

October 8, 2014

Daniel Sexton
Senior Planner
City of Newton
1000 Commonwealth Ave.
Newton, MA 02459

RE: Kessler Woods Peer Review
Newton, Massachusetts

Dear Mr. Sexton:

McMahon has completed a peer review of the Kessler Woods Residential Development in Newton, MA. The Kessler Woods Residential Development calls for the construction of an 80 unit residential building to be accessed via one new site driveway on Lagrange Street. McMahon has reviewed the following documents prepared by MDM Transportation Consultants, Inc. and Stantec for the proposed Kessler Woods Residential Development:

- Traffic Impact Assessment Study (TIAS) and attachments, dated July 23, 2014 (MDM)
- Conceptual Intersection Improvements Plan for Lagrange Street/Vine Street, dated August 2014 (MDM)
- Sheets L-001 and L-702 from the Special Permit Drawing Set, revised August 29, 2014 (Stantec)

The TIAS prepared by MDM presented a review of the proposed project and its impacts on traffic operations within the study area. A site visit was conducted by McMahon on Thursday, September 25, 2014 to review the proposed site access and to verify existing conditions reported within the TIAS. McMahon offers the following comments and suggestions (numbered in each segment below) regarding the reviewed documents prepared as part of the Kessler Woods Residential Development.

Study Area

The TIAS included a study area of the major roadways and intersections in the vicinity of the project site including the following intersections: Lagrange at Vine Street/Corey Street, Lagrange Street at Rangeley Road, Lagrange Street at Broadlawn Park and Lagrange Street at the proposed site drive. McMahon generally finds this study area to be acceptable and appropriate for a project of this size and nature but offers the following comment:

PRINCIPALS

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ASSOCIATES

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1. The rotary at the intersection of Hammond Pond Parkway, West Roxbury Parkway, Newton Street, Hammond Street and Lagrange Street is located in close proximity to the proposed project. Although the Kessler Woods Residential Development alone may not significantly impact the traffic operations at the rotary, it may have an effect on rotary operations in combination with other proposed projects in the area. Further consideration should be given to the potential impacts of the rotary operations in the future.

Existing Traffic & Safety Characteristics

Roadways & Intersections

Descriptions of existing study area roadways and intersections were provided in the TIAS prepared by MDM. Based on a review of the TIAS and site visit, McMahon finds the description of the existing roadways and intersections to be accurate.

Existing Traffic Data

As documented in the TIAS, traffic volume data was collected at the study area intersections during the weekday morning and weekday afternoon peak periods. Turning movement counts were conducted on Tuesday, May 6, 2014 (7:00 AM - 9:00 AM and 4:00 PM - 6:00 PM), Friday, May 9, 2014 (7:00 AM - 9:00 AM), Thursday, June 5, 2014 (4:45 PM - 5:45 PM) and Friday June 6, 2014 (7:00 AM - 8:00 AM). Typically, the combination of traffic volumes on the roadways and trips generated by the proposed project would be expected to be the highest during the weekday morning and weekday afternoon time periods. Therefore, McMahon finds the analysis of the weekday morning and weekday afternoon peak periods to be satisfactory to measure the impacts of the proposed project, but offers the following comments:

2. Collection of traffic volume data on a Friday for this type of development is atypical and may not capture a representative traffic volume set. It would be preferred to have all traffic volume data collected on a typical Tuesday, Wednesday or Thursday.
3. A significant traffic volume imbalance is noted between the intersection of Lagrange Street and Vine Street/Corey Street and the intersection of Lagrange Street and Broadlawn Park in the westbound direction during the weekday morning peak hour. This discrepancy should be clarified.

Traffic volume and speed data were also collected along Lagrange Street for a 48-hour period from Tuesday May 6, 2014 to Wednesday, May 7, 2014. McMahon finds the collection of daily volume and speed data through the use of an automatic traffic recorder (ATR) to be appropriate.

The TIAS notes that traffic volumes collected during the month of May and June are typically higher than those collected during the average month. The existing traffic volumes were not seasonally adjusted downward, presenting a conservative analysis which McMahon finds acceptable. The TIAS referenced MassDOT permanent count station data located in Quincy,

Abington and Weymouth. This data was used to identify seasonal adjustment factors for collected traffic volumes.

4. The proponent should review permanent count station data in closer proximity to the proposed project site to obtain a more locally representative data set.
5. The volumes summarized in the historical traffic comparison in Table 2 have been seasonally adjusted based on the traffic volume data at the permanent count stations in Quincy, Abington and Weymouth. The traffic volume comparison should be seasonally adjusted to reflect more local data.

Intersection Crash History

Crash history included in the TIAS reviewed and summarized motor vehicle crash data for MassDOT data from 2009 to 2011 and Newton police data from 2011 to 2013. The calculated crash rates at each of the study area intersections are below the statewide and District 6 average crash rates, indicating that no significant safety deficiencies appear to be present, as presented in the TIAS. McMahon finds this safety analysis to be acceptable.

Measured Travel Speeds

Travel speeds along Lagrange Street were measured using an automatic traffic recorder. The data presented in the TIAS appears to be representative of conditions observed in the field.

Sight Line Evaluation

An evaluation of sight lines at the proposed project site driveway was conducted. Both stopping sight distance (SSD) and intersection sight distance (ISD) were evaluated in the TIAS. Available SSD was measured and was noted in Table 5 of the TIAS. McMahon's field visit verified the available sight distance measurements reported in Table 5.

Calculations for the required SSD for the posted speed limit, average travel speed and 85th percentile speeds along Lagrange Street were provided in the attachments of the TIAS. The calculations utilized approach grades of 5% and 4% for the eastbound and westbound approaches, respectively. McMahon verified these calculations and confirmed the grade measurements in the field.

Based on the ATR data, more than 250 vehicles are shown to travel over 40 miles per hour over the course of a day. The required SSD for vehicle speeds of 40 mph to 45 mph is approximately 285 feet to 340 feet, utilizing the calculation methodology noted in the attachments of the TIAS.

6. The available sight distance measurements noted in the TIAS are approximately 290 feet and 300 feet, which does not meet the minimum required sight distance for the vehicles traveling faster than 40 miles per hour. Where possible, the modifications to the site should be further evaluated to provide maximum sight distance possible.

The TIAS also included an evaluation of the available ISD, summarized in Table 6.

7. The values summarized in Table 6 only note SSD (not ISD), despite the title of the table. The measurements taken appear to reflect the geometry of an ISD measurement but the reported values do not. The statement noting that the available ISD exceeds the recommended minimum sight line requirements is inaccurate. Table 6 should be updated to reflect minimum ISD values for left-turning and right-turning vehicles for the proposed site driveway as determined by AASHTO.
8. Values for the available ISD from the proposed site driveway, “assumes clearing of on-site vegetation and re-grading.” Due to the existing site conditions, this value is difficult to determine accurately. Sight distance triangles should be depicted on the proposed site plan in order to accurately identify the appropriate grading and landscaping required to achieve the minimum ISD recommended by AASHTO.
9. McMahan agrees that the landscaping proposed as part of the project should be maintained at a height of 2 feet or less within the driveway sight lines. Additionally, existing and proposed signage and utility poles should be placed to maximize available sight distance. Under the current site plan, the proposed Kessler Woods entry sign may limit available visibility to the west. The entry sign, as depicted in the site details plan, should be placed outside of the sight lines or reconfigured to provide clear sight lines through/underneath the sign.

Alternative Modes of Transportation

The TIAS included a description of alternative modes of transportation near the proposed project site including MBTA Bus Route 37, MBTA Bus Route 51 and Chestnut Hill Realty (CHR) Shuttle Service. The report notes that 25% of residents in the immediate study area (U.S. Census Tract 3739) use modes of transportation other than single occupancy vehicles. No reduction in site trips was taken for trips via public transportation. McMahan finds this acceptable, considering the lack of available pedestrian connections to the two bus routes noted in the study and offers the following comments:

10. The proposed project site is located at the intersection of three separate U.S. Census Tracts. The majority of the Census Tract identified for comparison in the TIAS included in the study is located much more conveniently to public transportation than the project site. In order to obtain a more accurate representation of alternative mode use, adjacent tracts would need to be investigated. However, since no credit was taken for the number of trips taken by public transit, this is not necessary.
11. The proponent should provide additional information regarding the specific programming of the CHR Shuttle Service at Kessler Woods.
12. McMahan has noted that the project proposes a new crosswalk across Lagrange Street just east of the project site driveway. The location of the crosswalk should be considered

carefully due to the limited visibility created by the horizontal and vertical curves within the study area. Additional information should be provided including pedestrian visibility and required modifications to existing infrastructure necessary to ensure the safe and efficient pedestrian access.

13. In order to promote pedestrian access to the project site, the construction of sidewalks should be reviewed and implemented along Lagrange Street connecting to the existing Town of Brookline sidewalks in the east and to the intersection of Vine Street/Corey Street in the west. All sidewalks and ramps should be ADA compliant.
14. The proponent should coordinate with the appropriate City of Newton entities to verify how school buses will service the proposed residential development. The proponent should identify measures to ensure safe access for children between the proposed residences and schools/school buses.

Projected Future Traffic Conditions

Background Growth

Traffic volumes were projected to the future year of 2019 to reflect a five-year planning horizon. McMahan finds this acceptable.

Included in the future year project is an overall background growth rate of one percent per year and traffic to be generated by other specific developments identified by the City Planning Staff. Five specific projects were identified by the proponent as having potential impact on the study area intersections including the Center 128 Office Park, 135 Wells Avenue 40B Residential Development, Chestnut Hill Shopping Center, Chestnut Hill Square Residential Development and Residences of South Brookline. The Center 128 Office Park and 135 Wells Avenue 40B Residential Development were noted to have negligible impact on Lagrange Street. Due to the location of these projects, McMahan agrees with this assumption, but offers the following comments concerning the remaining background growth assumptions:

15. The TIAS refers to the MassDOT permanent count stations to verify background growth. As noted previously, there are a number of permanent count stations located in closer proximity to the proposed project site reflecting local conditions that should be reviewed. Use of local data is important due to the recent growth and development experienced within the City of Newton.
16. Due to their close proximity to the Kessler Woods Residential Development, specific trip generation/distribution information from the original traffic impact studies for the Chestnut Hill Shopping Center, Chestnut Hill Square Residential Development and Residences of South Brookline projects should be provided to verify the potential impacts on Lagrange Street.

17. The Chestnut Hill Shopping Center was said to be included in the one percent background growth rate due to its partial occupancy during the time of the counts. The proponent should identify the amount of unoccupied space at the time of the counts and quantify the remaining number of trips expected to travel along Lagrange Street. If this value exceeds the one percent background growth in either direction of travel on Lagrange Street, the generated traffic should be added in addition to the one percent background growth rate.

Trip Generation

Trip generation estimates for the proposed Kessler Woods Residential Development were calculated for the weekday morning and weekday afternoon peak hours utilizing ITE's *Trip Generation Manual, 9th Edition*. Land Use Code 220 (Apartments) was utilized for the trip generation calculations based on the peak hour of adjacent street traffic. This methodology is considered to be acceptable by industry standards.

Trip Distribution

The site-generated traffic was distributed to study area intersections and roadways based on U.S. Census Journey to Work data. This methodology is considered to be acceptable, however McMahon offers the following comments:

18. The Journey to Work data utilized in the TIAS is from the 2000 U.S. Census. The U.S. Census Bureau provides more recent journey to work data, collected through the American Community Survey that should be utilized for the trip distribution calculations.
19. Trip distribution calculations provided in the attachments note the "Residence Town Name" as Middleton, MA. This table should be updated to reflect Newton as the town of residence. Additionally, the adjacent Town of Brookline should be included in the calculation for a better representation of potential trip distribution. All traffic volume networks and capacity analysis should be updated to account for the updated Journey to Work data.

Operations Analysis

Capacity analysis was completed at the study area intersections under the Existing, No-Build and Build traffic volume conditions utilizing methodology found in the 2010 Highway Capacity Manual. Overall, McMahon finds that the analysis was conducted appropriately using the correct peak hour factors and heavy vehicle percentages. The capacity analysis at the intersection of Lagrange Street and Vine Street/Corey Street was noted to be very conservative. A delay study was conducted to observe delay and compare to the capacity analysis results. Conflicting pedestrian volumes and roadway grade percentages were not included in the Synchro capacity analysis. However, due to the limited pedestrian activity, the results of the capacity analysis are not expected to change significantly. The following comments are offered regarding the capacity analysis:

20. It is important to be able to quantify the project impacts at the study area intersections. Due to the conservative nature of the capacity analysis conducted at the intersection of Lagrange Street and Vine Street/Corey Street, it is difficult to quantify the impacts associated with the proposed development at this location in the future. Therefore, the capacity analysis model should be calibrated to match traffic operations observed as part of the delay study and carried through the future conditions. Additional information including a gap study and additional field observations may be required to achieve this.
21. The level-of-service summary for the proposed site driveway indicates that the exiting movement from the site driveway is expected to operate at LOS C with 25 seconds of delay during the weekday afternoon peak hour. The capacity analysis worksheets show a LOS D for this movement. The results of the capacity analysis should be clarified so that the worksheets match the summary.
22. Capacity analysis should be conducted and summarized for the proposed improvements at the intersection of Lagrange Street and Vine Street/Corey Street under the future year conditions.

Site Access and Circulation

On-site circulation of a ladder truck was provided in the attachments of the TIAS. McMahon offers the following comments.

23. The design vehicle is shown to extend beyond the edge of the circulatory road around the rear of the building. The materials used for the roadway and edging should be mountable or the roadway should be reconfigured in order to ensure full access to the rear of the building.
24. The Autoturn exhibits should be shared with the Newton Fire Department to ensure that an appropriate design vehicle was used in the analysis and that they approve of the proposed circulation. The design vehicle used in the Autoturn analysis is shown to cross over into the opposite direction of travel upon entrance to and egress from the proposed project site. The Newton Fire Department should be comfortable with this access. The corner radii of the proposed driveway may need to be altered to accommodate turning movements within the lane of travel.
25. If school buses are to circulate within the project site, a detailed description of the proposed access as well as on-site Autoturn analysis should be provided.

Intersection of Lagrange Street and Vine Street/Corey Street

The proposed conceptual improvements at the intersection of Lagrange Street and Vine Street/Corey Street include the reconfiguration of the Vine Street and Corey Street approaches. Upon preliminary review, the improvements should provide more organized traffic control at this location.

26. Additional information regarding traffic operations and capacity analysis should be provided for the identified improvements.

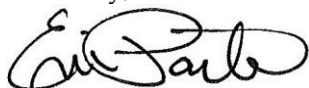
Conclusions and Recommendations

The TIAS summarized recommendations for access related improvements including driveway design to accommodate passenger cars, delivery traffic and emergency vehicles, pedestrian connectivity and proposed landscaping and structures to maximize sight distance for the proposed site driveway. The TIAS also notes that CHR plans to consider the inclusion of Kessler Woods in their existing shuttle service. McMahon agrees with these recommendations and suggests the following additional recommendations.

27. A Transportation Demand Management (TDM) plan should be implemented as part of the development to encourage carpooling, bicycle use and pedestrian activity. Specific information regarding the TDM, including the proposed CHR shuttle program, should be provided for review.
28. The City of Newton should require that all plantings, grading and structures be constructed to maximize the available sight distance at the proposed site driveway and not just to meet the stopping sight distance minimums.
29. The proponent should review and implement the construction of sidewalks along Lagrange Street from the proposed project driveway to the existing Town of Brookline sidewalks in the east and to the intersection of Lagrange Street and Corey Street /Vine Street to the west. All sidewalks and ramps should be ADA compliant.
30. The improvements at the intersection of Lagrange Street and Vine Street/Corey Street should be included in the Kessler Woods Residential Development as proposed by the proponent. Additional information including capacity analysis, preliminary design plans, and proposed pedestrian access should be provided for review.

If you have any questions about any of the material presented in this letter, please do not hesitate to contact me.

Sincerely,



Erin Pacileo, P.E.
Project Manager