

**Oak Park Conservancy District
Stormwater Best Management Practices (BMPs)
Site Planning and Design Practices (SPDs)**

SPD-02.3

Activity: Cul-de-sac Design

**PLANNING
CONSIDERATIONS:**

Planning:
Required

Training:
Required

Recommended
Personnel
Involvement:
Town Engineer
Town Attorney
Developers
IDEM
IDNR



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 greatly be 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. The smallest design with a radius of 40 feet will accommodate the turning of most emergency service vehicles, while a 30 feet radius will allow the largest of these same vehicles one backing movement in order to turn around. This difference in radius can reduce the impervious coverage by 50%. 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**

- Subdivisions with tight developmental budgets.
- Small subdivisions have 10 or fewer homes will 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 less 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 than 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 | <ul style="list-style-type: none"> ➤ 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. ➤ In first two to three years, planted islands require more maintenance than paving. |
| Installation Procedures | <ul style="list-style-type: none"> ➤ Avoid compacting soil in center island, till soil to a 2 foot depth. ➤ Select vegetation that thrives on high rainfall and drought. |
| Design Criteria | <ul style="list-style-type: none"> ➤ Areas with low traffic volume (10 or fewer homes) should consider a T-shaped turnaround. ➤ Design Cul-de-sac with radius of 30 feet or less to reduce runoff from the area. ➤ Widen rear pavements in Cul-de-sacs to ensure a easier turning. ➤ Islands should be maintained and vegetation planted for the appropriate soil type. ➤ Include an unpaved, depressed island, using whatever radius will allow a 20-foot road width. |
| Construction Criteria | <ul style="list-style-type: none"> ➤ 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, as well as during droughts without watering. |
| Maintenance | <ul style="list-style-type: none"> ➤ 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. |