

Nordic Civil User Conference 2009

InRoads Roundabout Tool

History

- Several iterations before 08.09
 - Prototypes for research
- Released with 08.09.03 products
- Delivered with V8i Civil products

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InRoads Roundabout Tool

Outline for Designing a Roundabout

- Design road centerline geometry
Alignment or cad graphic
- Place roundabout
- Check entry paths
- Modify roundabout
- Commit Design

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Roundabout Task



The first icon is to open the library browser, which we will explore in a few minutes.



The second icon is to replace an approach. We will explore this when we review the library items. Basically what it does is allow you to set up parameters once on a single approach and copy these settings to a second approach.



The third icon is to update alignments. We will lay out our roundabout based upon a graphical alignment. If something happens to change these alignments then we can use this tool to redesign the roundabout to match.



The fourth icon is the entry curve path analysis tool. We will use this tool later in this workshop.



The fifth icon is to bring up the civil preferences. These preferences are mainly colors for manipulators and design speed factors.



List from help

!!! Missing the description for "Commit"

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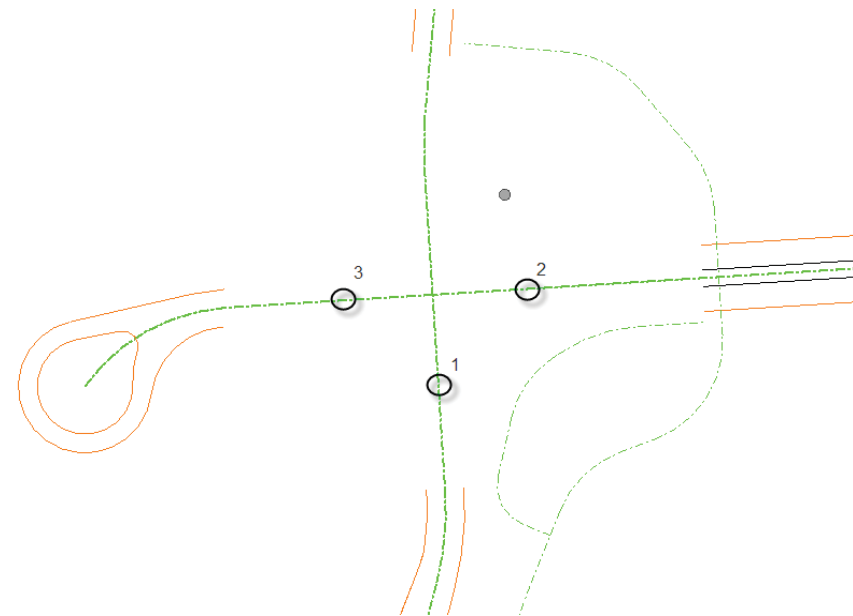
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Place Roundabout

- Placed on MicroStation elements
- Do not have to intersect
- Lines, arcs, linestrings

Or

- Civil alignments



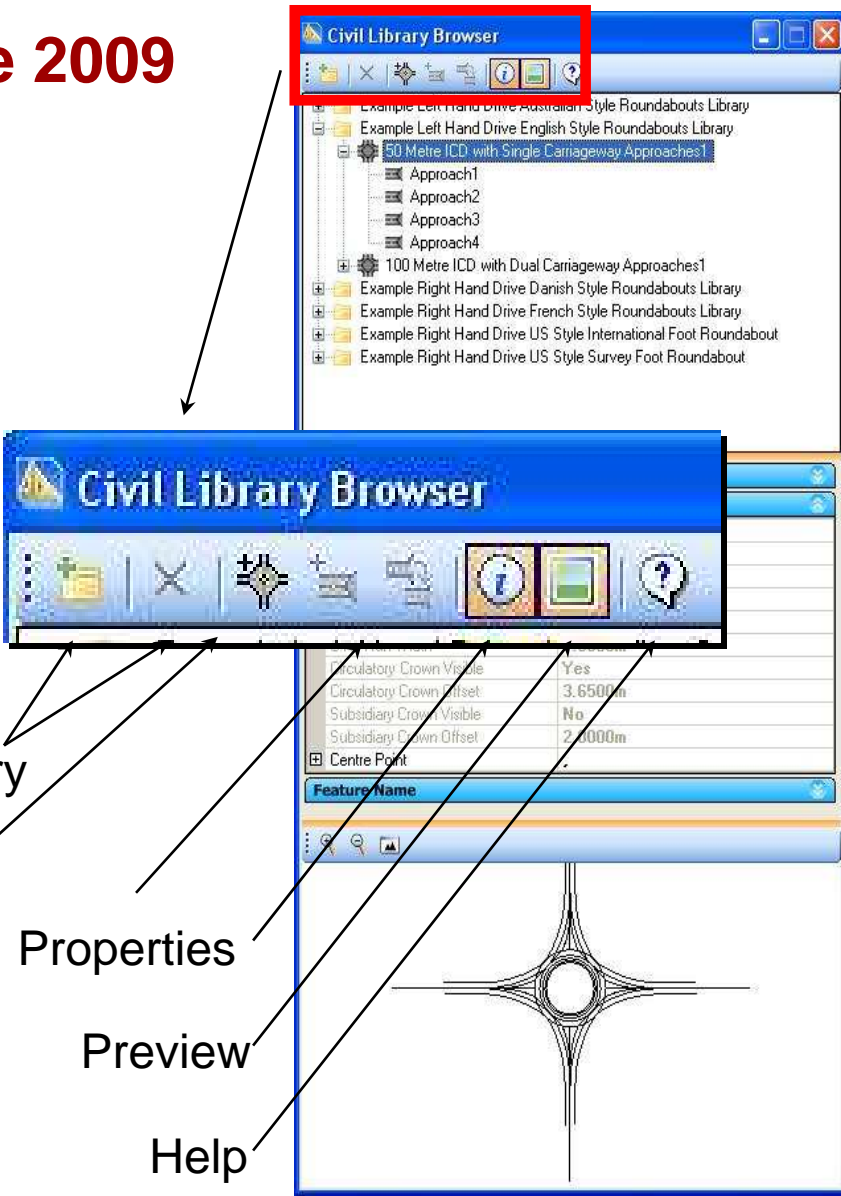
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Library Browser

- Libraries, DGN content etc.
- Place Roundabout
- Properties
- Preview
- Help

Add/Remove Library
Place Roundabout



Properties

Preview

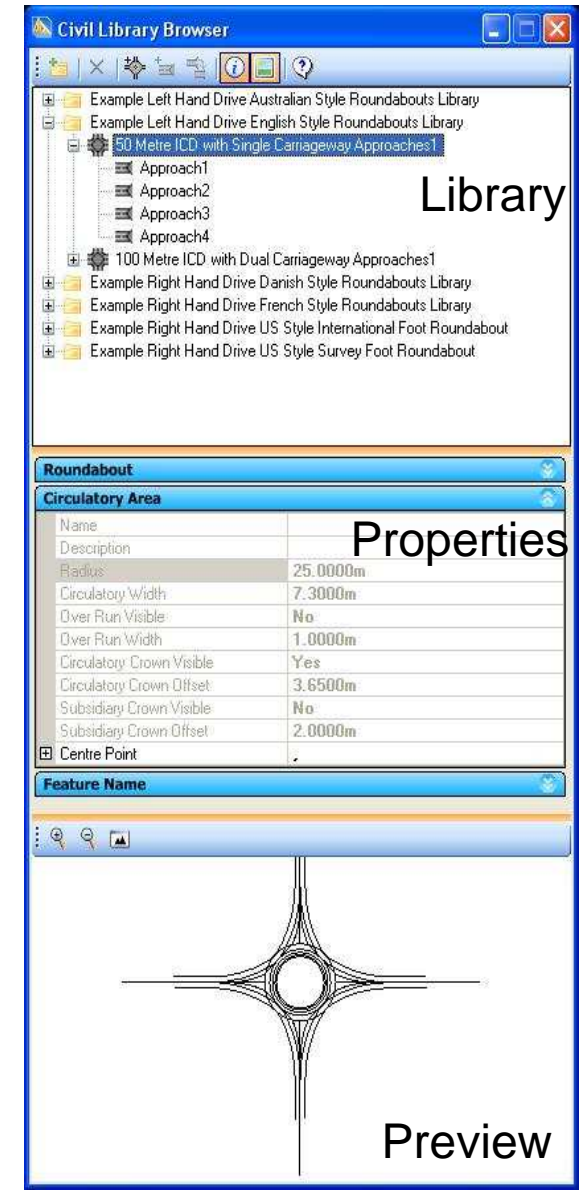
Help

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Library Browser

- Each “file” icon is a DGN
- Each DGN contains one or more library items
- Properties are read only – for information
- Preview shows the selected roundabout or approach
- Remember – the browser is only used to place an item!!



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Changing the geometry

- Two ways to do this:

Properties and Manipulators

The screenshot shows the Bentley InRoads software interface. On the left, a design view displays a roundabout with various geometric elements. Green arrows point to specific radii: 100.0000m, 7.0000m, 15.0000m, and 100.0000m. On the right, the 'Element Info' panel is open, showing the 'Flare' properties. The 'Departure Radius' is highlighted with a red box. Below the panel, a manipulator in the design view also shows '100.0000m' highlighted with a red box. Arrows point from the text 'Properties' and 'Manipulators' to these respective elements.

Flare	
Name	
Description	
Approach Radius	100.0000m
Entrance Radius	15.0000m
Inset Straight	
Departure Radius	100.0000m
Theoretical Entrance	7.0000m
Achieved Entrance Wid	7.0000m
Achieved Exit Width	8.6686m
Effective Entry Flare Len	23.5458m
Entry Angle	12.04°
Sharpness of Entry Flare	0.1138
Maximum Entry Angle	60°
Minimum Entry Angle	10°

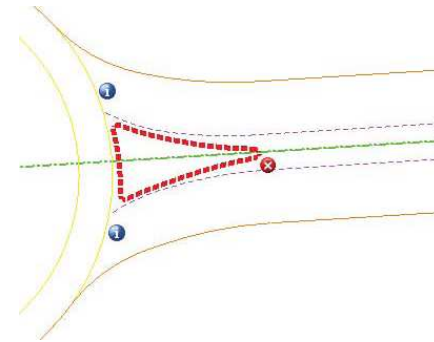
Feature Name
Flare Carriageway (Edge)

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The Message Center

- *Errors* - Design problems. eg, an item cannot be created.
- *Warnings*- Design warnings. eg, a geometry value is outside recommended limits.
- *Messages*- Information Messages. eg, a property value has been changed when geometry has been adjusted.



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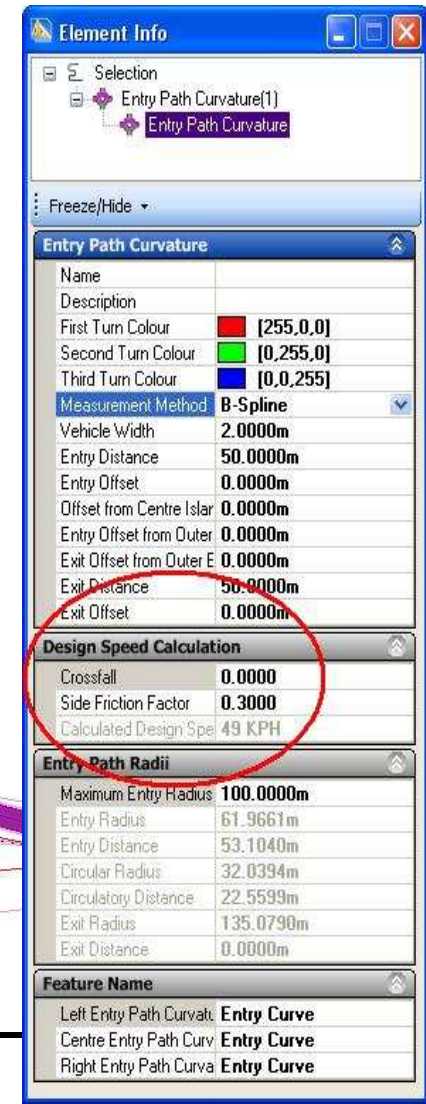
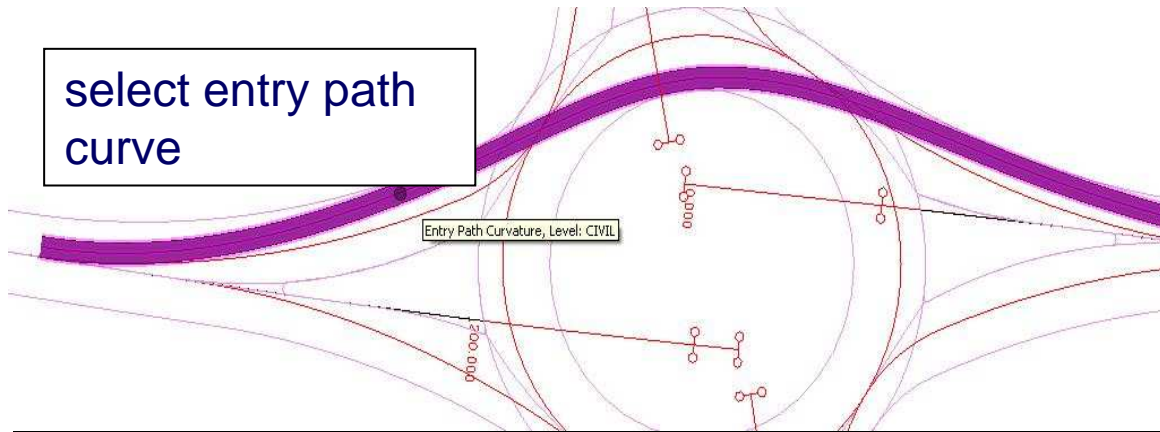
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Entry Path Analysis

- Design Speed Calculation
- Additional design check



Entry Path Curvature Analysis



Element Info

Selection

- Entry Path Curvature(1)
- Entry Path Curvature

Freeze/Hide

Entry Path Curvature

Name	
Description	
First Turn Colour	Red [255,0,0]
Second Turn Colour	Green [0,255,0]
Third Turn Colour	Blue [0,0,255]
Measurement Method	B-Spline
Vehicle Width	2.0000m
Entry Distance	50.0000m
Entry Offset	0.0000m
Offset from Centre Islar	0.0000m
Entry Offset from Outer E	0.0000m
Exit Offset from Outer E	0.0000m
Exit Distance	50.0000m
Exit Offset	0.0000m

Design Speed Calculation

Crossfall	0.0000
Side Friction Factor	0.3000
Calculated Design Spe	49 KPH

Entry Path Radii

Maximum Entry Radius	100.0000m
Entry Radius	61.9661m
Entry Distance	53.1040m
Circular Radius	32.0394m
Circulatory Distance	22.5599m
Exit Radius	135.0790m
Exit Distance	0.0000m

Feature Name

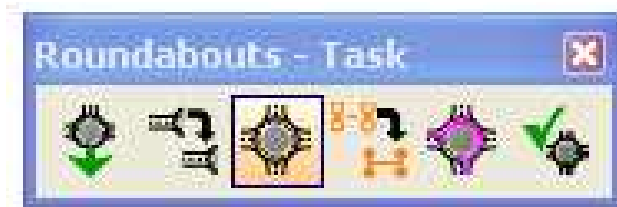
Left Entry Path Curvatu	Entry Curve
Centre Entry Path Curv	Entry Curve
Right Entry Path Curva	Entry Curve

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Commit

- Creates features in the native application
- Method varies according to the native application
- In InRoads geometry is created in the ALG file



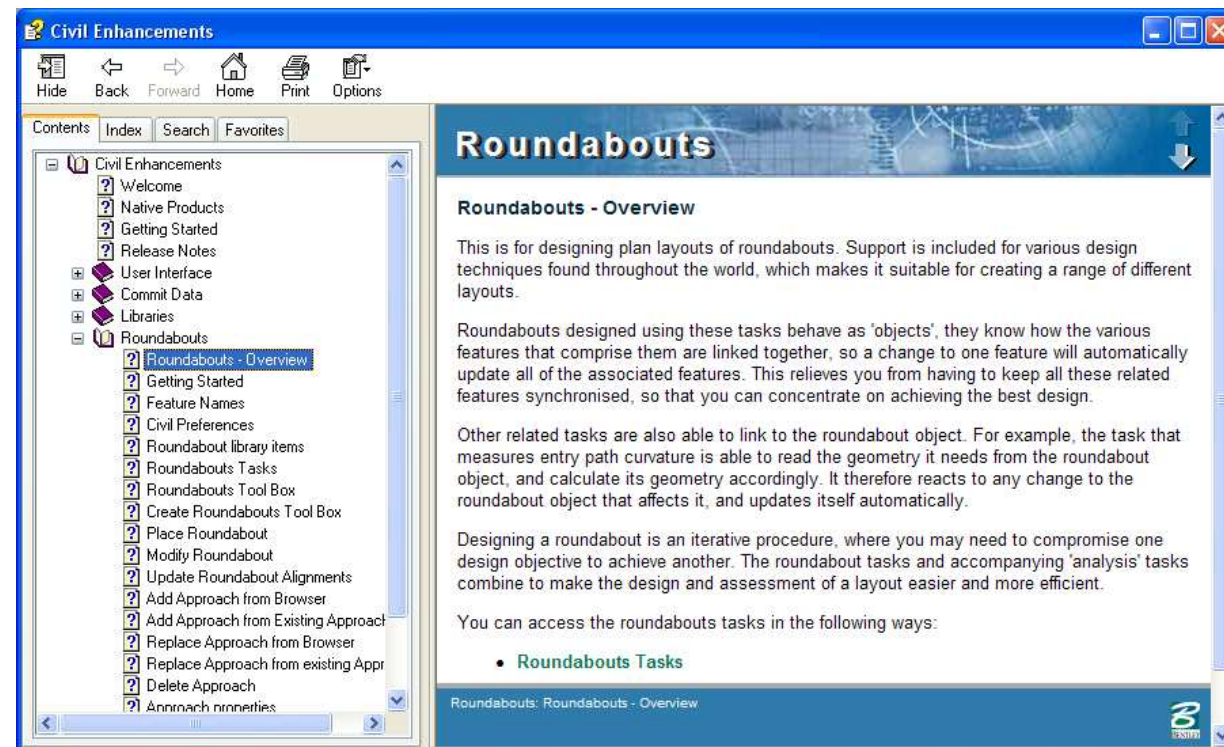
Commit



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More details under Help



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The Danish Standard

V8i delivery contains standards for

- Australia
- Denmark
- France
- Germany
- Italy
- United Kingdom
- United States

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The Danish Standard



Rundkørsler i åbent land

Oversigt over typeeksempler

VR01_F_4.2_Rundkørsler

Type-eksempel (nr.)	Midterøstørrelse (radius til midterøens begrænsningslinje i m)					Tilgængelighedskrævende / dimensionsgivende køretøj			Cykeltrafik		Type af sekundærhelle		
	5	7,5	10	12,5	15	SK / SVT	SVT / 12 m BUS	SVT / 13,7 m BUS	Ja	Nej	Parallel	Trekant	Trompet
1	X						X		X ²⁾		X		
2	X					X			(X ²⁾	X	X		
3		X				X			X	X	X		
4			X				X		X ²⁾	(X)		X	
5			X					X		X		X	
6			X			X				X		X	
7				X		X				X		X	
8					X			X	X ¹⁾		X		
9					X	X				X		X	
10					X	X				X			X

¹⁾ Med cykelstier langs cirkulationsarealet og langs til- og frafarter

²⁾ Alene med cykelstier langs til- og frafarter

Type-eksempel (nr.)	Bestemmende dimensioner af sekundærhelle			Beregnet maksimal hastighed (km/t) ved sidefriktions-koefficient på:			Ønsket maksimal hastighed (km/t) som angivet i Hæfte 4.2 Rundkørsler
	Største bredde ¹⁾ (m)	Total længde (m)	Afrundingskurve (m)	0,5	0,4	0,3	
1	2,0	-	-	32	29	25	20-25
2	2,0	-	-	33	29	25	(20-25) / 30-35
3	3,0	-	-	34	30	26	30-35
4	4,0	20	-	33	30	26	20-25 / (30-35)
5	4,0	20	-	36	33	28	30-35
6	5,0	25	-	36	32	28	30-35
7	5,0	25	-	36	32	28	30-35
8	2,0	-	-	35	31	27	20-25
9	6,0	30	-	36	32	28	30-35
10	-	-	40	45	40	35	30-35

¹⁾ Nærmest cirkulationsarealet og kun af den kantstensbegrænsede del

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Typeeksempel nr. 1

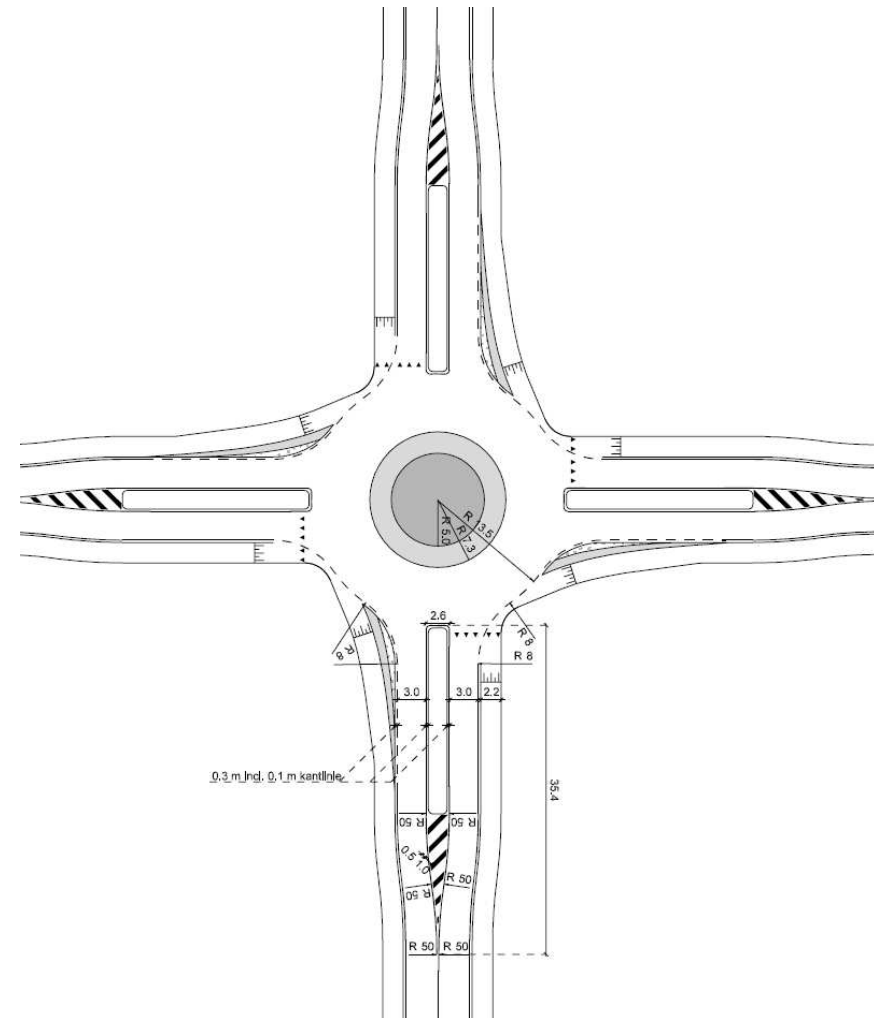
Midterøradius: 5.0 m

Tilgængelighedskrævende / dimensionsgivende køretøj:

SVT / 12.0 m BUS

Cykeltrafik: ja alene med cykelstier langs til- og frafart

Helletype: parallelhelle



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Typeeksempel nr. 10

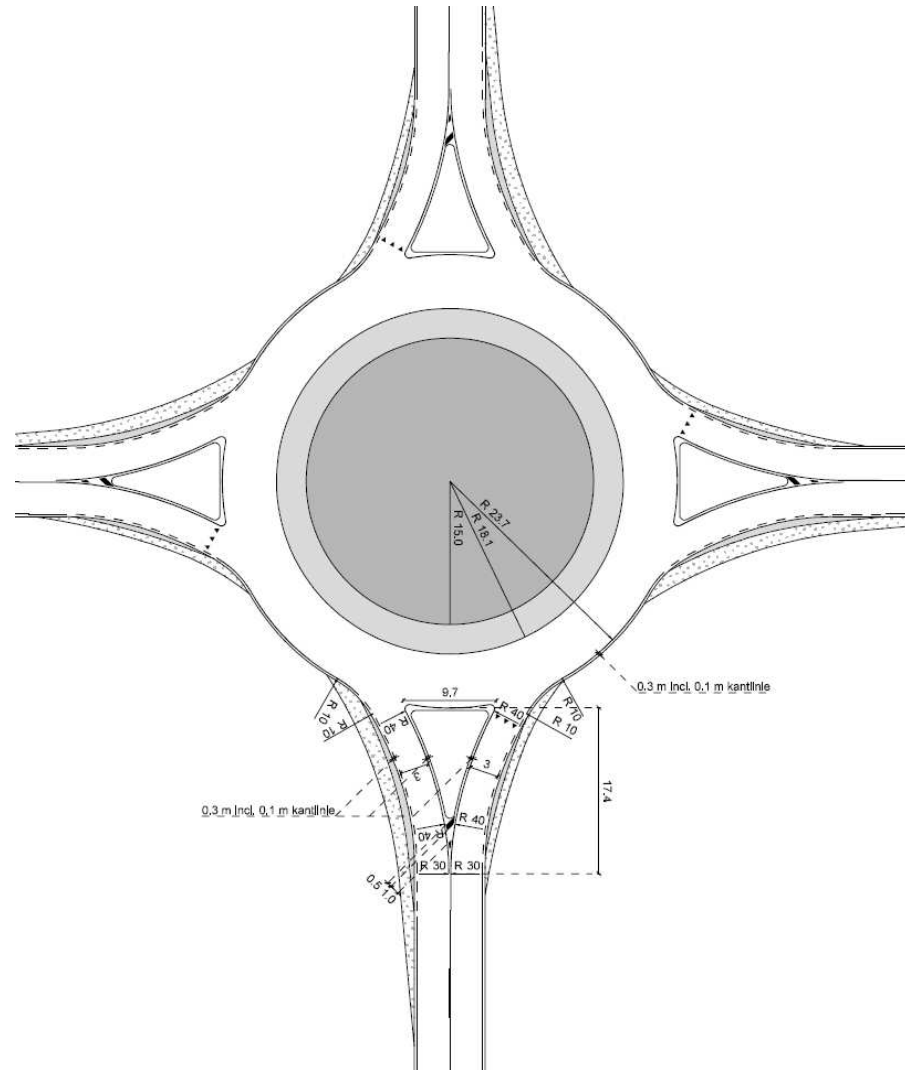
Midterøradius: 15.0 m

Tilgængelighedskrævende / dimensionsgivende køretøj;

SK / SVT

Cykeltrafik: nej

Helletype: trompethelle



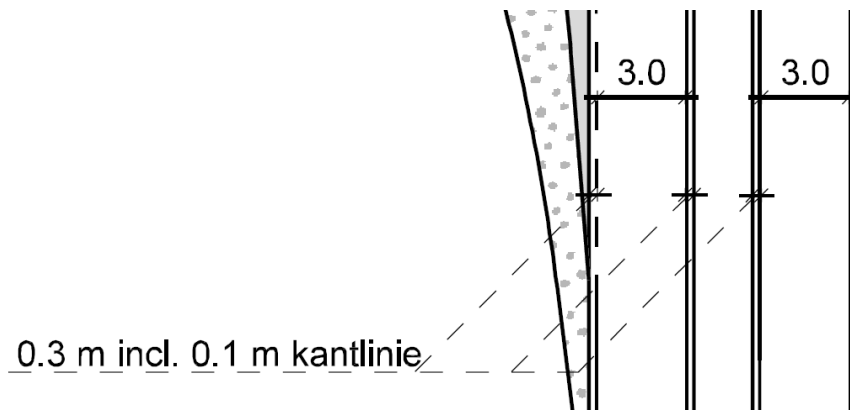
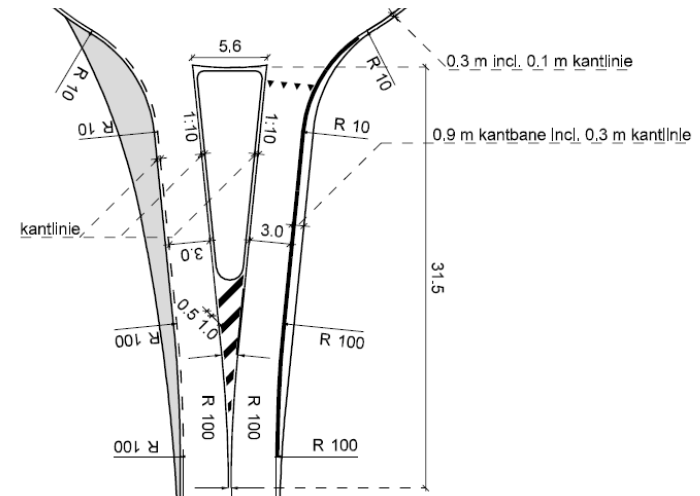
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InRoads Roundabout Tool

The Danish Standard

Can we make all the elements

- No, limitation exists in the tool
- The design of the roundabout is to the edge of pavement. In Denmark we design roundabout according to the Roadmarkings. So you need to include extra space of roadmarkings, cycle paths etc.



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The Danish Standard

Limits

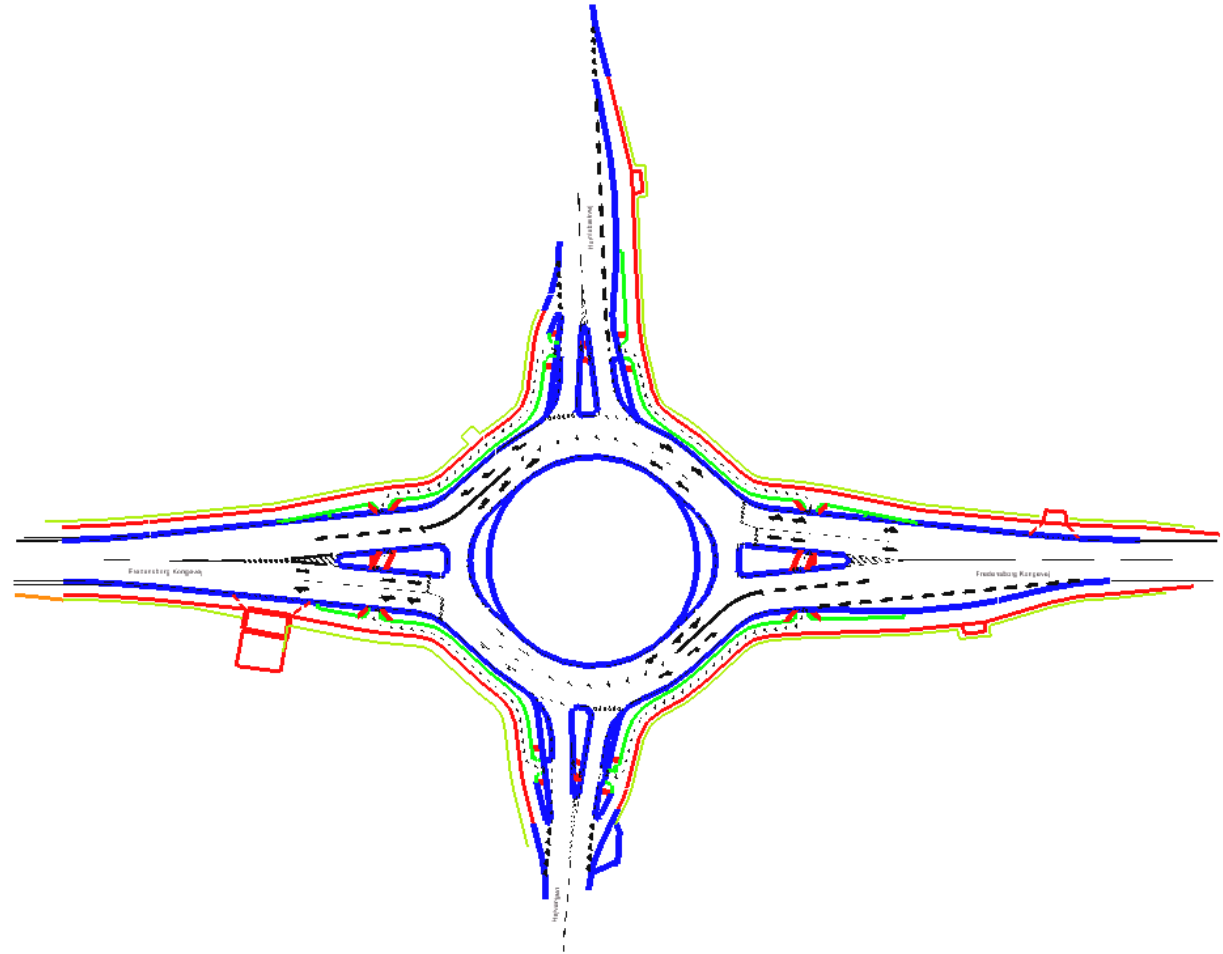
- Separate pedestrian areas, cycle paths and area for trunks can not automatic be created. But you can include these elements with template design, features etc.
- Not possibly to have a Circulatory Area in a non-circle shape
- Anyway that's not a Danish standard (but it's the Real World)

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The Danish Standard

Non-standard type

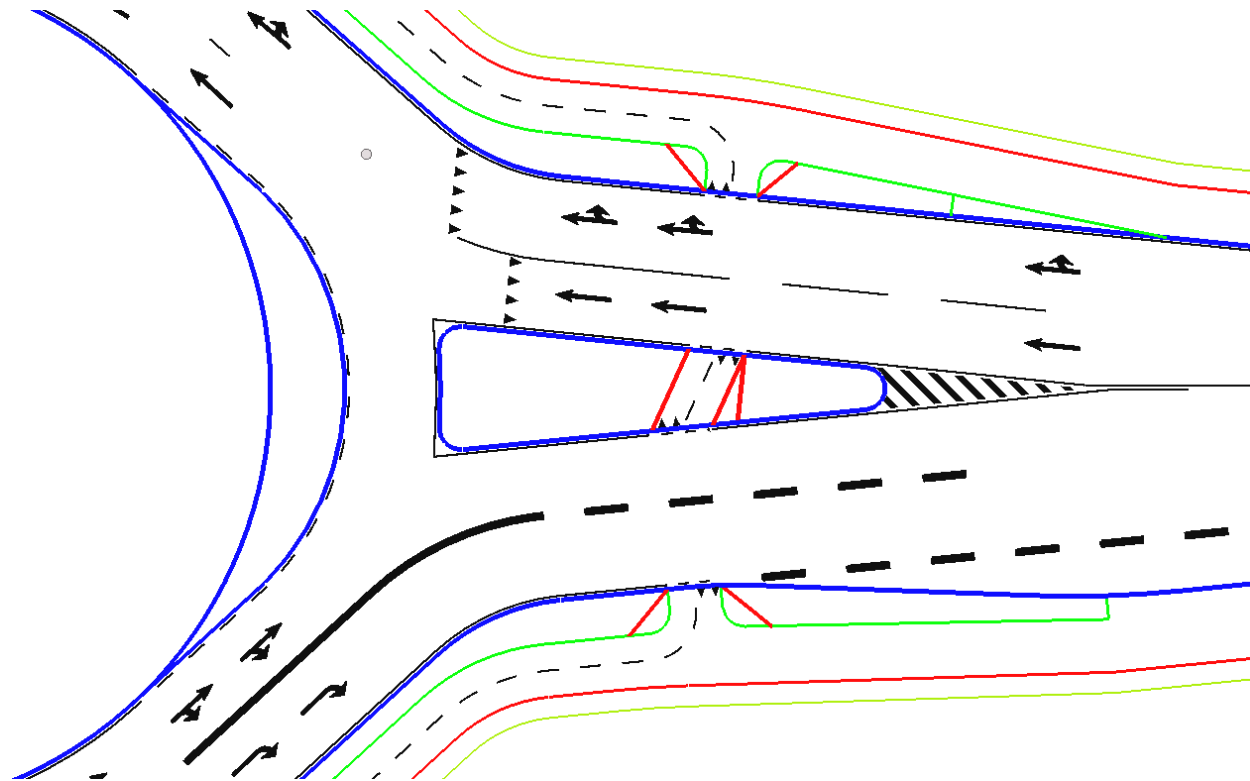


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The Danish Standard

Non-standard type



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Do we need to make all 10 types?

- Yes, in principle. They are all different sizes etc.
- But they can all be based on type 1, 4 and 10
- The radius and Island are the main elements to change
 - Parallelhelle, trekantehelle, trompethelle

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The Danish Standard

Can we do this work in the usergroup?

- Yes, no need for all to do the same work

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Q&A

Thanks



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