Roundabout Workshop

Using Civil Geometry

The Roundabout Workshop utilizes some new Civil Geometry tools in GEOPAK along with Roadway Designer and GEOPAK Site tools.

Overview
Chapter 1 – Libraries
Chapter 2 – Working With Civil Geometry
Chapter 3 – Placing the Roundabout
Chapter 4 – Model Setup
Chapter 5 – Corridor Modeling
Chapter 6 - 3D Drive Thru
Class Final Exercise

MoDOT CADD SUPPORT

Overview

This workshop gives the users the ability to use the Bentley Civil Roundabouts application in a hands-on environment.
The Roundabout tool is a rules-based approach that allows intelligence to be preserved in the design, standards to be applied to the roundabout design, and dynamic adjustment to the design.

Prerequisites

- Fluent in MicroStation and a basic understanding of roundabouts is recommended.
- Previous GEOPAK and Roadway Designer classes are recommended.

Objectives

After completing this course, you will be able to:

- Have a basic understanding of the rules based approach as it pertains to design
- Understand the concepts to manipulate your design and save your alternatives
- Understand new Civil Geometry Tools and GEOPAK Site tools
- Manipulate the template to fit your needs

Defining Physical Features

A roundabout is a type of circular intersection, but not all circular intersections can be classified as roundabouts. In fact, there are at least three distinct types of circular Intersections:

- Rotaries are old-style circular intersections common to the United States prior

to the 1960's. Rotaries are characterized by a large diameter, often in excess of 100 m (300 ft). This large diameter typically results in travel speeds within the circulatory roadway that exceed 50 km/h (30 mph). They typically provide little or no horizontal deflection of the paths of through traffic and may even operate according to the traditional "yield-to-the-right" rule, i.e., circulating traffic yields to entering traffic.

- Neighborhood traffic circles are typically built at the intersections of local streets

for reasons of traffic calming and/or aesthetics. The intersection approaches may be uncontrolled or stop-controlled. They do not typically include raised channelization to guide the approaching driver onto the circulatory roadway. At some traffic circles, left-turning movements are allowed to occur to the left of (clockwise around) the central island, potentially conflicting with other circulating traffic.

- Roundabouts are circular intersections with specific design and traffic control

features. These features include yield control of all entering traffic, channelized approaches, and appropriate geometric curvature to ensure that travel speeds on the circulatory roadway are typically less than 50 km/h (30 mph). Thus, roundabouts are a subset of a wide range of circular intersection forms.
To more clearly identify the defining characteristics of a roundabout, consistent definitions for each of the key features, dimensions, and terms are used throughout this guide. Exhibit 1-1 is a drawing of a typical roundabout, annotated to identify the key features. Exhibit 1-2 provides a description of each of the key features.

Description of Key roundabout features

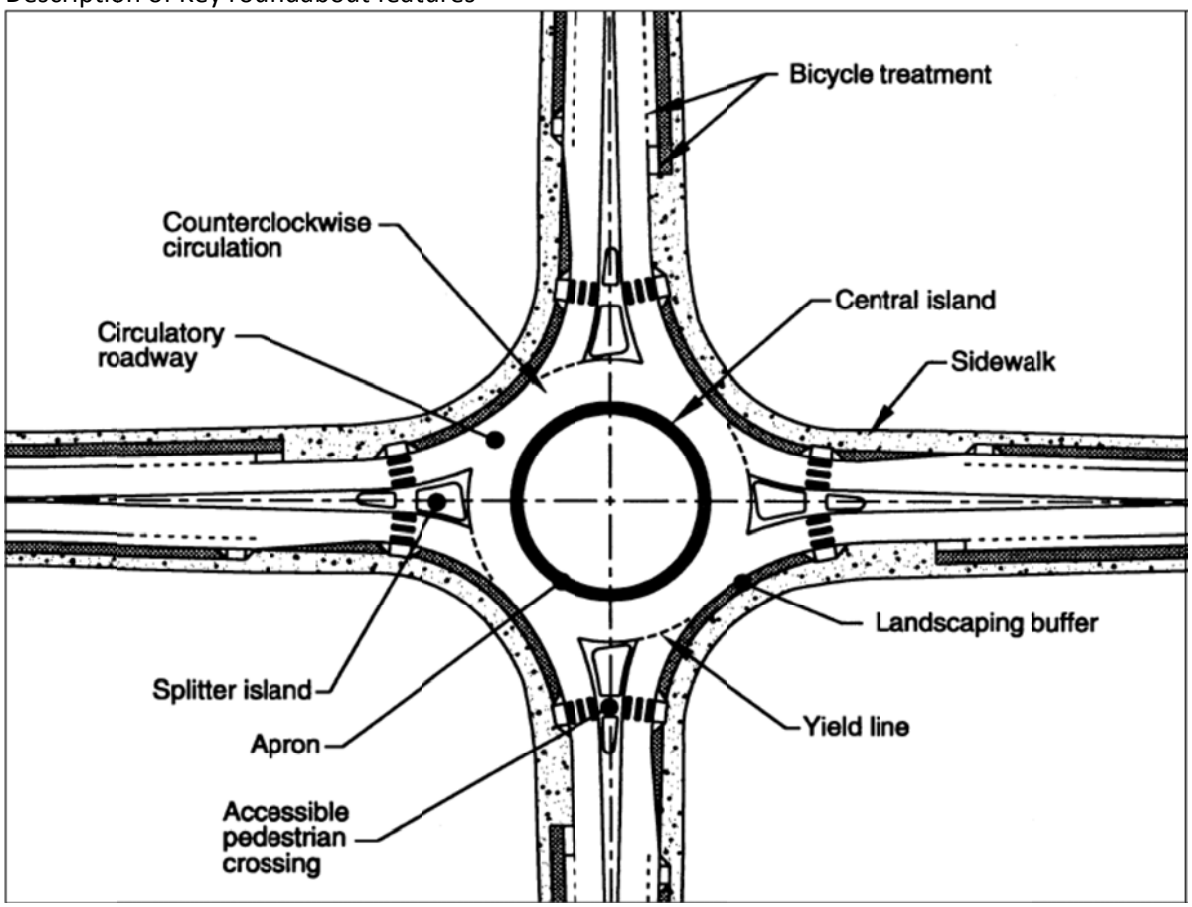
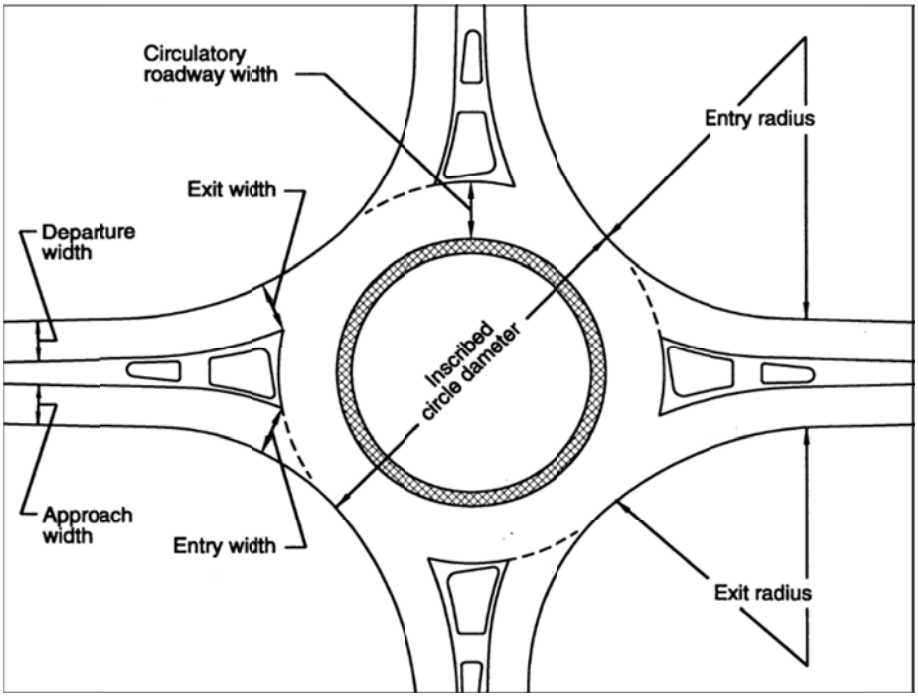


Figure 1 Drawing of key roundabout features

Feature	Description
Central island	The central island is the raised area in the center of a roundabout around which traffic circulates.
Splitter island	A splitter island is a raised or painted area on an approach used to separate entering from exiting traffic, deflect and slow entering traffic, and provide storage space for pedestrians crossing the road in two stages.
Circulatory roadway	The circulatory roadway is the curved path used by vehicles to travel in a counter- clockwise fashion around the central island

Apron	If required on smaller roundabouts to accommodate the wheel tracking of large vehicles, an apron is the mountable portion of the central island adjacent to the circulatory roadway.
Yield line	A yield line is a pavement marking used to mark the point of entry from an approach into the circulatory roadway and is generally marked along the inscribed circle. Entering vehicles must yield to any circulating traffic coming from the left before crossing this line into the circulatory roadway.
Accessible pedestrian crossings	Accessible pedestrian crossings should be provided at all roundabouts. The crossing location is set back from the yield line, and the splitter island is cut to allow pedestrians, wheelchairs, strollers, and bicycles to pass through.
Bicycle treatments	Bicycle treatments at roundabouts provide bicyclists the option of traveling through the roundabout either as a vehicle or as a pedestrian, depending on the bicyclist's level of comfort.
Landscaping buffer	Landscaping buffers are provided at most roundabouts to separate vehicular and pedestrian traffic and to encourage pedestrians to cross only at the designated crossing locations. Landscaping buffers can also significantly improve the aesthet-ics of the intersection.



Roundabouts: An information Guide – FHWA-RD-00-67, June 2000
http://www.tfhrc.gov/safety/00068.htm

Dimension	Description
Inscribed circle diameter	The inscribed circle diameter is the basic parameter used to define the size of a round- about. It is measured between the outer edges of the circulatory roadway.
Circulatory roadway width	The circulatory roadway width defines the roadway width for vehicle circulation around the central island. It is measured as the width between the outer edge of this roadway and the central island. It does not include the width of any mountable apron, which is defined to be part of the central island.
Approach width	The approach width is the width of the roadway used by approaching traffic upstream of any changes in width associated with the roundabout. The approach width is typically no more than half of the total width of the roadway.
Departure width	The departure width is the width of the roadway used by departing traffic downstream of any changes in width associated with the roundabout. The departure width is typically less than or equal to half of the total width of the roadway
Entry width	The entry width defines the width of the entry where it meets the inscribed circle. It is measured perpendicularly from the right edge of the entry to the intersection point of the left edge line and the inscribed circle.

Exit width	The exit width defines the width of the exit where it meets the inscribed circle. It is measured perpendicularly from the right edge of the exit to the intersection point of the left edge line and the inscribed circle.
Entry radius	The entry radius is the minimum radius of curvature of the outside curb at the entry.
Exit radius	The exit radius is the minimum radius of curvature of the outside curb at the exit.