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

February 12, 2025

Ref. T1603

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

Dear Mr. Rumsey:

On behalf of the Town of Oxford, TEC, Inc. (TEC) has reviewed documents as part of the 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 materials as part of our traffic engineering review:

- *Traffic Impact and Access Study – The Reserve – Oxford/Auburn, Massachusetts Prepared for Eastland Partners, Inc.*; prepared by Greenman-Pederson, Inc. dated November 1, 2024; and
- *Ashworth Hills Residential Development – 0 Ashworth Drive & 191 Southbridge Road Oxford, Massachusetts;* prepared by Turning Point Engineering dated November 15, 2024.

The Traffic Impact and Access Study (the 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.

TEC completed a review of these documents for the Town of Oxford and provides the following transportation-related comments for your consideration during the Town's review of this application.

Traffic Study

1. The Traffic Study includes the following intersections within the study area in the town of Oxford:

    - US Route 20 (Southbridge Road) at Route 56 (Leicester Street)
    - US Route 20 (Southbridge Road) at Thayer Pond Drive
    - US Route 20 (Southbridge Road/ Southbridge Street) at Route 12 (Main Street).

    The Traffic Study also includes the following intersections within the study area in the town of Auburn:

    - US Route 20 (Southbridge Street) at Albert Street / Hill Street
    - US Route 20 (Southbridge Street/ Washington Street) at Route 12 (Southbridge Street)
    - Route 12 (Southbridge Street) at West Street / Plaza Driveway
    - Route 12 Westbound (Southbridge Street) at Interstate-90 (I-90) Off-Ramp Merge
    - Route 12 Eastbound (Southbridge Street) Weave between I-90 Off-Ramp and I-90 On-Ramp.

    Based on the scale of the planned redevelopment and the expected trip generation, TEC concurs with the Applicant's study area. *No response required.*

2. The Applicant's engineer performed traffic volume turning movement counts (TMC) at the study intersections from 7-9 AM and 4-6 PM on Thursday May 12, 2022 and Thursday Oct. 26, 2023 when schools were in session, and 11am – 2pm on Saturday May 14, 2022 and October 28, 2023. TEC concurs that the selected time periods are appropriate as the peak hours of residential developments typically overlap with the peak commuting hours of the adjacent street system. *No response required.*

3. A seasonal adjustment factor was not applied to the TMC volumes as May and October have higher than average volumes based on the MassDOT 2022 and 2023 Weekday Seasonal Factors. A COVID adjustment factors was not included, COVID adjustment factors are generally not necessary for traffic counts collected after March of 2022. *No response required.*

4. The Applicant's engineer performed an automatic traffic recorder (ATR) count on Southbridge Road (Rt. 20) near the site of the proposed Western Commercial driveway on Thursday Jan 19, 2023, and Saturday Jan 21, 2023. A seasonal adjustment factor of 1.05 was selected for January from the MassDOT 2023 Weekday Seasonal Factors to increase the traffic volumes to account for lower-than-average traffic volumes in January. The factor was selected for an *Urban – Other Principal Arterial* (U-3) designation. TEC concours with the use of this seasonal adjustment factor. *No response required.*

5. Motor vehicle crash data for each study area intersection is presented in the assessment. The crash data indicates the number, type, and severity of crashes at the study area intersections between 2013 and 2017 obtained from MassDOT. Review of the data indicates that relevant crashes are included for the study intersections. The crash rates provided show a crash rate higher than the state average for the

intersection of Southbridge Road Rt. 20 at Leicester Street Rt. 56, a road safety audit for this intersection was conducted in 2014. All other study intersections had a crash rate below the statewide and district averages. *No response required.*

6. To assess roadway operations and safety for the proposed site driveways the applicant provided sight distances including stopping sight distances (minimum) and intersection sight distances (preferred). These calculations involved the use of roadway travel speeds, typically the 85th percentile speed. The ATR data collected on Southbridge Road (Rt. 20) provided an 85th percentile speed of 51mph for Sturbridge Road.

    a. Sight distance for the western commercial driveway at Southbridge Road utilizes the 85th percentile Speed on Southbridge Road for the Western Commercial driveway. The minimum and preferred sight distances at this location are met for stop controlled right turn only conditions and are met for a signalized intersection. Sight distance for a stop controlled left turn out of this site driveway was not provided. A permanent median to prohibit left turns from the Western Commercial driveway is proposed as part of a MassDOT project. *No response required.*

    b. Sight distance for the eastern commercial driveway at Sturbridge Road did not utilize the 85th percentile speed in determining sight distances utilizing instead the posted speed limit of 45 mph. The Applicant's traffic engineer documented an available sight distance of 395 feet looking to the left (east) of the proposed driveway. This available sight distance satisfies the minimum 375-foot stopping sight distance required for 45 mph roadway but does not satisfy the stopping sight distance of 440 feet for the 51 mph 85th percentile speed. The preferred sight distance for stop controlled right turns at this intersection is 480 feet (per MassDOT PDDG Table 3-13). The applicant team should utilize the 85th percentile speed established by the ATR (51 MPH) or alternatively a separate ATR could be conducted at the driveway location to confirm a lower 85th percentile speed for westbound vehicles. The applicant should consider restricting the driveway to entering traffic only.

    c. Sight distance for the sight driveway at Ashworth Drive utilized an assumed travel speed of 27 MPH TEC agrees that this is a conservative speed assumption. The available sight distance of 330-feet for right turns meets both the minimum and preferred sight distances. The available sight distance to the north of the intersection for left turns does not meet. TEC agrees that left turns on to the dead-end portion of Ashworth Drive are not likely to occur with regularity and also notes that the sight distance minimum for left turns is met for travel speeds of 25mph or less on Ashworth Street. A left turn restriction for vehicles leaving the sight driveway may be considered.

    d. Sight lines at the existing intersection of Ashworth Drive at Comminsville Road and Rochdale Street should be assessed to ensure that the existing sight distances are sufficient as an increase in volume may encourage higher risk maneuverers.

7. The background growth rate of 1.0% per year was applied to the 2022 and 2023 existing volumes to generate the 2030 future year volumes to be consistent with recent traffic studies in the area. TEC reviewed Historic Traffic Data in the area and found

that traffic volumes are generally decreasing since 2016 therefore a 1.0% per year growth rate is considered a conservative growth rate. *No response required.*

8. Site trip generation calculations for the Ashworth Hills 320-condominum units was generated based on the ITE *Trip Generation Manual, 11th Edition,* Land Use Code (LUC) 215 – Single Family Attached Housing), TEC concurs with this methodology and selection of LUC 215 for the buildings proposed as the ITE *Trip Generation Manual, 11th Edition* is an industry standard. TEC concurs with the trip generation provided in the appendix noting that table 5 and 7 in the traffic study shows volumes that have been reduced based on internal capture, see comment 9. Site trip generation calculations for the three other portions of the development were not examined as part of this review plans for these additional developments should be verified to determine the accuracy of floor areas, number of units, and land use types utilized. For the sake of reviewing the traffic impacts of Ashworth Hills the trips generated by the additional developments are assumed to be accurate.

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.

10. The traffic generated by the Ashworth Hills portion of the proposed project was distributed to the existing roadway network based on United States Census Bureau 2011-2015 Journey-to-Work information. This is an appropriate method for a residential development. TEC concurs with the distribution of the trips generated by the Ashworth Hills portion of the development. *No response required.*

11. The trip distribution from the Project to and from the northerly segment of Ashworth Drive appears low. The Applicant's team should assess the potential for residential trips from the northerly portion of the development to use Rochdale Street and West Street to access Route 20 eastbound through the traffic signal at Route 20 / West Street during the interim access scenario that does not include a signalized site driveway at the intersection of Route 20 / Road C. This may require a time-of-day travel time sensitivity analysis given the commuter trends on Route 20 in this area.

12. Multi-modal access is proposed that includes sidewalk, shared use paths, and gravel walking trails within the proposed development. TEC concurs with the use of a shared use path along the primary roadway through Ashworth Hills. See comment 18 and 19 for additional shared use path comments. TEC notes that the Town of Oxford is developing design plans at various stages for segments of the French River Rail Trail

that will include a segment offset approximately 150 south of Southbridge Road at the location of the proposed development. Consideration of a segment of shared use path between the proposed crosswalk at the Western Commercial Driveway and Turner Road along the south side of Sturbridge Road for future access to the trail should be considered as part of the proposed traffic signal construction.

13. A capacity analysis was conducted utilizing the Highway Capacity Manual (HCM) 2000 methodology. Although TEC understands the use of HCM 2000 methodology for signalized intersections, the use of HCM 6th Edition for the signalized intersections within the study area may still be reasonable.

    a. The Applicant should confirm that there is no significant operational result change for unsignalized intersections between the use of HCM 2000 and HCM 6th Edition.

    b. It appears the use of HCM 2000 at the signalized intersection within the analysis is solely based on the exclusive pedestrian phase at the signalized intersection, which TEC finds to be reasonable. The Applicant should note the number of pedestrian calls attributed to each analysis condition which is currently not shown on the worksheets.

14. Mitigation proposed in Oxford includes signal timing and phasing adjustments for the intersection of Route 20 at Route 56, signal optimization for Route 20 at Route 12 (Main Street), and new signal be installed for Route 20 at the Western Site Driveway. Other mitigation in Auburn includes signal optimization for: Route 20 at Hill Street and Albert Street, Route 20 at Route 12 (Southbridge Street), and Route 12 at West Street/ Plaza Driveway along with changing the approaches under stop control at the intersection of Blaker Street at Albert Street. TEC concurs that the proposed mitigation is appropriate. *No response required.*

15. As part of the mitigation for the West Commercial Driveway, which is expected to be utilized by the majority of the traffic generated by Ashworth Hills, a new traffic signal is proposed. This signal will introduce approximately 5 seconds of delay for drivers on Route 20 traveling past the development in the eastbound direction during each of the peak hours and will introduce approximately 21 seconds of delay for drivers on route 20 traveling past the development in the westbound direction during each of the peak hours. Drivers turning left into or out of the site are expected to experience up to 54 seconds of delay with the longest delays occurring during the evening peak hour. TEC considers this to be a reasonable amount of delay. *No response required.*

16. Per the Town of Oxford Zoning By-Laws in Chapter III section 3.9.3.8 and Chapter XI section 3.0; 2 off-street parking spaces per unit are required per dwelling-unit requiring a total of 640 parking spaces. The parking analysis provided in the TIAS demonstrated a number of parking units required based on ITE Parking Generation data with a weekday average peak period demand of 1.31 parking spaces for the land use code LUC 220 – Multifamily Housing [Low-Rise] requiring a total of 420 parking spaces. The traffic study indicates that 4 parking spaces are proposed for each unit including two garage spaces and two driveway spaces along with an additional 40 spaces for visitors for a total of 1,320 parking spaces well exceeding the required number of spaces. TEC notes that LUC 115 Single Family Attached Housing with a rate of 1.41 spaces per unit for a development of this size is a more appropriate land use code for the proposed

development, however, the associated parking space demand would still be substantially lower than the number of parking spaces proposed. *No response required.*

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.
18. A 3-5 ft buffer between the roadway and shared use path should be considered where feasible for increased pedestrian safety.
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.
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.
21. A stop line should be provided at the intersection of Road A and Road B between units 135 and 161.
22. The all-way stop proposed at the intersection of Roads B, C, and D should include “All Way” placards under each stop sign.
23. All crosswalks should be a minimum of 8’ wide to be consistent with industry standards, 10’ wide crosswalks should be considered at shared use path crossings.
24. Alternative pedestrian curb ramp type or location should be considered at the intersection of Road E and Road B to reduce the skewed angle of the pedestrian crossing.
25. At the intersection of Road C and Road D with Road B, two separate ramps should be used on the eastern corner for each of the crossing directions. A shared use path should be provided between the ramps for continuity.
26. At the intersection of Road F and Road E two separate ramps should be used on the eastern corner for each of the crossing directions.
27. Consider bicycle parking at the clubhouse and a shared use path connection to the clubhouse.
28. TEC recommends that the Applicant consider two-way flow for the clubhouse driveway and a reversal of the flow in the drop-off lane so passengers are discharged on the right side of the vehicle.
29. A “keep right” sign (MUTCD R4-7) should be considered at the nose of the triangular island on Road C at Station 2+50 on the approach to Route 20. A graphic “right turn only” sign (MUTCD R3-5R) should be considered with the stop sign where Road C meets Route 20.

30. Pedestrian crossing warning signs (MUTCD W11-2 / W16-7p) should be considered at all crosswalks within the development.

31. The Applicant should provide a narrative regarding waste removal. If waste removal is not to be collected roadside, then dumpster locations should be identified and evaluated for appropriate heavy vehicle turning movements.

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

33. All pedestrian design features should comply with the Americans with Disabilities Act Accessibility Guidelines (ADAAG), Public Right-of-Way Accessibility Guidelines (PROWAG), and the Massachusetts Architectural Access Board (MAAB) requirements or petition the State for a waiver.

34. The Applicant's team should identify locations where raised intersections or crosswalks may calm traffic and improve pedestrian accessibility.

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.

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."

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.
*"**T**he **E**ngineering **C**orporation"*

John D. Dixson, EIT
Senior Transportastion Designer

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