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Mr. Joseph Laydon
Wayland Town Planner
Town Offices
41 Cochituate Road
Wayland, MA 01778

January 8, 2007

Ref: T0124.02

RE: Traffic Engineering Peer Review – Proposed Town Center Project
Mixed Use Overlay District *Traffic Forum / MEPA Filing Review*

Dear Mr. Laydon:

We understand that the Town of Wayland has been working with the project proponent, Twenty Wayland, LLC, (“Proponent”) to relay comments on the recently filed Environmental Impact Report submitted to the Executive Office of Environmental Affairs (EOEA) - Massachusetts Environmental Policy Act (MEPA) office. We further understand that the Proponent desires to address many of the traffic issues prior to filing the Master Special Permit (MSP) with the Town’s Planning Board. At the Town’s request, TEC, Inc. is providing this comment letter as a summary of observations and issues compiled following our review of the following documents for this project:

- Traffic Impact and Access Study – Wayland Town Center – Wayland, MA prepared by Vanasse & Associates, Inc. (VAI) – Received at TEC 12/8/06
- Memorandum from Kenneth P. Cram, P.E. (VAI) to Mr. Frank Doherty (Travel Time Assessment) – 12/8/06

As part of our preliminary review of the above-referenced documents, we have compiled the following comments based on a review of the Planning Board’s adopted “Guidelines for the Preparation of a Traffic Impact and Access Study¹” and general traffic engineering practice.

Conformance to the Traffic Guidelines for Master Special Permit Submission:

In general, the reports submitted satisfy the types of information suggested for a thorough analysis of traffic and parking associated with the proposed project. However, some of the information provided within the report should be expanded and there are

¹ Issued as Attachment D within the Wayland Planning Board’s Findings and Determination for the Application of Twenty Wayland, LLC for Concept Plan Determination for Mixed-Use Overlay District Project known as the Wayland Town Center Project (11/8/06)

technical questions surrounding the analysis and conclusions of some of the recently collected data.

The following items from the guidelines should be included as elements of study within the formal MSP submission to the Town:

- Item a: The Parking and Loading Study should detail the parking needs for each specific use with a table and the reference to specific rates and and shared parking recommendations within the referenced publications.
- Item f: The source of data for the estimated hourly distribution of site-generated traffic should be noted and provided within the appendix.
- Item i: The retail traffic distribution should include a gravity model assessment of competing retail opportunities in the area. This will confirm the previous distribution estimate based on the traffic volumes on the adjacent roadways.
- Item j: The report should provide supporting information for the site's occupancy within the past five years prior to filing the MSP.
- Item r: The report should provide projected construction cost estimates for the proposed mitigation items.

Travel Time Assessment:

The travel time assessment was performed by VAI following a scoping discussion with TEC. The following comments should be considered by VAI and the Town as part of the MSP submission:

1. The dates of the travel time runs for Routes 4 and 4A should be noted on the data forms provided within the appendix.
2. The report notes that all routes had a minimum of seven travel time runs. However, it appears that Route 4 had only three runs during the weekday evening peak period. This does not present a concern because this represents an eastbound movement, which is contrary to the primary (westbound) commuter flow during this time period. However, the report should be revised to correct this minor discrepancy.
3. The average duration of the Route 4 runs will be higher than what was depicted within the report summary because four of the seven evening runs were taken only to the intersection of Route 126 / Glezen Lane rather than ending at the intersection of Route 20 / School Street in Weston. This will present data that should present Route 4 as a slightly less desirable route than what was summarized.
4. The report does not adequately summarize the comparison of travel times for common points between the various routes. After significant data review, TEC interpreted the travel times for Route 2, 2A, 3, 3A, 4, and 4A from the intersection of Route 126 / Glezen Lane to assess the risk of cut-through traffic along Glezen Lane and Bow Road (see Table 1 on the following page). The weekday morning peak hour has a limited risk of cut-through traffic associated with traffic generated by the proposed development and therefore was not compiled. The potential for



cut-through traffic during the morning peak hour is related to the delays for commuter traffic on Route 20 eastbound, which is summarized within the report.

Table 1: Travel Times To and From Site Driveway and Route 126 / Glezen Lane

<i>Weekday Evening</i>	(Exiting)		(Entering)	
	<u>Northbound</u>	<u>Time (sec)</u>	<u>Southbound</u>	<u>Time (sec)</u>
	Route 2	241	Route 2A	247
	Route 3	247	Route 3A	277
	Route 4	220	Route 4A	257
<i>Saturday Midday</i>	(Exiting)		(Entering)	
	<u>Northbound</u>	<u>Time (sec)</u>	<u>Southbound</u>	<u>Time (sec)</u>
	Route 2	208	Route 2A	217
	Route 3	169	Route 3A	176
	Route 4	217	Route 4A	149

Route 2 represents travel from the site to the northeast via Bow Road and Route 126; Route 3 represents travel from the site via Library Lane and Route 126; Route 4 represents travel via Glezen Lane. The "A" Route suffix represents the reverse flow of the numbered route.

During the weekday evening peak period, travel both to and from the site is quickest via Glezen Lane and Bow Road (Routes 2 and 4) instead of staying of Route 126. Travel to the site during the Saturday midday peak period is slightly quicker by using Glezen Lane (Route 4). The travel time via Route 126 will be reduced following the installation of the proposed traffic signal at the intersection of Routes 27/126 and the suggested change in one-way operation of Library Lane. However, there is a distinct possibility of cut-through traffic for traffic originating from or destined for the northeast.

Some of the options to discourage the cut-through traffic are discussed within the VAI report and other options are presented later within this letter.

5. The travel time summary provided within the VAI report shows that travel to the east (further along Route 20 closer to Route 128) from the site's easterly driveway is quicker via several local roadways instead of traveling south on Routes 27/126 and then turning left onto Route 20 eastbound during the weekday morning peak period. The reverse is true for westbound traffic destined for the site during the weekday evening peak period. However, the report concludes that there is no need to change the original traffic distribution estimates submitted a few days prior even though the local streets can save as much as 2 to 3 minutes for commuters.

Although there is a limit to the amount of traffic that would actually benefit from the use of the potential cut-through routes, TEC has provided a preliminary estimate of a range for traffic volumes based on the data supplied to date:



**Table 2: Estimated Cut-Through Trips from Town Center Project
Using Glezen Lane or Bow Road**

<u>Proposed Land Use</u>	<u>Morning</u>	<u>Evening</u>	<u>Saturday / Sunday</u>
Residential	15-20	20-25	5-10
Retail	10-15	50-75	50-75
Municipal / Office	5-10	25-30	25-30
Total	30-45	95-130	60-115

The totals listed above consider both trips to and from the proposed development; it assumes approximately 25% of the traffic on Route 20 from the east as well as traffic from Route 126 (North) will be attracted to the cut-through routes. This level of traffic is certainly higher than exists today, but it does not appear to be an insurmountable level of traffic to mitigate, especially when considering that they could be distributed via several roadways. VAI proposed several traffic-calming or trip diversionary measures within the TIAS and several are discussed in latter sections of this letter.

Traffic Impact and Access Study (TIAS)

6. *The TIAS presents a thorough compilation of traffic data from MassHighway and the Town of Wayland Police Department as previously requested.*
7. *The reference to sight distance for the proposed site driveway intersections with Routes 20 and 27 suggest the need to keep established set-backs for landscaping. There should be no other features such as walls or signs located to impair sight distance.*
8. *There are noted deficiencies in Intersection Sight Distance (ISD) at the following intersections:*
 - *Route 27 / River Road*
 - *Route 27 / Bow Road*
 - *Route 126 / Moore Road*
 - *Route 27 / Winthrop Road*
 - *Glezen Lane (w) / Training Field Road*
 - *Glezen Lane / Moore Road*
 - *Glen Road / Plain Road*
 - *Plain Road / Decator Road*

The TIAS should document the source of the sight distance obstruction and any recommendations for correction.

9. A summary of the Route 126 speed data should be included within Table 3-6.
10. The data for the intersections of Route 27 / Bow Road and Route 126 / Bow Road do not balance well. This discrepancy will affect the analysis and traffic operations for one of the intersections.



11. The description of the existing conditions at the intersection of Routes 20/27/126 is inaccurate, as the reconstruction of this intersection is now substantially complete. However, it is not a critical element requiring edits to the report because the impacts and subsequent mitigation are based on the difference in traffic operations between the future No-Build and Build conditions.
12. The No-Build condition within the TIAS assumes full access to and from the Route 27 access point. This is not consistent with the current permits for the site and prior local approvals. The MSP study should reflect primary access to and from Route 20 for the re-occupancy of the existing site based on a recent opinion letter issued by the Wayland Town Council.
13. Figure A-6, which pertains to the weekday evening distribution of trips associated with the No-Build Re-Occupancy, is missing from the TIAS Appendix.
14. The origin-destination study data was provided within the TIAS Appendix. However, there was very little description of the methodology of the data collection and the associated analysis. The TIAS attempts to quantify the trips originating / destined for Glezen Lane and Bow Road, but it does not appear to take into account a data point at Route 126 to ascertain the number motorists may travel to/from points further to the northeast. This section should be expanded within the formal MSP submission or addressed within a written response to comments.
15. The TIAS assumes a low percentage of traffic that will “cut through” Glezen Lane and Bow Road based on the recently submitted Travel Time Assessment. The traffic volumes should be reevaluated to more appropriately weigh the paths of lower travel time.
16. VAI should provide the reasoning why the number of site-generated trips using Glezen Lane and Bow Road do not change within the traffic volume networks for Access Alternatives A and B.
17. The new “main” street is expected to accommodate approximately 100 diverted (northbound) vehicles that would otherwise turn left from Route 20 eastbound to Routes 27/126 northbound. Most of these motorists are likely bound for Route 126 North or other roadways to the northeast rather than Route 27 North because motorists on Route 20 eastbound have the option of using Old County Road to access Route 27 North. The credit described above may be lower because many of the significant trip generators along Route 20 between the Site Driveway and Routes 27/126 are on the south side of Route 20 and would require a left-turn movement across Route 20 traffic to access the proposed “main” street.
18. The traffic volumes shown within Figures 3-26 through 3-29 (internal site volumes) do not match the traffic volumes shown for Route 27 / Site Driveway and Route 20 / Site Driveway as shown within Figures 3-30 through 3-33 (study area volumes). VAI should confirm the correct turning movement numbers and correct the appropriate figures.
19. The report includes several suggestions for traffic calming along Glezen Lane and Bow Road. However, it should also include an analysis of the impacts of the diverted traffic associated with changes such as the prohibition of left-turns on Route 27 southbound (onto both Glezen Lane and Bow Road) during the morning peak hour. These suggestions will have a significant impact on the intersections of Routes 27/126 and Routes 20/27/126.



Discussion of Site Access and Proposed Mitigation

20. TEC generally concurs with the proposed geometry and traffic control for the intersection of Route 20 / Site Driveway (Street 'A'), whereby the Proponent will realign and channelize the driveway for Russell's Garden Center Driveway in cooperation with the property owner. It appears, however, that the Russell's Driveway should be designed with a single entrance lane. The analysis shows excessive through queues for the westbound movement on Route 20. The Proponent should consider a left-turn lane, one through lane, and one shared through-right lane on the westbound approach to improve the through capacity and reduce the risk of these queues blocking commercial driveways just east of the site driveway.
21. The sidewalks proposed near the intersection of Route 20 / Street "A" should be extended to the existing sidewalk network on the north side of Route 20, located near the proposed limit of work. The design should consider a signalized crosswalk across Route 20 between the site and the Russell's Garden Center property.
22. TEC concurs with the proposed lane geometry for the intersection of Old Sudbury Road (Route 27) / Street 'A'. VAI has appropriately noted that the consolidation of the driveway(s) for Wayland Commons Residential Development is a critical component of the design for this location. As mentioned in previous review letters, the design for this access point should include sidewalk construction along Route 27 between the site driveway and Route 126. The concept mitigation plans should be revised to address this important pedestrian connection.
23. The Town can consider a condition of approval that gives the Planning Board the option to require the Proponent to convert the site exit onto Route 27 to a right-turn-only driveway if the level of cut-through traffic exceeds
24. During the time that the intersection of Route 27/ Site Driveway is unsignalized, the striped island in front of the southerly Wayland Commons driveway should be broken to allow left turns from the driveway.
25. The intersection of Route 27/126 meets the thresholds for the installation of a traffic signal. The Concord Road (Route 126) approach will receive the greatest benefit from this traffic control change. Once signalized, there will be newly introduced delays for Route 27/126 northbound. The analyses currently assume an additional right-turn lane for this approach all the way south to Millbrook Road. This lane use is not currently shown on Figure 3-40. TEC recommends that the Proponent investigate a northbound right-turn lane at this location that allows Route 126 northbound vehicles to bypass the queued vehicles bound for Route 27 northbound in the through lane.
26. Section 3.5.2.5 describes the need for queue detection at the intersection of Route 27/126. TEC concurs with this recommendation, but the signal should not be designed to keep the Route 27 / Site Driveway intersection clear. The pre-emption should be focused on maintaining flow along the relatively short Route 27/126 link between Route 27 and Route 20. The coordination will likely be controlled by MassHighway because they maintain jurisdiction over the intersection of Route 20 / 27 / 126.



27. VAI should present calibrated simulations of the traffic operations at Routes 20 / 27 / 126 that compare the existing cross-section with the proposed four-lane section for Route 20. This can be accomplished easily based on the Synchro/ SimTraffic analysis files already completed for the project. The two through lanes in each direction will be required to merge to one lane immediately after the intersection. The traffic operations at the intersection will be significantly limited by the 150-200 foot segment to process two westbound through lanes on the west side of the intersection. This analysis will require additional coordination between TEC and VAI.
28. The Route 27/126 northbound approach to Route 20 has one short left-turn lane that is often blocked by a high volume of through and right-turning vehicles. There are excessive queues on this approach under existing conditions, especially during the weekday evening peak hour. TEC recommends that VAI investigate the feasibility of extending the northbound left-turn lane.
29. VAI recommends that the intersection of Old Sudbury Road (Route 27) / Glezen Lane be modified to remove the traffic island and install a new traffic signal. TEC does not recommend a traffic signal at this location because it will not likely exceed the minimum thresholds mandated within the Manual on Uniform Traffic Control Devices (MUTCD). Furthermore, the introduction of a traffic signal at this location would likely encourage additional cut-through traffic along Glezen Lane. Although it was not discussed within the TIAS, the volume of traffic turning left from Route 27 southbound (onto Glezen Lane) far exceeds the thresholds for the introduction of an exclusive left-turn lane. This should be considered by the Proponent and the Town as a potential safety improvement even though the proposed development is not expected to add traffic to this movement.
30. VAI recommends that Bow Road be either changed to a dead-end roadway or modified to restrict it to a one-way road. However, TEC recommends that the Town consider prohibiting left-turns from the Bow Road approaches to both Route 27 and 126 along with traffic islands to reinforce right-turn maneuvers. This will eliminate the potential for cut-through traffic associated with the proposed development, but will still allow full access for vehicles desiring to enter Bow Road from Routes 27 and 126. This will require enforcement of the regulatory signs through the Wayland Police Department.
31. Figure 3-44 depicts the traffic control recommendations for the multiple intersections that comprise the junction of Glezen Lane and Training Field Road. While this proposal reduces the number of conflict points for traffic in this area by creating a one-way couplet of roadways, it may encourage speed for traffic movements on Glezen Lane westbound. TEC recommends that the Town consider closing the northerly edge of the triangle to through traffic in both directions and creating one defined intersection for Glezen Lane / Training Field Road in the southeasterly corner of the triangle. This will increase travel time for Glezen Lane traffic and significantly lower the speed potential along this section of Glezen Lane.



32. Figure 3-45 presents conceptual changes to Glezen Lane and Moore Road close to their intersections with Route 126. There is insufficient analysis performed at this time to evaluate the merits of this proposal. Undoubtedly, there will be secondary impacts to Claypit Hill Road, Training Field Road, Bow Road, and the intersection of Routes 27/ 126.
33. The introduction of speed humps on local roadways will require a review of sight distance as well as drainage patterns to avoid ponding. We recommend a field meeting between the Proponent, VAI, TEC, Wayland Highway, and the Planning Department to investigate potential locations.
34. The Proponent has offered several Transportation Demand Management (TDM) measures to reduce the need for residents to own and operate their own vehicle. These measures should be incorporated within the future conditions of approval and should require annual documentation of the use of the program.

The comments provided within this letter are not associated with a formal application to the Planning Board for a Master Special Permit. Once the application is submitted, the Planning Board should confirm that the items listed within this letter are submitted for review whether as part of an update report or through a response-to-comments memorandum that can append the recently submitted traffic report.

If you have any questions regarding our preliminary review of the referenced materials, please do not hesitate to contact me at (978) 794-1792 x145.

Sincerely,
TEC, Inc.



Kevin R. Dandrade, PE, PTOE
Senior Engineer

cc: Lynne Dunbrack, Chair, Planning Board
Mark Santangelo, Chair, Board of Road Commissioners (by e-mail)
Stephen Kadlik, Highway Director of Operations (by e-mail)
Frederick Turkington, Town Manager (by e-mail)
Joseph Nolan, Chair, Board of Selectmen (by e-mail)
Bill Whitney, Board of Selectmen (by e-mail)
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