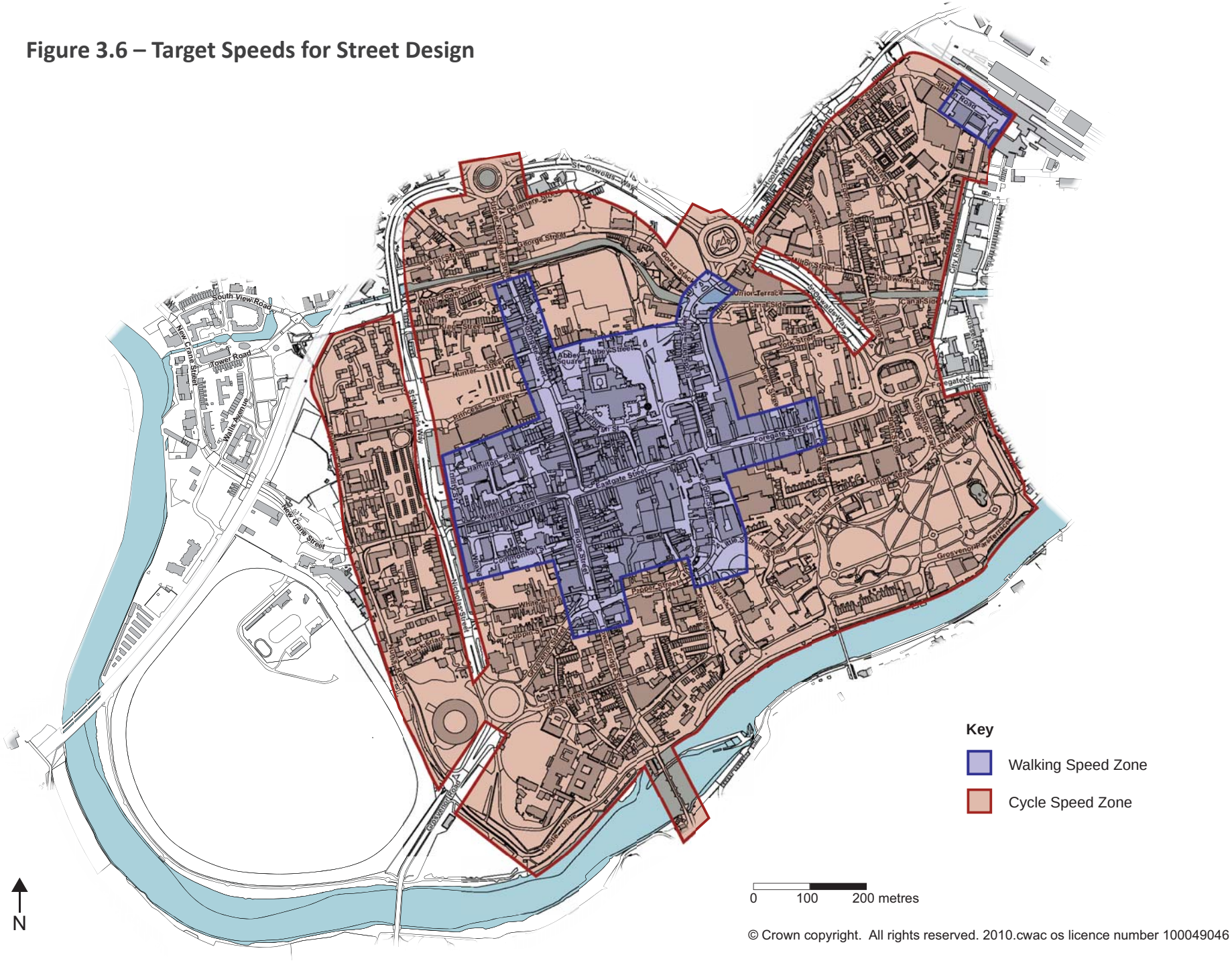
Figure 3.6 – Target Speeds for Street Design



3.9 Street Design...

Target Speeds for Street Design

As part of the vision for a pedestrian friendly city centre, street layouts should be designed to encourage drivers to travel at appropriate speeds. Figure 3.6 sets out the target speeds for the centre streets.

Cycle Speed Zone (10-20mph)
On many streets it is considered appropriate for vehicles to travel at the speed of a cyclist (approximately 10-20mph).

Walking Speed Zone (5-10mph)
On some streets in the core of the city centre where there are significantly more pedestrians than motorists or at particularly important nodes it is suggested that vehicles should travel at a speed close to walking pace (approximately 5-10mph).

Designing for Lower Traffic Speeds
There are a number of tools that designers can use to design streets for lower traffic speeds, these include:

- Creating a space or street which is perceived as public realm rather than highway infrastructure (i.e through the materials used and their application)
- Narrower carriageways
- Lower kerb heights
- Tighter radii
- Raised tables at junctions and crossings
- Use of sett surfacing to carriageways
- Avoiding use of pedestrian guardrails altogether
- Avoiding over-use of traffic signage
- Avoiding use of white lines

Further information on these techniques is provided in the remainder of this section.

Bridge Street

General Street Design Principles:

1) Street design should reinforce a sense of place and not visually detract from the city or adjacent architecture.

2) Street design must comprise a balance of highway design and public realm design in order to meet the movement and non-movement functions of the street.

3) As a general rule the city centre streets should be designed for pedestrians and cyclists, as the most important users.

4) The street layout should be designed to encourage drivers to travel at speeds appropriate to the functions of the particular street.

5) It should be recognised by designers that features which might seem to make for a safer environment (e.g. pedestrian guardrails) may reinforce the perception of motorist's rights to a carriageway and result in higher traffic speeds. The need for any additional highway infrastructure such as signs, railings or road markings should have to be carefully considered.

6) Narrow carriageways, tight radii at junctions, raised tables at junctions and crossings and the use of sett surfacing all reduce the speed vehicles will tend to travel. These are all important tools in enabling the desired balance of functions in a street.

7) Generally a traditional street layout is preferred, with separate footway to carriageway usually defined by a riser kerb, except in pedestrianised areas where a flush kerb is detailed.

Current Design of Northgate Street (note narrow pavements and sinuous kerb lines)

8) The kerb line is an important visual component to the historic streetscenes in Chester and should be primarily defined by architectural alignment and form rather than vehicular movement patterns or the need for parking and laybys. However, required vehicle access must be accommodated. Kerblines are also an important visual component for road safety amongst all users, but particularly those with visual, cognitive or learning impairments and so the layout of kerbs must be carefully considered.

9) Kerb heights will range from 40mm to 125mm. Higher kerb heights increase traffic speeds by reinforcing the carriageway line. Lower kerb heights are easier for pedestrian to negotiate and create a more pedestrian friendly character but can be less of a deterrent to parking on the pavement.

10) Service, parking and taxi lay-bys should not define the kerb line, as this results in a sinuous kerb line which does not relate to the urban form. The indicative street designs illustrated in the previous sections show how a lay-by can be constructed whilst retaining a straight kerb line. This ensures that lay-bys that are not in use appear part of the pedestrian environment rather than the carriageway.

11) Bus Stops must be designed in accordance with Cheshire West and Chester Highway standards and will generally use a 150mm high 'Kassel Kerb' except where this causes drainage problems, or results in an excessive cross-fall on the pavement.

St Werburgh Street

Junctions - Indicative Designs and Design Examples

The following provides a series of indicative designs for street junctions along with examples for use by street designers. These designs are indicative and not approved highways designs. Any street designs will have to be undertaken to Cheshire West and Chester highway standards (see standard details 'Chester 4, Rev B', 'Chester 6, Rev A', Chester 90, Rev A', 'Chester 91, Rev A').

Design Principles

- Junctions must be designed to facilitate pedestrian movement, remembering that pedestrians are above vehicles in the hierarchy of users.
- Junctions and crossings can be constructed at carriageway level, at footway level on a raised table or halfway between the two (see photo example - bottom right).
- Designers should consider the street uses, functions, traffic levels, bus usage and desired traffic speed in choosing the appropriate height of kerb and materials.
- Detailed design and construction should be to Cheshire West and Chester standards, care must be taken in ensuring proper gradients on approach ramps.
- Raised tables constructed from granite sett units can be at increased risk of structural failure if subjected to high loading, particularly where heavy vehicles make tight turning movements.
- The pedestrian route across a junction should be at least partially in line with the approaching footway as if it is too far out of a pedestrians desire line it will not be convenient.
- The kerb radii at a junction affects the character of the street and should be designed to suit the functions of the street. Large radii can inconvenience pedestrians and promote higher traffic speeds. Conversely radii that are too tight may cause vehicles to over-run footways or require them to cross to the opposite carriageway when turning. Either may be acceptable depending on the frequency of occurrence and the functions of the street.
- Consider the use of bollards on junction corners to protect pedestrians (see photograph examples).

Example of type J1 – Raised table junction, tight radii with granite sett over-run on footway

Example of type J1 – Stone sett junction on busy traffic route taking regular bus use (not turning buses), footway drops to carriageway level, tight radii

Example of type J3 – Raised table junction with flush kerbs and tight radii

Example of half kerb height raised table

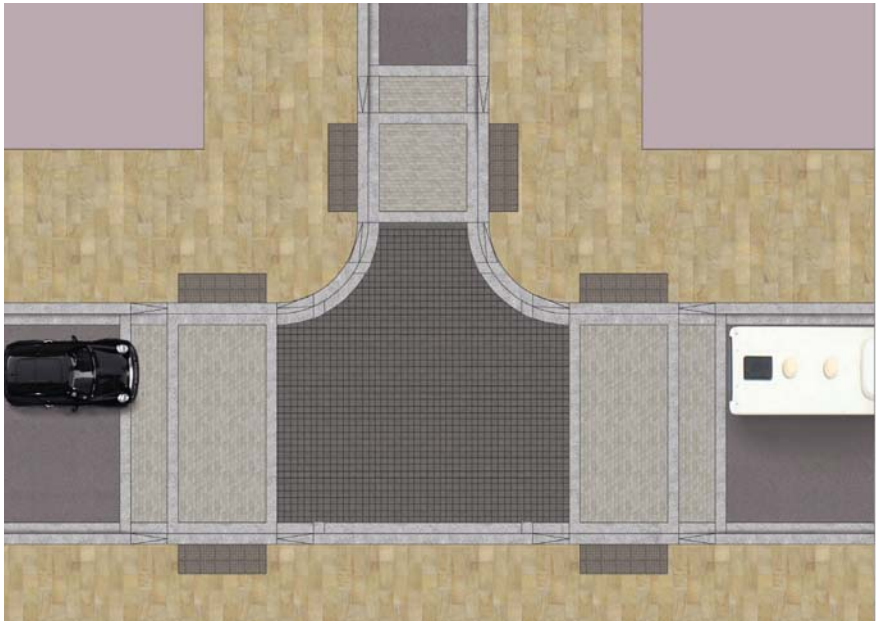
Indicative Junction Designs

The indicative junction designs are provided with the following variations:

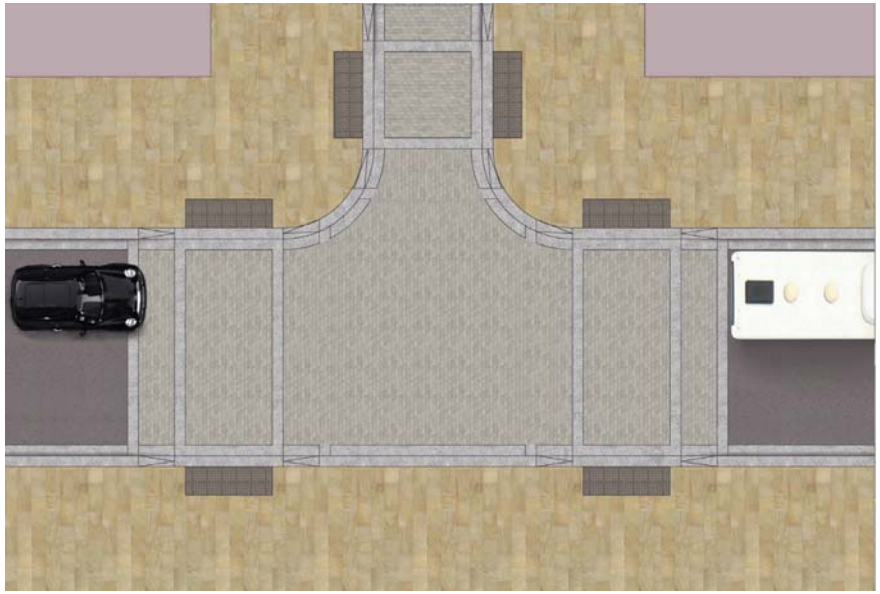
J1 – Courtesy crossing junction with granite sett turning area

J2 - Courtesy crossing junction with mastic asphalt imprint turning area

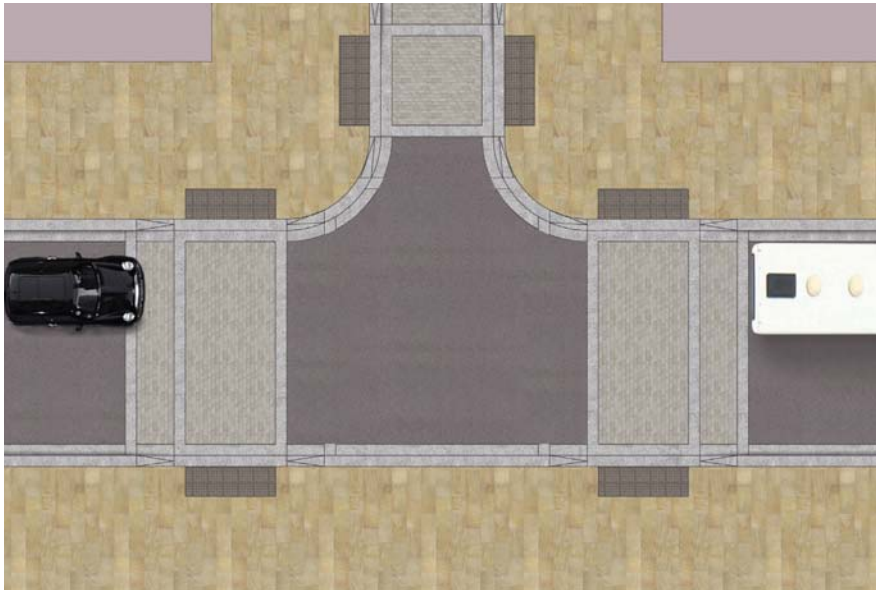
J3 - Courtesy crossing junction with tarmacadam turning area.



J2 - Courtesy crossing junction with mastic asphalt imprint turning area



J1 – Courtesy crossing junction with granite sett turning area.



J3 - Courtesy crossing junction with tarmacadam turning area.

Courtesy Crossings - Indicative Designs and Design Examples

The following provides a series of indicative designs for courtesy crossings along with photograph examples for use by street designers. These designs are indicative and not approved highways designs. Any street designs will have to be undertaken to Cheshire West and Chester highway standards (see standard details 'Chester 4, Rev B', 'Chester 6, Rev A', 'Chester 20, Rev G', 'Chester 83, Rev A', Chester 90, Rev A', 'Chester 91, Rev A').

Design Principles

- Courtesy crossings are presently used in Chester at the railway station and on Bridge Street at the Old Dee Bridge (see photo examples).
- Crossings will generally break the linearity of the carriageway by introducing a contrasting suface material.
- They rely on the courtesy of the driver in allowing a pedestrian to cross and are successful in low speed environments where vehicles are travelling at walking or cycling speeds.
- Granite sett or imprinted mastic surfacing may be used depending on the movement and non-movement functions of the street.
- The crossing can be at carriageway level, on a raised table at footway level or halfway between the two dependent on the movement and non-movement functions of the street.
- Consider the use of bollards at courtesy crossings to protect pedestrians (see photograph examples).

Example of type C1 – Courtesy crossing on busy traffic and bus route, Chester Station

Example of type C1 – Courtesy crossing (using mastic asphalt imprint) at Bridgegate, Chester

Example of type C1 - Courtesy crossing in granite setts, flush with carriageway, Sheffield

Example of type C1 - Courtesy crossing flush with carriageway at junction, Liverpool

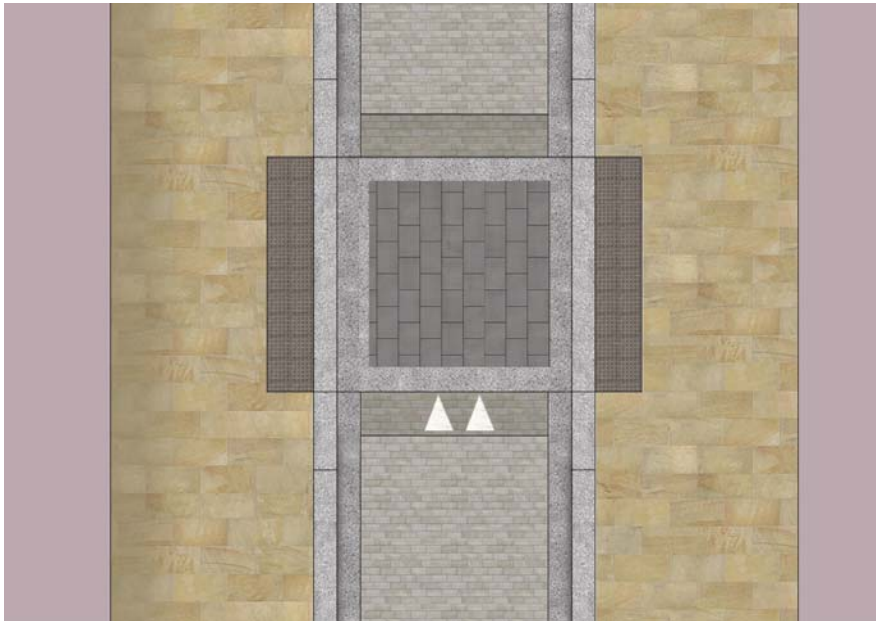
Indicative Junction Designs

The indicative courtesy crossing designs are provided with the following variations:

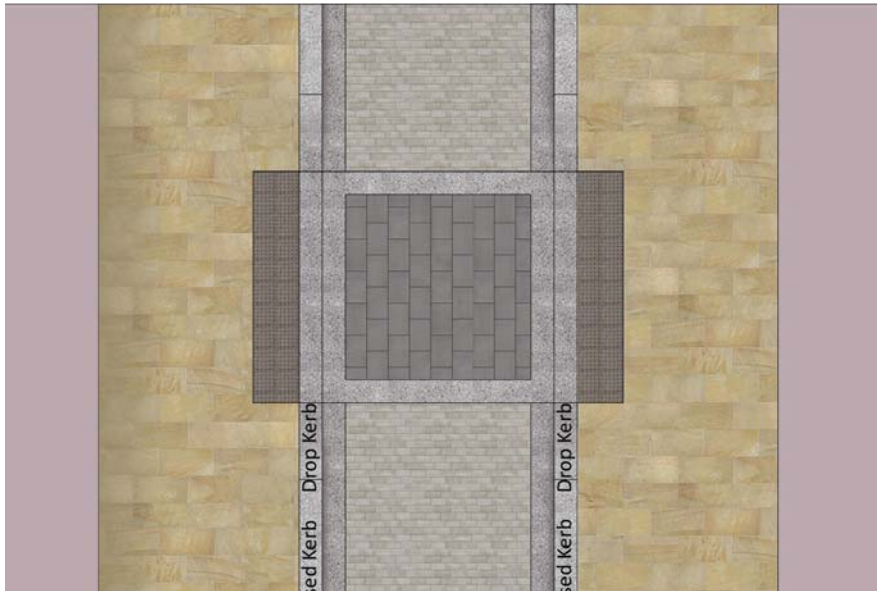
C1 – Courtesy crossing flush with carriageway (drop kerbs)

C2 – Crossing raised to half the height of the kerb

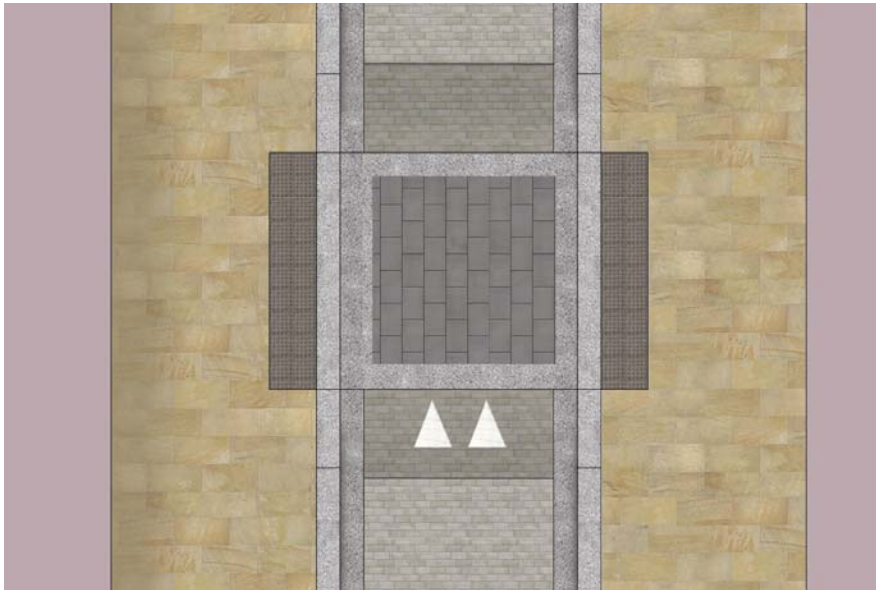
C3 – Crossing raised to the full height of the kerb



C2 – Crossing raised to half the height of the kerb



C1 - Courtesy crossing flush with carriageway (drop kerbs)



C3 – Crossing raised to the full height of the kerb.

Controlled Crossings - Design Examples

The following provides a series of photograph examples of controlled crossings for use by street designers. These proposals are indicative and not approved highways designs. Any street designs will have to be undertaken to Cheshire West and Chester highway standards (see standard details 'Chester 4, Rev B', 'Chester 6, Rev A', 'Chester 20, Rev G', 'Chester 80, Rev E', 'Chester 83, Rev A', Chester 90, Rev A', 'Chester 91, Rev A').

Design Principles

- A precedent has already been established in Chester for controlled crossings without pedestrian guard rails.
- The pedestrian route across the crossing must be made as direct as possible with minimum level changes within the context of Cheshire West and Chester standards.
- Controlled crossings can be constructed in various materials and at carriageway level or on a raised table dependent on the movement and non-movement functions of the street.

Good example of flush controlled crossing with no pedestrian guard rails

Good example of controlled crossing in granite setts, raised to kerb height

Good example of controlled crossing with granite setts on busy traffic route

New Crossing Point Installed as Part of Station Frontage Scheme, Chester