

Final drawing



Benefits of the Project

This project will improve the aesthetics, safety, and environmental value of the land. The drainage system will prevent water stagnation, proliferation of bacteria, and animal infestations. Recommended native vegetation will add ecological benefits and natural beauty to the landscape. Removing the liability and improving the land will maintain and bolster the inn's reputation, providing long-term financial benefits to the owners

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Senior Design Project:

Stormwater Runoff System
Improvement

Team SB-4

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Problem

The owners of The Whittaker Inn have experienced issues created by their existing stormwater system. The issues pose a threat to the safety of the guests and the natural beauty of the property.

Land development plans specify a single grassed channel to drain the entire property. Two retention ponds along the channel were designed to fill during storms and slowly release the water to prevent excessive runoff to the municipal drainage ditch.

Project Scope

Two issues need to be solved in the property

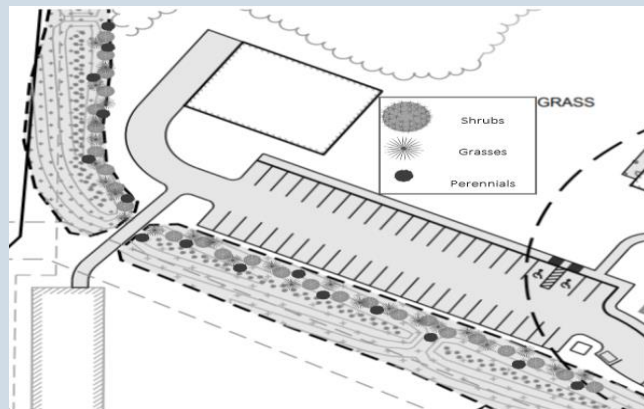
- 1. The retention pond located next to the inn never drains fully.
- 2. During periods of heavy precipitation, runoff from the front lawn is directed over the driveway.



Solution

Problem 1: Water ponding

Two solutions were combined to solve this problem: addition of drainpipe inside the channel as well as new vegetation.



Problem 2: Flow over the road

The solution chosen for this project was to add a culvert to redirect the water flow under the road towards the existing channel. A small grassed channel is required to direct water along the driveway and into the culvert.

Design Recommendations

The final design consists of 4 parts:

- A min. 2.3-inch diameter pipe will allow controlled flow out of the retention pond to ensure full drainage within 2 days of a 24-hour, 25-year storm.
- A small grassed channel, 1-foot bank full depth, will guide the runoff along the driveway, preventing flow from the front lawn from moving across the driveway
- The channel will lead to an 18-foot-long culvert (10.8-inch drop, 1-foot diameter) that will direct the flow of water under the front driveway and into the main drainage channel.
- Riverbank Tussock Sedge is recommended for planting in the channel. Morton Chokeberry and Tardiva Hydrangea are shrubs that can be planted around the channel to create a barrier.

