

June 21, 2017

VIA EMAIL

Ms. Cynthia Redinger, PE, PTOE  
City of Ann Arbor  
301 E. Huron St., P.O. Box 8647  
Ann Arbor, MI 48107

RE: **Response to Comments**  
**1140 Broadway Traffic Impact Study-Revised Study**  
**Ann Arbor, Michigan**

Dear Ms. Redinger:

Fleis & VandenBrink (F&V) staff has completed this letter in response to the comments provided by the City of Ann Arbor in their review letter dated June 1, 2017, and to the comments provided by the City of Ann Arbor and HRC in their review letters dated June 1 and 2, 2017 respectively and the meeting held on June 12, 2017 to discuss the comments. F&V's responses to these comments pursuant to the conversations and correspondence with HRC and the City of Ann Arbor are summarized herein.

Furthermore, as a general note, the Morningside Lower Town TIS Report and associated Synchro and SimTraffic files have been revised to reflect the comments provided by the City of Ann Arbor and HRC as reproduced herein. To accurately evaluate the study intersections, two sets of analysis Synchro models were developed.

The first set of Synchro analysis files were used to conduct the Highway Capacity Manual (HCM) analysis. The second set of Synchro analysis files were used to run the SimTraffic microsimulation to model the SCOOT adaptive signal system as accurately as possible. Although the SimTraffic analysis software is not capable of adjusting signal phase splits and offsets in real-time like the SCOOT adaptive traffic controllers in use in the City of Ann Arbor at several of the study intersections, optimizing the signal phase splits and offsets at all study intersections to the greatest extent possible allowed for more accurate modeling of projected traffic conditions.

**City of Ann Arbor Comments – June 1, 2017**

1. *Moore & Pontiac Trail, Westbound Moore approach lane assignment should have shared LT/Thru and RT. Right turn movement does not have STOP control, and enter blocked intersection.*

**The Synchro model and the TIS have been updated to reflect these operations.**

2. *SB Pontiac Trail approaching Swift should have both lanes continue to SB Swift approaching Broadway.*

**The Synchro model and the TIS have been updated to reflect this geometry.**

3. *Broadway & Plymouth, remove median on south leg; vehicle-lane assignment is incorrect.*

**The Synchro model and TIS has been updated to reflect this geometry.**

4. *Broadway/Plymouth & Maiden, outbound Broadway should be perm-prot, instead of permissive only; phasing sequence is incorrect.*

**The Synchro model and the TIS have been updated to reflect these operations**

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5. *Broadway & Swift, SB Swift should be NTOR.*

**The Synchro model and the TIS have been updated to reflect these operations**

6. *Why the signalized intersections at Fuller & Cedar Bend, and at Fuller & Bonisteel are not analyzed, and skipped to the signalized intersection at Fuller & Glaizer.*

**These intersections were added into the model at the request of the City for modeling purposes only. No operational analysis was provided for these intersections nor are they included in the TIS.**

7. *What is the design (horizon) year for Fuller/Maiden intersection? Should Lower Town look at least 5-10 years after build-out, as this is a complex development generating more than 300 peak hour trips?*

**A five-year horizon (2027) analysis has been completed in the revised TIS.**

8. *Maiden & Neilson signal warrant analysis should cover all applicable warrants. Lack of traffic data should not be the reason for not evaluating signal warrant. Pedestrian related signal warrants should also be evaluated.*

**Pedestrian-related signal warrants were evaluated; traffic control signalization is not warranted at this location on the basis of peak hour or four-hour pedestrian volumes. The relevant signal warrants are included in the revised TIS.**

### **HRC Comments – June 2, 2017**

#### **A. Synchro/SimTraffic Models**

1. *Confirm existing operation of Broadway/Maiden Lane intersection and westbound Maiden Lane right turn overlap in the existing Synchro models.*

**This right-turn overlap was added at the request of the City. It was also observed during the field review performed at this intersection.**

2. *The existing and background PM SimTraffic models freeze up when running.*

**This has been corrected in the revised analysis. As noted above, the simulation-specific analysis files are included with the deliverables.**

#### **B. Existing with Improvements**

3. *An exclusive right turn lane for westbound Maiden Lane to northbound Plymouth Street is recommended in the study; however, this is existing. It appears that an exclusive left turn lane is being recommended by the study. Please clarify.*

**The recommendations of the study include the following:**

**“Construct additional lane to provide a three-lane approach at the westbound Maiden Lane approach (turning north on Plymouth Road). Provide a left turn lane, a through lane, and a right turn lane at this approach.”**

4. *During the PM peak hour, the southbound Plymouth Road queues at Broadway Street/Maiden Lane/Moore Street are still unacceptable.*

**This has been corrected in the revised analysis. Simulation-specific analysis files are included in the submission package.**

#### **C. Background with Improvements**

5. *During the PM peak hour, the southbound Plymouth Road and northbound Broadway Street queues at Maiden Lane/Moore Street are still unacceptable.*

**This has been corrected in the revised analysis. As noted above, the simulation-specific analysis files are included with the deliverables.**

#### **D. Trip Generation**

6. *The total new trips in Table 6 should be total trips generated minus the pass-by trips. Please revise.*

**This typographical error has been corrected.**

7. *Revise the calculated person-trips in Table 8 as rounding is still off.*

**A typographical error has been corrected in the table, but the trip generation calculations are correct.**

8. *Describe how the pass by trips were included in the modal split trip generation (Table 10).*

**The remaining pass-by trips not accounted for in the Vehicular Trips pass-by calculations were assumed to be mid-block pedestrian pass-by trips. This pedestrian pass-by travel pattern involves exiting and re-entering a mid-block sidewalk to reach the retail storefronts; these trips do not appear on the study road network.**

9. *The note for Table 10 states that the values have been rounded up to the nearest whole number. This is not always the case.*

**Since we are using person-trips, for this study it is important to remember that the modal split trip generation numbers displayed in Table 10 will not add up to the person-trip generation numbers displayed in Table 8 because of the vehicle occupancy rates utilized in the calculations. A single vehicle trip is not equivalent to a single person-trip.**

#### **E. Trip Distribution and Assignment**

10. *Explain why only pass-by trips were shown entering the parking area south of the Broadway Avenue/W. Site Drive and no new trips were added here.*

**While it is reasonable to assume that some new trips may also utilize this parking area, all new trips associated with the retail development were assigned to the site driveways. This created a reasonable composition of both *pass-by* and *new* site-generated retail trips utilizing the storefront parking area and the site driveways.**

11. *Existing pass-by trips are not shown leaving any site drives in Figure 5. Please revise.*

**The pass-by trips are shown using the parking area directly adjacent to the storefronts.**

#### **F. Future with Improvements**

12. *During the AM and PM peak hours, the intersection of Plymouth Road/Broadway Street/Maiden Lane/Moore Street has approaches that operate with unacceptable levels of service and delays worse than background with improvements. Provide recommendations for mitigating this increase in delay.*

**The intersection capacity has been increased to the maximum reasonable extent allowable. This additional capacity will be efficiently utilized by the constant adjustments of the SCOOT adaptive signal system.**

**It is also important to note that in general, *Future Conditions with Improvements* operates better than *Background Conditions*, and many movements and approaches currently operating with critical delays and LOS have been mitigated with the proposed improvements, which are warranted under existing conditions. This comparison is shown in Table 14 in the revised TIS.**

#### **G. Broadway Street and Proposed Site Driveway-Intersection Alternatives**

13. *The all-way stop, three-way stop, roundabout and signalize options shows vehicles waiting to make the left turn from westbound Broadway Street to southbound Plymouth Road backing up through the intersection/roundabout.*

**The SimTraffic analysis outputs, which show the average of five simulation runs conducted for each analysis scenario, display a 95<sup>th</sup> percentile queue length on this approach of 103 feet and 180 feet (4-8 vehicles) during the AM and PM peak hours, respectively. It is possible that occasional short periods of vehicle queues could extend through the intersection on an isolated single signal cycle basis, the capacity at the signalized intersection of Plymouth Road and Broadway Street will also be efficiently utilized by the constant adjustments of the SCOOT adaptive signal system. Overall, any of the three options (traffic signal control excluded) for traffic control at this intersection will operate acceptably, with the roundabout providing the best option.**

**H. Conclusions**

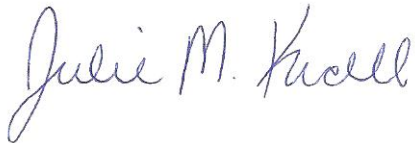
14. *Conclusions number 2 and 10 have contradicting information.*

**This has been updated in the revised TIS report.**

If you have any questions or concerns, please contact our office.

Sincerely,

FLEIS & VANDENBRINK ENGINEERING, INC.



Julie M. Kroll, PE, PTOE  
Sr. Project Manager

BMH:jmk

**Attached:**

City of Ann Arbor Comments from June 1, 2017

HRC Comments from June 2, 2017



TO: Alexis DiLeo, Planning and Development Services Unit

FROM: Luke Liu, Project Management Services Unit

DATE: June 1, 2017

SUBJECT: SP17-009 Traffic Review

CC: via TRAKiT

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In addition to HRC independent review.

- Moore & Pontiac Trail, Westbound Moore approach lane assignment should have shared LT/Thru and RT. Right turn movement does not have STOP control, and enter blocked intersection.
- SB Pontiac Trail approaching Swift should have both lanes continue to SB swift approaching Broadway.
- Broadway & Plymouth, remove median on south leg; vehicle-lane assignment is incorrect.
- Broadway/Plymouth & Maiden, outbound Broadway should be perm-prot, instead of permissive only; phasing sequence is incorrect.
- Broadway & Swift, SB Swift should be NTOR.
- Why the signalized intersections at Fuller & Cedar Bend, and at Fuller & Bonisteel are not analyzed, and skipped to the signalized intersection at Fuller & Glaizer.
- What is the design (horizon) year for Fuller/Maiden intersection? Should Lower Town look at least 5-10 years after build-out, as this is a complex development generating more than 300 peak hour trips?
- Maiden & Neilson signal warrant analysis should cover all applicable warrants. Lack of traffic data should not be the reason for not evaluating signal warrant. Pedestrian related signal warrants should also be evaluated.

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June 2, 2017

City of Ann Arbor  
301 E. Huron St, PO Box 8647  
Ann Arbor, MI 48107

Attn: Cynthia Redinger, PE, PTOE, Traffic Engineer

Re: 1140 Broadway  
Traffic Impact Study Review

HRC Job No. 20170332

Dear Ms. Redinger:

Hubbell, Roth & Clark, Inc. (HRC) and the City have reviewed the revised Morningside Lower Town Traffic Study conducted by Fleis & Vandenbrink dated May 15, 2017. Our comments are as follows:

≡ Synchro/SimTraffic Models

- ≡ Remove the additional eastbound through lane, east of the dummy node between Fuller Road and Neilson Court.
- ≡ The westbound Moore approach lane assignment at Pontiac Trail should have one shared left turn/through lane and one dedicated right turn lane, the right turn movement is not stop controlled and allow vehicles to enter blocked intersection.
- ≡ Southbound Pontiac Trail approaching Swift Street should have both lanes continue to southbound Swift Street approaching Broadway Street.
- ≡ Remove the median on the south leg of the Broadway Street/Plymouth intersection and correct the vehicle-lane assignment.
- ≡ At Broadway Street/Plymouth and Maiden, outbound Broadway Street should be permissive-protective, instead of permissive only. The phasing sequence is incorrect.
- ≡ Southbound Swift at Broadway should be no turn on red.
- ≡ Include the signalized intersections of Fuller Road/Cedar Bend Drive and Fuller Road/Bonisteel Boulevard in the model.
- ≡ The existing and background PM SimTraffic models freeze up when running.

≡ Existing with Improvements

- ≡ An exclusive right turn lane for westbound Maiden Lane to northbound Plymouth Street is recommended in the study; however, this is existing. It appears that an exclusive left turn lane is being recommended by the study. Please clarify.
- ≡ During the PM peak hour, the southbound Plymouth Road queues at Broadway Street/Maiden Lane/Moore Street are still unacceptable.

≡ Background with Improvements

- ≡ During the PM peak hour, the southbound Plymouth Road and northbound Broadway Street queues at Maiden Lane/Moore Street are still unacceptable.

≡ Trip Generation

- ≡ The total new trips in Table 6 should be total trips generated minus the pass-by trips. Please revise.
- ≡ Revise the calculated person-trips in Table 8 as rounding is still off.
- ≡ Describe how the pass by trips were included in the modal split trip generation (Table 10).
- ≡ The note for Table 10 states that the values have been rounded up to the nearest whole number. This is not always the case.

≡ Trip Distribution and Assignment

- ≡ Explain why only pass-by trips were shown entering the parking area south of the Broadway Avenue/W. Site Drive and no new trips were added here.
- ≡ Existing pass-by trips are not shown leaving any site drives in Figure 5. Please revise.

≡ Future with Improvements

- ≡ Provide a more complete signal warrant analysis at the intersection of Maiden Lane and Nielson Court. Even though 24-hours of data were not collected, the five hours that were can still be applied to all the warrants. Pedestrian related warrants should also be considered.
- ≡ During the AM and PM peak hours, the intersection of Plymouth Road/Broadway Street/Maiden Lane/Moore Street has approaches that operate with unacceptable levels of service and delays worse than background with improvements. Provide recommendations for mitigating this increase in delay.

≡ Broadway Street and Proposed Site Driveway-Intersection Alternatives

- ≡ The all-way stop, three-way stop, roundabout and signalize options shows vehicles waiting to make the left turn from westbound Broadway Street to southbound Plymouth Road backing up through the intersection/roundabout.

≡ Conclusions

- ≡ Conclusions number 2 and 10 have contradicting information.

In addition, the City is requesting a design horizon year of 10 years after build out to be included in the study due to the large size of the development and high number of projected peak hour generated trips.

Ms. Cynthia Redinger, PE, PTOE  
June 2, 2017  
HRC Job Number 20170332  
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If you have any questions or require any additional information, please contact the undersigned.

Very truly yours,

HUBBELL, ROTH & CLARK, INC.

*Lia Michaels*

Lia Michaels, P.E., PTOE  
Project Engineer

LFM/lfm

pc: City of Ann Arbor; Luke Liu  
HRC; C. Hill-Stramsak, File