Preliminary Stormwater Plan

Dove Family Dentistry Addition

600 39th Ave SW, Puyallup, WA 98373

Prepared for

Dove Family Dentistry
600 39th Ave SW
Puyallup, WA. 98373

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PROJECT OVERVIEW AND MAPS

Dove Family Dentistry Office is located in Puyallup, WA along the south side of 39th Avenue Southwest. The lot size is 13,796 SF (0.32 AC).

The project includes the construction of an addition to the existing dental office on site along with site improvements. The existing office on site is 1,532 SF, the new building addition will add 2,331 SF of story addition and 1,637 SF of basement addition. Site improvements include permeable pavement, new sewer service connection, and landscaping. Water, power, communication, and gas services will be reconnected to addition.

EXISTING CONDITIONS SUMMARY

The Dove Family Dentistry Office is on a 13,764 SF (0.32 Acre) site consisting of the existing Dental office building, existing parking lot, and landscaping around the building. The slopes on site are moderate along the frontage sidewalk and landscaping, and fairly flat throughout the existing parking lot.

How is stormwater currently being collected?

The existing project site has an impervious lot coverage of 41.1%.

There are no critical areas on or within the vicinity of the site.

OFF-SITE ANALYSIS REPORT

Stormwater for Dove Family Dentistry shall be conveyed to a catch basin on 39th Ave Southwest and into the City of Puyallup's Storm Drain System.

PROPOSED CONDITIONS SUMMARY

The Dove Family Dentistry project proposes a 2,331 SF story addition and 1,637 SF basement to an existing office.

Site improvements include new sidewalk connections to ROW, ADA accessible ramps, parking lot reconfiguration, stormwater BMPs, utility service connections, and landscaping. Existing septic will be decommissioned. New sewer service will connect to City's manhole along the driveway entrance.

The Dove Family Dentistry new addition adds less than 5,000 SF of new impervious surface which subjects the project to minimum requirements 1-5. Stormwater from the Dove Family Dentistry project area will be collected from the new building addition and tightlined to inline Perforated Stub-Out Connections. Perforated stub-outs will allow stormwater runoff the opportunity to disperse on site, before flowing into an existing catch basin on 39th Ave Southwest. Stormwater from new or replaced hard surfaces will be managed via permeable pavement. All disturbed soils will be amended to meet jurisdiction standards.

The proposed site will result in an impervious lot coverage of 69.9%.

LOT COVERAGE

	Existing Conditions	Proposed Conditions
Impervious Surface Area	41.1%	69.9%
Pervious Surface Area	58.9%	30.1%

SOIL INVESTIGATION

Preliminary evaluation of soil on-site involved excavation at two locations in the northern portion of the site. Excavations and infiltration testing were conducted on December 27th, 2019, to a depth of 4.0-feet. Soils were visually inspected for the presence of distinct horizons, mottling, ground water presence and organic materials. During the testing, a standing ponding depth of 12-inch could not be maintained, and therefore the test was ended. No mottling or groundwater was observed with over-excavation below testing depth, and minimal organic materials were observed. Soils were hand tested for plasticity and clay content and were observed to crumble when rolled. The infiltration rate is estimated to be approximately 39.0 in/hr. See Appendix A for infiltration testing results.

SUMMARY OF MINIMUM REQUIREMENTS

The City of Puyallup utilizes the 2019 Washington Department of Ecology Stormwater Manual (2019 Manual) for stormwater design. Volume 1 of this manual describes the Minimum Requirements for stormwater management for a redevelopment site. Using the flow chart below, Minimum Requirements 1-5 apply to the Dove Family Dentistry site.

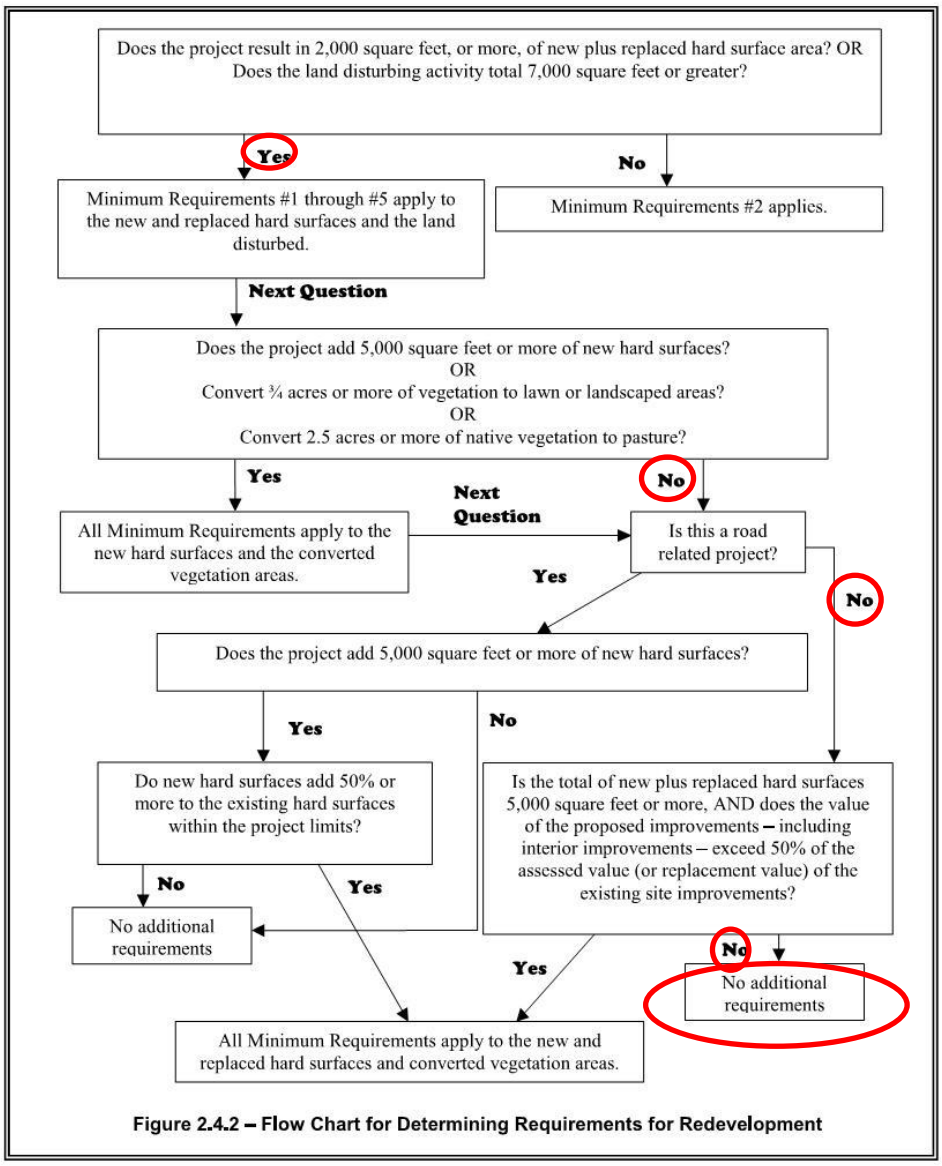

Figure 2.4.2 – Flow Chart for Determining Requirements for Redevelopment

MINIMUM REQUIREMENT 1: PREPARATION OF STORMWATER SITE PLANS

Stormwater Site Plan drawings are submitted with this Permit.

MINIMUM REQUIREMENT 2: CONSTRUCTION STORMWATER POLLUTION PREVENTION

A Temporary Erosion and Sediment Control Plan will be included with the Civil Construction Permit. Construction Stormwater Pollution Prevention measures may include storm drain inlet protection, construction entrance, silt fence and vegetative filtration.

MINIMUM REQUIREMENT 3: SOURCE CONTROL OF POLLUTION

Source control BMPs will be implemented to minimize stormwater contamination and comply with the 2019 Department of Ecology Stormwater Manual as adopted by the City of Puyallup. BMP's for the project may include:

- *Inspect and clean treatment BMPs, conveyance systems, and catch basins as needed, and determine necessary O & M Improvements.*
- *Clean catch basins when the depth of deposits reaches 60-percent of the sump depth as measured from the bottom of basin to the invert of the lowest pipe into or out of the basin.*
- *Clean woody debris in a catch basin as frequently as needed to ensure proper operation of the catch basin.*

MINIMUM REQUIREMENT 4: PRESERVATION OF NATURAL DRAINAGE SYSTEMS AND OUTFALLS

This project proposes to maintain natural drainage pattern of the existing site.

MINIMUM REQUIREMENT 5: ONSITE STORMWATER MANAGEMENT

Per the 2019 Manual, this project is subjected to List #1 or meet LID standards to determine Stormwater Best Management Practices (BMPs) for new and replaced impervious. This project will utilized List #1. Below are evaluations of each stormwater BMPs for the Dove Family Dentistry Project:

- Lawn and Landscaped Areas
    - Post Construction Soil Quality and Depth in Accordance with BMP T5.13 shall be utilized for grass and landscaped areas of the Project.
- Roofs
    - Full Dispersion (BMP T5.30) is determined to be infeasible due to insufficient vegetated flow path within project site. Project does not maintain 65% of the site in a "native condition".
    - Downspout Infiltration (BMP T5.10A) is determined to be infeasible for roof runoff, due to minimum setback requirements. Per setback requirements, all infiltration systems should be at least 10 ft from any structure.
    - Raingardens are determined to be infeasible for roof runoff, due to the minimum setback requirements. Per setback requirements, all infiltration systems should be at least 10 ft from any structure.

- Bioretention is determined to be infeasible for roof runoff, due to the minimum setback requirements. Per setback requirements, all infiltration systems should be at least 10 ft from any structure.

- Downspout dispersion is determined to be infeasible for roof runoff, due to site constraints. Per design requirements, at least 25-feet of flow path is required for dispersion. There is not sufficient space on-site to accommodate the flow path.

- Perforated Stub-Out Connections were determined to be feasible and comply with design and setback requirements. Perforated Stub-Out Connections was sized and designed based on the following criteria:

    - Perforated stub-out connections consist of at least 10 ft of perforated pipe per 5,000 SF of roof area laid level.
    - 2 ft wide trench backfilled with washed drain rock.
    - Extend the drain rock to a depth of at least 8 inches below the bottom of the pipe and cover the pipe.
    - Lay the pipe level and cover the rock trench with filter fabric and 6 inches of fill.

- Hard Surfaces

    - Full Dispersion (BMP T5.30) is determined to be infeasible due to insufficient vegetated flow path within the project site. The project does not maintain 65% of the site in a "native condition".

    - Permeable Pavement (BMP T5.15) is determined to be feasible for hard surfaces of the project site. Project proposes to utilize permeable asphalt and concrete within the site to maximum extents feasible. Permeable Pavements has been sized utilizing the WWHM Model for permeable pavement based on the following criteria:

        - Infiltration rate of 0.1 in/hr
        - Drain Rock Basin with a porosity of 0.33
        - 5" Drainage Layer thickness
        - 100% of runoff file to be infiltrated

    - Permeable Pavements will include the following:

        - 5" minimum Permeable Ballast Rock Layer
        - 4" Slotted PVC underdrain with connection to the Dove Family Dentistry Stormwater Conveyance System
        - Impermeable geotextile along building walls

      See Appendix A for Infiltration Testing results.

Runoff from Dove Family Dentistry will be managed using Perforated Stub-Out Connections and permeable pavements. Roof leaders from the building addition will convey water through the downspouts and tighline to the perforated stub-outs prior to connecting to City's system along 39th Ave.

Runoff from new and replaced hard surfaces will be managed using permeable pavement to maximum extents feasible. Runoff will infiltrate through pavements and into native soils. Permeable pavements located on the Dove Family Dentistry Site have been sized to infiltrate 100% of stormwater runoff file. Permeable pavements at Dove Family Dentistry will abut structures and could introduce risk of water pooling near building foundations. To mitigate this risk, permeable pavements shall be lined with an impermeable geotextile along building footings to convey any stormwater that may pool away from the structures. The impermeable geotextile will extend 3 feet from building exteriors.

All disturbed soils and new landscaped areas will be amened to meet BMP T5.13 per City of Puyallup standards.

APPENDIX A

Project Location:	Dove Family Denistry						
Date of Test:	12/26/2019, 12/27/2019						
Test Pit Dimensions:	3.0	Wide (Feet)	3.0	Length (Feet)		Depth (Feet)	
Presoak:	____M - ____M at _____-inch water column				Meter Start		Meter End
Infiltration Test:							
	Water Column Maintained (inches)		12				
	Gallons Per Inch:	5.61					
	Time(Minutes)	**Volume (gallons)**	**Flow Rate (GPM)**			**Flow (Gallons)**	**Infiltration Rate (in/hr)**
			Meter Start	Meter End	Flow (Gallons)		
	0		131.2	131.2	0.0	0.0	
	10						
	15		131.2	185.0	53.8	53.8	
	30		185.0	280.0	95.0	148.8	
	45						
	60		280.0	353.2	73.2	222.0	**39.6**
Drawdown Test:							
	Elevation (Inches)	**Drawdown Time (Min)**	**Infiltration Rate (in/hr)**				
	12	0.00					
	11		#DIV/0!				
	10		#DIV/0!				
	9		#DIV/0!				
	8		#DIV/0!				
	7		#DIV/0!				
	6		#DIV/0!				
	5		#DIV/0!				
	4		#DIV/0!				
	3		#DIV/0!				
	2		#DIV/0!				
	1						
	0						
	Average		**#DIV/0!**		Infiltration Rate of _____ Used for Sizing of System