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Ms. Kathleen Bradley-Colwell
Planning Division Director
Department of Economic and Community Development
City of Methuen
41 Pleasant Street
Methuen, MA 01844

April 4, 2024

Re: Brookview Heights Subdivision, Methuen, MA
Civil Engineering Peer Review

Dear Ms. Bradley-Colwell and Members of the Planning Board:

On behalf of the City of Methuen, TEC, Inc. (TEC) has reviewed documents as part of the civil engineering peer review for the proposed subdivision project located at Lots 53C, 66B, 66D, and 67E of Map 908 Block 78E. Greenman-Pedersen, Inc., ("Applicant") submitted the following documents which were reviewed by TEC for conformance with the applicable sections of the City of Methuen Zoning Ordinance, Stormwater Management Rules and Regulations, and Subdivision Regulations. The submission was also reviewed for conformance with the Massachusetts DEP Stormwater Standards and generally accepted industry standards:

- *Application for Approval of a Definitive Plan;* prepared by Greenman-Pedersen, Inc.; dated March 6, 2024
- *Definitive Subdivision Plans;* prepared by Greenman-Pedersen, Inc.; dated March 6, 2024
- *Stormwater Management Report;* prepared by Greenman-Pedersen, Inc.; dated March 6, 2024
- *Operation & Maintenance Plan and Long Term Pollution Prevention Plan For Stormwater Management Systems;* prepared by Greenman-Pedersen, Inc.; dated March 6, 2024
- *Certified Abutters List for Lot 908-76-53C;* prepared by Methuen Assessor's Office; dated March 1, 2024
- *Certified Abutters List for Lot 908-78E-66X;* prepared by Methuen Assessor's Office; dated February 29, 2024
- *Certified Abutters List for Lot 908-78E-66D;* prepared by Methuen Assessor's Office; dated February 29, 2024
- *Certified Abutters List for Lot 908-78E-67E;* prepared by Methuen Assessor's Office; dated March 1, 2024

In addition, TEC is in receipt of the letter titled "Brookview Heights Definitive Subdivision Review", prepared by Stephen J. Gagnon, CPWP-M of the Methuen DPW Engineering Division, dated March 21, 2024.

Upon review of the documents and plans, TEC has compiled the following comments for the Board's consideration:

Waiver Requests

1. **Section 4.2.3.2 Dead Ends – Streets greater than 500' (Washington Street 1,300', Edgewater Drive 1,500')** - TEC has provided recommendations within the Traffic Impact and Traffic Engineering Site Plan Review comments herein to address the proposed dead-end condition. See comment #32.

2. **Section 5.3.1 Street and Roadways – General – 26' Pavement width required, 24' width proposed for Washington Street and 22' width proposed for Edgewater Drive** – The applicant has not provided justification for the decreased street width.

3. **Section 5.3.7 Curbs and Berms – Sloped granite curbing required, bituminous concrete curbing proposed** – TEC offers that bituminous concrete curbing may require additional maintenance for the municipality on public roads when compared to the required sloped granite curbing.

4. **Section 5.7.1 Sidewalk Location – 5' wide sidewalks along both sides required, sidewalk on only one side proposed** – TEC understands that there are no sidewalks proposed on the extension of Washington Street. TEC has provided recommendations within the Traffic Impact and Traffic Engineering Site Plan Review comments herein to address this. See comments #30 and 31.

Subdivision Rules and Regulations

5. Pursuant to section 4.2.4.1 for maximum centerline slope, station 5+00 to 11+00 of Washington street exceeds the maximum allowable slope. The applicant has designed a portion of Washington Street at an 11.25% grade with driveways that will be very difficult to safely transition at Lots 1 through 4 and Lots 28 and 29. TEC recommends that the applicant review alternatives to comply with the requirement of the regulations.

6. Pursuant to section 4.7.1, the Community Development Board requires that trees be planted along all new streets at a specified interval. Applicant should update the submission in accordance with these requirements.

7. Pursuant to section 5.3.8, granite curb inlets shall be provided at all catch basin locations. Please verify if a waiver is being sought from this requirement.

8. Pursuant to section 5.7, TEC recommends that the applicant provides a sidewalk cross section to verify compliance with sidewalk base, pavement, and accessibility requirements specified.

Site Plan Review

9. A fire truck turning plan should be provided to verify access is adequate for emergency vehicles. Approval of the fire truck turning plan should be provided by the Fire Department.

10. TEC recommends that the applicant update the profile to identify crossing utilities and separation distances. The applicant should include protection requirements of the proposed sanitary line, if necessary.

11. On the Washington Street Plan and Profile Sheet 22 of 32 – revise the bar scale to match the noted scale.

12. There appears to be several areas where the proposed water line conflicts with other structures, including CB-9, CB-7, CB-5, and CB-3.

13. There are two trench sections provided in the details, on sheet 27 and 28. Revise the plans to indicate which utility these are specific to.

14. On the Pump Station Details Sheet 31 of 32 – The pump station detail is missing elevations for inverts, finish grade, and other structure elevations. Please provide this missing information. Additionally, the pipe routing shown on the detail does not appear to match the plan, please verify the intended routing and layout of the design.

15. The proposed pump station requires review and approval by the Department of Public Works.

16. The Washington Street and Edgewater Drive cross-sections show a 3' minimum cover on sewer lines. TEC recommends the minimum cover of sewer to be 5'.

17. There are several locations where the waterline is within the 10' separation requirement, specifically as a result of avoiding conflict with proposed catch basin structures.

18. The profile does not include the proposed sewer force main. It is not clear if air/vacuum valves are required.

19. Revise the locations of catch basins 14, 15, 16, 17 to be located at low point of road.

20. The plans appear to be missing rim and invert information for the following structures: YD-1, YD-2, YD-3, DMH-11, DMH-14, and DMH-15. Please provide this information.

21. TEC recommends that the plans be updated to provide the following details: level spreader, pavement tie-in at sawcut locations, yard drains, guardrail, retaining wall, and overflow spillways.

Stormwater Management Review

22. Applicant identifies that a portion of the project is located within a flood hazard zone AE. Please include the FIRM panel identified in section 2 of the stormwater management report and include this boundary on the existing conditions plan.

23. The above ground Infiltration Basin #1 (INF 1) 72-hour drawdown time calculation does not appear to be supported by test pits completed within the bounds of the basin. Please clarify.

24. Pursuant to Massachusetts Stormwater Handbook Chapter 3 table 2.3.3, the infiltration rates used for the infiltration basins do not meet the requirements for a sandy loam as identified in the provided test pits for each location. Instead, the applicant uses the recommended Rawls Rate for loamy sand. Please update the model and stormwater report accordingly.

25. Pursuant to Massachusetts Stormwater Handbook Chapter 3 regarding stormwater recharge and depth to the estimate seasonal high ground water table, it appears that Infiltration Basin #3 (INF-3) has a ESHWT within 4' of the bottom of the proposed infiltration basin, requiring a mounding analysis. Please provide a mounding analysis for INF-3.

26. There is a discrepancy with the 12" orifice located at elevation 148.00' on the INF-1 outlet control device. The 12" orifice is modeled as a vertical orifice while the plans detail this orifice as a horizontal opening. Please clarify.

27. The HydroCAD model shows the grassed depression to have a Broad-Crested Rectangular Weir. The weir appears to be missing from the plan set. Please update the plans to include this

28. The report identifies a first defense pre-treatment unit in treatment train A. It appears DMH-8 is intended to be a pretreatment device to align with the treatment train A. Please verify.

29. Ownership of required maintenance for stormwater features shall be coordinated with the City and the Operations & Maintenance.

30. Massachusetts DEP Stormwater Standards

    a. It appears that this project fully meets standards 1, 4, 8, 9, and 10 of the MADEP Stormwater Standards.

    b. It appears that this project is not applicable to standards 5, 6, and 7, including requirements for land use with high potential pollutant loads, Critical Areas, and redevelopment projects.

    c. Standard 2 – This standard requires that the proposed project does not increase the stormwater peak runoff rates from the existing conditions. The project has minor stormwater calculation revisions that will be required to verify that the project fully complies with this standard.

    d. Standard 3 – This standard requires that a specific volume of groundwater recharge is attained by the proposed development. The project exhibits several infiltration basins that require revisions to the infiltration rates to verify that this standard is fully met by the development.

Traffic Impact and Traffic Engineering Site Plan Review

Based on the review of the Site Development Overview Plan, the subdivision includes 29 single family homes. TEC reviewed the Institute of Transportation Engineers the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition, Land Use Code (LUC) 220 – Single-Family Detached Hosing. The proposed development is expected to generate 18 vehicle trips during weekday morning peak hour and 11 vehicle trips during weekday evening peak hour. This is an increase of one (1) vehicle every 2 minutes along Washington Street. Therefore, based on the minimal impact of the project, TEC concurs that a Transportation Impact Assessment (TIA) is not necessary as part of the project. However, TEC compiled the following traffic-related comments regarding the site plan:

31. Although Washington Street does not have sidewalks along either side of the roadway, the Applicant should provide a sidewalk on at least one side of Washington Street.

32. The Washington Street Cross-Section detail on Sheet 26 should include sufficient details to show a minimum 5' wide sidewalk, excluding any curbing, and a full sidewalk platform with on the opposite side, both of which should be graded at less than 2%. TEC recommends detailed 1.5% to allow for construction tolerances. The maximum driveway grades should be shown in addition to the typical side slope grades.

33. The Applicant should install signage to notify motorists about the dead end roadway condition on Washington Street, just north of Edgewater Drive. The applicant's team should discuss the end treatment for Washington Street, including any potential gates or parking restrictions with City staff. TEC recommends that any fixed objects be buffered from the end of the paved portion of the roadway given the potential for sliding vehicles on the proposed steep roadway grade approaching the dead end during winter conditions.

34. Parking restrictions should be implemented on Washington Street north and south of Edgewater Drive, following the Manual on Uniform Traffic Control Device (MUTCD) guidelines, which state that no driver shall stand or park upon any street or highway within twenty (20) feet of an intersecting way, except alleys (Section 5-1 (i)). TEC recommends installation of "NO PARKING – ANY TIME" signs (MUTCD designation R7-1 with arrows).

35. The Applicant should verify Stopping Sight Distance (SSD) and Intersection Sight Distance (ISD) at the Edgewater Drive intersection with Washington Street, considering the *limited* potential for a future extension of Washington Street to the north for any municipal conservation access opportunities near Hawkes Brook. Sight triangle areas should be shown on the Site Plans, along with a note indicating: "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 3.5 feet in height or that would otherwise inhibit sight lines shall be promptly removed. The proposed side slope grading and layout of the consideration easement on Lot 5 (southeast corner of Washington Street / Edgewater Drive) should consider the maintenance needs related to the sight lines.

36. A marked stop line should be provided for vehicles exiting the Edgewater Drive approach to Washington Street.

37. The Applicant's team should verify the sight line characteristics for the stopped condition for motorists on Old Ferry Street westbound where it meets Washington Street and confirm that AASHTO criteria can be satisfied given the introduction of new through traffic associated with the proposed subdivision.

Please do not hesitate to contact me directly if you have any questions concerning our comments at 978-794-1792.Thank you for your consideration.

Sincerely,
TEC, Inc.
*"**T**he **E**ngineering **C**orporation"*

David Nader, PE
Project Manager

Kevin Dandrade, PE, PTOE
Principal