Engineering Comment Responses

Project: Nguyen Residence
Subject: Engineering Comments Permit #2204-199

Plan Comment Responses in RED below:

1. **Plan Sheet C1.0** – Add note “the lawn and landscape areas are required to provide Post-Construction Soil Quality and Depth Requirements specified on the approved plan set prior to final inspection of the project. Note Added as requested.
2. **Plan sheet C2.0** – Is the construction entrance intended? Architectural plans indicate existing driveway to remain and be protected. It has been decided that the driveway will be overlayed for maintenance rather than removed. We have removed the construction entrance and added notes to sweep street if sediment is tracked offsite.
3. **Plan sheet C3.0 #1 –** Please verify the proposed rim with the survey – the proposed rim seems to be high and there is currently no work to be performed to the driveway. The driveway runoff should not be routed to the infiltration trench – but please verify there is enough fall from start to end in the resubmittal. It seems there is even less than 1% fall between CB’s. Removed the CB, see response to comment 2 above.
4. **Plan sheet C3.0 #2 –** The infiltration trench is intended for roof surfaces, not hard surfaces – driveway runoff shall not be tightlined to the infiltration trench. If the driveway trench is confirmed to be replaced, MR#1 – MR#5 applies to this area. The replaced driveway is also required to provide passive spill control prior to discharge from the site or into a natural on-site drainage feature. The intent of this device is to temporarily detain oil or other floatable pollutants before they enter the downstream storm water system in the event of an accidental spill or illegal dumping. It shall consist of a tee section in a manhole or catch basin (or even elbow when allowed by the city engineer. It has been decided that the driveway will be overlayed for maintenance rather than be removed. This will not be considered replaced impervious surface per 2014 DOE definition and so we have removed the driveway catch basin and tightline.
5. **Plan sheet C3.0 #3 –** Indicate rims and inverts for all roof downspout/cleanout connection to show that there will be sufficient fall and pipe coverage – minimum 18” cover in soft surface/landscape, 24” cover in paved / drivable areas. Added Rim / IE information as requested. We have utilized roughly 12” min. cover in soft areas, no pipe in drivable areas and are comfortable with this amount of cover in order to provide 1% min slope on the 6” pipe.
6. **Plan sheet C3.0 #4 –** Driveway and front/side/rear walks: Architect plans indicate these to remain as existing with the exception of a small portion in the rear. With the proposed driveway CB, it seems there will actually be work to these locations – please confirm if these areas are to remain as existing or be replaced. Otherwise are this surfaces to remain subject to MR#5. The owner would like to replace the sidewalks, we have revised them to be pervious sidewalks.
7. **Plan sheet C3.0 #5 –** A new side sewer from the building to the existing side sewer stub at the property line is required. Provide a complete side sewer design showing the side sewer layout, pipe size, pipe slope, IE at the building point of connection, IE at the existing tie in point at the property line, clean out locations. Show the existing sewer main

location and existing stub within the SE 56th St. The project proposes re-use of the existing side sewer. We have the information requested above from the topographic survey and from an exploratory pothole provided by the contractor for the connection at the building. This info has been added to the plan set.

8. **Plan sheet C3.0 #6 –** Add the note: the tv inspection of the existing side sewer to the city sewer main on SE 56th st is required prior to any work related to the side sewer. If the result of the TV inspection is not in satisfactory condition, as determined by the city of Mercer Island Inspector, the replacement of the existing side sewer is required. We have added this note as requested. It should be noted that the TV inspection has already been performed and can be provided to the inspector at any time.
9. **Plan sheet C3.0 #7 –** Architectural drawings indicate a footing drain for the building – please show the footing drain layout, pipe type/slope/size, the building point of connection IE, and where the footing drain will discharge/connect to on the plan. Project will re-use the existing footing drain. Project architectural plans have been updated to call for re-use of existing.
10. **Plan sheet C3.0 #8 –** Indicate the surface elevation of the infiltration trench. The IE of the 4" pipe and bottom of gravel are equal and do not provide 12" of gravel bedding under the pipe. Infiltration trench does not go to the surface, we have called out top of gravel elevation. Please note that survey shows 2' elevation drop in the back yard, based on site visit, we do not believe this drop exists and so top of gravel elev = 355.50 and finished grade is ~356. Design does not include 12" of gravel below the perf pipe. We have made this compromise in order to provide suitable cover and pipe slope. We are comfortable with the design functioning as intended and have updated the trench cross section to reflect the pipe at the bottom of gravel.
11. **Plan sheet C3.0 #9 –** For a sandy loam soil, DOE requires 125 LF of trench per 1,000 sf of roof area – the 30 lf does not meet this for a 3,500 sf roof area. We are utilizing WWHM and the results of the infiltration testing to size the infiltration trench. (Calcs provided in drainage report) The DOE table is highly conservative and is intended for homeowners who do not want to involve a professional engineer. The site soils were quite well drained and resulted in a good design rate after correction factors.
12. **Plan sheet C3.0 #10 –** Setbacks: 10' setback is required from structures and property line on the plan. The EOR must ensure that there will be zero erosion / flooding impact to downstream neighboring properties and this concrete wall from the infiltration trench. Retaining wall is more of a decorative keystone block wall and not more than a few feet high. Do not believe it qualifies as a structure, but regardless, we have adjusted the infiltration trench to also be setback 10' from the keystone block wall. We believe the trench is designed per DOE and City of Mercer Island standards and we have stamped it as such. It is our opinion that there will not be erosion or flooding impacts as a result of the infiltration trench.
13. **Plan sheet C3.0 #11 –** General: The report indicates election to meet the LID performance standard and the plans propose a downspout infiltration system BMP with the infiltration trench to satisfy the performance standard. All feasibility criterial shall be evaluated and design criteria met for from the 2014 DOE SWMMWW and provided in the report and the plans to show infiltration trench meets all criteria. See additional comments in SSP report regarding the additional information needed for infiltration feasibility. We Have revised the storm strategy to compliance with List #1 and have added that discussion to MR#5 section of the storm report.
14. **Plan sheet C3.0 #12 –** Grading: Are the contour lines shown existing or proposed? Survey shows contours sloping down toward the southern property line. Please show all existing and proposed grading required around the storm facilities. Contour lines shown were existing and sourced from GIS, we have removed them and provided contours from the topographic survey. We believe they are a more accurate source. It was noted above that the back yard shows a couple feet of drop per the survey contours. Do not believe this is the case based on a site visit.
15. **Plan sheet C3.0 #13 –** The site plan callouts indicate 4" pipe @1% min, and detail 2 for downspout connection indicates 0.50% minimum – which is it? 4" pipe shall be 2%

minimum, 6” pipe at 1% minimum (typ.) We have revised piping to 6” @ 1.0% as requested and updated detail 2 sheet C3.0 to reflect that.

16. **Plan sheet C3.1 #1 –** DOE indicates 10’ of separation from the edge of trench to the edge of structure. Please update this detail, profile, and indicate on C3.0. The DOE detail incorrectly shows the 10’ dimension. It is intending to convey the 10’ separation requirement from the trench to the building and is just drawn incorrectly. If you review other stormwater manuals, like King or Pierce County you can see this, it seems the DOE detail has been incorrect for the last few manual editions. There is no functional reason to have 10’ between the trench and the catch basin and we are comfortable with the design as is.
17. **Plan sheet C3.1 #2 –** This structure needs to be at least 5’ deep minimum with the proposed rim at 356’ and pipe IE at 353’ Removed dimension to prevent confusion.
18. **Plan sheet C3.1 #3 –** What type of rock and size is required. Added rock type to detail.
19. **Plan sheet C3.1 #4 –** The IE of the 4” pipe and bottom of gravel elevation are equal and do not provide 12” of gravel bedding under the pipe Indicate the 12” of bedding in the section and profile. Design does not include 12” of gravel below the perf pipe. We have made this compromise in order to provide suitable cover and pipe slope. We are comfortable with the design functioning as intended and have updated the trench cross section to reflect the pipe at the bottom of gravel.
20. **Plan sheet C3.1 #5 –** Ensure there is 12” minimum from the bottom of gravel to the groundwater level. Further test pits going deeper may be required once final grading and elevations are confirmed. Test pit revealed impermeable layer at 4’ and no evidence of groundwater. We have placed the bottom of gravel 12” above the impermeable layer and believe this requirement is met.
21. **Plan sheet C3.1 #6 –** DOE indicates a 24” trench – clarify why a 4’ trench is proposed and deviating from this design criteria. We have provided a custom trench sized via WWHM to fully infiltrate the impervious. A wider and shorter trench fits the site better with the required setbacks and also works well with the piping layout vs. rooflines and where the downspouts are located.
22. **SSP PG.1 – Comment #1 –** Provide additional information in the report to justify how the site soil was tested and determined to be a sandy loam soil. Was the soil classification performed on site or at a lab? Was the falling head test performed on site or taken to a testing facility? Please provide all documentation to support the soil classification and infiltration testing. Soils were visually classified and the test was completed on site. We have added this to the report.
23. **SSP PG.1 – Comment #2 –** The existing infiltration trench is not relevant to the proposed facility as there are no records or permits on the existing facility. We are reporting what was found during the excavation, it is standard practice to do so when providing a soil log.
24. **SSP PG.3 – Comment #1 –** The proposed infiltration trench shall not result in flooding or erosion problems for downstream neighboring properties and the block wall along the south property line. Provide writing to address any impacts to erosion, slope, downhill neighboring properties due to the proposed infiltration trench; how impacts will be mitigated; or state that there will be no negative impacts with the proposed design. We have added to our original statement and included a statement that there will be no negative impacts as requested.
25. **SSP Appendix C1 – Comment #1 –** Provide additional write up to clarify how the test was performed, and how each of these design values and rates were determined for the design infiltration rate. Additional information added to the soils / infiltration section in the body of the report. The test was performed on site and soils classified visually.
26. **SSP Appendix C1 – Comment #2 –** The soil log alone is not sufficient to show site soils are suitable for infiltration. Provide additional writing as to how the soil was tested and determined to be a sandy loam soil. Describe how the soil is/is not consistent with the arents/alderwood material from the NRCS map and USDA classification as a sandy loam. What are the approximate limits and extents of this soil layer? Provide all test results, and additional documentation to detail how the soil classification was determined. We have

added a description that the soil was visually classified and infiltration test performed on site. In addition we have provided soil log, description of soil log and site soils, description of impermeable layer, groundwater, results of infiltration test, correction factor calculations, and we have located the infiltration trench in the location of the soil log / infiltration test. These are prepared and stamped by a licensed professional engineer.

If the comment is suggesting a full writeup by a Geotech, this cannot be provided by Sitepro Engineering. Full Geotech writeup however, is not typically required for a single family residence project unless there are critical areas, steep slopes, or extensive walls / tight construction, etc. We believe the testing and reporting is common practice for this type of project, and a sufficient amount of exploration has been performed for the design of a downspout infiltration trench.

27. **SSP Appendix C1 – Comment #3 –** Where is the groundwater or impermeable soil layer expected to be? Will the groundwater rise during the wet seasons above 4' depths? Include response/writing in report. With the pit ending at 4' - will a deeper TP be needed to ensure 12" of clearance from bottom of trench to the impermeable layer? We did not observe any groundwater or evidence of seasonal groundwater, no mottling was observed within the excavations. The excavation was terminated at the impermeable layer and we have placed the bottom of trench the required 12” minimum above impermeable layer.
1. **SSP Appendix C2 – Comment #1 –** These thresholds appear to be the flow control standard under MR#7. Please update report for LID Performance Standard thresholds. We have changed the stormwater strategy to utilize list #1. No change to WWHM sizing for infiltration trench.
2. **SSP Appendix C2 – Comment #2 –** Where is the predeveloped condition information under land use and routing? It seems the analysis was not able to be completed as there is no predeveloped condition to compare against in order to confirm the developed conditions meet the LID performance standard. We have changed the stormwater strategy to utilize list #1. No change to WWHM Calcs as they are now only used to show adequate sizing of the infiltration trench. Predeveloped not needed for sizing infiltration trench only.