

March 26, 2025

NEX-2020145.00

Mr. Eric Rumsey, Town Planner
Town of Oxford
325 Main Street
Oxford, MA 01540

SUBJECT: Response to TEC Traffic Engineering Peer Review # 2 – March 21, 2025
Proposed Residential Development
Ashworth Hills – Oxford, Massachusetts

Dear Mr. Rumsey:

Greenman-Pedersen, Inc. (GPI) has prepared this Response to Comments (RTC) letter to respond to the traffic study comments provided in the second peer review letter from TEC, dated March 21, 2025 regarding the *Traffic Impact and Access Study* (TIAS) prepared for the proposed residential development to be located 0 Ashworth Drive & 191 Southbridge Road in Oxford, Massachusetts. We have reviewed the outstanding comment and this letter has been prepared to summarize our response. The outstanding initial site plan comments will be responded to under separate cover by Turning Point Engineering. A copy of the TEC review letter is attached for reference.

Traffic Study

Comment 9: *TEC Follow-up Comment 3/21/2025: TEC agrees with MassDOT's determination that it is appropriate to include Ashworth Hills as part of the internal capture calculations. However, TEC believes it may be unreasonable to utilize an internal capture rate as high as shown where the development is located along a corridor with a significant number of alternative retail and restaurant opportunities already established. For instance, the utilization of a 37% overall internal capture rate in the weekday evening peak hour suggests that more than 1/3 of all site traffic (mainly resident to retail / restaurant) is sharing uses on an everyday basis including 58% of the resident traffic. Put another way, 58% of resident traffic goes to the same retail and/or restaurant on a daily basis. The internal capture rate, although a calculated value, may not represent the size and scope of the particular development.*

A proximity factor takes into account that as the distance increases to an internal destination the desire to walk to a location decreases and as the mode shifts from walking to driving other alternative destinations outside of the development becomes more desirable as the travel distance becomes less of a deterrent due to the change in mode. TEC estimates that based on an average travel distance of over 2,000 ft between the residences and the internal commercial destinations the internal capture for residential origins and destinations should be reduced by at least 80% prior to balancing based on Figure 6.4. of the ITE Trip Generation 3rd Edition. TEC Estimates that of the 109 trips proposed as internal trips during the evening peak hour that involve residential users 77 of those should be considered external trips with 32 trips remaining internal providing a capture rate of 17% as opposed to the 58% currently shown with respect to residential trips.

TEC recognizes that the majority of the impact of an additional 77 trips during the evening peak hour would be to the users of the development and to Rt. 20, which is under MassDOT's jurisdiction. We further recognize that MassDOT has approved of the methodology used. As such TEC notes that the impact of the incremental increase in site-

generated traffic on roads under the jurisdiction of the Town of Oxford would not be significant.

As part of the Applicant's planned mitigation and related phasing, TEC recommends that the Town of Oxford provides written correspondence encouraging MassDOT to permit Phase 2 of the proposed mitigation, including the signalization of the Western Site Driveway, as early as practical in the construction. The right turn movement out of the Western Site Driveway is already expected to operate at a level of service F while under stop control, as shown in Tables A-3 and A-4 of the response letter from GPI, and with the inclusion of these additional trips the delay for that approach would further increase.

Response 9: **Comment acknowledged. GPI has been working with the MassDOT District 3 Office on the permitting of the project. All correspondence should be addressed to the MassDOT District 3 Permits Engineer, Christopher Silva (christopher.p.silva@dot.state.ma.us).**

We hope this letter adequately addresses any outstanding traffic related matters. Should you have any questions or require additional information, please feel free to contact me directly at (978) 570-2968 or hmonticup@gpinet.com.

Sincerely,

GREENMAN-PEDERSEN, INC.



Heather L. Monticup, P.E.
Senior Vice President / Director of Land Development
44 Stiles Road
Salem, New Hampshire 03079

enclosure(s)

1. TEC Peer Review Letter – March 21, 2025

cc: (via email)

Kevin Dandrade, TEC
Chad Boardman, Eastland Partners
James Bernardino, Turning Point Engineering
Travis Brown, Turning Point Engineering

Town of Oxford
Attn: Eric Rumsey, Town Planner
325 Main Street
Oxford, MA 01540

March 21, 2025

Ref. T1603

Re: Proposed Residential Development – Ashworth Hills – Oxford, MA
Traffic Engineering Peer Review #2

Dear Mr. Rumsey:

On behalf of the Town of Oxford, TEC, Inc. (TEC) has reviewed supplemental documents as part of a follow-up traffic engineering peer review for a proposed residential development known as *Ashworth Hills* the development is proposed to consist of 320 residential duplex style units. The Applicant proposes access to Ashworth Drive on the northern side of the development, to Thayer Pond Drive on the western side of the development as enter only, and to Southbridge Road (Rt. 20) on the southern side of the development. The development includes multiple two-lane roadways throughout the development area.

TEC reviewed the following new materials as part of our traffic engineering review:

- *Response to TEC Initial Traffic Engineering Peer Review – February 12, 2025 – Proposed Residential Development – Ashworth Hills – Oxford, Massachusetts;* prepared by Greenman-Pederson, Inc. dated March 3, 2025;
- *Response to TEC-Traffic Peer Review Comments – Ashworth Hills, Oxford MA – Traffic Engineering Peer Review;* prepared by Turning Point Engineering dated March 5, 2025; and
- *Ashworth Hills Residential Development – 0 Ashworth Drive & 191 Southbridge Road Oxford, Massachusetts – REV. 4;* prepared by Turning Point Engineering dated March 5, 2025.

The Traffic Impact and Access Study (Traffic Study) includes the following (3) additional future developments:

- *Ashworth Commons* - A commercial development which proposes 160,000 square feet of commercial space located south of Ashworth Hills adjacent to Southbridge Road and utilizing the same proposed access point to Southbridge Road (Rt. 20);
- *The Reserve* – A residential development which proposes 324 residential units in (12) 3-story buildings located east of Ashworth Hills in Auburn, MA with access independent of Ashworth Hills to Southbridge Street (Rt. 20) via Blaker Street;
- *Auburn Condos* – A residential development which proposes 8 residential duplex units located east of Ashworth Hills in Auburn, MA which shares the same access to Southbridge Street (Rt. 20) as The Reserve.

For brevity, this letter has been limited to only those GPI and Turning Point Engineering responses that required a follow-up comment based on TEC's initial February 12, 2025 peer review letter. For consistency, TEC maintained the original numbering system for the comments. We offer the following follow-up comments and new comments for the Zoning Board of Appeals' consideration:

Traffic Study

9. Internal Capture percentages were calculated based on the ITE Trip Generation 3rd Edition. The internal capture summaries demonstrate internal capture rates for the residential use (the Ashworth Hills portion of the development) that appear to be high, such as a residential internal capture rate for the weekday evening peak hour of 58% for residential trips for an overall internal capture rate of 37% for the development.
 - a. Applicant should confirm calculations. Although retail and restaurant tenants are not defined in the study TEC believes it may be unreasonable to have internal capture percentages as high as shown where the development is located along a corridor with a significant number of alternative retail and restaurant opportunities already established.
 - b. Proximity adjustment factors as described in section 6.5.4 of the ITE Trip Generation 3rd Edition should be utilized for the internal capture demand rates for the evening peak hour given the proposed distance between the centroids of the residential and commercial areas.

Applicant's Response: Responses are provided below regarding internal capture.

- a. *GPI prepared a TIAS dated August 17, 2022 for the Draft Environmental Impact Report (DEIR) prepared for the project. In that TIAS, GPI utilized trip rates from the ITE Trip Generation Manual, 10th Edition (most recent at the time of running the calculations) and did not include Ashworth Hills in the internal capture calculations. For reference, relevant pages from the August 2022 TIAS are attached to this letter, including the Trip Generation section, Site-Generated Networks, Capacity & Queue Analysis tables, and Trip Generation calculations.*

As part of the comments received from MassDOT on the DEIR dated October 27, 2022, MassDOT stated, "it's not clear why the Ashworth Hills residential component wasn't included in the internal trip calculations since they have shared access with the Ashworth Comments (commercial) development." Based on the comments in the letter, as well as a meeting held with MassDOT on December 13, 2022 requesting the use of the 11th Edition of the Trip Generation Manual, GPI re-examined the trip generation for the FEIR and this included incorporating Ashworth Hills into the internal capture calculations. MassDOT has since deemed the trip generation methodology acceptable.

- b. *The ITE Trip Generation Handbook states, "The proximity adjustment is equal to 1.0 for land uses in close proximity, and declines as distances between land uses increases." However, the proximity adjustment factors are based on average walking distance between land uses. By implementing internal capture, we are not suggesting that there will be a reduction in trips between Ashworth Hills and*

Ashworth Commons due to patrons walking between the two developments. Should a resident of Ashworth Hills travel to Ashworth Commons and back home (even by vehicle), this is an internal trip within the internal driveways of the project and is not seen as a trip outside the internal roadway network (i.e. onto US Route 20). It is understood that this peer review is for the Ashworth Hills development only, and the TIAS was prepared to include Ashworth Commons, The Reserve, and Auburn Condos. Had the TIAS been prepared for Ashworth Hills alone, then it is agreed upon that a proximity adjustment factor should be applied to represent the trips to/from the internal Ashworth Hills driveway (driveway between Ashworth Commons and Ashworth Hills), however, the driveway analyzed as part of the study extends beyond the Ashworth Hills internal driveway to the intersection with Route 20, which is inclusive of Ashworth Commons traffic as well.

TEC Follow-up Comment 3/21/2025: TEC agrees with MassDOT's determination that it is appropriate to include Ashworth Hills as part of the internal capture calculations. However, TEC believes it may be unreasonable to utilize an internal capture rate as high as shown where the development is located along a corridor with a significant number of alternative retail and restaurant opportunities already established. For instance, the utilization of a 37% overall internal capture rate in the weekday evening peak hour suggests that more than 1/3 of all site traffic (mainly resident to retail / restaurant) is sharing uses on an everyday basis including 58% of the resident traffic. Put another way, 58% of resident traffic goes to the same retail and/or restaurant on a daily basis. The internal capture rate, although a calculated value, may not represent the size and scope of the particular development.

A proximity factor takes into account that as the distance increases to an internal destination the desire to walk to a location decreases and as the mode shifts from walking to driving other alternative destinations outside of the development becomes more desirable as the travel distance becomes less of a deterrent due to the change in mode. TEC estimates that based on an average travel distance of over 2,000 ft between the residences and the internal commercial destinations the internal capture for residential origins and destinations should be reduced by at least 80% prior to balancing based on Figure 6.4. of the ITE Trip Generation 3rd Edition. TEC Estimates that of the 109 trips proposed as internal trips during the evening peak hour that involve residential users 77 of those should be considered external trips with 32 trips remaining internal providing a capture rate of 17% as opposed to the 58% currently shown with respect to residential trips.

TEC recognizes that the majority of the impact of an additional 77 trips during the evening peak hour would be to the users of the development and to Rt. 20, which is under MassDOT's jurisdiction. We further recognize that MassDOT has approved of the methodology used. As such TEC notes that the impact of the incremental increase in site-generated traffic on roads under the jurisdiction of the Town of Oxford would not be significant.

As part of the Applicant's planned mitigation and related phasing, TEC recommends that the Town of Oxford provides written correspondence

encouraging MassDOT to permit Phase 2 of the proposed mitigation, including the signalization of the Western Site Driveway, as early as practical in the construction. The right turn movement out of the Western Site Driveway is already expected to operate at a level of service F while under stop control, as shown in Tables A-3 and A-4 of the response letter from GPI, and with the inclusion of these additional trips the delay for that approach would further increase.

Initial Site Plan Comments

17. A truck turning analysis should be provided for the Oxford Fire Department design vehicle and a large single-unit (SU) truck (representative of a moving van, trash/refuse truck or similar). The turning analysis should demonstrate that the subject vehicles can access and circulate within the project site in an unimpeded manner.

Applicant's Response: Please refer to the revised site plan's added sheets C11.1-C11.4 "Truck Turning and Sight Line Plan". The noted plan models a large ladder truck fire apparatus appropriately navigating the site (primarily right turns within the site).

TEC Follow-up Comment 3/21/2025: TEC reviewed the truck turns and finds that the comment has been reasonably addressed as the truck sweeps can clearly be performed within the proposed roadway surface. TEC defers to the Oxford Fire Department to confirm if the design vehicle used was appropriate.

18. A 3-5 ft buffer between the roadway and shared use path should be considered where feasible for increased pedestrian safety.

Applicant's Response: Incorporating a buffer strip was considered, however not implemented as the intent of the designs was to minimize the footprint of the overall development impact and maximize the proposed dedicated open space and nature walking trail areas. The shared use path's layouts/designs (widths/alignments) were developed to be consistent with designs of the RT20 corridor shared use paths.

TEC Follow-up Comment 3/21/2025: TEC recognizes the intent to minimize the footprint of the path through most of the proposed development. TEC continues to recommend a 3 ft to 5 ft buffer along Road C between Southbridge Road and Road E, between the curb line and the front edge of the shared use path because vehicles may travel faster along this stretch of road where there is no density of housing. A grass buffer would improve safety and user comfort for both pedestrians and bicyclists and could be considered to compliment the intent to provide open natural space.

TEC also recommends that the Town of Oxford coordinate with MassDOT to ensure that the Route 20 project provides adequate separation for the safety and comfort of shared use path users as this segment of shared use path will connect the new residents of these developments to major commercial areas to the east and may act as a connection to or possible segment of the French River Rail Trail. Although TEC and the Town of Oxford are early in the planning process for future trail rail connections, TEC recommends a more robust design of this on-road shared use path connection. TEC recommends a minimum 5-foot buffer

between the Route 20 curb line and the front edge of the path given the operating speed for traffic along Route 20 westbound in this area.

19. Trees should be located a minimum of 3 feet away from the shared use path to provide an appropriate clear distance for cyclists. Trees should be located a minimum of 2 feet away from sidewalks to minimize future root damage to sidewalks that may limit accessibility.

Applicant's Response: The Typical Roadway Cross section was updated to provide the recommended separation notes for the street trees, see sheet C-8.1. Also, an identical note was added to each of the landscape sheets, see sheets C9.0-C9.4. Lastly, the locations of street trees on the site plan were reviewed and updated to assure the minimum recommended separations are provided.

TEC Follow-up Comment 3/21/2025: Updated plans show that the appropriate notes have been added and that trees throughout the project have generally been located an appropriate distance from the sidewalks and shared use paths. Trees between Station 0+00 and 2+50 of Road A on the left side of the roadway are still located approximately 1 foot from the edge of the shared use path. To prevent future damage to the shared use path or failure of the proposed trees to grow either the proposed trees should be removed or bicycles should be directed on to the street west of the access gate and the shared use path width should be reduced to the width of a sidewalk between the access gate and the point where the shared use path terminates at Ashworth Drive.

20. The applicant should consider an additional road name for one or more segments of Road B to avoid having 3 intersections between Road A and Road B that could lead to confusion for visitors and first responders.

Applicant's Response: The Applicant agrees that modified road names are/will be necessary to avoid confusion of first responders as well as visitors. The Applicant respectfully requests that the Board make a condition of the Site Plan Review Approval that requires the Applicant to coordinate final road names with the appropriate Town Officials prior to the issuance of any building/occupancy permits.

TEC Follow-up Comment 3/21/2025: TEC recommends updating site plans to show Road B (east of Road C) as Road H on site plans until final names are determined. TEC supports the request for a condition that the applicant coordinate final road names with the appropriate town officials prior to the issuance of any building permits.

32. Sidewalks should be considered on both sides of the proposed roadways to provide accessible pedestrian paths of travel to each unit.

Applicant's Response: The option of installing sidewalks on both sides of the street was considered during the design process, however not implemented as the intent of the designs was to minimize the footprint of the overall development impact and maximize the proposed dedicated open space and nature walking trail areas. The Applicant believes that one sidewalk as proposed will provide safe and appropriate pedestrian access throughout the site.

TEC Follow-up Comment 3/21/2025: Sidewalks along both sides of the roadway are preferred to increase pedestrian connections, safety, and comfort. TEC

defers to the Planning Board to determine if sidewalks on one side of the roadways is acceptable.

35. The applicant should clarify the proposed design speed for each roadway within the development and verify that the radius for each proposed horizontal curve and k value for each proposed vertical curve provides sufficient stopping sight distance for the design speed. Traffic calming measures should be considered for lower design speeds.

Applicant's Response: Below is the summary of the design speeds for the proposed roadway system along with the proposed minimum stopping sight distances, centerline radius and k values provided in the designs. Designs have been verified with one minor revision required, that being a modification to the sag curve Road B station Sta 32+00 +/-, where the vertical curve length was lengthened to provide the minimum k value.

Roads A, B (station 12+00 to end), C, D, E

- Design Speed = 30 MPH
- Min. Stopping Sight Distance required/provided = 200'
- Min. C.L. Radius required = 200'; Provided = 200'
- Min. k values
 - Sag Required/provided = 37
 - Crest Required/provided = 19

Roads B (station 0+00 to 12+00), F and G

- Design Speed = 25 MPH
- Min. Stopping Sight Distance required/provided = 155'
- Min. C.L. Radius required = 125'; Provided = 150'
- Min. k values
 - Sag Required/provided = 26 ; provided = 37
 - Crest Required = 12, provided=19

Traffic Calming/Mitigation for Lower Speeds:

Road A:

- Proposed access to Ashworth to be emergency gated preventing potential for cut through traffic.

Road B:

- Added Speed Limit signs (20 mph) to the approach (both directions) of this section of roadway.
- Incorporated reverse curves to assist with calming of traffic
- Added all way stop at Road B (12+00) and Road A.

Road C:

- Added Raised Intersection at intersection with Road E.
- Added pedestrian crossing signs

Road E:

- Raised intersection with Road C
- Pedestrian Crossing Signs

Road F:

- *Gated roadway-dead end*
- *Serving only 12 residents.*

Road G:

- *Cul-de-sac -dead end*

TEC Follow-up Comment 3/21/2025: MassDOT's Project Development and Design Guide Table 4-3 sets the minimum design radius for a road with a 25-mph design speed with no superelevation at 200' and a road with a 30-mph design speed with no superelevation at 335', see below. TEC recommends:

- Reducing the design speed of all roadways to 25 mph.
- Increasing curve radius to a minimum of 200' if practical. This may include Road B near Station 7+50, Road B near Station 9+50, and Road C near Station 1+50.
- Adding roadway curve warning signs (W1-1) and advisory speed plaques (W13-1p) where increasing the minimum curve radius to 200' may not be practical. This may include Road B near Station 2+50.
- Noting that dead end or Cul-de-sac roads such as Road G are expected to see lower speeds that would be reasonably accommodated by a 150' curve radius as proposed; However, curve warning signs may still be considered.

Except from MassDOT's Project Development & Design Guide:

For roadways in areas with design speeds of 45 mph and below, Table 4-3 provides the minimum radii for 2.0 percent, 0 percent, and -2.0 percent (no superelevation) rates of superelevation. The 2.0 percent column represents the situation where the normal pavement crown is replaced with a consistent 2.0 percent cross slope.

Table 4-3: Minimum Radius (ft) with Low or No Superelevation

Design Speed (MPH)	e = -2.0%	e = 0%	e = 2.0%
15	50	50	45
20	110	100	95
25	200	185	170
30	335	300	275
35	510	455	410
40	765	670	595
45	1040	900	795

Note: Radii are rounded up to the nearest 5 feet for e = percent superelevation. For design speeds less than 35 mph, designers should avoid using superelevation to the extent possible.

Source: Adapted from A Policy on Geometric Design of Highways and Streets, AASHTO, 2018 Chapter 3 Elements of Design, Table 3-13

36. All sight line triangles should be shown for all proposed intersections on the Site Plans based on AASHTO criteria along with a general note in the plan set to indicate: "Signs, landscaping and other features located within sight triangle areas shall be designed, installed, and maintained so as not to exceed 2.5- feet in height. Snow windrows located within sight triangle areas that exceed 36 inches in height or that would otherwise inhibit sight lines shall be promptly removed."

Applicant's Response: Refer to Site Plans, sheet C4.1-C-11 and the Truck Turning and Sight Line Plans sheets C11.1thru C11.4. Sight Lines and the appropriate notes have been added.

TEC Follow-up Comment 3/21/2025: The desirable sight lines demonstrated on the Sheets C11.1thru C11.4 show multiple locations where trees and driveways, where parked vehicles may become an obstruction, are located within the desired sight triangles. The desired sight distances used ranged from 290' to 335' and are appropriate lengths for not impeding the flow of traffic on the uncontrolled approaches as designed. However, where traffic efficiency is not a critical factor for the internal roads within the residential development, the minimum safe stopping sight distance may be used for safe operations. For a 25-mph design speed the minimum stopping sight distance would be between 143' and 165' for the grades proposed for this development (PDDG Table 3-9). TEC reviewed the revised plans and notes that the following changes would allow the project to sufficiently satisfy the minimum safety-related sight lines at each intersection:

- Reducing the design speed of all roadways to 25 mph
- Removing or relocating the proposed street trees at:
 - Road A Station 8+30 – Right Side (relative to alignment direction)
 - Road E Station 2+50 – Right Side
 - Road E Station 4+00 – Right Side
 - Road C Station 20+00 – Left Side
 - Road C Station 21+40 – Left Side

Please do not hesitate to contact us directly if you have any questions concerning this peer review at 978-794-1792. Thank you for your consideration.

Sincerely,
TEC, Inc.
"The Engineering Corporation"



John D. Dixon, EIT
Senior Transportation Designer



Kevin R. Dandrade, P.E., PTOE
Principal