

Project No. MELR-0029

March 27, 2020

City of Melrose Planning Board
City of Melrose Conservation Commission
Attn: Ms. Denise M. Gaffey, Director and City Planner
Office of Planning and Community Development
Melrose City Hall
562 Main Street
Melrose, MA 02176



Subject: Review of 9-Lot Modified Definitive Subdivision, Hillside Park
City of Melrose Department of Public Works

Dear Denise,

This letter is provided in response to comments provided in a Memorandum dated March 11, 2020 by Elena Proakis, City Engineer/ Assistant DPW Director as a result of their review requested for the Definitive Subdivision Plan and Notice of Intent Filing for the above referenced project. The DPW comments are shown below in italics and, our responses are in the bold text that follows.

The following issues, concerns, and considerations have been identified during the course of our review of the project plans and documentation and are in addition to BSC Group's peer review letter:

General Comments

1. *The Engineering Division has reviewed the proposed stormwater management system and associated documentation, as well as the peer review comments from BSC Group. This Division concurs with all comments and outstanding issues and questions identified by BSC Group and defers to BSC Group on the applicant's resolution of those issues.*

No further response required.

2. *General plan legibility is an issue in some places. Please make sure there is no text and/or linework overlapping with each other (i.e., building text on Lots 3&4, topo lines crossing into buildings on lot 1, etc.).*

See revised plans. We have made edits to improve plan readability.

3. *Please label/ID all structures on both the plan view and profile views (i.e. CB-1, DMH-1, etc.). This will assist the City, the contractor, and the construction oversight personnel in ensuring all are referring to the same structures as questions or issues arise.*

Structures are labeled/identified in both plan and profile views on plan sheets two and three.

- 4. The City agrees with the replacement/installation of the water and sewer infrastructure on Hillside Park as shown.*

No further response required.

Stormwater Management

- 5. The City agrees with the addition of roof recharge systems. Please provide details, calculations, and specifications of the systems once designed for review and approval by the City. The designer should also provide soil data to show 2-foot separation to seasonal high groundwater from these systems.*

We have provided basic designs of the proposed roof recharge systems based on the approximate house boxes areas shown on the plans, see accompanying HydroCAD printouts. We do not have soil testing at every location for the systems, however, the Applicant will accept a condition that prior to applying for a building permit, confirmatory soil test pits shall be performed to establish the vertical separation from the estimated seasonal high groundwater table (ESHGWT) to the bottom of the system.

- 6. Please include rainfall maps in the appendices. We request that the applicant use the NOAA Atlas 14 rainfall data. If other rainfall data is being used, the applicant should indicate what the source of that data is and why it was preferred.*

See attached Rainfall Data Maps for Massachusetts from the Rainfall Frequency Atlas of the United States (TP-40) which is required for calculations under the Wetlands Protection Regulations and the Stormwater Management Policy. Because this is the standard for the Department of Environmental Protection (DEP) we prefer to use this rainfall data in order to be consistent with the design storms cited in their regulations.

- 7. Please provide a detail for the overflow control structure from Infiltration Pond 1P. Consider adding an overflow weir to bypass the 4-inch orifice to handle extreme storm events.*

A detail of the outlet control structure for Pond 1P was provided on the detail sheet in the February 20, 2020 revision and is now found on detail sheet 3 of 4 (Sheet 8 of 10). There is a pre-cast concrete panel in the structure that will act as an overflow weir to bypass the 4-inch diameter orifice should it ever become clogged or to handle an extreme storm event.

- 8. Pond 4P is incorrectly labeled as 2P on the plans. Please revise.*

We have corrected the typo on the revised plans.

- 9. Pond 4P has the incorrect recharge volume calculations. It should be 208 cf of available storage (not 520 cf), since 520 cf does not take into account the stone. As a result, infiltration trench 4P does not meet the required 449.3 cf water quality volume (WQV). This should be corrected in the analysis.*

See revised plans & calculations.

10. *It is unknown where the test pits from the appendices were conducted. A map should be added and/or symbols should be added to the plans.*

See revised plans showing soil test pit locations.

11. *Please provide soil data and depth to seasonal high groundwater at all infiltration locations (including the proposed roof recharge areas).*

We have added cross-sections of the Subsurface Infiltration Ponds as well as depth to the ESHGWT. As mentioned above, we do not have soil testing at each and every location and are willing to accept a condition that testing/designs for rooftop systems be performed prior to the application of a building permit.

12. *Please label all inlets and outlets as such (i.e. 12" HDPE outlet).*

See revised plans. The requested information has been added.

13. *Melrose typically measures projects according to language in the zoning code that states that, to the extent practicable, best management practices "shall be sized to capture, retain, and percolate to ground all runoff from impermeable surfaces generated by the five-year, twenty-four-hour storm event. Preferred BMPs shall include, but not be limited to, constructed wetlands, pocket wetlands, rain gardens, vegetated swales, retention/detention ponds, and subsurface leaching systems." Furthermore, the code references other low-impact design elements such as "porous pavements, bioretention cells, infiltration trenches, rainwater collection cisterns, and other design methods that maximize the use of landscaped areas for stormwater control and promote the reuse of runoff." The applicant should provide a written statement indicating whether the project meets these requirements.*

The criteria listed above is found in Section 235-16.1 Site Plan Review, E. (12) Stormwater Management of the City of Melrose Zoning Ordinance. However, we are required to follow the design criteria found in the Rules and Regulations Governing the Subdivision of Land in Melrose Massachusetts and not the Melrose Zoning Ordinance Chapter 235 for Site Plan Review for this project as it is a subdivision.

It should be noted that we are using the following Low Impact Development (LID) techniques for the project:

- 1. Reduction in the amount of roadway pavement from 32-feet to 24-feet;**
- 2. Subsurface Infiltration Structures for portions of the proposed roadway and selected roof areas;**
- 3. Infiltration Trench for the top portion of the roadway**

These methods will result in a reduction in the amount of surficial runoff generated from the project.

14. *Please confirm the constructability of all structures, especially the DMH at STA 1+12. There should be a minimum of 12-inches of concrete between the outside diameters of all inlet pipes. If this is not met, please adjust.*

The proposed structures called for on the plans will be pre-cast to order and we see no issues with constructability. The DMH at STA 1+12 will have an outside diameter of 5-feet minimum which provides a circumference of 15.7 feet which will provide a minimum of 12-inches of concrete between the inlet pipes.

15. *Drain manhole frame and covers should be East Jordan Iron Works Model #2110-A or equal and must meet Melrose current casting material specifications. The cover shall have a diamond pattern, pick holes, and the word "DRAIN" cast in 3-in letters. Please add the model number(s) to the appropriate details.*

See revised plans. The specification has been added.

16. *Double catch basin frame and cascade grates should be East Jordan Iron Works Model #5520M8/5448Z or equal and must meet Melrose current casting material specifications.*

See revised plans. The specification has been added.

17. *Provide the inlet grate capacity and bypass calculations for all catch basins. Due to the steep roadway, a portion of the gutter flows will most likely bypass catch basins and continue downstream. The applicant should provide these calculations.*

We have performed curb and gutter analysis using the FHWA Hydraulic Toolbox (Version 4.4) for the proposed catch basins and calculated the expected amount of bypass for the 100-year storm event. According to the model, the total bypass flow that would reach Maple Terrace = 1.69 cfs for the 100-year storm event which means that there would still be a peak flow rate reduction in the proposed condition. See the attached calculations which show the efficiency for each structure.

It is important to note that the program used does not increase the efficiency for each structure when the rim is depressed by one (1) inch as well as using open throat granite curb inlet sections as we have specified on our plans. Therefore, it is our position that the calculated values for the intercepted flow is conservative and we expect the bypass flow to be less than what is shown on the attached hydraulic analysis report printouts.

18. *In regards to the comments above, the catch basins at the intersection of Maple Terrace and Patrick's Place should be changed to double catch basins.*

See revised plans. The basins have been specified as double grates.

19. *The proposed development is required to meet all components of the City's Stormwater Management Plan. In particular, the applicant should be aware of the construction site monitoring that will take place to ensure sedimentation and erosion controls are adequate.*

The applicant is aware of this requirement.

Right-of-way Considerations

20. *The City has reviewed the site and believes that a sidewalk can be installed on the north side of Maple Terrace to the intersection of Swains Pond Avenue, to meet the proposed sidewalk on Patrick's Place. The City would also like the sidewalk extended on the south side of Swains Pond Avenue (west of the Maple Terrace intersection) east to the intersection of Maple Terrace. With the addition of an ADA accessible curb ramp and a crosswalk to connect to the new sidewalk installed on the north side of Maple Terrace, this would result in a continuous walking path for residents of the new road to Swains Pond Avenue.*

The sidewalk, as described above, has been added to the plan.

21. *Whereas sidewalks are only shown on one side of the proposed road and are not proposed to be included on Patrick's Place as part of the roadway repair, the applicant will be required to provide a contribution to the sidewalk fund in lieu of the second sidewalk. The sidewalk fund contribution will be equivalent to the square footage of the sidewalk area not being provided, times the cost at the time of project approval of installing cement concrete sidewalks under the City's applicable services contract.*

The applicant is aware of this requirement.

22. *The proposed variance from a 50-foot to a 40-foot right-of-way is acceptable. This is common practice for a low-speed residential development.*

No response required.

23. *The proposed variance from 32-foot wide to 24-foot wide pavement is acceptable. We support minimizing the amount of impervious area to reduce stormwater and environmental impacts.*

No response required.

24. *The City agrees with the installation of the gravel pathway at the end of the cul-de-sac road to provide access to the open space. Please include a detail of the path with gravel specifications.*

No response required.

Sewer System Comments

25. *Please show all sewer service connections, sizes, slopes, and pipe materials. Please include a sewer service connection detail on the plans.*

Sewer service locations, sizes and pipe materials are shown on the revised definitive profile sheets. A typical sewer service connection detail is provided on detail sheet four. Additional information such as sewer service slopes will be provided on individual plot plans prior to construction.

26. *Please provide sewer capacity and velocity calculations for all mains. The Engineering Division does not fully support the sewer system as presently designed and would like to have all sewer main slopes reduced in an effort to minimize sewer velocities to industry-recommended levels. This can be accomplished by installing drop-manholes at select locations where lesser slopes are required to stay within this maximum. It is our preference to have internal drops within these manholes, with easy access to the drop pipe through a cleanout within the manhole structure. Once design capacity and velocity information is submitted, the City will discuss options with the applicant to minimize slopes and corresponding velocities.*

See attached sewer rate/velocity calculation performed at the most critical location. It is our opinion that the velocities are well within desired ranges. It is our opinion that creating drops in the manholes will create unnecessary operation and maintenance issues. However, we are willing to have further discussion regarding this matter, if so desired.

27. *Similarly, the Engineering Division is concerned about the ability for sewer services to be designed such that they can meet maximum slope and velocity recommendations. Utility permits will not be granted without detailed design information for each home showing how appropriate sewer service connections can be accomplished.*

The applicant is aware of this requirement. Each building permit application will be accompanied by a detailed plan providing the utility designs for the particular lot.

28. *Sewer manhole frames and covers should be East Jordan Iron Works Model #2110-A or equal and must meet Melrose current casting material specifications. The cover shall have a diamond pattern, pick holes, and the word "SEWER" cast in 3-in letters. Please add the model number(s) to the appropriate details.*

See detail sheet 3 of 4.

29. *Prior to the issuance of any building permits, the applicant will be required to pay an infiltration/inflow (I/I) fund contribution. The current cost for this fee is \$6.89 per gallon-per-day (gpd), calculated using the Title 5 flow of 110 gallons per bedroom per day. The final calculations and fee assessment will be made by the Engineering Division based on floor plans submitted by the applicant.*

Agreed. The applicant is aware of this requirement.

30. *The City performed a CCTV inspection of the sewer main on Maple Terrace in 2017. It appears that this sewer main was originally an 8-inch vitrified clay sewer that has since been slip lined. While the liner appears to be in very good condition, the existing service connections are allowing significant infiltration at their connection points with the main. The Engineering Division would like for the applicant to add short service connection liners at each service connection*

along this portion of sewer main downstream of the proposed connection for the project, in order to allow this main to remain in service and to serve the proposed development.

The applicant will either replace the main and sections of the services or will add the service connection liners, as described above.

Water System Comments

31. *Please show all water service connections, sizes, and pipe materials. Please include a water service connection detail on the plans. All services should maintain at least a 10-foot separation from sewers.*

Water service connections, sizes and pipe materials are shown on the revised definitive profile sheets. See revised detail sheet 4 of 4 for water service connection detail.

32. *Flow and pressure calculations should be conducted. Individual water booster pumps may be needed for the units in the proposed development due to inadequate water pressure to reach second-floor fixtures. Such pumps should be required to have a backup power supply, either via a long-term battery backup or an emergency generator. While the Engineering Division is providing this comment, please note that the water booster pumps will be the responsibility of the individual homeowners and are considered part of their internal plumbing, rather than part of the water system owned, maintained, and/or inspected by the Department of Public Works. As part of the internal plumbing on the homeowner's side of the water meter, inspection of these pumps upon installation would fall under the City's Inspectional Services.*

A flow and pressure test will be provided. Given the elevations at the site and our knowledge of the pressures in the system, it is our expectation that pressures will not be an issue in the new homes. If pumps are warranted, the developer will provide them as outlined above.

33. *The existing water mains on Maple Terrace, Hemenway Avenue, and Ireson Court are included in the City's Capital Efficiency Plan as Phase II priority locations for replacement. As such, following the City's current practice, no roadways should be paved that require high priority water main replacement. Phase II would be considered a high priority category, especially considering that the City will conclude all remaining Phase I replacements this construction season. The Engineering Division recommends that the applicant be required to replace the water main on Maple Terrace from Swains Pond Avenue to the new road, beginning at the side line of Swains Pond Avenue with a new 8-inch gate valve.*

The revised plans show a new water main as described above.

Comments on Detail Sheet

34. *Please fix the text on the Thrust block detail.*

Revised thrust block detail on detail sheet one.

35. *Please add a sewer manhole detail.*

See detail sheet 3 of 4.

36. *Please add a double catch basin detail showing 5-ft diameter structures.*

See detail sheet 4 of 4

37. *Please add pipe trench details for all types of pipe used.*

See detail sheet 4 of 4.

38. *Please include riprap outlet pad details including specifications for the stone sizing.*

See detail sheet 4 of 4 for a typical rip rap apron to be used on site, use a 12" layer of 10 lb. stones (6" diameter) min.

Comments on Topography Plans

39. *There appears to be a break in grading in Lot #5 near BM#1. The contours go from elevations 148 to 142. Please revise.*

See revised plans. This issue has been corrected.

40. *Please add TF/GF/CF abbreviations to the legend.*

See revised plans. This information has been added.

41. *Add spot grades to the top of the infiltration basin and adjust contours at the spillways.*

The infiltration basin was converted to a subsurface infiltration structure and the spillway removed.

Proposed Mitigation and Associated Documentation

42. *The application should contain documents detailing both construction-phase and long-term mitigation monitoring, maintenance, and reporting requirements for items such as the stormwater management systems, wetland protection, etc. The applicant should provide a checklist for monitoring and reporting requirements for both the construction phase and the long term. The long-term checklist should also be provided to the homeowner's association to assist in their ability to follow through with the many tasks required of them once the developer's work is completed.*

Agreed, see the Long-Term Operation & Maintenance Plan found in Section 4 of the Stormwater Report which includes description of system, frequency & method of cleaning as well as Inspection and Maintenance Forms for submission.

43. *The homeowner's association should be required to submit documentation showing that the required long-term maintenance is being performed pursuant to the required schedules. Furthermore, the City should have the right to enter and maintain all stormwater systems if adequate maintenance of the systems is not being performed, with costs assumed by the homeowner's association.*

Agreed.

Other Comments

44. *The Engineering Division notes that gas service does not appear to be available on Swains Pond Avenue in the immediate area of Maple Terrace. It appears to end approximately 100 feet from Maple Terrace. Should the applicant wish to extend gas service to the new development, all costs shall be borne by either the applicant or National Grid, and it will be the applicant's responsibility to coordinate this work with National Grid. This work would also require a grant of location from the Melrose City Council. Furthermore, any disturbance of Swains Pond Avenue would require curb-to-curb pavement restoration.*

Agreed. We do not expect to install or extend the gas service.

45. *Proposed electrical utilities should be shown on the drawings. Additionally, the applicant should coordinate early on with National Grid to ensure that adequate electrical capacity exists for the proposed project.*

The design of the electrical layout will be provided by National grid subsequent to approval, as is their policy. Based on initial conversation with them, capacity is not an issue.

46. *The applicant should submit a lighting plan showing the proposed location and details of street lights. All street lights should be LED.*

Street light locations have been added to the plans. These locations are subject to relocation as a result of the final design by the utility provider.

47. *The Engineering Division would like to see a landscaping plan that shows specifics of the vegetated buffers along the abutting properties. In addition, ideally, all street trees should be located at least 10 feet from utilities and driveways. If this cannot be achieved, the maximum separation possible from utilities should be maintained. All plantings should be guaranteed for a minimum of two years.*

Street trees have been added to the plans. Proposed plantings and fencing have been added to the topographic plans adjacent to the affected abutters.

48. *The Construction Management Plan (CMP) should include continuous emergency access at all times to all existing homes in the project area. Information should be provided describing how this will be accomplished.*

A construction sequencing/management schedule is attached. Access will be maintained at all times and the developer will provide the city and the affected abutters with periodic updates on the access conditions and relocations.

49. *The CMP should include the days and hours of operation and specify that work on Saturdays shall not commence until 8:00 am or later.*

A construction sequencing/management schedule is attached with the work schedule.

50. *The Engineering Division recommends that wetland delineations should remain flagged throughout the construction duration, in addition to any related requirements of the Conservation Commission, to ensure that required construction setbacks are met and no unpermitted work or stockpiling occurs within jurisdictional areas.*

Agreed.

51. *A pre-blast survey should be conducted pursuant to all applicable codes and regulations.*

Agreed.

52. *Given the extent of infrastructure work required to install this development, the Engineering Division recommends that the applicant be required to provide a full-time construction inspector during utility and roadway installation, to provide oversight, daily reporting, and recordkeeping to be provided to the City. The Engineering Division must approve the resume of the proposed Clerk of the Works.*

The applicant is aware of this requirement.

53. *The applicant will be required to submit a schedule of values for the site and utility work, so that a tripartite agreement can be developed commensurate with the estimated costs of the individual unit items.*

Agreed.

54. *Once the project has reached completion and occupancy has been granted, trash and recycling curbside pickup will be provided by the City's contractor. Similarly, snow removal will be provided by the City once roadway paving is complete to the satisfaction of the Engineering Division. This is consistent with the City's policies for other private roads. The City reserves the right to change this Citywide policy at any time.*

Agreed

55. *As-built plans are required to be submitted and approved by the Engineering Division. These plans must show all utilities, both above and below ground, including sizes, materials, and*

City of Melrose DPW Review Responses
Hillside Park Definitive Subdivision, Melrose, MA
March 11, 2020

slopes, along with roadway grades, locations of structures, curb cuts, sidewalks, landscaping, etc. The applicant shall resubmit revised plans pursuant to any comments provided by the Engineering Division. Final occupancy will not be issued without approved as-built plans.

Agreed

Thank you for the opportunity to review this project.

We look forward to discussing these comments at the next public hearing. In the meantime, please feel free to contact me if you have any additional questions or comments regarding the information provided in this letter.

Very truly yours,

A handwritten signature in blue ink, appearing to read "Richard L. Williams", followed by a horizontal line and the initials "P.E." written in blue ink.

Richard L. Williams, P.E.
Principal

Enclosures

cc: Frank DiPietro, P.E., BSC Group
0 Swains Pond Avenue Realty Trust