEBER CITY TOWN CENTER TRAFFIC IMPACT STUDY**

Merrill Development, LLC:

DMJM Harris is pleased to submit this review and summary of the Heber City Town Center Traffic Impact Study dated January 21, 2008 that was completed by Horrocks Engineers. This summary is submitted to support the traffic planning process, and is a contribution on behalf of Merrill Development. I have completed or supervised the completion of over 150 traffic studies and I was one of the first registered engineers in Utah to be certified as a Professional Traffic Operations Engineer (PTOE). I have reviewed the complete traffic study; however, the backup provided in the report that you have given me to review does not provide enough detail to verify the traffic volumes, intersection configuration, and traffic control parameters used to calculate the level of service at the study intersections in the report. The traffic study completed by Horrocks follows typical traffic engineering procedures and standards. The intent of this review is not to discredit the traffic study, but to highlight and summarize some of the key components of the study.

GENERAL COMMENTS

The traffic study is well written and has followed standard traffic engineering principles to forecast the amount of traffic that is expected to be generated by the project, evaluate the potential project-related traffic impacts, and identify required traffic mitigation measures. However, the second paragraph on page 14 of the report talks about the 2012 Level of Service (LOS) and all other references and documentation in the report refer to 2006, 2011, or 2030 conditions. I assume this should be referring to the 2011 analysis and the LOS values referenced in this paragraph are significantly worse in Table 5 and the LOS printouts in the Appendix of the report for a number of the study intersections.

PROJECT DESCRIPTION

According to the traffic study, the Heber City Town Center will include 390,700 square feet of retail development, 260 apartment units, and 40 condominiums/townhouses when the project is completed. The site plan in the traffic study indicates that there will be two big box retail stores, along with a number of smaller stores.

PROJECT TRAFFIC FORECAST

The Horrocks study states that when the entire project opens it is expected to generate 13,140 new trips on a typical weekday, with 380 new AM peak hour and 1,211 new PM peak hour trips. The AM and PM peak hour is the busiest one hour period between 7:00 AM and 9:00 AM and between 4:00 PM and 6:00 PM.

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TRAFFIC VOLUME COMPARISON

Table 1 compares that anticipated PM peak hour project traffic to the PM peak hour traffic counted on US-189 just south of the project and on Daniels Road just south of US-189 in the summer of 2006. All of the information in Table 1 comes directly from the Heber City Town Center Traffic Impact Study. As shown in Table 1, during the PM peak hour as soon as the proposed project is completed it will generate more traffic than was counted in 2006 on US-189 and slightly more than three and a half times as much traffic as was counted on Daniels Road.

Table 1
PM Peak Hour Traffic Volume Comparison

Description	PM Peak Hour Volume
Heber City Town Center New Project Traffic At Project Completion	1,211
2006 Traffic on US-189 Southwest of Daniels Road	1,133
2006 Traffic on Daniels Road South of US-189	343

INTERSECTION OPERATION

A level of service (LOS) analysis was completed at six existing intersections near the project. LOS is a qualitative measure describing traffic conditions and their perception by motorists. A LOS definition generally describes these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, and delay. There are six levels of service describing these conditions, ranging from A to F, which have been standardized by the Transportation Research Board. LOS A represents a free-flowing traffic condition where motorists are affected very little by other motorists, and the level of comfort and convenience to the motorist is excellent. LOS F is characterized by congested conditions. Motorists have little if any freedom to choose speeds or lanes of travel, and experience discomfort, inconvenience, and long delays.

Table 2 presents the delay thresholds for stopped movements at unsignalized intersections. For stop controlled intersections the average intersection-wide delay and LOS are not defined. Therefore, for stop controlled intersections only the minor street approach with the highest delay was reported. Table 3 provides the LOS delay criteria for signalized intersections which is based on the average delay for all the vehicles that pass through the intersection. Motorists generally will accept longer delays at signalized intersections compared to stop controlled intersections, and this is reflected in the LOS delay criteria developed by the Transportation Research Board and summarized in Tables 2 and 3. On page 12 of the traffic study it states "Heber City standard for LOS will not accept anything below a LOS C. Any intersection with a LOS D-F is considered unacceptable."

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Table 1
LOS Criteria for Stopped Movements at Unsignalized Intersections

LEVEL OF SERVICE (LOS)	CONTROL DELAY PER VEHICLE (in seconds)
A	< 10
B	> 10 - 15
C	> 15 - 25
D	> 25 - 35
E	> 35 - 50
F	> 50

Table 2
LOS Criteria for Signalized Intersections

LEVEL OF SERVICE (LOS)	CONTROL DELAY PER VEHICLE (in seconds)
A	< 10
B	> 10 - 20
C	> 20 - 35
D	> 35 - 55
E	> 55 - 80
F	> 80

Currently during the PM peak hour the US-189/US-40 intersection operates at LOS E and the stop controlled movements on Daniels Road at US-189 operate at LOS F. The other four study intersections operate at LOS C or better. The addition of project traffic significantly increases the delay at the two intersections that currently operate poorly, and also cause the 910 South/100 West and US-40/1000 South intersections to change from an acceptable LOS to LOS F. Additionally, two of the project accesses (US-40/Access G and US-189/Access I) will fail, along with the internal project intersection at 1000 South/100 West.

PROJECT TRAFFIC IMPACTS

According to the Horrocks Traffic Impact Study, the completion of the proposed Heber City Town Center will change the average delay per vehicle at the US-189/US-40 intersection from 55.8 seconds to 85.8 seconds during the PM peak hour. This 30 second per vehicle increase in delay caused by the project will result in a total of 26 hours of additional delay every day at this one intersection during the PM peak hour.

Based on the 2006 traffic counts in the traffic study there are 1,413 vehicles passing through the US-189/Daniels Road intersection during the PM peak hour. The proposed project will add 452 new project trips through the intersection during the PM peak hour or an increase of over 30 percent.

Based on the Heber City criteria all intersections should be improved to LOS C or better. The traffic study includes three mitigation alternatives. Alternative 1 Mitigations do not include a West Route By-pass. Alternative 2 Mitigations include a West Route By-pass from US-40 through the development at Access I and K and connects to Industrial Parkway. Alternative 3 Mitigations are similar to Alternative 2 but the West Route By-pass starts from Daniels Road instead of from US-40. The identified mitigation measures improve all of the study intersections to LOS C or better except for the intersections described below.

Intersections with an Unacceptable LOS with Alternative 1 Mitigations

- US-40/1000 South LOS E in 2011 and LOS F in 2030
- US-189/US-40 LOS D in 2030

Intersections with an Unacceptable LOS with Alternative 2 Mitigations

- US-40/1000 South LOS E in 2030

Intersections with an Unacceptable LOS with Alternative 3 Mitigations

- US-40/1000 South LOS E in 2011 and LOS F in 2030

As noted above, Alternative 2 Mitigations, which includes a West Route By-pass from US-40 to Industrial Parkway provides the best LOS at the study intersections.

PROPOSED PROJECT MITIGATION MEASURES

The Horrocks traffic study identifies the following improvements to increase the capacity of the roadway network to provide adequate capacity for background and project traffic conditions.

- reconstruct US-189 to a 5 lane section from US-40 to Access J, with a westbound acceleration lane from the free southbound right turn lane on US-40 to Access I
- at US-189/US-40 add a second eastbound left turn lane and a free southbound right turn lane, and optimize signal timing and phasing
- at US-40/1000 South add an eastbound left turn lane
- at US-189/Access I (West Route By-pass) construct a traffic signal
- prohibit the northbound left turn movement from Daniels Road to US-189

The improvements identified above are the Alternative 1 measures that are required immediately with the completion of the proposed project. Additional improvements are required by 2030 as outlined in the traffic study and proposed project applicant should not be required to participate in these additional improvements. The improvements are similar for Alternatives 2 and 3 except they incorporate the West Route By-pass and the termination of the Daniels Road connection to US-189.

The proposed project should participate in a significant way for each of the improvements identified above. In particular the traffic signal at US-189 and Access I is only required because of the proposed project and should be entirely funded by the proposed project. The addition of a new traffic signal on US-189 will create additional delay for existing motorist on US-189 who will be required to stop at the signal to allow the traffic movements in and out of the proposed Heber City Town Center project.

The restriction of the northbound left turn from Daniels Road to US-189 does not improve the operation of the intersection. This restriction simply eliminates a movement that becomes more difficult because of the traffic added by the proposed development. This restriction forces everyone that needs to travel in this direction to take a much longer route, which includes traveling through the busy US-189/US-40 intersection to continue southwest on US-189. Another significant concern is that with the new traffic from the proposed project on US-189 it may be too difficult to make the left turn movement from US-189 to Daniels Road and UDOT could prohibit this movement. This traffic restriction would significantly impact emergency response time to all the residents and uses along Daniels Road, the airport, and Daniels Township. Some assurances should be made that access between Daniels Road and US-189 will not be restricted until another reasonable connection to US-189 is made.

CONCLUSION

The traffic study completed by Horrocks Engineers for the proposed Heber City Town Center appears to accurately identify the potential traffic impacts associated with the proposed project, and the required traffic improvements to mitigate these traffic impacts. The purpose of a traffic study is to identify these impacts and have those impacts mitigated by those that are causing them. The addition of over 1,200 new trips during the PM peak hour when this project is completed will significantly impact traffic conditions near the project. Therefore, it is critical that the project provide funding, right-of-way, and/or construct the improvements identified in the traffic study to mitigate the impacts caused by the development.

We trust that this summary of the traffic study will be helpful as you provide input to the local agencies that will be reviewing this project. Feel free to contact me at (801) 569-2131 if you have any questions.

Sincerely,

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