



ENGINEERING SUCCESS **TOGETHER**

August 29, 2016

Michael Kulesza, Chairman
Town of Norfolk – ZBA
1 Liberty Lane
Norfolk, MA 02056

Re: Norfolk, MA – Lakeland Farms Townhouse Community
Traffic Peer Review

Dear Mr. Kulesza:

BETA Group, Inc. (BETA) has reviewed supplemental documents for the subject project, a 40-unit townhouse project proposed at 84 Cleveland Street in Norfolk, MA. This letter is provided to update findings, comments and recommendations.

BASIS OF REVIEW

BETA received the following supplemental documents:

- Traffic Memorandum entitled: Response to the Traffic Peer Review, dated August 12, 2016, prepared by WSP/Parsons Brinkerhoff (PB), Boston, MA
- Traffic Memorandum entitled: Evaluation of Additional Intersections, dated August 8, 2016, prepared by WSP/Parsons Brinkerhoff (PB), Boston, MA

COMPILED REVIEW LETTER KEY

BETA reviewed this project previously and provided review comments in a letter to the Board dated July 12, 2016 (original comments in standard text). WSP/Parsons Brickerhoff (PB) provided responses (responses in italics) and BETA has provided comments on the status of each (status in bold standard text).

INTRODUCTION

The project site consists of a parcel located on the south side of Cleveland Street approximately one mile north/northeast of Route 115 (Rockwood Road) in Norfolk. The parcel is 8.8± acres, and currently contains a single family dwelling, detached garage, and numerous farm structures that were used when the property was operated as Brambly Farms. The project proposes to build a 40-unit townhouse community, containing a mix of twenty (20) single-family and ten (10) duplex-style townhomes. Thirty (30) units will be priced at “market” rate, while ten (10) will be moderate income affordable homes. Homes will range in size from 1,642 sq. ft. to 2,460 sq. ft. The community will be serviced by town water, an on-site shared sewage disposal system, propane gas, cable and electricity.

FINDINGS, COMMENTS AND RECOMMENDATIONS

TRAFFIC

The study area includes Cleveland Street in the vicinity of the proposed site drive, and the intersection of Cleveland Street and Fruit Street, located approximately 1,500 feet east of the proposed site drive. The memorandum generally follows MassDOT Transportation Impact Assessment (TIA) guidelines and is consistent with industry standard practices.

- T1. The study area should be expanded to include the intersections of Cleveland Street at Route 115, Holbrook Street at Route 115, Cleveland Street at Seekonk Street, and Fruit Street at Seekonk Street. Traffic volumes show that Cleveland Street is a commuter route, which in turn suggests these nearby intersections with arterial roadways will be utilized by site-generated traffic. *PB: In response to this comment and the additional clarification provided at the public hearing regarding safety concerns along Cleveland Street and at these locations, PB has conducted a detailed analysis of the stopping sight distances available, the crash history and the expected project impact at each of these locations for the Town's use. In order to provide the most conservative analysis of trip generation impacts at the additional intersections, PB used the fitted curve methodology as is requested in comment T4 below. As is outlined on the Table provided attached to this response, based on available sight lines and minimal crash data most locations do not raise safety concerns. Although the sight lines are limited at the intersection of Seekonk Street at Fruit Street, the number of crashes was only two over the three year period and only a maximum of two trips will impact this intersection during the peak hour. Despite limited sight lines approaching Fruit Street at Cleveland Street, only one crash was reported over the three year period reviewed. It is unclear whether the vegetation limited the sight lines is located within the public right of way. The sight lines at the intersection of Cleveland Street at Holbrook Street are limited by grading and vegetation, however, there have been no crashes reported over the three year period.* BETA2: Information provided – item resolved. It is recommended that right-of-way widths be investigated to determine if vegetation affecting sight lines can be trimmed.

Traffic volume data were collected in May 2016. Automatic Traffic Recorder (ATR) counts reveal 2,560 vehicles per day (vpd) over a 24-hour period on Cleveland Street near the proposed site. The morning peak hour occurred from 7:00 AM to 8:00 AM when approximately 280 vehicles passed by the proposed site, showing a heavy directional split consistent with commuting patterns (235 vehicles, or 84% of peak hour traffic, were heading eastbound). The weekday evening peak hour occurred from 5:00 PM to 6:00 PM and showed a heavy westbound directional split, with 160 vehicles (67%) of the total 240 vehicles headed westbound. Turning movement counts (TMCs) were conducted at the intersection of Cleveland Street and Fruit Street for peak periods, from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM.

Speed information was collected by ATR and shows that the 85th percentile speed on Cleveland Street is 41 mph in both directions in the vicinity of the project site. This exceeds the 35 mph posted speed limit on Cleveland Street.

- T2. Crash data and a crash analysis should be provided for Cleveland Street. *PB: PB researched crash data collected in the study area for the most recent three years available from MassDOT (2012-2014). During those three years nine crashes were reported along Cleveland Street excluding the crashes occurring at the intersections at either end. Of the nine crashes, only one occurred within close proximity of the proposed site. The crash involved a single vehicle colliding with a mail box just 50 feet east of the proposed driveway resulting in property damage. The crash at the intersection of Cleveland Street and Fruit Street occurred in 2012 when two vehicles traveling in opposite directions*

sideswiped each other resulting in property damage. The remaining seven crashes were located away from the proposed site or other intersections or the exact locations were unknown. None of the crashes along Cleveland Street were fatal, however, two resulted in injury. The MassDOT average crash rate for a rural local road is 2.08 crashes per million vehicle miles traveled. Cleveland Street has a crash rate of 2.14 crashes per million vehicle miles traveled. Therefore, Cleveland Street is experiencing crashes at a rate typically expected for a rural local road. The MassDOT District 5 average crash rate is 0.58 crashes per million vehicles entering unsignalized intersections. The intersection of Cleveland Street at Fruit Street has a crash rate of 0.36 crashes per million vehicles entering. The crash rate at the intersection of Cleveland Street at Fruit Street is less than the MassDOT average crash rate. As outlined above, the crash history at the additional intersection identified by BETA was summarized and is provided attached to this memorandum. The highest number of crashes were experienced at the intersections along Route 115 where traffic volumes are significantly higher than along Cleveland Street. Therefore, the crash rates at those locations are likely significantly lower than the MassDOT District 5 average crash rate. BETA2: Information provided – item resolved.

- T3. The study should include an evaluation of geometric characteristics of Cleveland Street, including roadway width, pavement condition and horizontal and vertical geometry. *PB: Cleveland Street is a rural local road that runs from its intersection with Route 115 to the west to its intersection with Seekonk Street to the east. Cleveland Street consists of 12 foot travel lanes in each direction divided by a double yellow centerline. Along its length, vegetation (either trees or low brush) grows right up to the edge of the roadway. Cleveland Street consists of both straight sections and some horizontal curvature, but is generally flat or gently graded. BETA2: Information provided – item resolved. Vegetation at or near the edge of roadway should be trimmed within the roadway right-of-way.*

Project-generated traffic volumes were determined by utilizing trip generation statistics published by the Institute of Transportation Engineers (ITE) using Land Use Code (LUC) 230, Residential Condominium/Townhouse. BETA finds this land use code appropriate for the proposed site use. The development is expected to generate 230 daily trips, including 18 (3 entering, 15 exiting) in the weekday morning peak hour, and 21 (14 entering, 7 exiting) in the weekday evening peak hour.

Trips were assigned to the study area based on existing traffic patterns, US Census Journey to Work information, and engineering judgment. BETA concurs with this methodology. 30 percent of site traffic is expected to travel to and from points west, with the remaining 70 percent expected to travel to and from points east.

- T4. Clarify why the average rate was used instead of the fitted curve regression equations for trip generation calculations. Using the regression equations would result in a more conservative trip generation analysis. *PB: PB determined and analyzed the Build condition using the trip generation from the regression equations. During the AM peak hour, the trip generation increased from 18 vehicle trips (3 in and 15 out) using the average rate to 25 vehicle trips (4 in and 21 out) using the regression equations for an increase of 7 vehicles. During the PM peak hour, the trip generation increased from 21 vehicles (14 in and 7 out) using the average rate to 28 vehicles (9 in and 19 out) using the regression equations for an increase of 7 vehicles. BETA2: Information provided – item resolved.*

The project "Build" condition was determined by adding distributed trips to the 2016 existing condition peak hour traffic volumes. Operational analysis was conducted for the study area intersections, and indicate that all movements at the intersection of Cleveland Street and Fruit Street and at the intersection of Cleveland

Street and the site drive will operate at level of service (LOS) B or better with the addition of site related traffic.

- T5. Capacity analysis including queue analysis should be provided for the expanded study area suggested in comment T1. *PB: As outlined in the response to T1 and summarized in the table attached to this memorandum, even with the more conservative trip generation methodology, the impact of the site is expected to be minimal at the additional intersections. The location with the most significant impact will be Seekonk Street at Cleveland Street and that intersection will experience 15 new trips during the highest hour. A review of the traffic volumes on Cleveland Street approaching Seekonk Street during the peak hours reveals a heavy volume during the weekday AM peak hour only which may result in a reduced level of service during that hour. However, with only one hour of high side street traffic, it is unlikely that geometric or traffic control mitigation would be warranted at this location. In addition, because there is no crash history at this location, no safety improvements are required.* BETA2: Information provided – response acceptable.

Stopping sight distance (SSD) was measured for the site drive and was found to exceed AASHTO recommended values based on both the regulatory speed and the measured 85th percentile speed.

- T6. Sight distance should be measured for the expanded study area suggested in comment T1, to assess conditions expected to be encountered for future townhouse residents accessing area arterial roadways. *PB: The additional stopping sight distance measurements were collected and are summarized in the Table attached to this memorandum. As outlined above, adequate stopping sight distance is available at most locations. There are limited sight lines available for vehicles to see an object on the southerly leg of Fruit Street. Although the limitations at this location are vegetation and not limitations due to grade, it is not clear if the vegetation is within the Town's right of way and if the Town is interested in removing the vegetation. The available stopping sight distance at the intersection of Seekonk Street at Fruit Street is also limited due to vegetation. As indicated, the sight distance at the intersection of Route 115 at Holbrook Street is met at the northerly portion of the westbound leg accommodating westbound right movements, however, sight distance is limited at the southerly portion of Holbrook Street accommodating westbound left movements. Since westbound left traffic destined to the south from the site would make that maneuver at Cleveland Street at Route 115, no site traffic is anticipated on the sight limited leg of Holbrook Street. Therefore, the site has no impact at this location. In conclusion, although sight lines are limited at some of the additional intersections, no safety concern has developed based on the minimal crash histories.* BETA2: Information provided – item resolved. See response T1 above.

If we can be of any further assistance regarding this matter, please contact us at our office.

Very truly yours,
BETA Group, Inc.



Greg E. Lucas, P.E., PTOE
Project Manager

Job No: 4980