

# G4 – Crossings

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## Amendments:

12/1/18 – Note clarifying that sheet refers principally to stand-alone crossings – this page and page 13  
02/05/18 – Note referencing factsheet G7 on page 5 and minor edits on the drawings on page 6

Note: This factsheet refers principally to stand-alone crossings rather than crossing points at signalled junctions

# Crossings

## Road crossings play a key role in improving conditions for pedestrians and cyclists.

Opportunities for pedestrians and cyclists to cross should be provided frequently enough to ensure that movement is not significantly constrained by motor traffic.

Crossings providing higher pedestrian priority over motor traffic (e.g. zebras) should be considered in streets with high pedestrian volumes (e.g. retail streets).

Crossing design should seek to maximise convenience for users, particularly by allowing them to follow desire lines.

Providing crossings at or near junctions is critical to delivering the 'QuietRoutes' cycle network.

## Crossing options

### Uncontrolled

- Dropped Kerb
- Build Outs
- Raised Tables / Junction
- Continuous Footway
- Refuge Island

### Controlled

- Zebras / Tigers
- *Toucan*
- *Puffin*

## Footbridges and underpasses

Only be considered under exceptional circumstances.



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## Special considerations

1. In Edinburgh special consideration is to be given to **Crossings at or near Junctions** to maximise convenience for pedestrians and where necessary cycle users. For further details please see factsheets on crossings at or near junctions.
2. **Continuous Footways** put pedestrian priority into practice by creating a continuous pedestrian environment rather than one that is interrupted at every side road. They should always be considered as part of new or renewals projects, particularly in retail/high streets and other important pedestrian routes.

### Relevant Factsheets:

QuietRoutes (C1)  
Pedestrian Desire Lines (P2)

Footbridges and Underpasses (G4)  
Crossings at or near Junctions (G5)

Continuous Footways (G7)  
Corner Radii (G6)

## Key design principles

Design will vary depending on context, however:

- Provide direct crossings and avoid staged crossing arrangements if possible.
- Ensure that the pedestrian/cycle environment is uninterrupted and easy to use.
- Consider reduced corner radii and raised tables to improve pedestrian and cycle priority.
- Provide protection / speed reduction / controls appropriate to function of crossing and traffic flow.

## Desire lines

Locations for crossings should always align with desire lines.

This means most crossings will be **at or near junctions** to maximise convenience for pedestrian and cycle users.

Consider if there are opportunities to combine pedestrian and cycle crossings where appropriate.



“Tracing studies mark pedestrian movement lines onto a map of the area. As these build up pedestrian desire lines and highly trafficked routes become more obvious, giving a graphical representation of the volume and direction of pedestrian movement.” ([Here & Now Public Life Street Assessments](#))

## How many crossings?

Pedestrian and cyclist safety and convenience should be the first consideration in street design. But impacts of crossings on other forms of transport, especially public transport, should be considered as well. Therefore before introducing a new crossing, consider the following:

- Does an existing crossing already sufficiently provide for the relevant movement or desire line?
- Would providing a new crossing cater for movements currently served by the existing crossing – can that crossing be removed?
- What type of crossing is necessary? – signalled; zebra; island; informal?

For aspects of crossing design that are not covered within this Guidance\*, please refer to the UK Guidance by Department for Transport:

- [Local Transport Note \(LTN 1/95\): The Assessment of Pedestrian Crossings, 1995](#)
- [Local Transport Note \(LTN 2/95\): The Design of Pedestrian Crossings, 1995](#)
- [Traffic Advisory Leaflet 5/05: Audible and Tactile Signals at Signal-Controlled Junctions, 2005](#)
- [The Zebra, Pelican and Puffin Pedestrian Crossings Regulations and General Directions 1997](#)

**\* If there is a conflict between this Guidance and the UK Guidance documents, the Edinburgh Street Design Guidance should be used.**

## Relevant Factsheets

Signalised Crossings (G4)  
Zebra/Tiger Crossings (G4)  
Corner Radii (G6)

Crossings at or near Junctions (G5)  
Traffic Management & Speed Reduction (G6)

Pedestrian Desire Lines (P2)  
Tactile Paving (M4)

## Choosing a Crossing Type

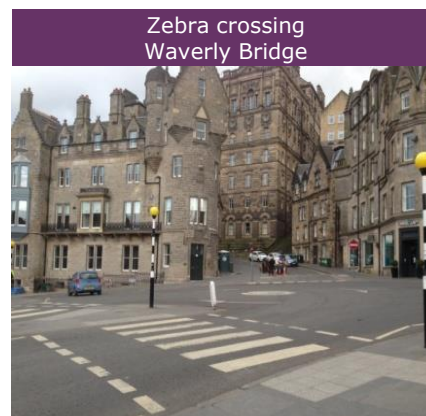
Several factors need to be considered when determining what type of crossing to install.

### 1. Factors for all crossings:

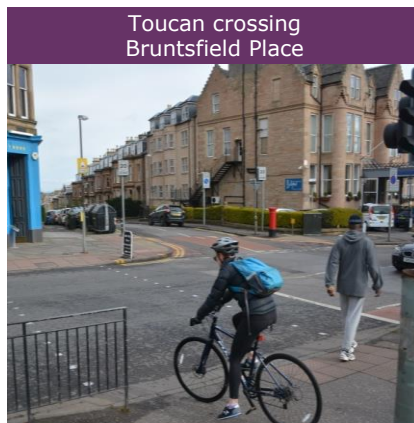
- a) Volume of road traffic:**  
As volume of traffic increases, it is more likely that a formal crossing is the right solution.
- b) Speed of road traffic:**  
As speed of traffic increases, it is more likely that a formal crossing is the right solution.
- c) Volume of pedestrians and cyclists crossing:** The greater the number of people crossing, the more likely it is that a formal crossing is needed.
- d) How wide is the road being crossed?**  
The wider the road, the more likely it is that a formal crossing is needed. Consider local reduction in width and/or providing a central refuge.



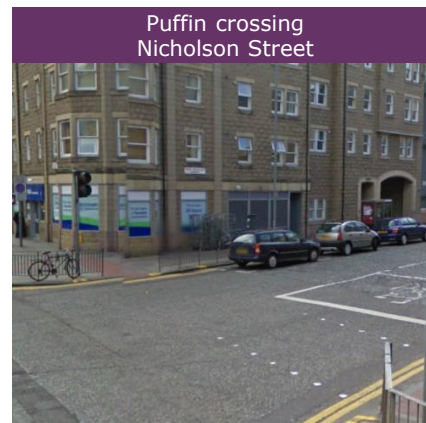
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Google Maps 2016

#### Relevant Factsheets:

Uncontrolled Dropped Kerb Crossings (G4)  
Signalised Crossings (G4)  
Crossings at or near Junctions (G5)

Refuge Island Crossings (G4)  
Zebra/Tiger Crossings (G4)

Design Speed (G1)  
QuietRoutes (C1)

### 2. Factors for cycle crossings:

- a) Is the crossing on the proposed 'QuietRoutes' network?**

#### Yes:

Provide a formal crossing (tiger or toucan) if 2-way daily traffic flows are greater than 3000.

Generally provide a toucan crossing if traffic flows are greater than 8000.

A refuge island can be used as an alternative for flows between 3000 and 6000 where there is space for an island 3m wide or more.

#### No:

As above, but potential cyclist and pedestrian use should also be a factor in this case.

**Contact the Council's Active Travel and Road Safety team for 'Road Safety Scoring System' to assist with determining the type of crossing.**

# Designing Convenient & Direct Crossings

Crossings should be convenient and easy to use and as such they should:

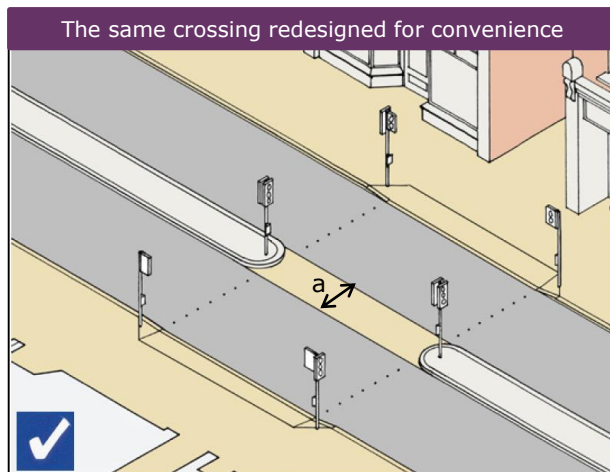
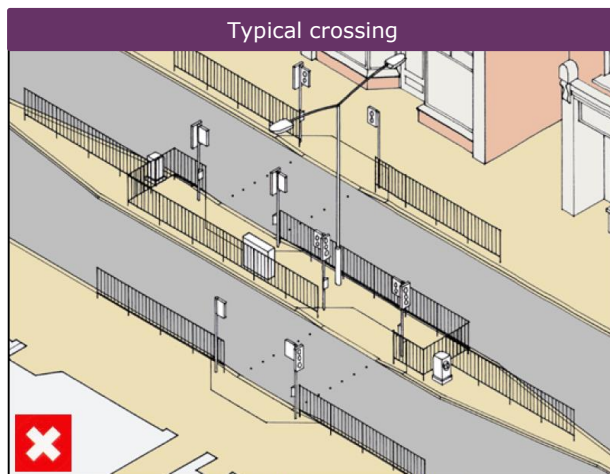
- Be as direct as possible
- Be single stage wherever possible (and take into account delays to pedestrians and cyclists versus vehicles).
- Minimise width to be crossed by providing build-outs etc.
- Minimise the amount of Guardrail and street clutter.

Minimum crossing width is 2.4m however wider crossings are preferred for pedestrian comfort.

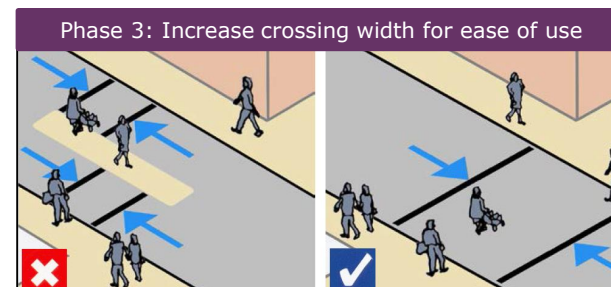
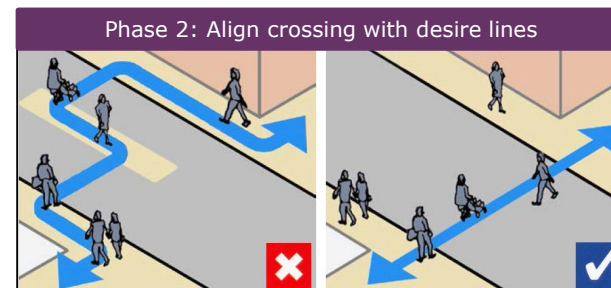
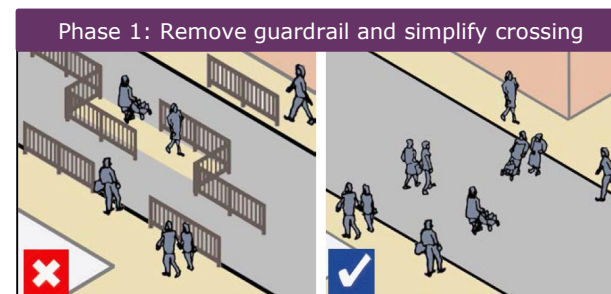
If redesigning the crossing with a central refuge, see page 12.

Tactile paving has been omitted from the illustrations for clarity, however **all crossings must use compliant tactile paving**.

Avoid use of guardrails – follow 'The City of Edinburgh Council Guardrail Assessment' if considering its use.



Note: See page 12 for values of a.



Source: [CIHT - Street Design For All](#)

**Relevant Factsheets:**

- Signalised Crossings (G4)
- Pedestrian Guardrail (P5)

- Tactile Paving (M4)
- Flush / Dropped Kerb Detail (G4)

- Pedestrian Desire Lines (P2)
- Minimising Street Clutter (P7)

# Uncontrolled Drop Kerb Crossings

**These basic crossings aid people crossing the road by dropping the kerb or raising the carriageway to help make crossing the road easier for everyone.**

## Typical locations

- At road junctions to help pedestrians cross the side street to continue their journey.
- At strategic points on a busy street where there is no need for a controlled crossing such as a zebra or puffin.
- Crossings should always be on pedestrian desire lines, see factsheet G7 for further details.

## Waiting / loading restrictions

- Double yellow lines or white bar markings can be used across a crossing point to help avoid parking along a dropped kerb crossing.
- They should always be used in situations where parking appears to be likely.

## Width of dropped kerbs

- Be equal on both sides and be directly in line with each other
- 1.8m min width (desirable width 2.7m) with 1:12 max gradient
- There should be a level area (900mm minimum width) along the rear of the dropped crossing to allow easy passage for wheelchair and mobility scooter users who are not crossing the road (Dropped Kerb Detail 1). Where footway width does not allow max gradient and at least 900mm level area, drop the level of the whole footway width (Dropped Kerb Detail 2).
- Dropped kerb flush (no more than 6mm raised) with the carriageway.

## Tactile paving

- Must be used at all crossing points in a contrasting grey colour.
- Should extend across the entire width of the dropped kerb.

Existing dropped kerb crossings should be reviewed and compliant, with tactile paving provided.

### Relevant Factsheets:

Flush / Dropped Kerb Detail (G4)  
Crossings at or Near Junctions (G5)  
Signalised Crossings (G4)

## Other options

Build-outs, refuge islands and raised carriageways (including continuous footways) can all be used to further assist pedestrians.

Build Out



The City of Edinburgh Council: Widening the footway/narrowing carriageway – Bruntisfield Edinburgh

Refuge Island



The City of Edinburgh Council

Continuous Footway



Jacobs: Enables pedestrian priority through visual continuity

Raised Table



[Google Maps 2017](#): Raising the carriageway to create a raised table/shared surface.

Refuge Island Crossings (G4)  
Zebra / Tiger Crossings (G4)

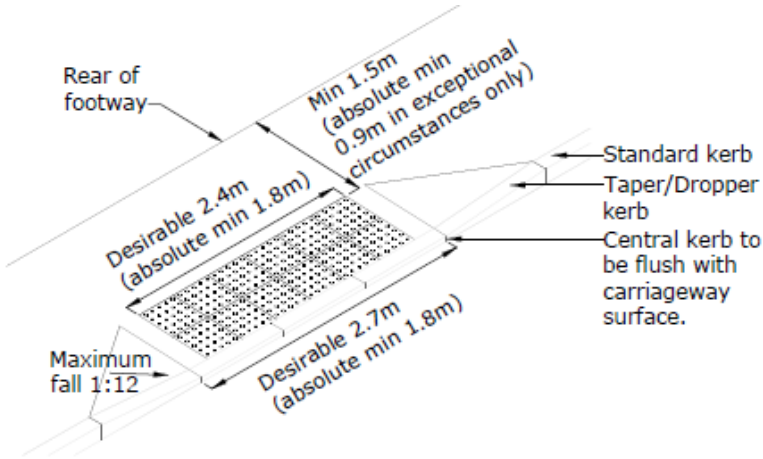
Tactile Paving (M4)  
Continuous Footways (G7)

# Flush/Drop Kerb Detail

For pedestrian and cycle access

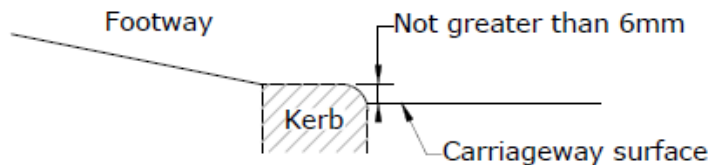
Dropped Kerb Detail 1

DWG Ref: 5145925-3D-DR-C-0002



Kerb Tolerance

DWG Ref: 5145925-3D-DR-C-0002



- 2 rows of Blister Paving as required on the dropped footway.
- Dropped kerb crossings should be protected from parking and loading at all times.

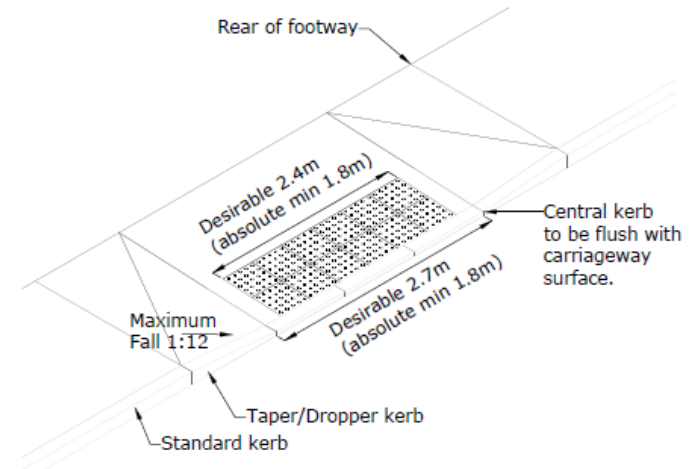
**Relevant Factsheets:**

- Blister Paving (M4)
- Signalised Crossings (G4)

Only use Detail 2 if Detail 1 is not feasible

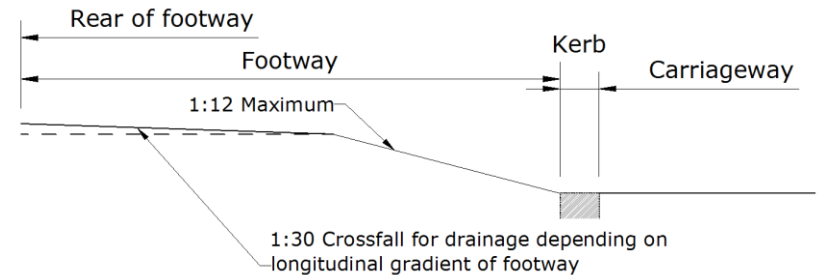
Dropped Kerb Detail 2

DWG Ref: 5145925-3D-DR-C-0007



Section through Dropped Crossing

DWG Ref: 5145925-3D-DR-C-0002



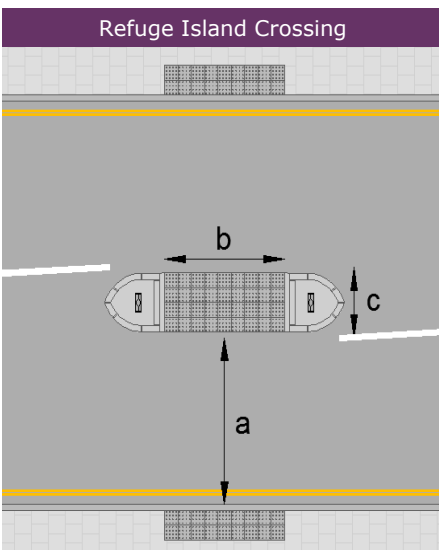
Refuge Island Crossings (G4)

Zebra/Tiger Crossings (G4)

# Refuge Island Crossings

## Refuge islands, created by installing 2 'D' islands can:

- create a central waiting zone to aid the movement of disabled and elderly users
- enable pedestrians and/ or cyclists to cross carriageway in two stages as part of a controlled or uncontrolled crossing
- provide a protection zone for right turning vehicles/cyclists



DWG ref: CJ-DR-C-0004

## Traffic lane width (a)

Refuge islands **should not be used** where road width is too narrow to install an island of suitable width.

"... lane widths in the range 3.1m – 3.9m (inclusive) should be avoided at refuges because this can lead drivers to take inappropriate risks to overtake cyclists. At lane widths of 3.0m or less, drivers will tend not to

attempt to pass a cyclist at the narrowing. Where lane widths are 4.0m or more, overtaking can be achieved safely by most vehicles..." [\(Sustrans, Streets and Roads \(draft\), 2015\).](#)

## Island dimensions (b and c)

The width of refuge 'D' islands is based on user requirements. Refuges should be as wide and long as is necessary to cater for anticipated pedestrian/cycle usage.

## Lighting

Only consider the installation of additional lighting over the pedestrian refuge to improve safety after dark, if there is not already sufficient street lighting.

## Keep left bollards

Should be provided if there is a safety concern regarding visibility. "In deciding whether or not a bollard is required, designers need to consider how visible the traffic management feature in question would be in the absence of a bollard". [DfT - TAL 3/13 \(2013\)](#)

## Dimension of 'a' (Kerb to island clearance)

Speed Limit	Max	To Be Avoided		Min
		Cycles on Carriageway (=no cycle bypass)	No Cycles on Carriageway (= with Cycle bypass)	
40mph	10.5m	<4.5m (pref 5m)	<3.5m	See Left
30mph	10.5m	<4.0m	<3.0m	See Left
20mph	10.5m	3.1m – 3.9m	<2.75m	2.75m*

\* overtaking a cyclist will not be possible at 2.75m.

## Dimension of 'b' and 'c' (Island dimensions)

	Max	Min (Pedestrians)	Min (Cyclists)
b	5.0m	2.0m	2.0m
c	3.0m	1.8m (1.2m absolute)	2.0m absolute 2.5m desirable 3.0m allows for trailers

## Relevant Factsheets:

Uncontrolled Drop Kerb Crossings (G4)  
Crossings at or near Junctions (G5)  
Minimising Street Clutter (P8)

Soft Segregation: Integration with Crossings (C3)  
Hard Segregation: Integration with Crossings (C4)  
Speed Reduction and Traffic Management (G6)

## Diagram 610

In **20 mph** zones consider the use of Diagram 610 mounted on a post.

In **30 mph** zones consider the use of Diagram 610 mounted on an illuminated bollard.



# Refuge Island Crossings at or Near Junctions on Main Roads

## Location of crossing

- Locate crossings on desire lines unless there is a physical obstruction - typically as near as possible to the junction, accommodating a turning manoeuvre. Consider banning turns

## Design considerations

- Assess which side to place the refuge island crossing, where it will best meet crossing needs and least impact turning movements and traffic flow.
- Undertake vehicle tracking (swept path analysis) for large vehicles. If this indicates the refuge island should be relocated off the pedestrian desire line, consider banning turn(s) as the preferred option instead.
- Consider using build outs on side roads to bring the refuge island closer to the junction.

## Dimensions

### (a),(b) and (c)

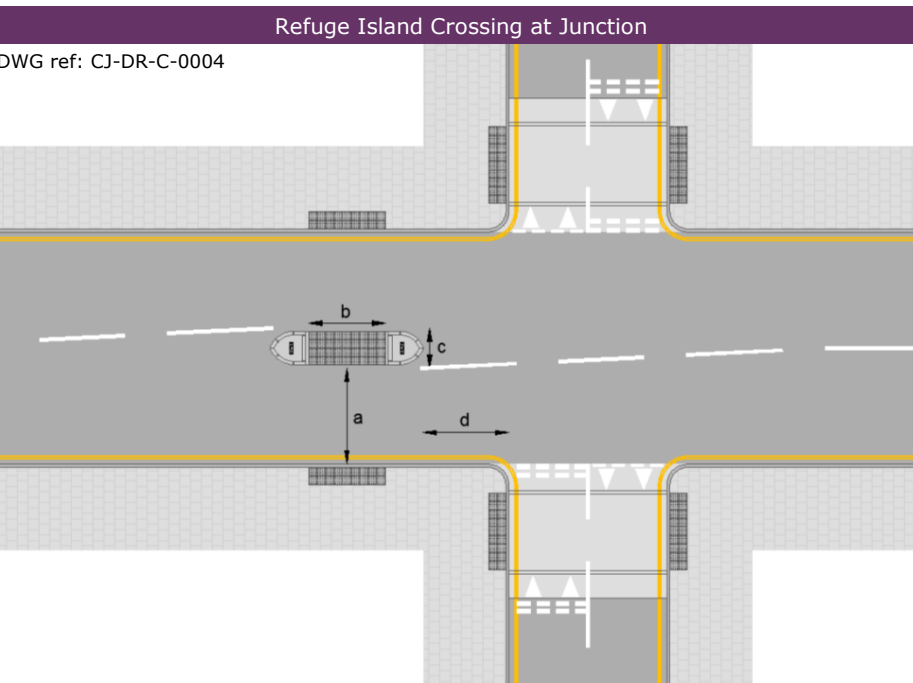
Details for these dimensions can be found on the **Refuge Island Crossing** factsheet.

### (d)

The aim will usually be to minimise this distance in order to enable crossing movements on desire lines. However must be set such that turns can be made by vehicles that are likely to regularly require to do so (e.g. delivery vans, potentially refuse vehicles).

## Relevant Factsheets:

Uncontrolled Drop Kerb Crossings (G4)  
Zebra / Tiger Crossings (G4)  
Pedestrian Desire Lines (P2)



Crossings at or near Junctions (G5)  
Refuge Island Crossings (G4)

Corner Radii (G6)  
Priority Junctions (G7)

# Zebra / Tiger Crossings 1

The 2016 edition of the **Traffic Signs Regulations and General Directions (TSRGD)** allows 'Tiger' parallel cycle crossings at zebra crossings.

- Should be located on or very close to pedestrian desire lines.
- Consideration should be given to creating a raised table which can improve pedestrian/cycle priority, especially for tiger crossings.

## Furniture

- Belisha Beacon (amber coloured globe atop a black and white pole) illuminated at night.
- Set back 450mm from kerb face (may be less on narrow footways - see **Minimum Kerb Zone** factsheet) and 500mm from tactile paving.
- Consider mounting on lighting column.

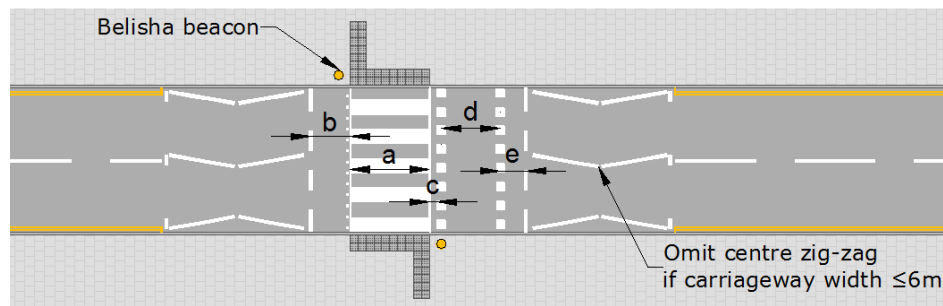
Dimension	Min / Max	Desirable
Pedestrian Crossing Width (a)	2.4 – 10.0m	3.2m
Clear Distance (b)	1.1 - 3.0m	1.7m
Distance between pedestrian and Cycle crossing (c)	0.4m	0.4m
Cycle crossing width (d)	1.5 – 5m	3.0m
Clear Distance (e)	1.1 – 3.0m	1.1m

If the crossing distance is:

- <10m – Single Crossing Point
- >10 and <15m – Single Crossing point with Refuge Island
- X>15m – Zebra not suitable

These are unlikely to be suitable if there are two or more lanes per direction.

Special care needs to be taken in designing a staged Tiger crossing to allow for the requirements of cyclists.

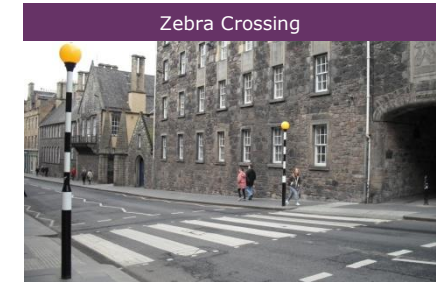


DWG ref: CR-DR-C-0001

## Relevant Factsheets:

Flush / Dropped kerb Detail (G4)  
 Minimising Street Clutter (P7)  
 Pedestrian Desire Lines (P2)

Crossings at or Near Junctions (G5)  
 Minimum Kerb Zone (F1)  
 Distance to crossing studs (G4)



The City of Edinburgh Council: Zebra/Tiger Crossing on High Street, Edinburgh

## Other considerations

- Guardrail only to be installed following a formal Guardrail Assessment.
- Bus stops to be sited downstream of crossings.
- To achieve suitable crossing locations and balance the demands on kerb space, it will usually be appropriate to use 4 or fewer zigzags on streets with a 20mph limit (2 on 'downstream' side).

## Further information:

- [Local Transport Note \(LTN 2/95\): The Design of Pedestrian Crossings, 1995](#)
- [TSRGD 2016](#)

Tactile Paving (M4)  
 Zigzags (G4)

## Zebra / Tiger Crossings 2 – Pros and Cons

### Advantages of Zebra/Tiger compared to signalised

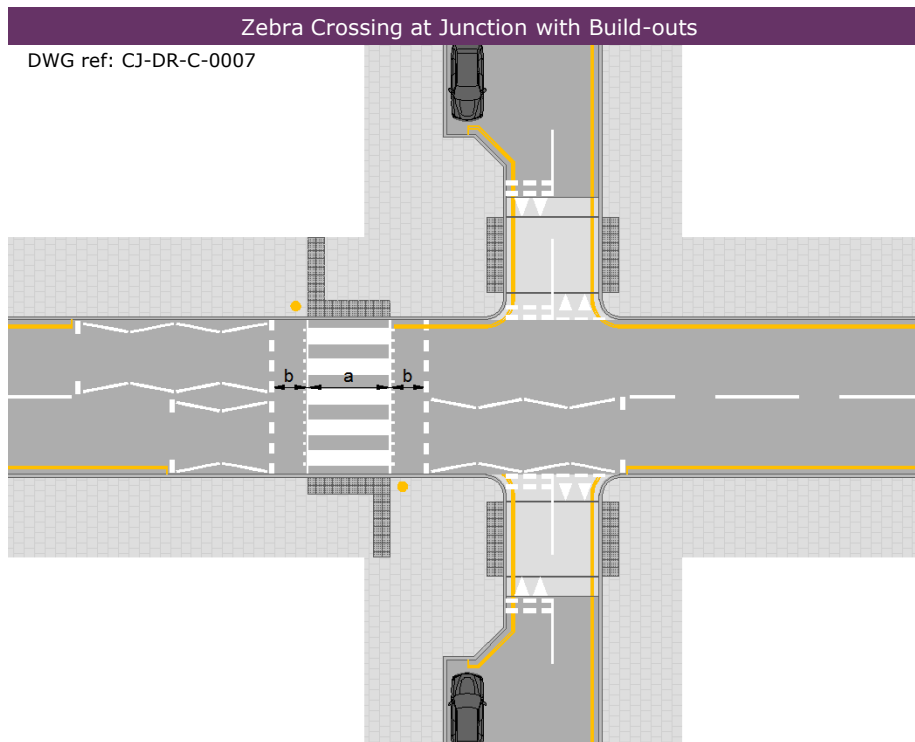
- Visually more prominent (lines on the road very visible).
- Belisha beacons can be seen from all directions.
- Minimal delay for pedestrians or cyclists crossing.

### Disadvantages of Zebra/Tiger compared to signalised

- Pedestrians have more confidence in signalised crossings. This is particularly an issue for visually impaired or young/old pedestrians.
- There could be issues around visibility of pedestrians or cyclists crossing, especially on long crossings.
- Where there are high pedestrian flows these crossings can heavily impact on motor vehicle movement.

### Zigzag area

- In order to achieve suitable crossing locations and to balance demands on kerb space, it will usually be appropriate to use 4 or fewer zigzags on streets with a 20mph limit (2 on the exit side of crossings once drivers are beyond the crossing).
- Where crossings are very close to side roads, there is little or no benefit to extending zigzags across side road junctions as vehicles will not park in front of these, unless the zigzags are required to be extended beyond the side road junction.



**Often crossings will be located at or near junctions to align with pedestrian and cyclist desire lines.**

**To enable Zebra and Tiger crossings to be as close to junctions as possible consider the following:**

- Build outs to reduce width of side roads.
- Reducing corner radii.
- Banning higher volume left turns that conflict with crossing.
- Raised Side Street entries/continuous footways.

For further details on how all of the listed options can be applied to best locate a crossing, see Factsheet: **Crossings at or near Junctions – Layout Option 1**

For dimensions (a) and (b) values see **Zebra/Tiger Crossings** factsheet.

#### Relevant Factsheets:

Flush / Dropped kerb Detail (G4)  
Minimising Street Clutter (P7)  
Pedestrian Desire Lines (P2)

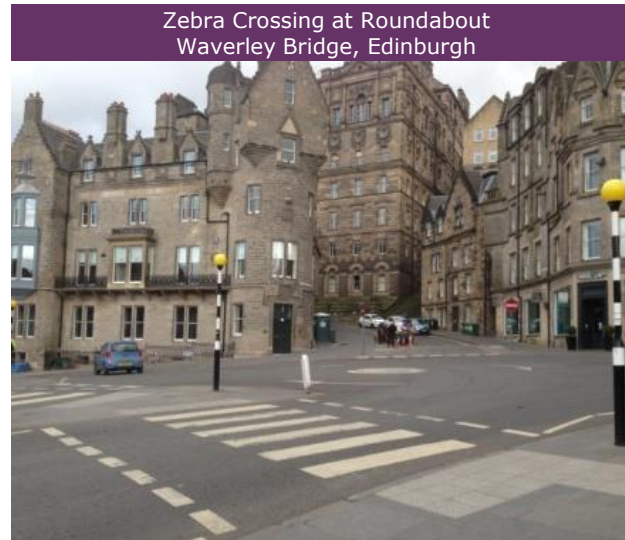
Crossings at or Near Junctions (G5)  
Distance to crossing studs (G4)  
Corner Radii (G6)

Tactile Paving (M4)  
Zigzags (G4)  
Priority Junctions (G7)

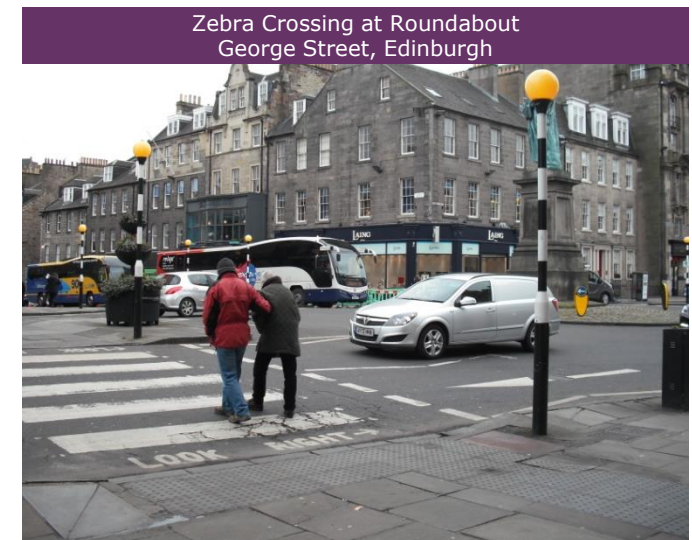
## Zebra/Tiger Crossings on Exit of Roundabouts

**Where it is considered beneficial to place a Zebra near a roundabout they should be:**

- Raised or made continuous to give pedestrians priority.
- They should usually be placed 5m back from the stop line to allow for at least one vehicle to queue.



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# Signalised Crossings

**A signalised crossing is a formal type of pedestrian and/or cycle crossing with push button controls.**

**A Puffin** crossing is pedestrian signalised crossing.

**A Toucan** crossing is a pedestrian and cyclist combined signalised crossing.

**A Pegasus** crossing is a pedestrian and equestrian combined signalised crossing (none in Edinburgh at present).

## Design principles

- Locate crossings on desire lines.
- Keep furniture to a minimum.
- Primary push button on right side.
- Avoid use of guardrails – follow **Guardrail Assessment** if considering its use.
- Tactile paving with tails required.
- Bus stops to be sited downstream.
- Anti-skid surfacing may be reduced in length or omitted in lower speed (20 mph) environments.

## Crossing widths

Type	Puffin	Toucan or Pegasus
Desirable	3.2m	6.0m
Minimum	2.4m	4.0m
Maximum	10.0m	10.0m

### Relevant Factsheets:

Crossings at or near Junctions (G5)  
 Pedestrian Desire Lines (P2)  
 High Friction Surfacing (M5)

Tactile Paving (M4)  
 Minimising Street Clutter (P7)  
 Designing Convenient and Direct Crossings (G4)

Flush / Dropped Kerb Detail (G4)  
 Bus Stops (PT2)  
 Pedestrian Guardrail (P5)



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## For further information

Sheet G5 – crossings at or near junctions  
 Department for Transport:

- [Guidance on the use of Tactile Paving Surfaces, 1998](#)
- [Local Transport Note \(LTN 1/95\): The Assessment of Pedestrian Crossings, 1995](#)
- [Local Transport Note \(LTN 2/95\): The Design of Pedestrian Crossings, 1995](#) (NB see sheet G5 re distance to junctions)
- [Traffic Advisory Leaflet 5/91: Audible and Tactile Signals at Signal-Controlled Junctions, 2005](#)

# Signalised Crossings of Wider Roads

## Design principles

- Aim to minimise delays, particularly to pedestrians and cyclists, but taking account of public transport and other road users.
- A single –stage crossing is generally preferred, especially for cyclists
- Consider building-out footways to reduce width to be crossed before considering islands and especially before considering a 2 stage crossing
- Islands should generally be at least 2m (straight across- single stage), 3m (staggered)
- If considering a straight across 2 stage crossing the central refuge needs to be wide to reinforce the impression of two separate crossings. 4m or more is advised (London Streetscape Guidance, p123).
- Special care is needed for any 2 stage crossing used by cyclists, as they will have less time to understand the split nature of the crossing while on the island. Unless the 2 –stage nature is obvious, through width or otherwise, there should be some stagger.
- Reduced offset for any stagger increases convenience for users , especially cyclists, of 2 stage crossings.

## Crossings of wider roads – stages and islands

Road Width - m*	Crossing stages	Island?*	Stagger
<11m	single	Consider for wider widths	Na
11 to 15m	Single preferred	If practicable	No if single stage Yes if two stage and island <4m
>15m	Generally two	Yes	Consider no stagger if wide island (>= 4m) is possible. (see design principles - crossings used by cyclists require special care)

Note: This factsheet refers principally to stand-alone crossings. Wider single-stage crossings without islands are often acceptable at signalled junctions.

## Use of Guardrail on islands

- There is presumption against the use of guardrail
- Kerb upstands are preferred to guide users.
- Refer to CEC Guardrail protocol



[Google Maps 2017](#)



[Google Maps 2017](#)

### Relevant Factsheets:

Crossings at or near Junctions (G5)  
Pedestrian Desire Lines (P2)  
High Friction Surfacing (M5)

Tactile Paving (M4)  
Minimising Street Clutter (P7)  
Designing Convenient and Direct Crossings (G4)

Flush / Dropped Kerb Detail (G4)  
Bus Stops (PT2)  
Pedestrian Guardrail (P5)

## Distance to Crossing Studs

The distance between the stop line and crossing is largely intended to avoid small pedestrians being in the blind spot of the drivers of large HGVs (see Fig. 1). However employing the full 3m distance now advised in [TALS/05](#) is likely to result in crossings being further from the pedestrian/cycle desire line, figures 2a and 2b illustrate this point.

Taking the above into account a distance of 1.7m from a stop/give way line to crossing studs should generally be used when seeking to locate crossings, particularly toucan crossings, on desire lines. 3m is advised for mid-link crossings.

Risk to smaller pedestrians resulting from the 1.7m distance can be mitigated by installing advanced stop lines or "Keep Clear" areas, see G5 – Layout Options.

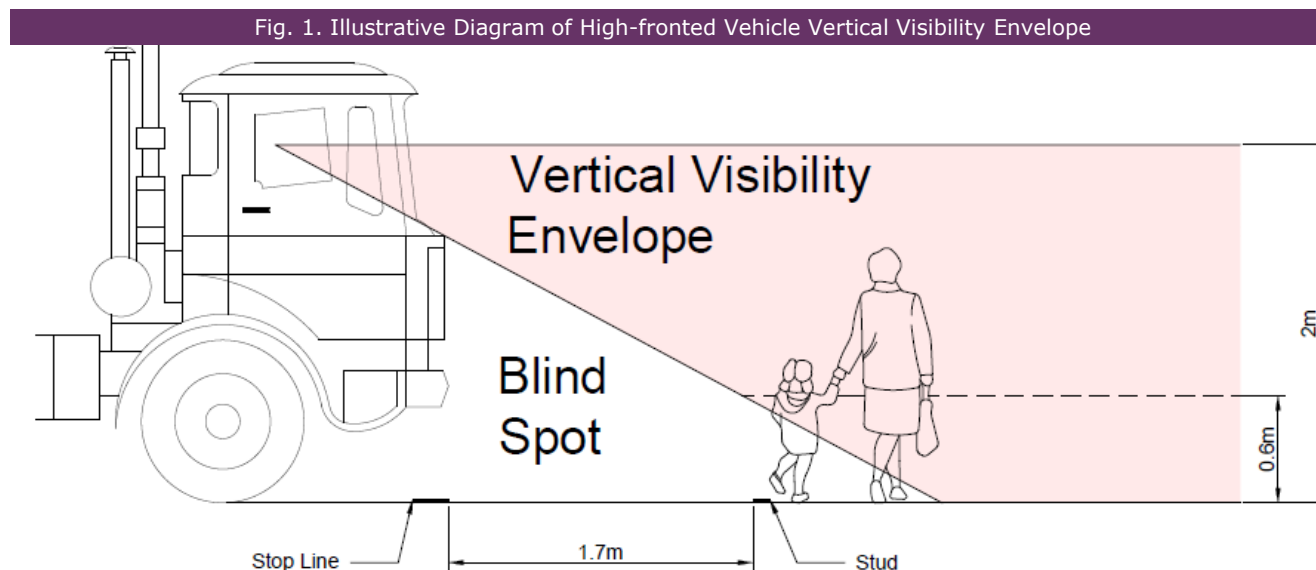
Maintaining pedestrian/cyclist desire lines encourages the use of formal crossings and is likely to deter users from crossing the road at dangerous locations ([TRL, Factors Influencing Pedestrian Safety: A Literature Review 2006: p.47](#)).

In addition, locating crossings on pedestrian/cyclist desire lines is crucial for delivering "QuietRoutes" networks.

**Widening the crossing** width should encourage crossing within studs and should always be considered, especially where the 1.7m stop line to studs distance is used.

### Existing guidance

- [Traffic Signs Manual Chapter 5](#) provides a minimum distance of 1.1m (Zebra) or 1.7m (Toucan) and a maximum of 3.0m.
- [Transport Advice Leaflet 5/05](#) recommends a minimum distance of 3.0m to ensure high-fronted vehicles waiting at the stop line can clearly see pedestrians at the crossing.



### Relevant Factsheets:

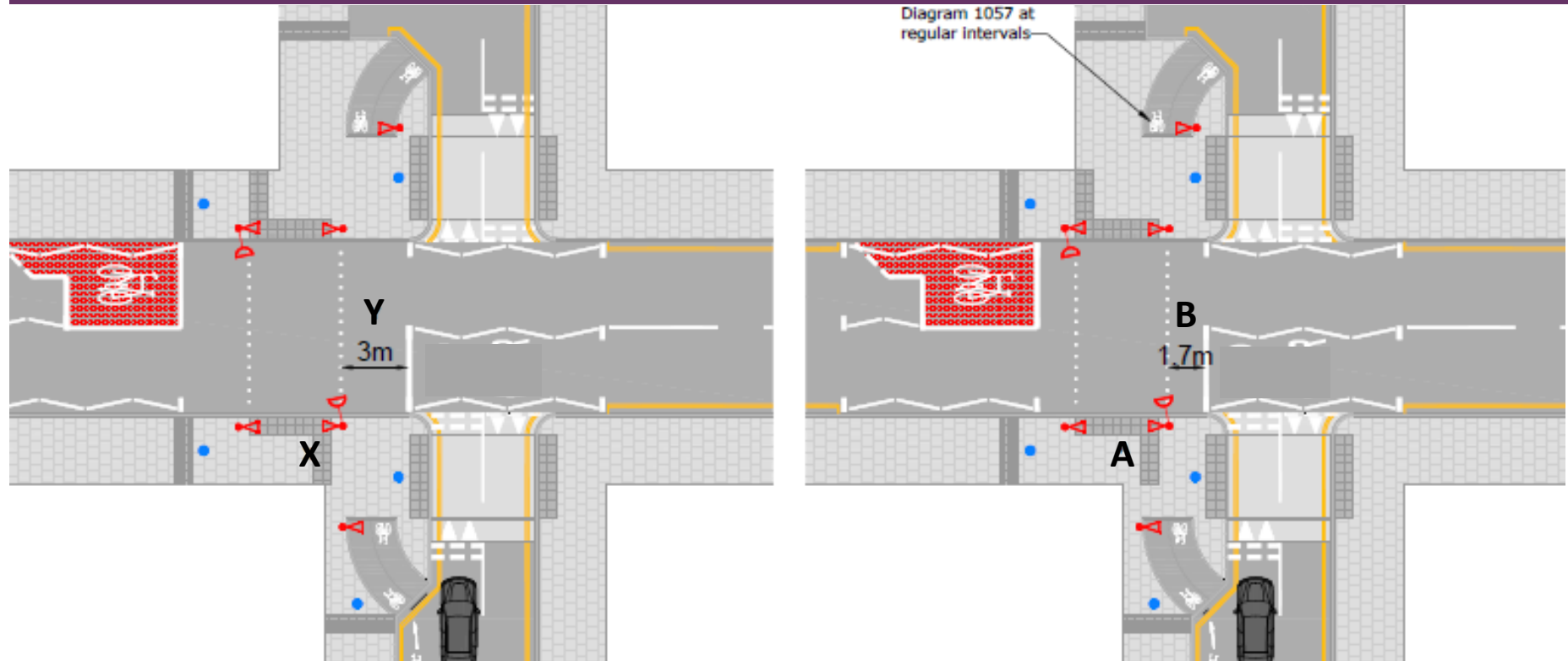
Crossings at or near junctions (G5)

Pedestrian Desire Lines (P2)

Fig. 2. Impact of stop line to crossing studs distance on location of toucan crossings relative to desire lines.

2a: 3m distance from stop line to studs

2b: 1.7m distance from stop line to studs



DWG ref: CJ-DR-C-0008

- X. Likely cycle/pedestrian conflict due to poor visibility
- Y. Temptation to cross in gap between stop line and crossing point

- A. Cycle desire lines further from building front, better visibility
- B. Narrower gap, lower temptation to use for crossing

**Relevant Factsheets:**

Crossings at or near junctions (G5)

Pedestrian Desire Lines (P2)



# Zigzags

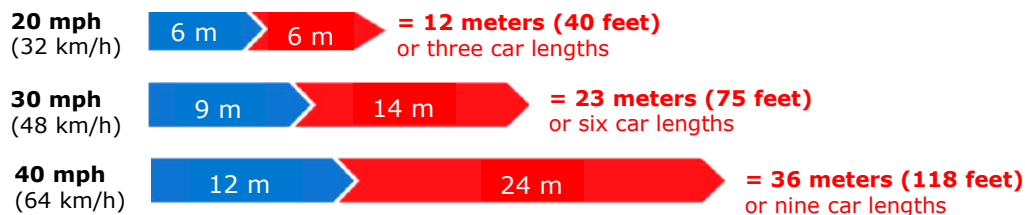
**In order to achieve suitable crossing locations and to balance demands on kerb space, it will usually be appropriate to use 4 or fewer zigzags on streets with a 20mph limit (2 on 'downstream' side).**

## Zigzag length

Zigzags are intended to improve inter-visibility between drivers, pedestrians and cyclists using crossings.

However the Department for Transport guidance does not require them at signalled junctions. This leads to significant inconsistencies in visibility between 'stand alone' crossings and crossings at traffic signalled junctions. A signalised junction should **never** be installed simply because it does not require zigzags.

## Typical stopping distances



## Design principles

### 20mph Streets

4 zigzags are normally sufficient 'upstream of crossing, 2 'downstream' ( due to reduced stopping distances)

Consider reducing upstream zigzags to 2 in following circumstances:

- Need for loading or disabled parking.
- Crossing can be placed on a 'build-out' with parking/loading in bay. Where a 'build-out cannot be achieved consider using a flat-topped road hump to encourage slower speeds on approach to the crossing.

**Always** reduce number to 2 if the alternative would be to replace the crossing with a signalled junction with the equivalent of 2 zigzags length , or less of a waiting/ loading ban on it's approach.

### 30mph Streets

8 zigzags are normally sufficient upstream, 4 or less downstream.

Consider reducing number of zigzags similarly to 20mph streets. 2 zigzags are only likely to be appropriate if parking/loading is in a bay, or if the crossing is in a build out.

**Do not** replace the crossing with a signalled junction simply to minimise the impact on parking and loading.

Consider reducing speed limit, accepting larger parking / loading impact, or using fewer zigzags (always reduce downstream zigzags in preference to upstream).

### 40mph Streets

8 or more zigzags are essential upstream.

Downstream numbers may be reduced in exceptional circumstances.

The distances shown are a general guide. The distance will depend on your attention (thinking) distance, the road surface, the weather conditions and the condition of your vehicle at the time.



Average car length – 4 metres (13 feet)

Source: [Highway Code Stopping Distance Diagram](#)

## Relevant Factsheets:

Minimising Street Clutter (P7)

Crossings at or near junctions (G5)

# Bridges and Underpasses

**There is a presumption against pedestrian and cycle bridges and underpasses which can present personal security & safety concerns. These will only be considered under exceptional circumstances.**

Where there is no other alternative, bridges and underpasses should be designed to be convenient, pleasant and safe to use and should preferably involve raising or lowering the carriageway to ensure that pedestrians and cyclists face minimal changes in level.

## For further guidance:

- [Sustrans Design Manual – Handbook for cycle-friendly design](#)
- [BD 29/17 - DESIGN CRITERIA FOR FOOTBRIDGES](#)
- [TA 90/05 - THE GEOMETRIC DESIGN OF PEDESTRIAN, CYCLE AND EQUESTRIAN ROUTES](#)
- [TD 36/93 - Subways for Pedestrians and Pedal Cyclists Layout and Dimensions](#)

## Bridges

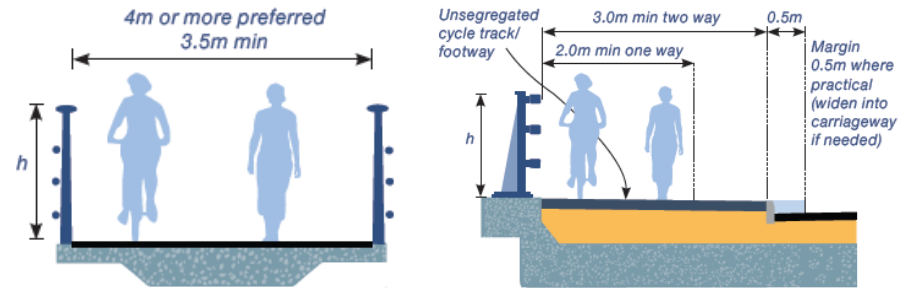
- 1 in 20 approach gradient preferred
- Avoid the use of steps
- Good visibility

### Parapet height ( $h$ )

- 1.4m preferred for cyclists, but many existing bridges operate well with lower heights
- 1.8m for equestrian use (mounted)
- Effective width of bridge reduced by 500mm at each parapet
- For advice on substandard parapet heights, refer to [Sustrans Technical Information Note 30](#).

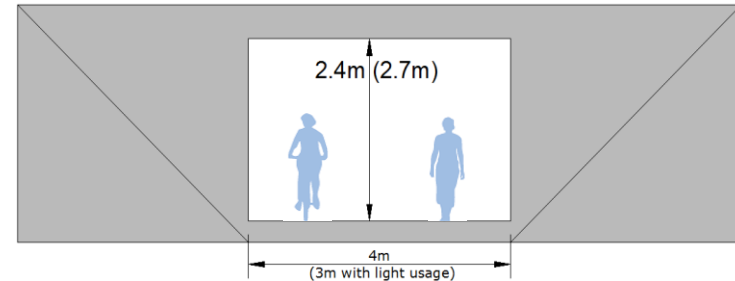
## Underpasses

- 45 degree min angle of wing wall
- Good visibility
- Well lit
- Dimensions shown are minimum recommended for new underpasses
- Dimensions in brackets apply to underpass lengths > 23m
- Many existing underpasses operate well with lower head rooms and appropriate warning signs
- Headroom of 3.7m required for equestrians (mounted)
- A greater width, or walls receding towards the top, increases natural light and reduces security issues at the ends.

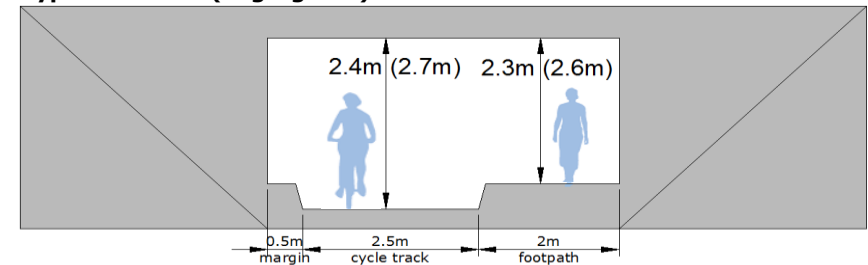


Bridges – Typical Sections and Parapet Height (Sustrans Design Manual - [Sustrans, HCFD, 2014](#))

### Typical Section (Unsegregated)



### Typical Section (Segregated)



## Image References

### Crossings

Typical Combined Crossing: The City of Edinburgh Council 2016

Refuge Island: The City of Edinburgh Council 2016

### Choosing a Crossing Type

Uncontrolled dropped kerb crossing – Bruntsfield: The City of Edinburgh Council 2016

Zebra / Tiger crossing– Waverly Bridge: The City of Edinburgh Council 2016

Toucan crossing - Bruntsfield Place / Leamington Terrace: The City of Edinburgh Council 2016

Puffin crossing – Nicholson Street / Nicholson Square: Google Maps. [ONLINE]. Available at: <https://goo.gl/xtuEpB> [Accessed 5 December 2016]

### Designing Convenient and Direct Crossings

All images: Street Design for All (2014) [ONLINE]. Available at:

[http://www.civicvoice.org.uk/uploads/files/street\\_design\\_2014.pdf](http://www.civicvoice.org.uk/uploads/files/street_design_2014.pdf) [Accessed 5 December 2016]

### Uncontrolled Drop Kerb Crossings

Build Outs - Widening the footway/ narrowing carriageway – Bruntsfield Edinburgh: The City of Edinburgh Council 2016

Continuous Footway: Jacobs

Refuge Island: The City of Edinburgh Council 2016

Raised Table: Google Maps [ONLINE]. Available at: <https://goo.gl/maps/tKvtYsukkXU2> [Accessed 5 December 2016]

### Zebra/Tiger Crossings

Zebra Crossing: The City of Edinburgh Council 2016

### On Exit of Roundabouts

Zebra crossing– Waverly Bridge: The City of Edinburgh Council 2016

Zebra crossing– George Street: The City of Edinburgh Council 2016

### Signalised Crossings

Toucan crossing, St. Leonard's Street: The City of Edinburgh Council

### Signalised Crossings of Wider Roads

Princes St: Google Maps. [ONLINE]. Available at: <https://goo.gl/YDuwez> [Accessed 11 December 2017]

Euston Road Google Maps. [ONLINE]. Available at: <https://goo.gl/PS97db> [Accessed 11 December 2017]

### Distance to Crossing Studs

Illustrative Diagram of high-fronted vehicle vertical visibility envelope: The City of Edinburgh Council 2016

### Zigzags

Stopping distance diagram: The Highway Code [ONLINE]. Available at:

<http://www.highwaycodeuk.co.uk/general-rules-techniques-and-advice-for-all-drivers-and-riders---control-of-the-vehicle-117-to-126.html> [Accessed on 5 December 2016]

### Bridges and Underpasses

Bridges – Typical Sections and Parapet Height: Bridges & Underpasses Factsheet. [ONLINE]. Available at:

[http://www.sustrans.org.uk/sites/default/files/file\\_content\\_type/sustrans\\_handbook\\_for\\_cycle-friendly\\_design\\_11\\_04\\_14.pdf](http://www.sustrans.org.uk/sites/default/files/file_content_type/sustrans_handbook_for_cycle-friendly_design_11_04_14.pdf) [Accessed on 5 December 2016]

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