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Mr. Nathaniel Strosberg, Town Planner  
Town of Ashland  
Planning Department  
101 Main Street  
Ashland, MA 01721

September 4, 2015

TEC Ref. T0604

RE: Proposed Sub-Division – 73 Olive Street – Ashland, Massachusetts  
Traffic Peer Review Comments

Dear Mr. Strosberg,

TEC, Inc. has completed an independent peer review of the potential off-site and on-site transportation impacts associated with the proposed 4-lot subdivision development to be located at #73 Olive Street in Ashland, Massachusetts. The site currently contains thick undisturbed vegetation on three of the proposed subdivision lots. The fourth subdivided lot adjacent to Olive Street currently contains the existing residential home at #73 Olive Street. The project consists of clearing and subdividing the existing land, and constructing single family houses on each of the three (3) newly-created lots within the subdivision. The existing home at #73 Olive Street will remain. Access to the residence at #73 Olive Street is currently provided via a driveway on the westerly side of Olive Street that forms a loop in front of the home, with the first connection to Olive Street approximately 100 feet south of Morey Drive and the second connection approximately 200 feet south of Morey Drive. As part of the project, the southerly driveway would be widened to serve as a subdivision road to access the three proposed new homes. The following documents were received as part of our review:

- *No. 73 Olive Street Preliminary Plan, 73 Olive Street, Ashland, Massachusetts*; The Jillson Company, Inc.; July 27, 2015.
- *No. 73 Olive Street Preliminary Plan – Supplemental Plan #1, 73 Olive Street, Ashland, Massachusetts*; The Jillson Company, Inc.; July 27, 2015.
- *Peer Review #1 – 73 Olive Street Preliminary Plan (Subdivision)*, Ashland, Massachusetts; GCG Associates, Inc.; August 21, 2015.

Overall, TEC finds that the Preliminary Plan was prepared in a manner that is generally consistent with Massachusetts Department of Transportation (MassDOT), local, and industry standards, with the exception of the following:

### **Traffic Impact Assessment**

- 1.) The Applicant has not prepared or submitted a Traffic Impact Assessment Report associated with the project. However, TEC has estimated that the three additional homes within the subdivision will generate approximately 29 new vehicle trips along Olive Street on a typical weekday, with 3 new vehicles trips or less generated during the weekday morning and evening peak hours based on standard trip rates published in the Institute of Transportation Engineers (ITE) publication, *Trip Generation, 9<sup>th</sup> Edition* for Land Use Code (LUC) 210 – Single Family Detached Housing. This represents one additional vehicle on

Olive Street every 20 minutes during the peak hours with lesser impacts during other hours of the day, and will have a negligible impact on traffic operations along Olive Street and surrounding roadways. Therefore, this level of trip generation should not warrant the completion of a Traffic Impact Assessment Report.

### **Sight Distance**

- 2.) TEC, Inc. measured the available sight distances at the proposed subdivision roadway location along Olive Street on Sunday, August 30, 2015 during a period of peak vegetation. The available sight lines were compared to minimum requirements established by the American Association of State Highway and Transportation Officials (AASHTO).

Sight distance represents the length of roadway that is visible to a driver traveling within the roadway. Two types of sight distance are typically evaluated for driveways and intersections: stopping sight distance (SSD) and intersection sight distance (ISD). SSD is the minimum distance required for a driver traveling along a roadway to perceive an object in the roadway and stop safely in advance of the object when traveling on a wet pavement surface. SSD is measured from an eye height of 3.5 feet to an object height of 2 feet above the ground, which is equivalent to a driver viewing the taillight of a vehicle ahead. SSD is measured along the centerline of the travel lane approaching the driveway or intersection.

ISD represents the length of the roadway visible to a driver waiting to exit a driveway or minor street. Minimum ISD requirements are based on the distance required for a driver to exit a minor street onto a major street without requiring an approaching vehicle to reduce its speed from the design speed to less than 70 percent of the design speed. ISD is measured from an eye height of 3.5 feet to an object height of 3.5 feet, and is measured from a distance 15 feet off the edge of the travel-way of the major roadway to represent a driver waiting to exit a driveway or minor roadway.

SSD is typically considered the critical sight distance, as it represents the minimum distance required for safe stopping, while ISD represents an acceptable speed reduction for approaching vehicles. The ISD, however, must be at least equal to the minimum required SSD in order to prevent a driver from entering the roadway when an approaching vehicle is too close to safely stop. The guidance provided by AASHTO states:

*"If the available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions. However, in some cases, this may require a major-road vehicle to stop or slow to accommodate the maneuver by a minor-road vehicle. To enhance traffic operations, intersection sight distances that exceed stopping sight distances are desirable along the major road."*

The posted speed limit along Olive Street is 25 miles per hour (MPH). During field observations, travel speeds along Olive Street were observed to be between 25 and 30 MPH along the roadway adjacent to #73 Olive Street. These speeds were measured by a spot speed study which measured the comfortable driving speed in both directions on multiple travel runs. Table 1 provides a comparison of the available sight lines to AASHTO's recommended minimum sight distances based on a travel speed of 30 MPH.

**Table 1 – Existing Sight Distance Measurements**

| Approach / Direction  | Speed  | AASHTO Minimum | Measured                |                             |
|---|--------|----------------|-------------------------|-----------------------------|
|   |        |                | Stopping Sight Distance | Intersection Sight Distance |
| Olive Street at Subdivision Roadway:<br><i>North of Subdivision</i> | 30 mph | 200 FT         | >400 FT                 | >400 FT                     |
| <i>South of Subdivision</i>   | 30 mph | 200 FT         | 375 FT                  | 280 FT*                     |

\*Assumes cleared low-growth vegetation (limited by 20" diameter tree)

As shown in Table 1, sufficient SSD is provided along Olive Street in both the northbound and southbound directions. Although sufficient ISD is provided at the proposed subdivision roadway looking north, excessive vegetation currently blocks sight lines looking south from the proposed subdivision roadway. The Applicant should commit to clear vegetation adjacent to Olive Street, south of the proposed subdivision roadway to provide for sight lines that meet the AASHTO minimum for intersection sight distance (200 minimum, 335 feet desired). Figure A-1 depicts the area along the west side of Olive Street that should be cleared to provide sufficient sight lines at and approaching the proposed subdivision roadway.

- 3.) §344-12.D – *“Forward sight distance shall not be less than one hundred fifty (150) feet on lanes...”* Upon inspection of the Preliminary Plan, TEC has confirmed that locations along the proposed subdivision roadway may provide less than 150 feet of forward sight distance. This is dependent on the clearing of trees along the northerly edge of pavement. TEC has identified six (6) trees outside the proposed edge of pavement which are currently located within the sight lines necessary to provide sufficient forward sight distance. These are in addition to any trees that are currently located within the proposed subdivision roadway layout. Figure A-1 provides a graphical depiction of the trees to be removed. The Applicant should revise the Plan to denote those trees scheduled for removal to provide sufficient forward sight distance.

**Preliminary Plan**

- 4.) The Preliminary Plan depicts the proposed subdivision roadway entering Olive Street at the Right-of-Way line and not the edge of pavement. Upon field measurements, Olive Street is approximately 22-feet wide at and in the vicinity of the #73 Olive Street residence. The Applicant should revise the Plan to show the correct location of the Right-of-Way, edge of pavement along both sides of roadway, and centerline along Olive Street to allow for a proper transition from the proposed subdivision roadway to existing conditions.
- 5.) §344-22.A – *“There shall be sidewalks five (5) feet in width ... Sidewalks may be required on a lane.”* The Preliminary Plan currently depicts no sidewalk along the proposed subdivision roadway. The Applicant should confirm with the Town whether a sidewalk will be required and revise the Plan accordingly. TEC does note that there are currently no sidewalks provided along Olive Street.

On August 21, 2015, GCG Associates, Inc. (GCG) conducted an independent peer review of the #73 Olive Street Preliminary Plan. As part of the review, GDG noted several discrepancies between the Plan and the Town of Ashland Zoning Bylaws in relation to traffic and transportation features. TEC has reviewed these discrepancies and offers the following comments:



- 6.) §344-12.A.6 – *"The minimum centerline radii of curved streets shall not be less than the following – a) Lane; one hundred (100) feet...."* Upon inspection, TEC has confirmed that the curve radius along the centerline is 100-feet. No further response required.
- 7.) §344-12.A.8 – *"Property lines at street intersections shall be rounded or cut back to provide for a curb radius of not less than thirty (30) feet."* TEC concurs with the comment by GCG that the curb radius shown on the Plan should be revised to provide a minimum 30-foot radius. The limited cross-section of Olive Street (22 feet at proposed subdivision roadway) may require moving trucks and delivery vehicles to need a larger turning radius to enter/exit the site.
- 8.) §344-12.F.4 – *"Dead-end streets shall be provided at the closed end with a turnaround having a property line diameter of at least one hundred twenty (120) feet. An island shall be installed within the center of the cul-de-sac. The outside radius of this island shall be designed to accommodate the turning radius movement of a WB-40 vehicle (D.O.T.)."* TEC has confirmed that the turnaround diameter between property lines is 120 feet. However, the Applicant should provide a truck turning template to depict the ability of a WB-40 vehicle, as well as a Town of Ashland Fire Apparatus if larger, to traverse the cul-de-sac island as noted by GCG.
- 9.) §344-20.H – *"The pavement width, exclusive of curbing, shall be as follows: 1) Lane: twenty-six (26) feet."* The Applicant should revise the Plan to provide a 26-foot pavement cross-section of the proposed subdivision roadway.

#### **Mitigation**

- 10.) The Preliminary Plan depicts no off-site transportation mitigation program. TEC recommends that the Proponent commit to trimming and clearing vegetation within the right-of-way and on the proposed subdivision property along the westerly side of Olive Street, consistent with the clear zones shown in Figure A-1, to maximize sight distances. This clearing should be completed prior to issuance of a Certificate of Occupancy and should be regularly maintained to ensure sight lines continuously meet minimum requirements. No further mitigation is warranted based on the limited impacts of the project on traffic operations along the adjacent roadways.

Please do not hesitate to contact me or Rebecca L. Brown, P.E., PTOE at (978) 794-1792 if you have any questions regarding our responses. Thank you for your consideration.

Sincerely,  
TEC, Inc.



Samuel W. Gregorio, P.E., PTOE  
Senior Engineer

1" = 50'

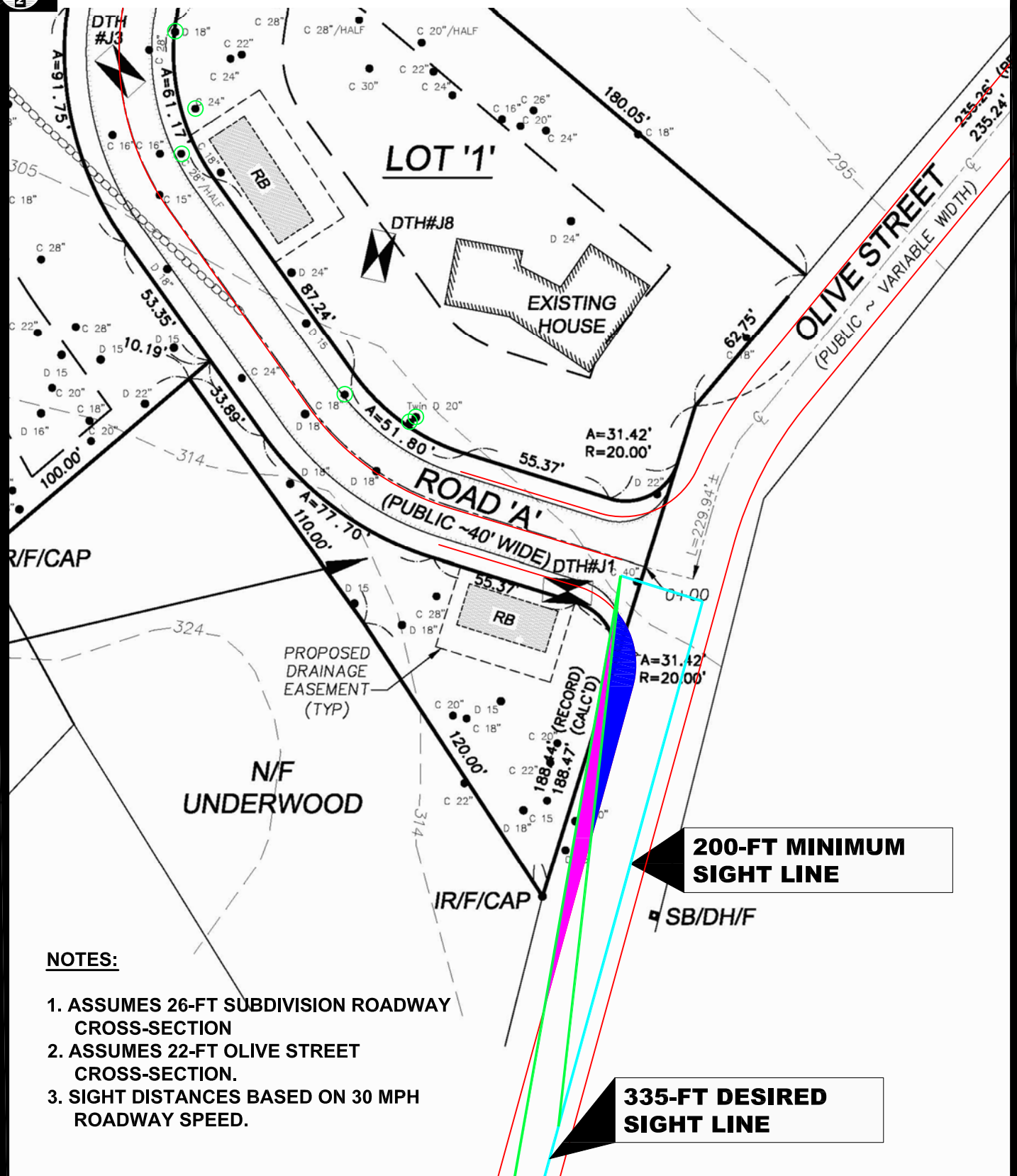


Figure A-1

Sight Distance Triangles



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- Minimum Vegetation Clear Zone
- Desired Vegetation Clear Zone
- Trees Along Subdivision Road to Remove