Red Barn Group, Inc.
www.redbarn-engineering.com

Field Report and Drainage Calculations

DATE: June 1, 2023

TO: KEVIN NGUYEN, DRAINAGE REVIEWER, CITY OF MERCER ISLAND

FROM: Rebekah Weston, PE Principal Civil Engineer

SUBJECT: Jaffe Residence – Drainage Analysis

Red Barn Group, Inc. (Gopi Masarapu and Rebekah Weston) and the City of Mercer Island (Kevin Nguyen) met at the site to discuss the drainage options for the site. The original site plan had runoff for the upper portion of the addition draining back toward the street. The City said that this would have to be hard-piped and no discharge onto the street could occur.

The existing drainage system has a drywell that collects the roof runoff. The new site impervious area is less than 2,000 SF, which does not require a drainage review. However, a city review comment required that the drywell be validated that it was working properly as well as for the additional runoff going to it. This is problematic in that the yard is well vegetated and would require digging within large root zones to find the drywell and test it.

At the site visit, we discussed the options and the following was decided:

1) It was discussed to not alter the impervious area going to the existing system. We walked downstream and there was no evidence of a failing system. There was no exposed soils or rutting occurring. Because the project is not altering the existing system, it was agreed that the drywell system did not need to be investigated further.
2) There is no existing drainage system other than the noted drywell on the property. Hence, the new impervious areas from the roof need to be routed through a drainage BMP to disperse to the extent possible. A basic dispersion trench is able to fit on the property and meets all the requirements. See Attachment A for a summary of the criteria for a basic dispersion trench.

See the plans for the areas that are routed to the new basic dispersion trench. Note that a portion of the SE roof will compensate for the front roof extension over the patio where that area is only feasible to be routed to the existing drainage system.

Pictures from the site visit are included in Attachment B.

Sincerely,

Rebekah J. Weston, PE

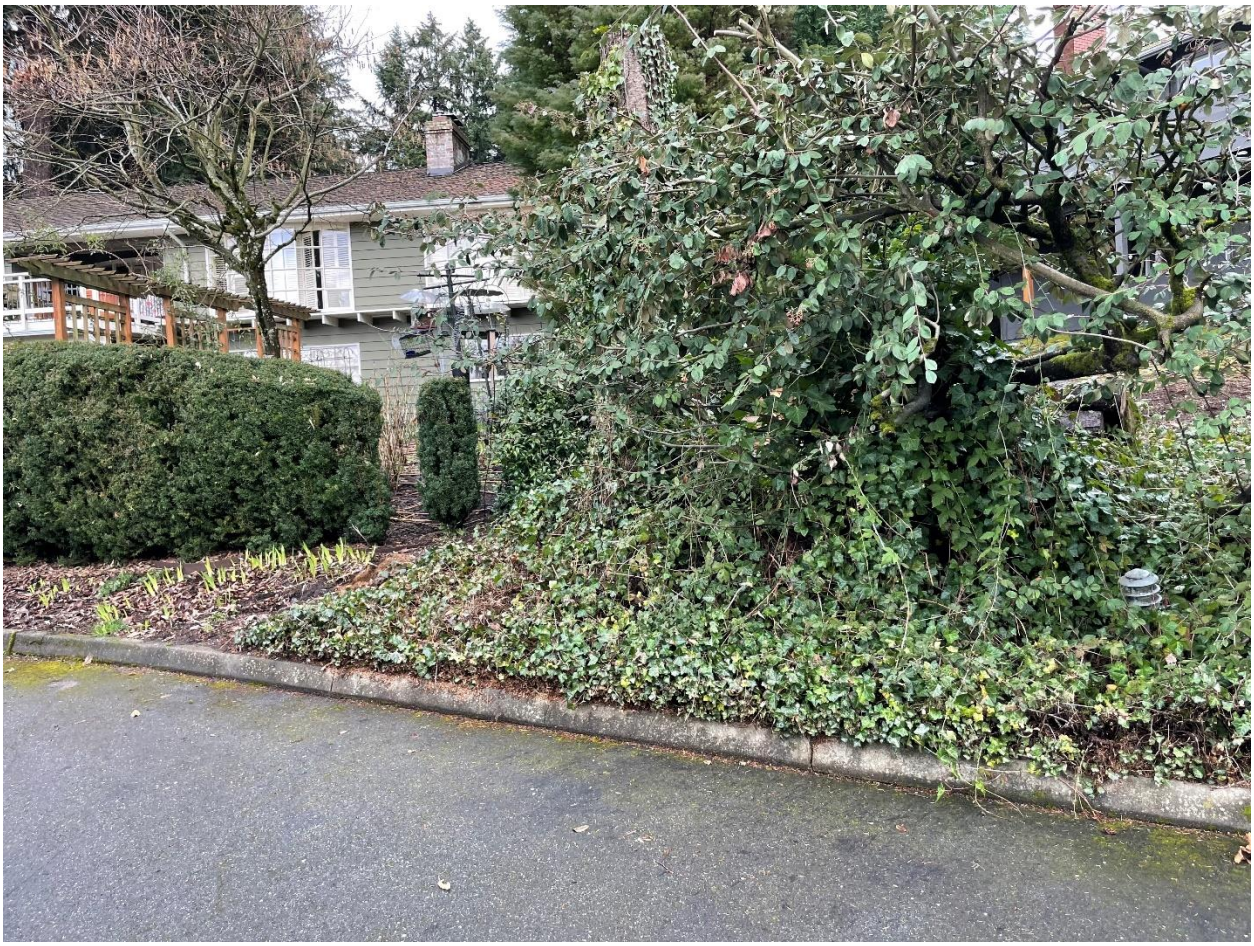
Engineer of Record

6610 NE 181st Street, Ste. 3, Kenmore, WA 98028 • 425.419.4979

Attachment A – Design Criteria for Dispersion Trenches (Section 3.1.2. 2012 DOE SWMMWW)

	Department of Ecology 2012 Stormwater Management Manual for Western Washington	How Met?	Does Design Meet Criteria?
1.	A vegetated flowpath of at least 25 feet in length must be maintained between the outlet of the trench and any property line, structure, stream, wetland, or impervious surface. A vegetated flowpath of at least 50 feet in length must be maintained between the outlet of the trench and any slope steeper than 15%. Sensitive area buffers may count towards flowpath lengths	The proposed dispersion trench maintains a minimum flowpath of 25 feet. A flowpath of 50 feet is unnecessary, due to the vegetated flowpath slope being across grounds with >15% slopes.	Yes.
2.	Trenches serving up to 700 square feet of roof area may be simple 10- foot-long by 2-foot wide gravel filled trenches as shown in Figure 3.1.5. For roof areas larger than 700 square feet, a dispersion trench with notched grade board as shown in Figure 3.1.6 or alternative material approved by the Local Plan Approval Authority may be used. The total length of this design must not exceed 50 feet and must provide at least 10 feet of trench per 700 square feet of roof area	A 15 foot trench is used. New Addition Front of House = 139 SF New Addition Garage = 508 SF Compensating Roof Area = 334 SF TOTAL AREA TO TRENCH: 842 SF = (508 + 334)	Yes.
3.	Maintain a setback of at least 5 feet between any edge of the trench and any structure or property line.	The dispersion trench is placed such that it meets the clearances from the building and property line.	Yes.
4.	No erosion or flooding of downstream properties may result.	Flowpath fulfills adequate length and slope requirements, but also exists through thick vegetation. Vegetation is an effective method of removing and absorbing surface flows. No seepage should occur beyond the flow path. Beyond the property is a paved driveway such that no erosion will take place.	
5.	Have a geotechnical engineer or a licensed geologist, hydrogeologist, or engineering geologist evaluate runoff discharged towards landslide hazard areas. Do not place the discharge point on or above slopes greater than 15% or above erosion hazard areas without evaluation by a geotechnical engineer or qualified geologist and jurisdiction approval.	No slopes are exceeding 15%, therefore this criteria does not apply.	Yes.
6.	For purposes of maintaining adequate separation of flows discharged from adjacent dispersion devices, the outer edge of the vegetated flowpath segment for the dispersion trench must not overlap with other flowpath segments, except those associated with sheet flow from a non native pervious surface.	Not applicable. There is only (1) dispersion trench, so this criteria does not apply.	Yes.

Attachment B – Field Site Visit Photos



Downstream of site on pavement below, looking north through vegetated area where flow dispersion will occur.