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TECHNICAL MEMORANDUM

DATE: November 8, 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 on October 29, 2021, 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 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. Key items in the review included:

- Revision Response Matrix dated October 2021 prepared by Oslo Bay Design Team
- Drainage Report dated October 27, 2021 prepared by kpff
- Civil Plans dated September 13, 2021, prepared by kpff

The following is the status of responses to previous comments followed by a summary of remaining items to be addressed. When the Parametrix summary of the response status is "The applicant indicates they will provide this information with construction plans." it means that we concur that the materials can be provided in the future and at that time a comprehensive review will occur, and that the item is resolved for purposes of this review. Changes may be required during construction plan review due to items the applicant did not chose to address during the land use phase.

Outstanding Review Cycle Comments

1. No calculations found for:
    a. Emergency overflow weir(s)
    b. Dispersion Structures/Diffuser Tees
    c. Cobble for discharge locations

    The applicant indicates that the City agrees with the preliminary overflow weir locations shown on plans and that refined geometry and calculations will be provided with construction plans. Applicant indicates that the dispersion structures were determined with WDFW, the City, local tribal fisheries representatives, and the City's biologist. The outfall will be a non-standard perforated pipe laid perpendicular to the slope with no rock armoring to be detailed on construction plans. As confirmed by the City, there was a preliminary meeting on-site where the location and nature of the outfall dispersion structures was discussed. However, we still need to see proof of concept for outfall dispersion structure,

including typical details for the design, sizing, erosion control at the discharge point, attachment to the slope, etc. before we move into the construction document phase.

The applicant has provided a proof of concept for the dispersion structure including photos and names of projects where WDFW has had success with the same type of dispersion structure. The applicant indicates they will provide the design information with construction plans.

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:
    d. 100-year peak discharge from the bypass area does not exceed 0.4 cfs.
        i. Applicant has provided the correct information to determine that the 100-year peak discharge is less than 0.4 cfs for the Vetter Road bypass (page 283 of drainage report) but has not provided runoff treatment for this area. Applicant shows BioPod upstream of this area but does not capture this area. Also, BioPod is redundant if treating downstream of detention as indicated in drainage report.
    e. Runoff Treatment requirements applicable to the bypass areas are met.
        i. For the East and West basin bypass areas the applicant has yet to show that the 0.4 cfs threshold has been met OR that runoff treatment is provided. All the applicant provides in the modeling is enough information to conclude that the proposed BMPs compensate for the bypass flows.

    The applicant indicates they will provide this information with construction plans.

3. 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.

    To resolve this issue the applicant has modeled the West Pond to account for the bypass flows. However, this bypass area (from both Vetter Road and SR305) will never reach the pond. It is not shown how this area will be treated. There is a BioPod shown upstream of this area that would not capture it. Some plans/reports show the old infiltration gallery design, some describe a vault, and some describe a vegetated swale. We need to discuss with the applicant/engineer or obtain additional information to understand the approach and how this is in compliance with the manual. There is insufficient information to review this piece of the design. Note that regardless of whether Vetter Road meets the standards for a high-use site, the entire Project is required to include enhanced treatment and Vetter Road is no exception.

    The applicant has indicated that a BioPod facility will be placed within the WSDOT right-of-way to provide water quality treatment for all on-site area that bypasses the West Pond as well as the SR305/Vetter Road intersection. There is a preliminary layout for this facility on sheet C4.12 of the plan set. There is enough information here to show proof of concept. However, during the construction plan phase, the applicant will need to show that all on-site area that bypasses the west pond meet the Department of Ecology water quality and flow control requirements. Additionally, the improvements within the WSDOT

right-of-way must meet all WSDOT flow control and runoff treatment requirements and adequately address all requirements and approvals of the City and WSDOT.

4. A geotechnical analysis to assess stability of the facility in operation and assess seepage on slopes greater than 40 percent within 200-feet of the toe of the facility.

   The geotechnical analysis provided as an appendix to the drainage report is not shown for the latest iteration of the east pond facility. The stability analysis must be completed for the current design. The stormwater review responsibility is to require this analysis. The efficacy of this report should be confirmed by the Geotechnical reviewer as it is not in our expertise.

   The efficacy of the revised stability report shall be confirmed by the Geotechnical reviewer.

Conditions to Address Final Review Comments

- Provide the dispersion structure design and calculations as described in Item 1 of the "Outstanding Review Comments". The applicant indicates they would provide the design information with construction plans.

- Provide details on the site flow bypasses and indicate 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, as described above in Item 2 of the "Outstanding Review Comment".

- The applicant must show that all on-site area that bypasses the west pond meet the Department of Ecology water quality and flow control requirements. Additionally, the improvements within the WSDOT right-of-way must meet all WSDOT flow control and runoff treatment requirements and adequately address all requirements and approvals of the City and WSDOT, as described above in review documents and in Item 3 of the "Outstanding Review Comment".

- The applicant must provide a stability report prepared by a Geotechnical Engineer for review by the City's geotechnical reviewer.

Items the Applicant indicated they will provide during construction documents. These can be used as a list of conditions.

Site Design Details

1. All detention ponds must have an emergency overflow spillway designed per the Ecology Manual. 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. 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.
4. Provide pipe trench detail that shows conformance with Chapter 5.E of the City of Poulsbo Construction Standards and Specifications.
5. Show scour protection on plans and provide calculations.
6. The maximum depth on Type I catch basins is 5'. Structures CB #L4 and CB #L2 do not meet this criterion and should be revised.

7. Show control structures with orifice sizes and elevations.
8. Show anti-seepage filter-drain diaphragms on outflow pipes in berm embankments impounding water with depths greater than 8 feet at the design water surface.
9. Provide 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".
10. Show pond access road surfacing type (permeable pavement, gravel or modular grid pavement).
11. Show height of pond fencing and access road gate.
12. The diversion pump does not appear to be shown in the correct location. Revise and show full stream bypass plan including fish barriers.
13. Show silt fence, an overflow spillway, and a riser for detention ponds in accordance with BMP C241.
14. Show the correct buffer from steep slopes for the East Pond.
15. 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.

Additional Information Required

16. Provide pipe capacity and inlet spacing calculations. Verify inlet spacing along Road A.
17. Embankments greater than 6' must be designed by a geotechnical engineer and have a key equal to 50 percent of the berm embankment.
18. 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.
19. Show how will the parking area in front of Building 9 will be collected in the conveyance system.
20. Jute netting is only shown on 2:1 slopes within the stream buffer. Show how 2:1 slopes will be stabilized outside of the buffer.
21. Grading plans must show positive drainage away from the foundations of all buildings.
22. 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.
23. Provide calculations for:
    a. Emergency overflow weir(s)
    b. Dispersion Structures/Diffuser Tees
    c. Cobble for discharge locations
24. 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:
    d. 100-year peak discharge from the bypass area does not exceed 0.4 cfs.
    e. Runoff Treatment requirements applicable to the bypass areas are met.
25. Show that on-site area that bypasses the west pond meets the Department of Ecology water quality and flow control requirements.
26. Provide a 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.
27. Provide velocity calculations and details on the stabilization of swales.
28. Provide volume calculations, geometry calculations, and dewatering calculations for the temporary sediment ponds. A dewatering riser must be used instead of a pump.
29. Define suitable protection of the drainageway and slope downstream of the emergency overflow or an alternate strategy to include an emergency overflow structure.

Thank you for the opportunity to assist you on this project review. Please let us know if you have any questions.