

# CASE STUDY: Rogue Valley Sewer Services



**LOCATION:** 138 W. Vilas Rd, Central Point, OR  
**PROJECT TYPE:** Pervious pavement, swales  
**PROPERTY TYPE:** Commercial building  
**CONSTRUCTION DATE:** 2005  
**INSTALLER:** Rogue Valley Sewer Services (RVS)  
**DESIGN:** District Engineer, Carl Tappert PE with RVS

## Summary

Grassy pavers were used to create an overflow parking area without creating more reflective, impervious surfaces on this commercial lot. In addition, a grassy swale collects any water that drains from the overflow parking area, and a non-vegetated swale collects water from the rooftop of the Rogue Valley Sewer Services building.

## Project Background

The main reason for installing these low-impact stormwater features was to decrease the amount of impervious surface area and to allow the majority of stormwater to be absorbed into the soil of the overflow parking area. Installation of grassy pavers does not require a stormwater quality permit and therefore presented a great alternative to conventional paving for an agency that hopes to better manage their stormwater runoff.

Currently, RVS is collaborating with Jackson County and the cities of Talent, Phoenix and Central Point to implement the National Pollution Discharge Elimination System (NPDES) Phase II Permit. In addition, RVS and local city representatives have joined forces to create the Stormwater Advisory Team (SWAT) to help determine the best and most efficient ways to improve the quality of stormwater discharged from the Bear Creek watershed. These collaborations



*Figure 1: Vegetated Grassy Paver parking area at RVS*

address how to best meet the federal requirements while minimizing costs. RVS is responsible for implementing stormwater quality practices for the cities of Phoenix, Talent, Central Point and portions of Jackson County; while each separate city handles the quantity of stormwater.

The Rogue Valley Stormwater Quality Design Manual was prepared by Carl Tappert, District Engineer, and adopted by the RVS Board of Directors, to set guidelines for meeting the post construction measure for the NPDES Phase II permit. The Design Manual allows developers to incorporate low-impact development stormwater facilities in new construction. In October 2004, RVS initiated a fee to cover the costs associated with implementing the NPDES Phase II permit. The cost for the stormwater quality program is \$1.00 per month for residential properties and \$1.00 per 3,000 sq ft of impervious area for others and is included in the RVS sewer bill.

## Soil Type and Infiltration

The soil type at the RVS site is an Agate-Winlo complex, which is highly impermeable according to



Figure 2: Grassy Paver detail

Grassy pavers as a form of permeable support work well for the following uses:

- Light-duty parking
- Playgrounds
- Residential driveways
- Erosion control
- Light truck utility access
- Nature trails
- Pedestrian access
- Infiltration basins

the design documents prepared by Carl Tappert. There were no infiltration tests done before or after installation of the grassy pavers and bioswales. The Agate and Winlo series are stratified and of moderate extent in the area of Rogue and Bear Creek Valleys in Jackson County, Oregon. The mean annual precipitation is around 18 inches for the Medford, OR region, and the mean annual temperature is 52 to 54 degrees Fahrenheit. The frost-free period lasts 150 to 180 days.

## Specifications

Grassy Pavers were installed in the overflow parking area. The panels are constructed of recycled HDPE plastic and support over 97,000 pounds per square foot. Figure 2 shows the paver panel detail.

Eighteen inches of soil was excavated for the Grassy Paver sub-base which consists of compacted structural soil. This base is a mixture of top soil and 1-2 inch rock that allows roots to grow and water to drain while maintaining a solid, load-bearing base (see figures 3 & 4). 6,200 square feet of Grassy Paver forms were installed and filled with top soil. The entire area was then planted with a Bluegrass (*Poa pratensis* ssp.) and Fescue (*Festuca ovina* ssp.) mix. The parking area slopes into a constructed grassy swale (420 sq. ft.) along the south end of the overflow parking lot, designed to catch additional runoff. A Bluegrass-Fescue mix was planted here as well. The non-vegetated swale (6000 sq. ft.) along the west side of the new office building was designed to collect water that drains from the roof. No grass was planted for maintenance reasons.



Figures 3 & 4: Showing the construction of the sub-base for the grassy pavers

## Benefits

Grassy pavers allow rainwater to percolate through the soil. Groundwater is recharged and surface water pollutant loading is reduced. The grassy pavers provide the stabilization of asphalt or concrete pavement, but with the aesthetics of a lawn while enhancing water quality. Grassy pavers are a plastic sub-surface reinforcement structure which provide incredible load bearing strength while protecting vegetative root systems. Stormwater is slowed through and across grassy pavers' surfaces, which allows water infiltration by the grass and soil.

Before installation of the grassy pavers, water collected and pooled on the property. Installation of grassy pavers and bioswales relieved this problem and created overflow parking areas without adding new impervious surfaces.

## Cost

The cost of the grassy pavers overflow parking area was about \$ 40,000. According to RVS, this approach was more expensive than using asphalt. RVS saved on construction costs by excavating the site and installing the grassy pavers themselves (Figure 5 & 6). The Grassy Paver website claims that over the life cycle of the product, maintenance requirements will be lower than those of conventional asphalt pavement.

## Maintenance

Pervious areas and grassy swales are maintained by a conventional lawn maintenance service with no special treatment required. The swale along the west side of the building requires some weeding and raking of leaves.

## Effectiveness & Monitoring

RVS staff informally monitors the site and has not observed any significant runoff since installation.

## Successes & Lessons Learned

Vehicles of all sizes have been parking in this area even during the rainy season. Design modifications would be necessary if designing for a 10 year storm.



*Figures 5 & 6: The layout of the grassy pavers in the parking lot.*

## Contact Information

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## References

Rogue Valley Sewer Services Headquarters website: <http://www.rvss.us>

Rogue Valley Council of Governments website: [http://rvcog.org/mn.asp?pg=natural\\_resources](http://rvcog.org/mn.asp?pg=natural_resources)

Information obtained for the Grassy Pavers: <http://www.grassypavers.com/>  
<http://www.grasspave.com/GP2/grasspave.htm>

Information on RVS's NPDES Phase II permit can be found on RVS's website or more general information at the Oregon Department of Environmental Quality's (DEQ's) website: <http://www.deq.state.or.us/wq/stormwater/municipalph2.htm>

Pictures courtesy of Rogue Valley Sewer Services.