

WQ-20 STORMWATER ALLEY

1.0 Stormwater Alley

A Stormwater Alley or service alley is designed as a private, one-way street with connections to larger public streets on both ends of an urban residential development. Stormwater alleys are only applicable for highly developed urban areas that have blocked street layouts. The alley will have 2 impervious driving strips separated by a strip of vegetation or other pervious cover. The design will allow rain water to infiltrate through vegetation or porous pavement to the ground, providing natural drainage.

1.2 Requirements

Stormwater Alleys are approved by Greenville County Land Development Division when the bulleted requirements in the following sections are met.

1.2.1 General Requirements

- The Stormwater Alley serves two rows of residences.
- Parking is not allowed within the stormwater alley right-of-way (ROW). The alley design must provide clear visual signs notifying that parking is not allowed.
- Each residential lot includes alley-loaded parking for at least two vehicles. In order to increase green space, no lots will have front-loaded parking.

1.2.2 Design Requirements

- The estimated ADT for the Stormwater Alley is equal to or less than 250.
- The Stormwater Alley is designed to be no less than 60 percent pervious surfaces calculated from the total ROW area.
- The Stormwater Alley design will have shared driveways when applicable.
- The Stormwater Alley will consist of two 4-ft driving strips separated by a 4-ft strip of pervious cover. Two 4-ft pervious pavers (see WQ-16 Pervious Pavement Specification and Detail) will be installed adjacent to each 4-ft driving strip.
- Stormwater Alley design includes bypass design capable of managing the 10-Year 24-Hour rainfall event.
- Stormwater Alley design includes stormwater management structures capable of managing the water quality volume of rainfall which drains to the stormwater alley. Designs may include a pervious center strip with underdrain or any functional equivalent.
- Stormwater Alley driving strips are a minimum of 4-in thick, composed of 4000psi concrete with an appropriately designed base foundation layer.
- Include a concrete ribbon or apron that separates the adjacent roadway road from the Stormwater Alley.

1.3 IDEAL Modeling

The table below shows how to represent this BMP and BMPs similar to this one in the IDEAL model. It lists the parameters needed to successfully run the model and the parameters that affect the trapping efficiency of the BMP.

If the alley includes a section with an underdrain, that section must be modeled as a bioretention cell. If there is no underdrain, then there is no need for modeling as a BMP in IDEAL. The use of this design without an underdrain will still provide a water quality benefit to the project by reducing the amount of impervious driveway area.

Stormwater Alley Modeling in IDEAL		
What to Model as in IDEAL	Bioretention Cell if the alley includes an underdrain.	
Similar BMPs	Stormwater Alley	
	Green Roofs	
	Planter Box	
	Rain Gardens	
	Natural Infiltration Area/ Basin	
	Bioretention Area/Swale/Basin	
Specifications Needed for IDEAL	Cell area and number of layers within the cell.	
	If applicable underdrain details such as: - Subgrade infiltration soil texture and degree of saturation. - Underdrain orifice diameter.	
	Type of media and depth of each layer of the cell.	
	Shape and dimensions of the riser.	
	Dimensions, slope, manning's roughness coefficient, and entrance loss coefficient of the barrel.	
	Type, shape, and dimensions of the emergency spillway if applicable.	
Parameters that Drive Performance	Direct loading of bacteria that will be entering the cell.	
	Feature	How Value Affects Sediment Trapping Efficiency (TE)
	Underlying Soil Texture	Soils with higher infiltration capabilities increase TE.
	Area	Increasing area increases TE.
	Amount of Clay in Media	More clay increases TE but decreases infiltration rate.

1.4 References

EPA Managing Wet Weather with Green Infrastructure – Green Streets December 2008

Upstate Forever LID Strategies Stormwater Alleys.