

March 15, 2024

Mr. Raymond Lavey  
Executive Director  
Waterfront District Commission  
145 Taunton Avenue, Town Hall 2nd Floor  
East Providence, RI 02914

Re: **Waterfront District Commission – Stormwater Peer Review Services  
Metacomet Redevelopment  
On-Call Professional Engineering Review Services  
East Providence, Rhode Island  
(Pare Project No. 24039.00)**

Dear Mr. Lavey:

Pare Corporation (Pare) has completed our review of the stormwater management design for the Metacomet Redevelopment Project. Pare reviewed the following documents provided by the Waterfront District Commission:

- Drainage Report for Marshall Properties proposed Metacomet Redevelopment dated December 21, 2023, prepared by Bohler Engineering
- Proposed Site Plan Documents for Marshall Properties proposed Metacomet Redevelopment dated December 21, 2023, prepared by Bohler Engineering

Pare Offers the following comments pertaining to these submissions:

### **Proposed Site Plan Documents**

1. Bioretention Basin Detail on Detail Sheet (C-906) does not show the proposed 30-inch perforated pipe illustrated on Drainage Plan D (Sheet C-455) and shown in HydroCAD model. Detail currently shows 4-inch perforated PVC underdrain. Review and revise accordingly.
2. Drainage Plan C (Sheet C-454) Subcatchment PD2.1 appears to surcharge through a proposed catch basin grate to the Proposed Above Ground Stormwater Basin P2.1. The proposed catch basin rim elevation is above the top of Stormwater Basin P2.1 berm. Review and confirm the intent.
3. Infiltration Basin Detail on Detail Sheet (Sheet C-906) shows a sediment forebay for the Infiltration Basins. Sediment forebays are not illustrated on the grading or drainage plan sheets. Show limits of pretreatment as required including sediment forebay check dam locations and heights.
  - a. Update infiltrating areas within calculations.
4. Pretreatment is not shown for the underground infiltration and detention systems. Confirm pretreatment requirements are met.
5. Maintenance access ports are not shown for the underground infiltration and detention systems. Add system specific details illustrating how the systems will be accessed and maintained.

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6. Proposed Underground Stormwater Basin P3.1.1 on Drainage Plan D (Sheet C-455) is annotated as P3.1.2 within the hydrologic model. Review and revise accordingly.
7. Review Proposed Diversion-MH 7 and Proposed HDS-MH 249 on Drainage Plan D (Sheet C-455). Confirm flow direction and inverts.
8. Confirm how runoff from the proposed parking lot west of Infiltration Basin P4.3 is being directed to the basin on Drainage Plan A (Sheet C-452).
9. Confirm how runoff from the proposed roadway and front of houses south of Bioretention-Infiltration Basin P3.10 is being directed to the basin on Drainage Plan D (Sheet C-455). For Prop. Bunker-CB 267, provide invert of primary outlet and the location.
10. Provide details on how the Wet Extended Detention Basin will be accessed and maintained. Revise grading for access to the sediment forebay as required.
11. The Wet Extended Detention Basin will have approximately 7 feet of ponding during a 100-year storm event. Confirm if fencing, safety benches, or other means of protection should be included.
12. The Prop. AG-OCS 11 for the Wet Extended Detention Basin is located at approximately elevation 47±. The detail and hydrologic calculations call for an orifice at elevation 43.5. Please review and provide additional detail.
13. Confirm Bioretention systems are in conformance with Stormwater Management, Design, and Installation Rules (250-RICR-150-10) Section 8.23- Filtering Systems Part D Treatment Subpart 4. Bioretention systems shall consist of the following treatment components... a 6-inch to 9-inch-deep surface ponding area". Confirm ponding depths within Bioretention systems.
  - a. Update provided WQv within calculations.
14. Confirm Bioretention systems are proposed with the required pretreatment. Show sediment forebays, if applicable, and update the filter areas.
15. Bioretention Basin Detail on Detail Sheet C-906 soil mix should conform with 250-RICR-150-10) Section 8.23- Filtering Systems Part D Treatment Subpart 4. Review and revise accordingly.
16. Landscape plans should show plantings proposed within infiltration, bioretention, and wet extended detention basin.

### **Drainage Report**

1. Appendix A Checklist – review Minimum Standards 4 & 5. DP 4 does not directly discharge to a 4<sup>th</sup> Order Stream or Pond of 50 Acres or Greater. DP 4 discharges to a forested wetland and Fort Street prior to entering Providence River. Additionally, not all subcatchments in DP 3 discharge directly to Providence River.

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2. Provide calculations for sediment forebay pretreatment sizing for surface infiltration and filtering practices. Confirm pretreatment sizing in accordance with the applicable sections of the 250-RICR-150-10 Section 8.23- Filtering Systems.
3. The drainage report references deep sump hooded catch basins. The plans show the RIDOT Standard Detail 4.3.0 with a 3-foot sump. Review and revise the details accordingly in conformance with 250-RICR-150-10 Section 8.30 – Pretreatment – Deep Sump Catch Basins.
4. Provide calculations to confirm compliance with 250-RICR-150-10 Section 8.23- Filtering Systems Part D Treatment Subpart 6 for minimum filter bed area and other applicable standards for Bioretention Areas.
5. Provide calculations to confirm compliance with 250-RICR-150-10 Section 8.21 Stormwater Infiltration Practices Part C- Conveyance Subpart 3. All infiltration systems shall be designed to fully de-water the entire WQv within 48 hours after the storm event.
6. Appendix A Checklist Table 5.2 – Summary of BMPs identifies that infiltration systems do not meet the Horizontal Setback Criteria. Provide Technical Justification and the distance provided.
7. Provide calculations to confirm compliance with 250-RICR-150-10 Section 8.33 Quantity Control – Stormwater Basins Part E and Part F for Using Basins for Additional Pollutant Loading Reduction. Confirm minimum detention times, pretreatment, length to width ratios, drainage area surface area ratios, and permanent pool ratios.
8. Wet Extended Detention Basins shall have a minimum contributing drainage area of 25 acres, unless groundwater is intercepted. Basins that do intercept groundwater shall not include the volume of the permanent pool in storage calculations. Confirm ESHGT.
9. Review Time of Concentration for Subcatchment ED 2 and ED 4. The Time of Concentration currently delineated is not the hydraulically most distant point within the subwatershed. Review and revise existing flows accordingly.
10. Confirm that test holes were observed by an RI Registered Professional Engineer or DEM-licensed Class IV Soil Evaluator.
11. Appendix A Checklist Table 5.3 does not include the soils analysis or separation to groundwater for each BMP and states “awaiting final geotechnical data”. For infiltration practices, provide information in accordance with 250-RICR-150-10 Section 8.21- Stormwater Infiltration Practices providing a minimum of 1 test hole per 5,000 square feet. For filtering systems, provide information to confirm compliance with the requirements of 250-RICR-150-10 Section 8.23- Filtering Systems.

- a. The Test Boring Logs, Test Probe Logs, and Test Pit Logs provided include soil descriptions using Burmister Identification System for the stratum observed. For stormwater management design, USDA textural classifications are required for selecting infiltration rates. One sample per hole was taken and grain size distribution tests were completed to determine the USDA textural classifications. Approximate depths of samples are included within a summary table.
- b. The ESHGT should be observed and logged based on the identification of redoximorphic features. The Test Pit and Boring Logs do not review ESHGT. Review and confirm ESHGT elevations.
- c. The preliminary Geotechnical Engineering Report does not include soil data for the following proposed infiltration practices:
  - Infiltration Basin P2.1
  - Underground Stormwater Basin P3.9
  - Infiltration Trench P3.13
  - Infiltration Basin P4.3
- d. Underground Stormwater Basin P2.2 shows a bottom of stone elevation of 40.2 and an Estimated Seasonal High Groundwater Elevation (ESHGT) of 38.0 within TP-23 and elevation 39.0 within B-42.
  - i. Within 250-RICR-150-10 Section 8.21- Stormwater Infiltration Practices, the bottom of infiltration practices shall be separated by at least 3 feet vertically from the ESHGT. Review and revise accordingly.

**Provide a section view of each BMP, showing the soil data collected and the associated elevations of the stratum observed, USDA soil textural class, and the ESHGT determined based on redoximorphic features. The bottoms of systems should be located with the required ESHGT separation, and outside of fill materials and A and B soil horizons.**

12. Hydrologic Calculations for Infiltration Basin P2.1 show a peak elevation of 15.30 in the 100-year storm. Confirm sufficient freeboard is available from the top of berm elevation (15.50 in HydroCAD and 15.00 on Proposed Site Documents).
13. Hydrologic Calculations for Infiltration Basin P2.1 show an outflow of 22.29 cfs through the spillway during the 100-year storm event discharging directly to golf course. Confirm safe passage of the 100-year flows and detail any necessary downstream stabilization.
14. Hydrologic Calculations for Infiltration Basin P3.4 show a peak elevation of 49.80 in the 100-year storm. Confirm sufficient freeboard is available from the top of berm elevation (50.50 in HydroCAD and 50.00 on the Proposed Site Documents).
15. Hydrologic Calculations for Bioretention-Infiltration Basin P3.10 show a peak elevation of 47.32 in the 100-year storm. Confirm sufficient freeboard is available from the top of berm of elevation (47.50 in HydroCAD and 47.00 on Proposed Site Plan Documents).
16. Hydrologic Calculations for Infiltration Basin P4.2 show a peak elevation of 63.98 in the 100-year storm. Confirm sufficient freeboard is available from the top of berm elevation (64.50 in HydroCAD and 64.00 on Proposed Site Documents).



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17. Confirm Recharge Volume provided, and Water Quality Volume provided for Infiltration Chambers P3.9. The Stage-Area Storage for weir elevation 58.60 is 20,720 cf. A volume of 22,733 cf is listed. Review and revise accordingly.
18. HydroCAD analysis should be updated using appropriate grate dimensions of the Nyloplast Dome Grate for applicable BMPs.
19. Provide product flow rates for the Jellyfish Filter Systems and model sizing calculations.
20. Provide HydroCAD 1.2" storm summary to confirm WQf values listed in Exhibit 4-III (Page 434 in Appendix F).
21. Appendix A – Part 1, MS4 should be checked for initial discharge location for DP 5 and DP 1.

**The applicant should provide a formal response to address each comment.**

If you have any questions or require any additional information, please do not hesitate to contact me at 401-334-4100 or [bsykes@parecorp.com](mailto:bsykes@parecorp.com).

Sincerely,

A handwritten signature in blue ink, appearing to read 'R. Sykes', with a horizontal line extending to the right.

Robert J. Sykes P.E.  
Managing Engineer

RJS/cls