Bowling Green, Kentucky
Stormwater Best Management Practices (BMPs)
Site Planning and Design Practices (SPDs)

SPD-02.3

Activity: Cul-de-sac Design

PLANNING CONSIDERATIONS:

Design Life:
Permanent

Acreage Needed:
Minimal

Estimated Unit Cost:
Low

Monthly Maintenance:
N/A

Target Pollutants

Significant ♦	Partial ◈	Low or Unknown ◇

Sediment ◈   Heavy Metals ◇   Nutrients ◈   Oxygen Demanding Substances ◇   Toxic Materials ◇
Oil& Grease ◇   Bacteria & Viruses ◇   Floatable Materials ◇   Construction Waste ◇

Description	Impervious areas can be significantly decreased with the cul-de-sac design in subdivisions. The smallest possible radius to this area ensures that stormwater runoff has less impact on downstream water bodies.
	Other combating methods of runoff acceptance in a cul-de-sac stem from the application of flat apron curbs, islands to accept runoff from surrounding area and T-shaped turnarounds.
Suitable Applications	➢ Small subdivisions having 10 or fewer homes can benefit from the T-shaped turnaround. ➢ Highly developed areas desiring a solution to the urban heat island effect.
Advantages	➢ Cul-de-sac designs like those suggested here result in less management of stormwater runoff and reducing the impact on downstream water bodies. ➢ Planted cul-de-sac islands are attractive amenities. ➢ Less paving can lower development costs. ➢ Reducing pavement lessens the urban heat island effect-the increase in air temperature that can occur when highly developed areas are exposed to the sun. ➢ Reducing pavement can help reduce the increased runoff temperature commonly associated with impervious cover.

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Limitations	➢	City ordinances may not accommodate small radii cul-de-sacs, due to accommodations for emergency vehicles.
	➢	Hammerhead turnarounds require vehicles to make a three-point-turn to exit.
	➢	Planted islands require more maintenance than paving during the first two to three years.
	➢	Difficulty in emergency vehicles ability to turn around.
Installation Procedures	➢	Avoid compacting soil in center island, till soil to a 2 foot depth.
	➢	Select vegetation that thrives on high rainfall and drought.
Design Criteria	➢	Widen rear pavements in cul-de-sacs to ensure easier turning, especially for emergency vehicles.
	➢	Islands should be maintained and vegetation planted for the appropriate soil type.
	➢	Include an unpaved, depressed island, using whatever radius will allow an appropriate road width.
Construction Criteria	➢	During paving, care should be taken to avoid compacting soil in center island. Should compaction occur, it may be necessary to rip or till soils to a depth of 2 ft.
	➢	Choose plants that will thrive when rainfall is high, and survive droughts without watering.
Maintenance	➢	Cul-de-sac island planting areas must be weeded monthly during the first two to three years. After that, weeding once or twice a growing season may suffice for maintenance.