



Rialtas na hÉireann
Government of Ireland



ACTIVE TRAVEL

Introduction to the Cycle Design Manual Crossings

19th of October 2023



4

Designing for Cycling



➔ 4.5 Crossings

- Crossing selection
- Uncontrolled crossings
- Zebra crossings
- Signal-controlled crossings
- Right-turning cyclists
- Grade separated crossings

Cycle Crossings – Introduction

- Mid-block crossings
- Crossing types
- Provide for pedestrian and cyclists
- Segregate pedestrians and cyclists if possible
- Refer to Section 4.1 for guidance on geometric requirements
- Refer to TII Publications for rural cycle crossings



Crossing Suitability Guide

Table 4.25 : Crossing Suitability Guide

Speed Limit	Traffic Flow (PCU/day)	Cycle Priority Crossing	Uncontrolled Crossing*	Zebra Crossing*	Signal-controlled crossing	Grade seperated crossing
≤30 km/h	<2000	Green	**	Green	Green	Green
	Any	Orange	**	Green	Green	Green
40 km/h	Any	Pink	**	Green	Green	Green
50 km/h	<2000	Pink	**	Green	Green	Green
	2,000-4000	Grey	***	Green	Green	Green
	>4000	Grey	Pink	***	Green	Green
60 km/h	Any	Grey	Pink	Grey	Green	Green
80 km/h	Any	Grey	Grey	Grey	Pink	Green
>80 km/h	Any	Grey	Grey	Grey	Grey	Green

- Provision should be suitable for most users
- Provision may not be suitable for all users
- Provision not recommended
- Provision not suitable

* Provision not recommended where more than one traffic lane per direction is to be crossed.

** Consider providing a refuge island

*** Refuge island recommended

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40 km/h	Any	Pink	**	Green	Green	Green
50 km/h	<2000	Pink	**	Green	Green	Green
	2,000-4000	Grey	***	Green	Green	Green
	>4000	Grey	Pink	***	Green	Green
60 km/h	Any	Grey	Pink	Grey	Green	Green
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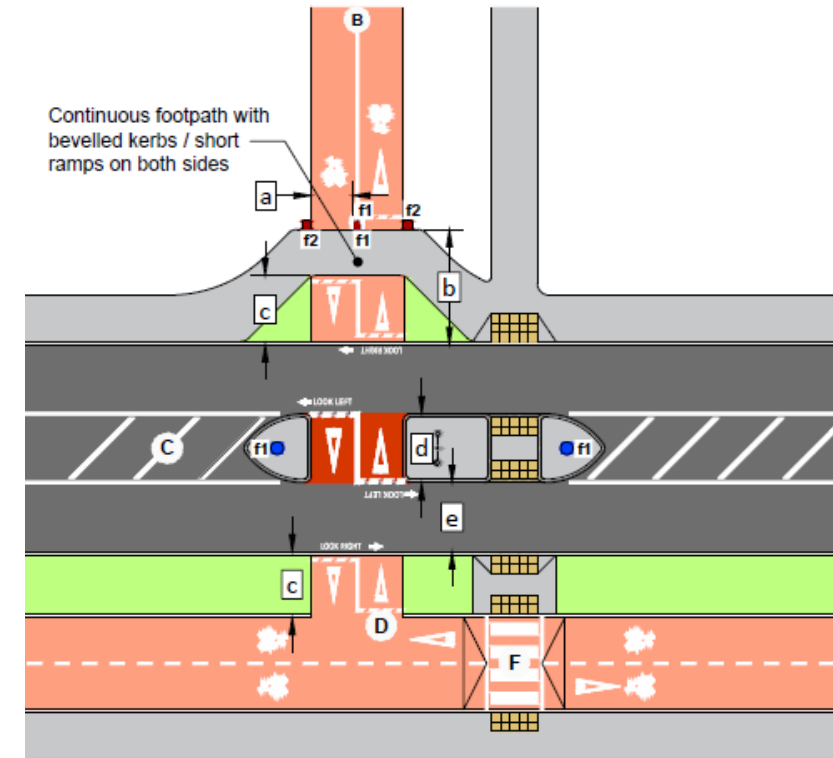
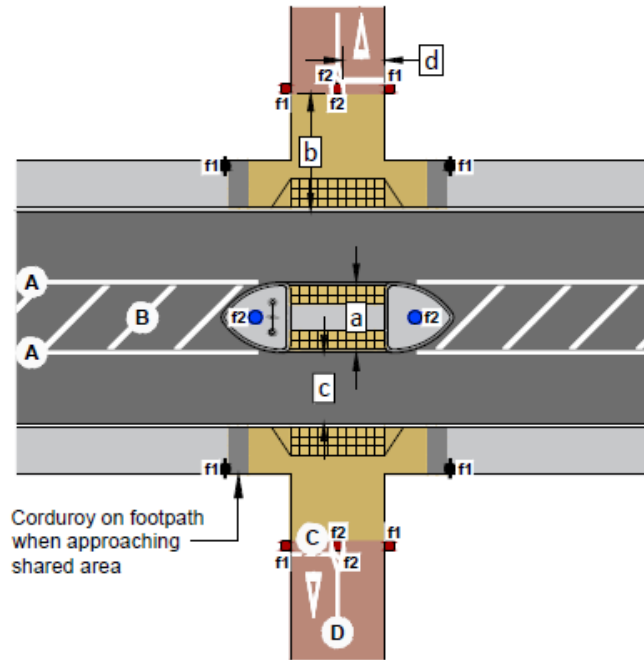
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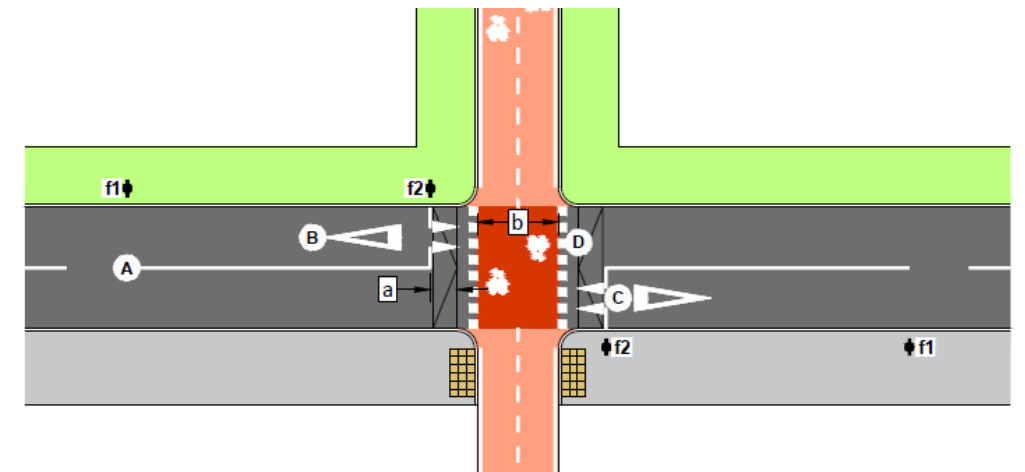
Uncontrolled Crossings

- Low traffic speeds and flows
- Segregated or shared options
- Refuge island (3m deep)
- Traffic lanes 3.25m max.
- Crossings at-grade or raised
- Provide verge or bend out cycle track to provide waiting area/stacking space
- Tactile paving at start/end of shared areas
- Public lighting at crossing
- Typical Layouts: TL601 & TL602



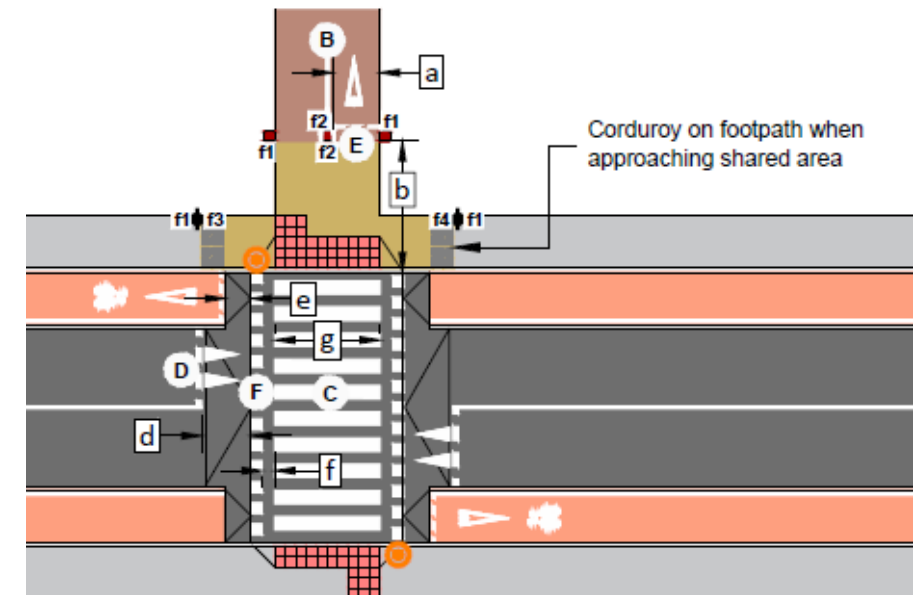
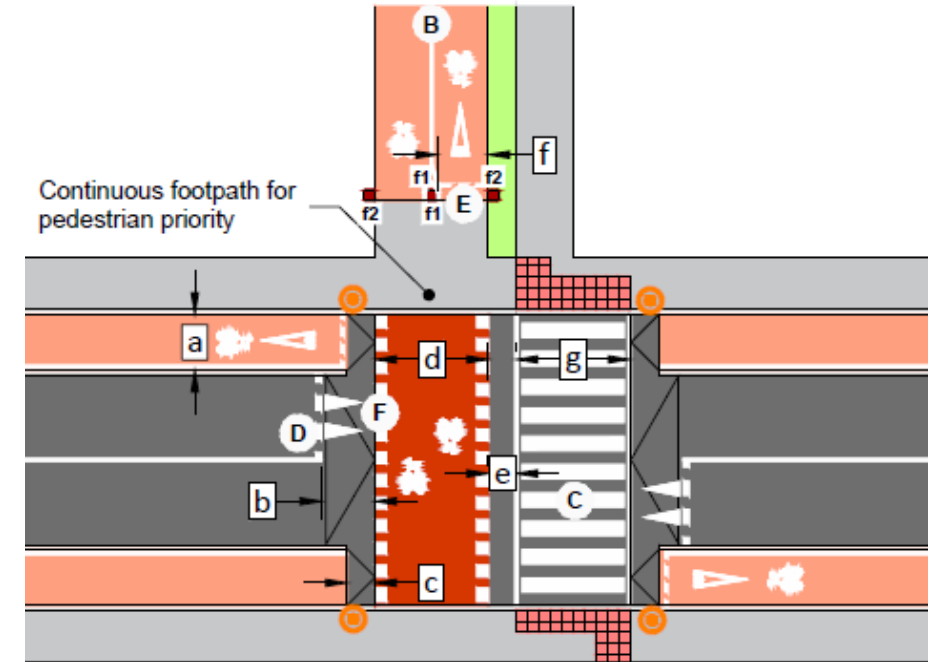
Cycle Priority Crossing

- Low speed and flows only
- Motorists yield to cyclists
- Raised crossing
- Red surfacing and 'elephant's footprint' markings
- Ensure visibility between users
- Warning signs on approaches
- Typical Layout: TL603



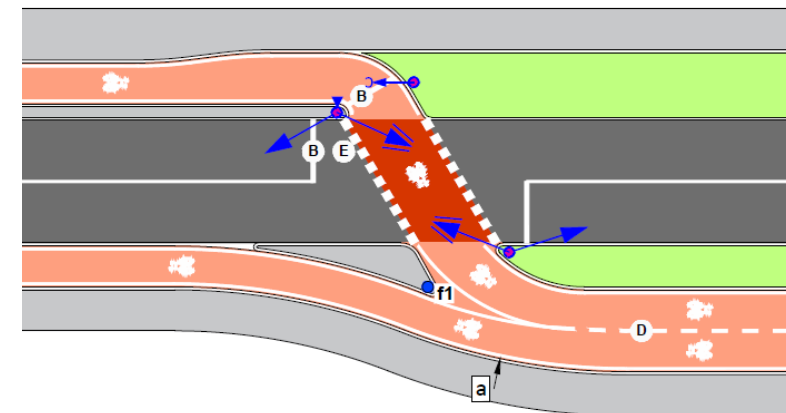
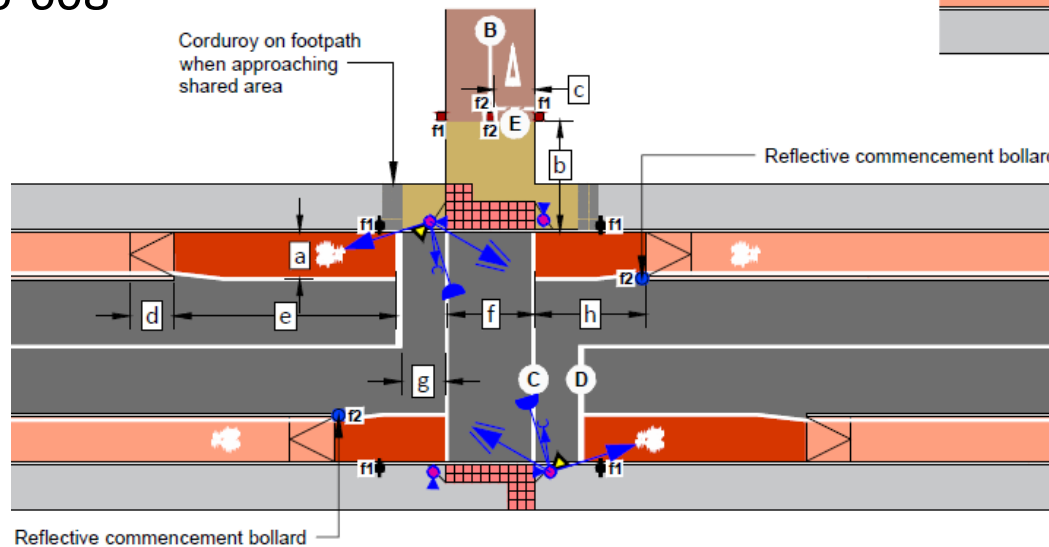
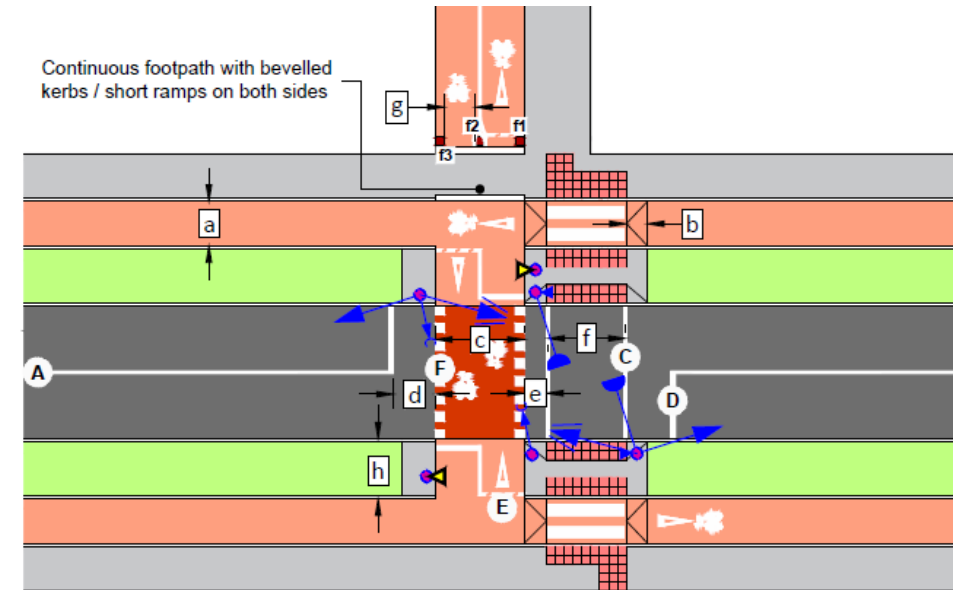
Zebra Crossings

- Appropriate for traffic speeds up to 50km/h
- Single traffic lane in each direction
- Provide refuge island where traffic flows are high
- Raised crossing recommended
- Segregate where possible (parallel zebra crossing)
- Shared option (combined zebra crossing)
- Zebra Crossing Pilot Scheme
- Amendments to legislation
- Typical Layouts: TL604 & TL605



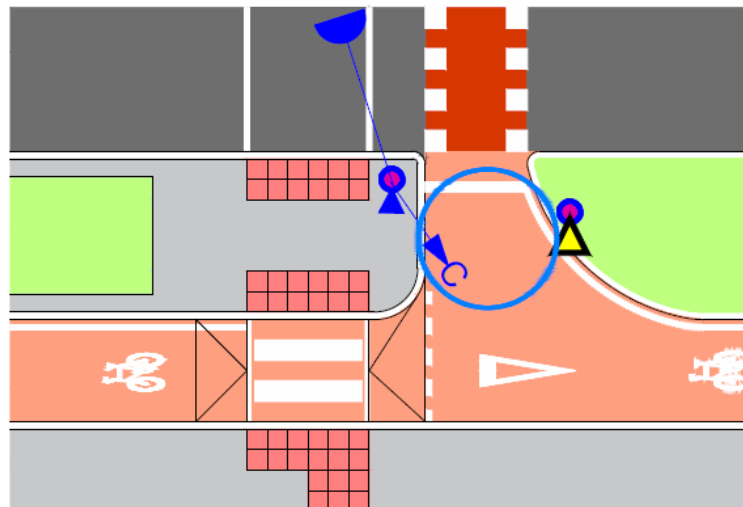
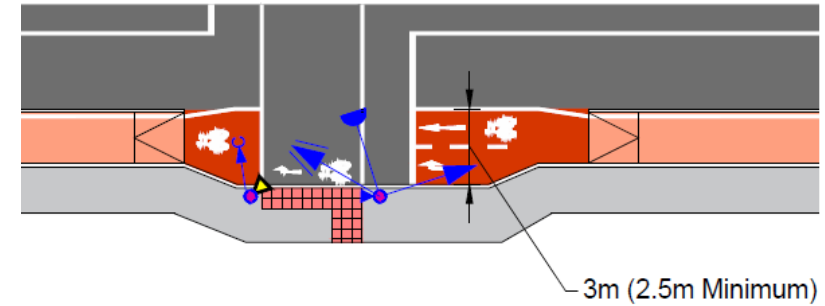
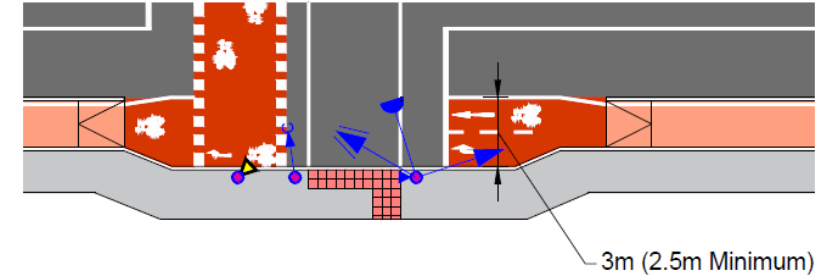
Signal-controlled Crossings

- Appropriate for traffic speeds up to 60km/h and high flows
- Suitable for multi-lane carriageways
- Segregate where possible (signalised parallel crossings)
- Shared facility (Toucan crossings) suitable in some situations
- Cycle-only crossings (e.g. transition between two-way to one-way tracks)
- Typical Layouts: TL606-608



Right Turns at Crossings

- Provide safe access, waiting space
- Stacking space at busier crossings
- Utilise buffer between cycle track and carriageway
- Options where buffer cannot be provided (local widening to form pocket or transition up to shared area)



Grade Separated Crossings

- Overbridge or underpass/tunnel where a cycle route crosses high speed roads, railways and waterways
- Removes conflict between cyclists (and pedestrians) and motor traffic; continuous route with no delay
- May require diversions and increased gradient
- Higher cost, potential visual and environmental impacts
- Segregated or shared (see Section 4.2.7 on Greenways)
- Widths (see Width Calculator Table 2.2)
- Access ramps (see NDA guidance) and consider alternative access options (e.g. steps)
- Guidance on headroom and parapet heights
- Wheeling ramp (cycle channel) – low cost retrofit solution for older stepped infrastructure





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Introduction to the Cycle Design Manual Roundabouts

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Designing for Cycling

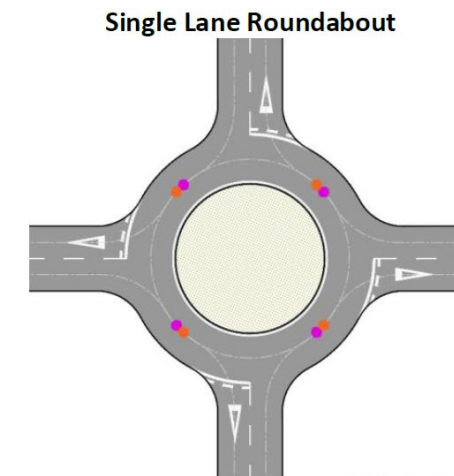


➔ 4.6 Roundabouts

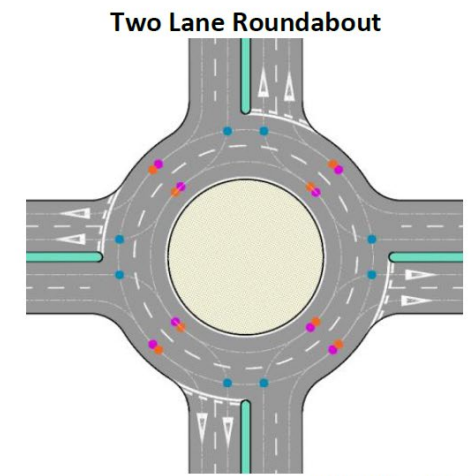
- Design principles
- Improving existing roundabouts
- Roundabouts with protected space for cycling
- Signal-controlled roundabouts
- Roundabouts for cycling in mixed traffic

Cycle-friendly Roundabouts – Design Principles

- Slow down approaching traffic
- Reduce speed on circulatory carriageway
- Shorten crossing distances (narrow lanes, refuge islands)
- Align approach arms towards centre and not deflected to the left; approach arms at right angles to each other
- Provide good visibility between drivers, cyclists and crossing pedestrians
- Avoid excessive visibility over the central island
- Provide segregated cycle facilities where multi-lane entries and circulatory lanes are required for traffic capacity



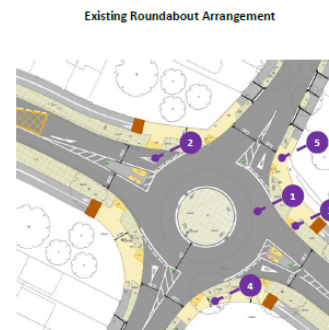
CONFLICTS (8no.):
● 4 DIVERGING
● 4 MERGING



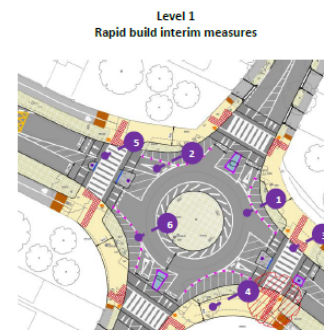
CONFLICTS (24no.):
● 8 DIVERGING
● 8 MERGING
● 8 CROSSING

Improving Existing Roundabouts – Options

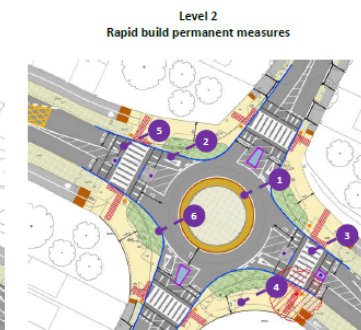
- If traffic conditions allow (or can be made suitable), upgrade to a compact shared roundabout
- Provide segregated cycling facilities around the junction
- Introduce signal control to the roundabout
- Replace roundabout with signal-controlled junction
- Provide grade-separated crossing
- Refer to NTA Active Travel Advice Note – *Roundabout Retrofit*



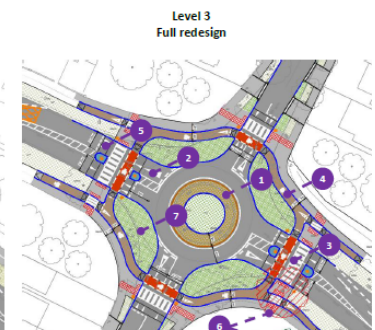
- Summary of existing arrangement:
1. Wide circulatory lane
 2. Wide approach lane width
 3. Uncontrolled pedestrian crossings
 4. Narrow footpaths
 5. Shared footpath arrangement for pedestrians and cyclists (segregated cycle/footpath on approach line marking on footpath)
 6. Land take not possible/requirement to work within road boundaries



- Summary of interventions:
1. Narrowing of circulatory lane (ribbed road markings to minimise drainage impacts at overrun area)
 2. Approach lane width reduced
 3. Zebra Crossings with raised table, set back 5.0m from circulatory carrieway
 4. Footpath widening to facilitate shared area
 5. Raised tables to reduce traffic speed
 6. Verge buildouts (bollard and road markings to minimise drainage impacts)



- Summary of interventions:
1. Narrowing of circulatory lane (concrete overrun area)
 2. Approach lanes width reduced
 3. Zebra Crossings with raised table, set back 5.0m
 4. Footpath widening to facilitate shared area
 5. Raised tables to reduce traffic speed
 6. Verge buildouts

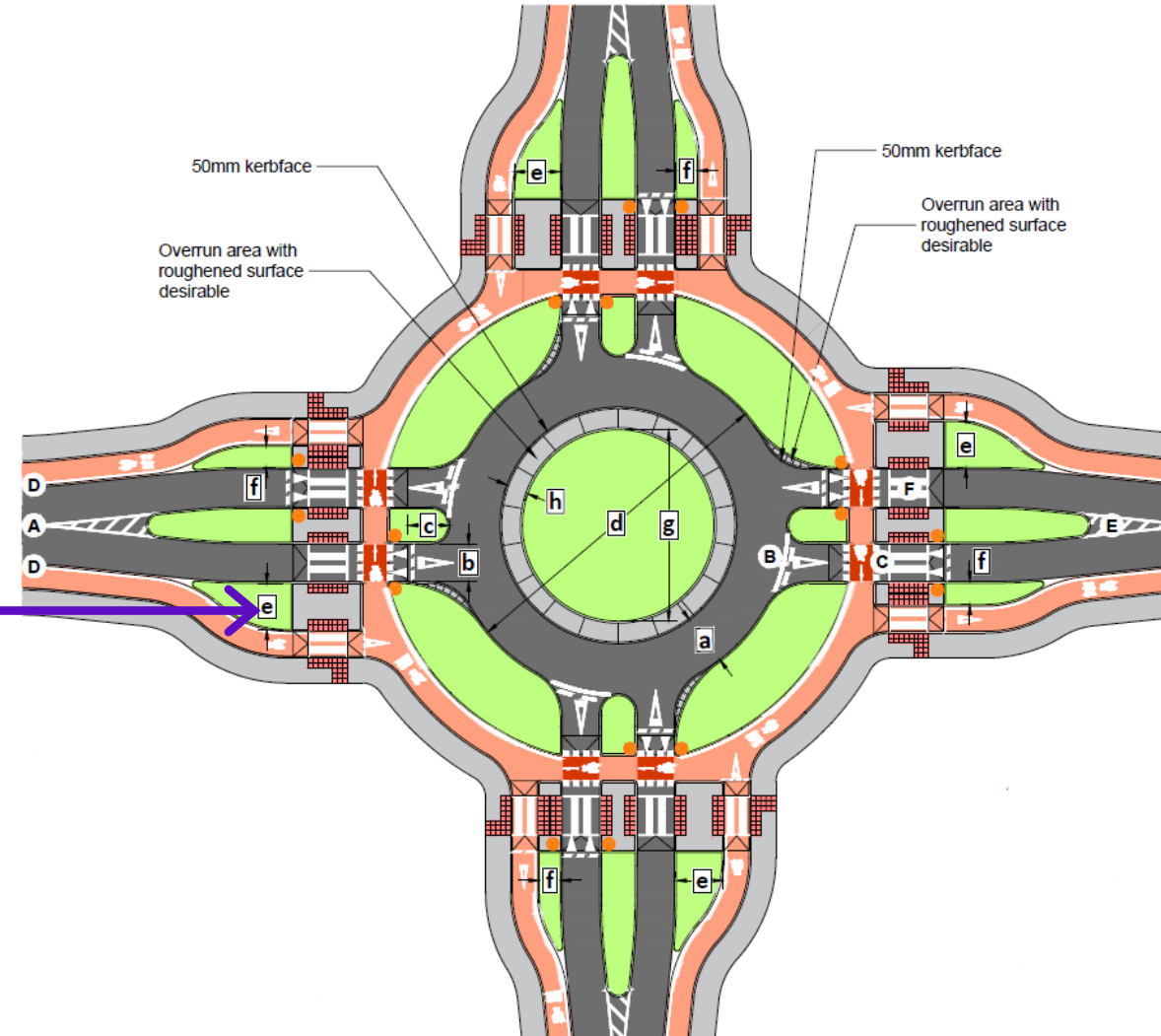


- Summary of interventions:
1. Narrowing of circulatory lane (concrete overrun area)
 2. Approach lanes width reduced
 3. Raised controlled pedestrian zebra crossing followed by parallel cycle zebra crossing on major arms (Zebra Crossing with raised table)
 4. Segregated cycle tracks
 5. Raised tables to reduce traffic speed
 6. Tree removal and replacement
 7. SUDS / public realm greening opportunities.

Roundabouts with Protected Space for Cycling

- Urban locations
- Traffic speeds and volumes (Table 4.25)
- ICD 25m – 40m
- Narrow single lane approaches
- Circulatory lane 4m – 6m with overrun area
- Raised parallel zebra crossings with refuge islands
- Zebra crossings set back 5m min.
- Cyclist approach perpendicular to carriageway at crossing
- Separation between exiting cycle track and exiting traffic lane (dimension 'e' = 5m min.)
- SuDS and greening opportunities

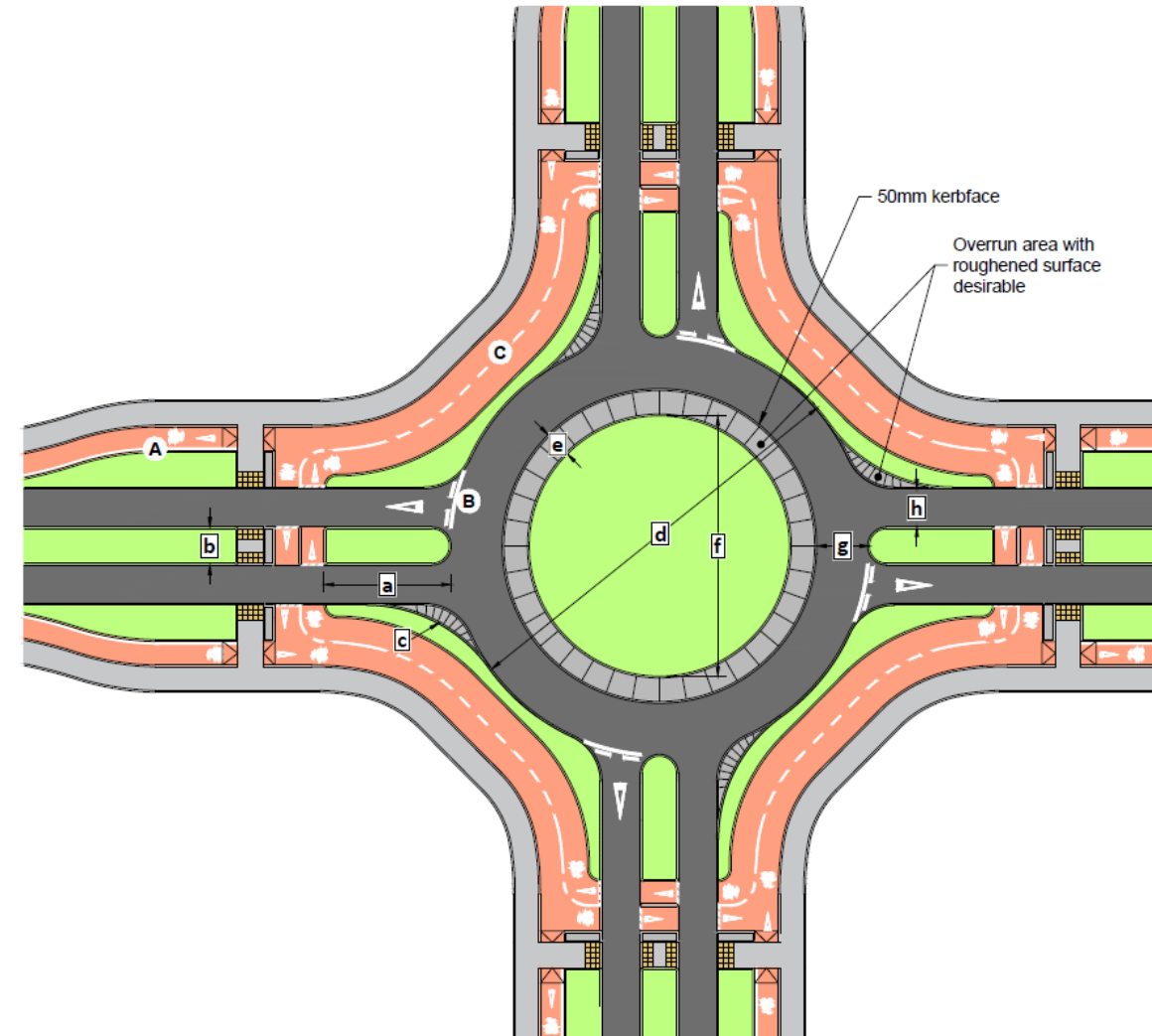
TL701 Protected Roundabout with Cycle Priority



Roundabouts with Protected Space for Cycling

- Typically, outside urban areas
- ICD 25m – 40m
- Narrow single lane approaches
- Circulatory lane 4m – 6m with overrun area
- Segregated uncontrolled crossings with refuge islands
- Crossings set back 10m min.
- Suitable for one-way and two-way cycle tracks
- Cyclist turns through 90 degrees in advance of crossing point to reduce speeds

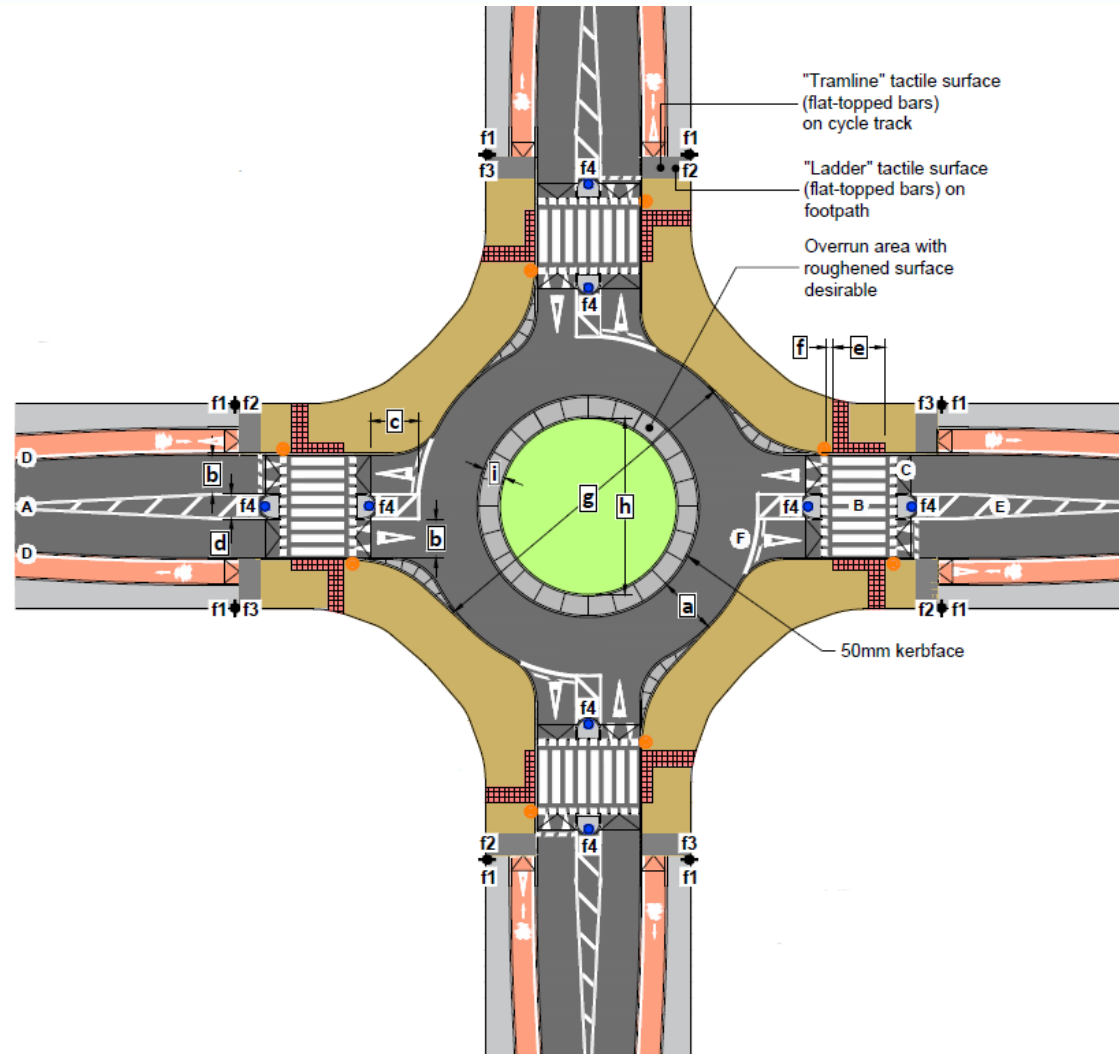
TL702 Protected Roundabout without Cycle Priority



Roundabouts with Protected Space for Cycling

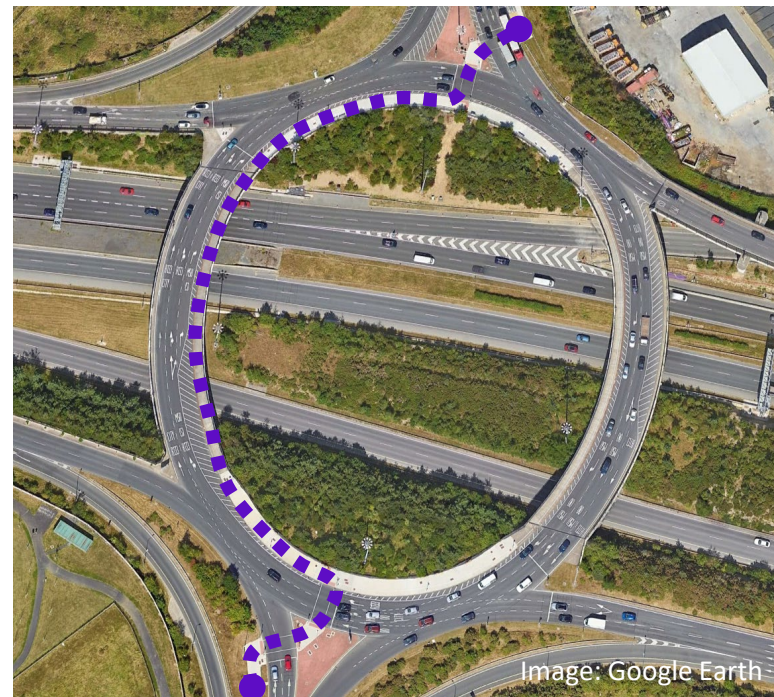
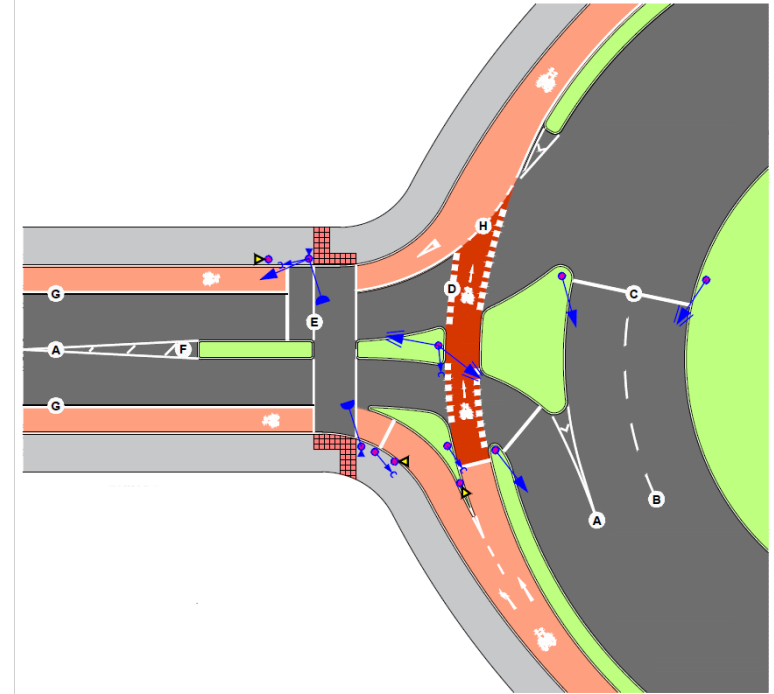
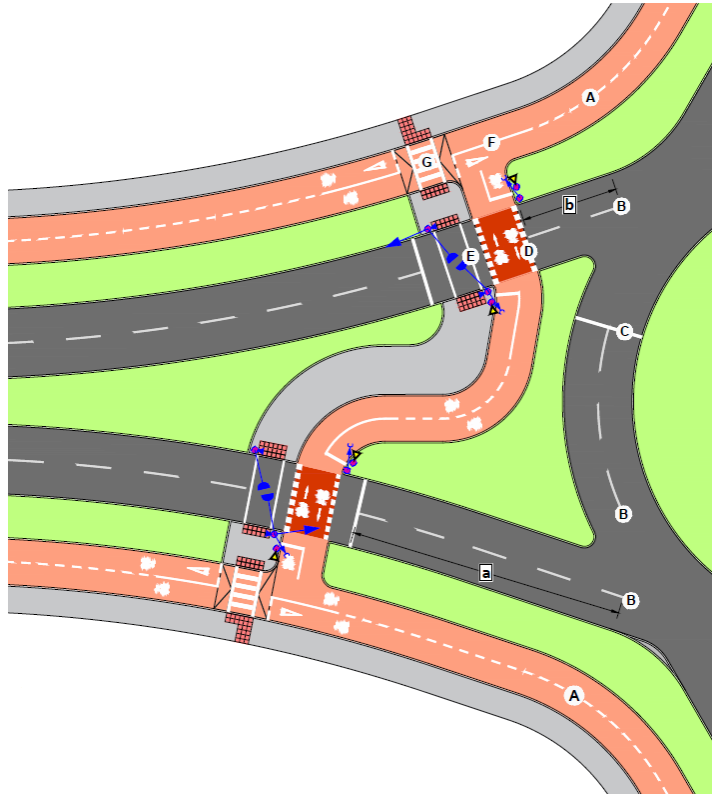
- Urban locations where space is limited or where shared active travel facility is appropriate
- Traffic speeds and volumes (Table 4.25)
- ICD 25m – 40m
- Narrow single lane approaches
- Circulatory lane 4m – 6m with overrun area
- Raised combined zebra crossings (provide refuge islands if space allows)
- Zebra crossings set back 5m min.
- Suitable for one-way and two-way cycling
- Tactile paving at start/end of shared area

TL703 Segregated Roundabout with Shared Active Travel Facilities



Signal-controlled Roundabouts

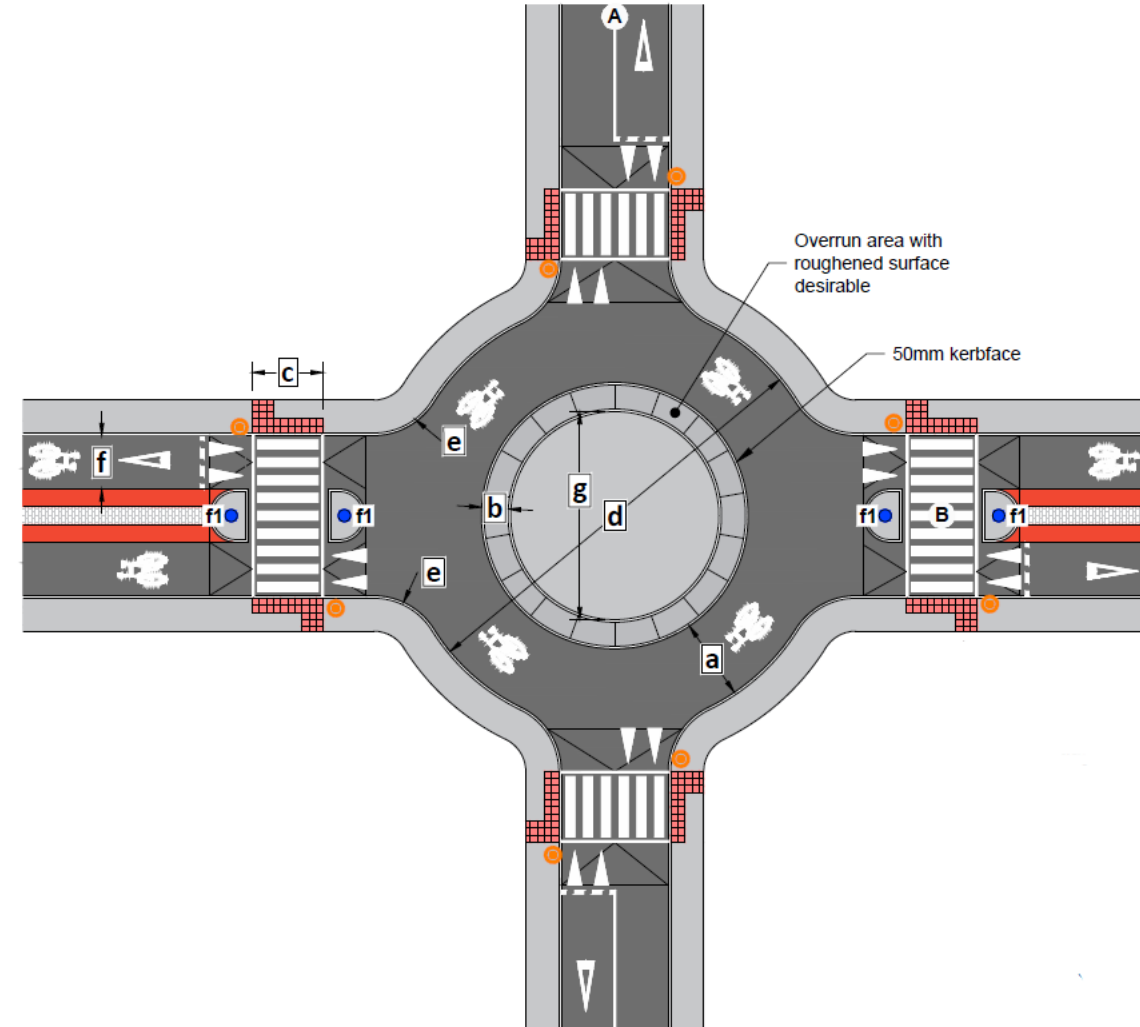
- Grade separated crossings facilities are preferred but may not be feasible
- 3 options for providing cycling facilities
- Signal-controlled crossings (parallel crossing or Toucan)
- Hold the left (cyclists proceed with circulating traffic)
- Crossing to central island



Roundabouts for Mixed Traffic

- Urban locations where cycling in mixed traffic is appropriate (Table 2.1)
- Compact ICD 15m – 30m
- Narrow single lane approaches
- Circulatory lane 4m – 6m with large cycle symbols and overrun area
- Cyclist ‘takes the lane’
- Raised zebra crossings (provide refuge islands if space allows)
- Mini-roundabouts: central disc road marking <4m (refer to Chapter 7 of Traffic Signs Manual for requirements and guidance)

TL704 Compact Roundabout with Mixed Traffic





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