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TECHNICAL MEMORANDUM

DATE: January 15, 2021
TO: City of Poulsbo
FROM: Rhiannon Sayles, PE, Paul Fendt, PE
SUBJECT: Oslo Bay Apartments - Stormwater Review
CC:
PROJECT NUMBER: 553-2377-121
PROJECT NAME: Task Order Support Services

Parametrix has reviewed the materials provided by the City for the project known as Oslo Bay Apartments, as per the scope of work and agreement between the City and Parametrix. We have reviewed the plans and calculations for completeness and to evaluate whether the basic elements of the stormwater management and drainage systems will be expected to meet the design guidelines as described by the design engineer. The site was not field reviewed.

While all of the documents provided were read and reviewed to become familiar with the project, the review focused on the stormwater design. Key items in the review included:

- Drainage Report dated November 2020 prepared by kpff
- WWHM Models (received from kpff) titled “eastbasin” and “westbasin”
- Civil Plans dated 11/23/20 prepared by Team 4 Engineering
- Hydroperiod Analysis Report dated 8/24/20 prepared by Clear Creek Solutions

Outstanding Comments from Last Review Cycle (5/13/20)

Downstream Impacts and Conformance to Minimum Requirement #8

1. The predevelopment and post development catchment areas draining to these points must be clarified. *The values for areas draining to the east pond from the drainage report do not match the values draining to the east pond from the hydroperiod analysis.*

General Comments

1. All detention ponds must have an emergency overflow spillway designed per the Ecology Manual. Please provide all calculations in the drainage report.
2. All retaining walls to be used as interior side slopes on ponds must be constructed of reinforced concrete and stamped by a structural engineer.
3. Embankments greater than 6’ must be designed by a geotechnical engineer and have a key equal to 50 percent of the berm embankment.
4. There are many utility conflicts that cannot be verified by the civil plans. Provide separation between pipes using either plan view or profile call outs.

5. Provide appropriately sized rock inlet protection at the inlet of all detention basins. See Chapter 5. B.10.a of the City of Poulsbo Construction Standards and Specifications for City specific requirements.
6. Provide pipe trench detail that shows conformance with Chapter 5.E of the City of Poulsbo Construction Standards and Specifications.
7. Grading plans must show positive drainage away from the foundations of all buildings. Please provide.
8. The roof drain system and foundation drain system must be shown on the plans. See Chapter 5.B of the City of Poulsbo Construction Standards and Specifications for design guidance.

Drainage Report

1. No calculations found for:
    a. Emergency overflow weir(s)
    b. Dispersion Structures/Diffuser Tees
    c. Cobble for discharge locations
2. For bypass areas the report shows that the flow control BMP compensates for the uncontrolled bypass area such that the net effect at the point of convergence is the same with or without bypass. However, to bypass area that requires flow control you must also show compliance with the following conditions:
    a. 100-year peak discharge from the bypass area does not exceed 0.4 cfs.
    b. Runoff Treatment requirements applicable to the bypass areas are met.

New Comments

The applicant has demonstrated that they have a plan to control stormwater in both the temporary and existing conditions. However, there are still many details that need to be provided to show compliance with all state and local standards. The following comments need to be addressed before we can determine that the stormwater design follows all applicable standards.

General Comments

1. Provide WWHM or MGS Flood model for each POC (East and West Basin) to ensure compliance with flow control requirements. Appendix D is illegible and the “eastbasin” WWHM model that was received is empty.
2. Provide a table that shows the drainage area to each wetland in the pre-developed and post-developed condition to verify hydroperiod analysis.
3. Correct the discrepancies between the provided WWHM model “westbasin” and tables 6-3, 6-4, 6-5 and 7-1 of the drainage report as highlighted.
4. The formation of Road L is creating a channel on the North side that leads directly to the unnamed stream. Show velocity calculations and provide temporary and permanent channel lining accordingly.
5. How will the existing drainage channel near the intersection with Road L and Viking Way be maintained? Consider adding a culvert under Road L.
6. If existing stormwater pond is to remain and Road L is decreasing the volume of the existing pond then calculations must be provided that show the pond is sized correctly for the proposed flows. Where does the pond outfall? Is it designed to infiltrate the 100 year storm?
7. Provide pipe capacity and inlet spacing calculations.
8. Show scour protection on plans and provide calculations.
9. Remove demolished pipe callouts from the storm plans.
10. Verify inlet spacing along Road A.
11. How will the parking area in front of Building 9 be collected in the conveyance system?
12. Remove the water and sanitary utilities on the stormwater profiles and just show crossing locations. It is difficult to read the profiles with all three utilities shown.

13. The maximum depth on Type I catch basins is 5'. Structures CB #L4 and CB #L2 do not meet this criterion. Please revise.
14. Show crossing utilities and their clearance from the culvert on the stream crossing profile.
15. While a plan was provided for the infiltration gallery serving a portion of the road improvements at and SR 305, there are key issues if this system does not perform as designed, as there are minimal contingency or adjustments that could be made. Notably, the depth of the facility compared to the surrounding area, the upstream west pond possibly contributing groundwater flow, and the generally poor area soil raises some questions. Key site information to assess the facility were not found, including geotechnical information regarding infiltration results and ground water level; underdrain discharge point and connection; and pretreatment if required by CARA (if the soils treatment is insufficient). Please provide this information.

Detention Ponds

More detail is required to determine whether the proposed detention ponds meet the requirements of the Ecology Manual. Please show the following:

1. Sediment storage area of at least 0.5'.
2. Control structures with orifice sizes and elevations
3. Geotechnical analysis/report for slopes over 15%. The scope of the geotechnical report should include the assessment of impoundment seepage on the stability of the natural slope where the facility will be located. The report should also include embankment compaction method and soil content requirements.
4. Anti-seepage filter-drain diaphragms on outflow pipes in berm embankments impounding water with depths greater than 8 feet at the design water surface.
5. A secondary inlet to the control structure as additional protection against overtopping should the inlet pipe to the control structure become plugged such as a grated opening "jailhouse window".
6. Pond access road surfacing type (permeable pavement, gravel or modular grid pavement).
7. Height of pond fencing and access road gate.
8. All facilities are at least 50' from the top of any slope greater than 15%.

TESC Plan

1. The diversion pump does not appear to be shown in the correct location. Please revise and show full stream bypass plan including fish barriers.
2. If jute netting is only shown on 2:1 slopes within the stream buffer, how will 2:1 slopes be stabilized outside of the buffer?
3. Provide velocity calculations and details on the stabilization of swales.
4. Consider adding filter fabric fence on the high side of the site to prevent clean water from entering project.
5. Provide volume calculations, geometry calculations, and dewatering calculations for the temporary sediment ponds. A dewatering riser must be used instead of a pump.
6. Show silt fence, an overflow spillway and a riser for detention ponds in accordance with BMP C241.