

**CONLEY**  
**ASSOCIATES**

# Memorandum

To: Mr. Hans Larsen, Mr. Kien Ho  
From: Ms. Jennifer Conley, P.E, AICP, PTOE  
CC: Mr. Mark Paris; Mr. Peter Tamm; Mr. Jack O'Neil; Mr. Bob Davis  
Date: February 21, 2008  
Re: Response to BETA Peer Review Comments

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Conley Associates, Inc. has submitted a Traffic Impact Study (TIS) dated December 2007, as the Traffic Component of the overall Municipal Systems Impact Analysis, detailing the traffic impact of the redevelopment of 27 Washington Street. In addition to the TIS, Conley Associates, Inc. has submitted two subsequent memorandums dated December 1, 2007 and December 20, 2007 detailing the results of our sidewalk survey and a speed study conducted along Washington Street, respectively. Conley Associates, Inc. has received a memorandum from the Town's traffic consultant, BETA Group, Inc. (BETA) dated February 5, 2008. The memorandum details the review of the TIS completed BETA. The peer review was discussed in detail between Conley Associates, Inc. and BETA at a meeting on February 13, 2008 (review meeting). The following addresses the traffic related comments of the February 5, 2008 BETA memorandum.

*We ask the proponent to calculate a K factor based on the TMC data collected to compare with the ATR count data K factor.*

Conley Associates, Inc. had determined the K factor based on the ATR data peak hour (weekday AM, 8:00 AM to 9:00 AM, approximately 2,010 vehicles) compared to the ATR daily traffic total (approximately 23,465 vehicles). As requested Conley Associates, Inc. has now calculated the K factor based on the hand collected TMC peak hour data and determined the TMC peak hour to ATR daily K factor to be 0.074. It should be noted that using the TMC data compared to the ATR data is less accurate due to the many driveways through the study area. It is difficult to determine, based on the TMC data at adjacent intersections, the exact number of vehicles traveling through the location of the ATR.

*To address this issue (referring to the operations of the One Washington Street driveway), we request that the proponent include this intersection in the study and perform a turning movement count and traffic analysis at the One Washington Site driveway.*

Conley Associates, Inc. and BETA agreed at the review meeting that the collection of additional data is not pertinent at this time. Depending on the potential transportation improvements chosen by the Town (as part of this project and to rectify existing transportation issues throughout the corridor), certain existing issues will be rectified through the improvement measures. Therefore, continued study of the existing issues could be rendered irrelevant.

*NO!*

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*Figure 6 and Figure 14 should be revised accordingly (referring to incorrect traffic volumes at the intersection of Washington Street at Oakland Street during the weekday PM peak hour).*

The TMC data collected during the weekday PM at the intersection of Washington Street at Oakland Street shows there were two (2) vehicle trips traveling northbound on Oakland Street and turning left onto Washington Street. Conley Associates, Inc. incorrectly showed a volume of 158 northbound left turns on Figure 3 and also incorrectly analyzed the intersection with 158 northbound left turns. Conley Associates, Inc. has corrected the volume for the Existing, No Build, and Build conditions (Figures 3, 6, and 14, respectively). Conley Associates, Inc. reanalyzed the intersection with the corrected northbound left turn volume. The Oakland Street approach to Washington Street operates at LOS C in all three conditions during the weekday PM peak hour (as compared to LOS F reported in the TIS).

*We request that this back-up data be provided for our review (referring to the collected school peak hour data).*

Please find the TMC data from the school peak hour (2:00 PM to 3:00 PM) attached.

*We request the proponent to provide back-up of the MassHighway crash data presented in this report. If available, the most recent 3-year updated accident reports from the Wellesley Police Department should also be obtained to include recent accident reports in the study area.*

As stated previously, during the review meeting it was decided that additional data not be collected at this time. The MassHighway data has been provided to BETA in electronic format.

*We recommend the proponent verify this (referring to accident history at the intersection of Washington Street at Concord Street in Newton) and suggest they check both the MassHighway and City of Newton Police Department crash data for the most recent three years available.*

Conley Associates, Inc. has researched the City of Newton MassHighway data for the most recent three year period available (2004-2006). A review of the data showed that there were four accidents at this intersection in 2004 and five accidents at the intersection in 2005. No accidents were reported at this intersection in 2006. The backup data for this intersection is in the accident data provided to BETA in electronic format.

*We request that this additional background development be included in the report's analysis (referring to the Temple Beth Elohim renovation).*

The expected traffic increase in the study area due to this project is expected to minimal. In addition, since this project had not been submitted to the Town at the time of the completion of the TIS, it was determined at the review meeting that the traffic associated with this project need not be included.

*We request the proponent to provide a trip distribution map of the proposed/future developments added to the No Build 2012 volumes for reference.*

The traffic associated with both the Wellesley Inn and Linden Square projects was sent through the entire Washington Street corridor through the study area. It was assumed, in order to provide

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the highest traffic volume impact at each study area that none of the traffic from these developments that reached the study area would turn at a study area intersection. This was explained at the review meeting and it was determined that a trip distribution network would not be necessary. ✓

*BETA recommends the calculated sixty-one total trips during the Saturday Midday peak hour be too low. BETA recommends the following options in calculating the Specialty Retail Saturday Midday peak hour trips:*

1. *There are data points within the 17,000 square feet range under LUC 820 for AM and Saturday, utilize those average rates to calculate the trips generated.*
2. *Research historical data from a similar specialty retail store in a comparable area.*

Conley Associates, Inc. utilized LUC 820 as requested in recommendation number 1. Based on ITE LUC 820, the 17,000 square feet of retail space is expected to generate 84 vehicle trips during the Saturday midday peak hour. Conley Associates, Inc. distributed the additional 23 vehicles through the study area and reanalyzed the intersections and found no changes in LOS operating conditions. ✓

*What about  
question # 2 ?*

*We recommend the proponent utilize the "Multi-Use Development Trip Generation and Internal Capture Rate Summary" (available in the ITE Trip Generation Book) in order to identify the most appropriate internal capture rate and include the internal capture rate calculations for our review.* ✓

Conley Associates, Inc. did use the internal capture rates included in the Trip Generation Handbook. As stated in the TIS, Table 7.1 (Internal Capture Rates for Trip Origins within a Multi-Use Development) of the Trip Generation Handbook was utilized. Table 7.1 summarizes the Multi Use Trip Generation Calculations for typically combined uses (retail, residential, and office). As per Table 7.1, Conley Associates, Inc. assumed 12 percent of the trips from the retail space would go to the residential use. To be conservatively high in our analysis, no internal capture trips were assumed between office and residential, nor the office and retail, although it is likely that there will be internal capture trips between these uses as well. ✓

*We recommend re-evaluating this (referring the US Census Journey to Work data and the high right turn percentage exiting the site) and adjusting the trip distributions accordingly.*

Conley Associates, Inc. and BETA discussed the trip distribution during the review meeting. As shown in the Appendix of the TIS, based on the Census data, more than 35 percent of the working residents of Wellesley also work in Wellesley. Since the site is on the east end of Wellesley, any resident of the development working in Wellesley would turn right out of the site. In addition, residents traveling west on Route 9 to access points west of Wellesley would also turn right out of the site. Therefore, Conley Associates, Inc. and BETA agreed at the review meeting that the 50 percent split of the residential and office trip distribution to be accurate. ✓

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*I thought we change the % heading east towards Newton.*

*We request that these figures (Figure 8 and Figure 9) be updated so they are legible and incorporate the above residential distribution changes.*

The trip distribution percentages were not legible in the copy of the TIS that BETA received. The percentages were clarified at the review meeting and are also attached. In addition, as stated previously, no change in the distribution is necessary.

*Analysis should also be calibrated to reflect existing conditions including the downstream bottleneck to the west and adjusting saturation flows on Washington Street and Concord Street due to downstream queuing. We suggest performing a saturation flow study at this intersection. While this intersection is located in Newton, it is critical to the traffic operation on Washington Street in the study area.*

The intersection operations analysis did include the bottleneck caused to the west of the Concord Street intersection. Synchro 6 software is capable of including the effect of a lane drop downstream from a signalized intersection (this is not true for a lane drop downstream from an unsignalized intersection). As mentioned previously, it is not pertinent to conduct a saturation flow rate at this time since potential improvements now being studied will increase the capacity at this intersection eliminating the need for a saturation flow study.

*Queuing along Washington Street eastbound at this intersection has not been discussed. Based on our observations the eastbound queue backs up to Hillside Road during the AM commuting peak period.*

The westbound queue lengths at this intersection was specifically requested by BETA and therefore included in the TIS. This data was requested to determine the impact of the queue lengths on Grove Street. Conley Associates, Inc. agrees that the eastbound queue at this intersection is lengthy during the weekday AM peak period. The mitigation measures proposed by the proponent in the TIS and the transportation improvements being investigated now will help to reduce the queue experienced at this intersection in the eastbound direction.

*All of these factors affecting traffic operations along this section of Washington Street need to be considered in the traffic study.*

Conley Associates, Inc. is now analyzing all improvement scenarios with the intersections set to the Central Business District (CBD) setting in Synchro 6 software. The CBD setting takes into account on street parking maneuvers, pedestrian delays, and multiple curb cuts in close proximity. In addition many of the improvements now being investigated will attempt to alleviate much of the conflicting actions.

*These factors need to be considered in the analysis (referring to the lane drop just west of the intersection).*

As stated previously, Synchro 6 software can include the impact of downstream lane drops on signalized intersections, but not unsignalized intersections. Some of the potential improvements now being investigated will attempt reduce the impact of the nearby conflict points and roadway geometry constrictions.

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*Revise your analysis accordingly in this study area to reflect a two lane roadway (at the intersection of Washington Street at Oakland Street).*

Conley Associates, Inc. has updated the intersection operations analysis with the correct lane geometry. The geometric change did affect the LOS at the intersection during any peak hour in any condition. The Oakland Street approach is still expected to operate at LOS D, LOS E, and LOS E during the weekday AM peak hour in the Existing, No Build, and Build conditions, respectively. The Oakland Street approach is still expected to operate at LOS C in all conditions during the weekday PM peak hour (with the updated decreased northbound left turn volume) and during the Saturday midday peak hour.

*The analysis should be revised accordingly (referring to signal timing at the intersection of Washington Street at Walnut Street).*

Conley Associates, Inc. added a westbound advance and an exclusive pedestrian phase. With these changes to the signal timing the intersection is now expected to operate at LOS B during all peak hours in all conditions if there are no pedestrian calls. When there is a pedestrian call the intersection is expected to operate as LOS D during all peak hours in all conditions.

*We request that the proponent revise the analysis accordingly (referring to the signal timing at the intersection of Walnut Street at River Street and Cedar Street).*

Conley Associates, Inc. added a southbound and westbound advance, as well as an exclusive pedestrian phase. With these changes to the signal timing the intersection is now expected to operate at LOS D during all peak hours in all conditions if there are no pedestrian calls. When there is a pedestrian call the intersection is expected to operate as LOS E during the weekday AM peak hour and LOS F during the weekday PM peak hour.

*A traffic signal Warrant Analysis was not included in the traffic report and we suggest that this information be provided for our review to ensure that it meets the traffic signal warrant criteria (referring to the proponent proposed mitigation of signalizing the River Street intersection).*

Signalization of the River Street intersection meets Warrant #3 (Peak Hour Warrant) with more than 100 vehicles approaching a two plus lane roadway from a minor street during the peak hour. In addition the signalization of this intersection would also meet Warrant #6 (Coordinated Signal System) since it would be part of a coordinated signal system.

*While the proposed signal will provide improvements for the River Street approach, we want to note that according to the SYNCHRO analysis, signalizing the intersection of Washington Street and River Street will result in a 500' queue on Washington Street eastbound direction during the AM peak hour and 300' queue during the Saturday peak hour. These long queues will block access to multiple driveways.*

Signalizing River Street will not create a new queue of 500 feet in the eastbound direction. This queue, as calculated by Synchro is the same queue that currently occurs at the Concord Street intersection. Signalizing River Street will simply shift the queue from Concord Street to River Street, or approximately 350 feet to the west. The driveways that would be blocked by the queue

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at River Street are the same driveways that are currently blocked by the standing queue in the eastbound direction during the weekday AM peak hour. As stated by BETA, the weekday AM eastbound queue has been observed as far back as Hillside Road. The closest intersection to the west of Hillside Road is BayState Road, approximately 600 feet west of Hillside Avenue. Therefore shifting the weekday AM eastbound queue 350 to the west would not block any additional intersections that are already not being blocked. ✓

*The proponent should use Sim Traffic to identify internal blockages in short links between the River Street and Concord Street intersections.*

Conley Associates, Inc. utilized the 95<sup>th</sup> percentile queues in Synchro 6, as well as reviewed the expected queue lengths using Sim Traffic. The timing and coordination of these two intersections would not cause queues to block each of the signalized intersections. The driveways in between the intersections would continue to be blocked during certain times of the day, as they are currently operating. ✓

*No mitigation was proposed for the outdated signal at Washington Street and Concord Street which is critical to the traffic operation on Washington Street.*

The mitigation proposed by the proponent did include updating the signal equipment at the Concord Street intersection. Without this updating, the coordination with a signal at River Street would not be possible. ✓

*The proponent should define and outline additional mitigation measures to improve and minimize pedestrian and traffic impacts within the study area.*

The proponent is currently investigating several improvement options for the Washington Street corridor. It should be noted that the proposed development is not the cause for the need for the potential extensive mitigation. The potential improvements currently being investigated are necessary with or without the development of the proposed project to increase pedestrian and vehicular safety and increase vehicular capacity through the corridor. ✓

*We recommend that the proponent repair any sidewalk that the proponent repair any sidewalk areas addressed in their evaluation as deteriorating or having severe cracks.*

The proponent is currently contemplating repairing sidewalks in 'fair' conditions as part of a potential mitigation package. ✓

*No site plan related to the site driveway and Washington Street intersection configuration was provided for our review. Conceptual plans for any off site mitigation should be developed for our review. The site driveway plan should also show traffic and emergency vehicle access/egress at the site driveway particularly the left turn movement from Washington Street to the site drive.*

The analysis at the Site Driveway intersection does not show a need for a westbound left turn lane into the proposed site. The site is expected to generate less than 85 vehicle trips entering the site during any peak hour. This is only one vehicle approximately every 43 seconds. ✓

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*For sight distance analysis purposes, speed studies should be included in this report for our review.*

As per PSI requirements, Conley Associates, Inc. conducted a speed study along Washington Street in the study area. A memorandum dated December 20, 2007 was prepared summarizing the data of the speed study. This memorandum has since been supplied to BETA.

*We recommend performing delay and gap studies for vehicles exiting River Street, Mica Lane and One Washington driveway.*

As previously stated, at the review meeting it was decided that the collection of additional data is not pertinent at this time due to the potential improvements being investigated.

*Please provide turning radius runs for emergency vehicles entering and exiting the proposed site driveway and also maneuvering around the parking lot. Also, a loading area (for deliveries to the retail stores) should be shown on the site plan along with turning radius runs for a delivery truck.*

The proponent's site engineer will provide emergency vehicle and delivery truck access and on site circulation plans.

A detailed discussion on the traffic analysis for the site drive at Washington Street intersection should be provided in the traffic report particularly the left turn movement from Washington Street into the site drive.

As previously stated, the proposed development is not expected to generate a high volume of traffic during the peak hour (less than 85 vehicles entering the site during the weekday PM peak hour). During this peak hour there is expected to be less than 40 trips entering the site from the west (left turn entrance). This is approximately one left turn entering the site every 90 seconds. This volume does not necessitate nor warrant an isolated left turn lane. However, as part of the potential improvements being investigated at this time, a turning lane for the multiple driveways along the Washington Street corridor in the study area is being investigated.