

Materials and Specification

7.1 ~ Surfacing...

Introduction

Part 3 of the PRDG sets out parameters for decision making on street designs and surfacing materials, as well as providing layout options for junctions and pedestrian crossings. This section provides further information on surfacing specification, construction and detailed paving design.

Surfacing Materials

The surfacing palette set out in Part 3 has been selected in response to the existing palette of high quality natural stone materials found within the parts of the city centre. Any materials used should comply with the council's existing highway standards (a copy can be obtained from Cheshire West and Chester Council Highway Department).

Sustainability and Reuse of Existing Materials

All paving should be sourced, wherever possible, from the UK. Where historic natural stone surfacing exists this should be retained. Consideration should only be given to repaving existing natural stone surfaces if accessibility becomes an issue. Repaving should be seen as a last resort after options of repointing or lifting and relaying have been dismissed. Where historic natural stone paving is replaced, this material should be stored for reuse in suitable locations. The quality and sourcing of materials should be accompanied by the implementation of robust and well executed construction techniques to ensure longevity.

Given the potential impacts of climate change, consideration should also be given to heat resistance of various surfacing materials to ensure that they are robust enough to tolerate expected temperature changes.

Surfacing Materials to Streets

The surfacing materials tables on the following pages provide details of the surfacing materials to be used on the city centre streets. The final selection of materials should be based on a more detailed street audit carried out by the council's conservation officers, to ascertain any historic precedents or underlying materials that could be restored. Figures 3.3 and 3.4 in Part 3 should be referred to in order to understand the street types listed under the 'use/application' column.

Streets

Higher Quality



Granite Setts



Yorkstone Setts



Porphyry Setts



Riverwashed Cobbles



Blue Clay Pavers



Mastic Imprint



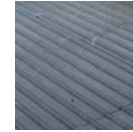
Greenmoor Flags



Cromwell Flags



Red Granite Tactile

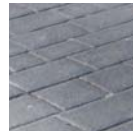


Black Granite Tactile



Silver Grey Granite Kerbs and Channels

Standard



Mastic Imprint



Tarmacadam



Buff Concrete Flag



Concrete Setts



Red Concrete Tactile



Buff Concrete Tactile



Standard Concrete Kerbs

Spaces

Higher Quality



Granite Setts



Mastic Imprint



Greenmoor Flags



Cromwell Flags



Buff Resin Bound



Silver Grey Granite Kerbs

Standard



Mastic Imprint



Tarmacadam



Tarmac and Chip Surface Dressing



Buff Resin Bonded



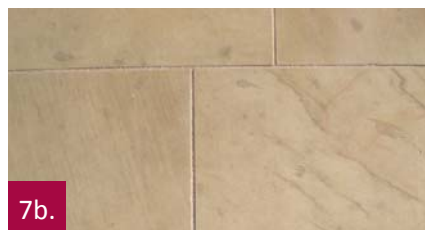
Standard Concrete Kerbs

Proposed Surfacing Materials to Street:

Material	Use/Application (as defined in Part 3)	Sizes	Product reference and supplier (or equal approved)	Finish
Setts				
1. Granite setts	<p>Setted carriageways on Street Types 1a, 1b, 3a and 4a (vehicular).</p> <p>Street intersections and pedestrian crossings on Street Types 1a (potential alternative material), 1b and 3a.</p> <p>Vehicle entry points on Street Type 4a (vehicular) and 4b (vehicular as potential alternative material).</p>	<p>Either 200x100x150mm or 300x200x150mm (Larger size should be used create a smoother surface for pedestrians in areas of intensive use)</p> <p>May be feasible to reduce thickness of units to min. 100mm. Dependent on intensity of traffic, prior testing (sample areas) and detailed design/investigation.</p>	<p>Marshalls Portuguese Granite, mix of:</p> <p>Mandin beige Lapa grey Alentejo grey</p> <p>Marshalls Chinese Granite alternative mix:</p> <p>GRA 998 Silver Grey GRA90 Beige GRA903 Mid Grey</p>	<p>Sawn flamed surface with cropped sides and base and tumbled to round off edges</p> <p>Hand picked setts to be used on historic streets to match existing finish (i.e street types 3a and 4a).</p>
2. Buff Yorkstone Setts	<p>Street intersections and pedestrian crossings on Street Type 1a.</p> <p>Lay-bys on Street Types 1b and 1c.</p>	<p>Either 200x100x150mm or 300x200x150mm (Larger size should be used create a smoother surface for pedestrians in areas of intensive use)</p> <p>May be feasible to reduce thickness of units to min. 100mm. Dependent on intensity of traffic, prior testing (sample areas) and detailed design/investigation.</p>	<p>Marshalls Cromwell or Greenmoor depending on location.</p>	<p>Cromwell – shot blasted finish tumbled to round off edges</p> <p>Greenmoor –shot blasted finish, tumbled to round off edges</p>
3. Porphyry Setts	<p>Setted carriageways on Street Types 1a (potential alternative material).</p>	<p>Either 200x100x150mm or 100x100x150mm</p> <p>May be feasible to reduce thickness of units to min. 100mm. Dependent on intensity of traffic, testing (sample areas) and detailed design/investigation.</p>	<p>Hardscape (Prima Porphyry)</p>	<p>Split sides with natural cleft top</p>
4. River Washed Cobbles	<p>Carriageways on Street Types 3a and 4a (vehicular).</p>	<p>To match existing.</p>	<p>To match existing.</p>	<p>To match existing.</p>
5. Blue Clay Pavers	<p>Pavements on Street Type 3a (alternative material)</p>	<p>200x100x65mm</p>	<p>Wienerberger, Baggeridge Blue Diamond Patterned Paver or Blue Dragfaced Square Edged Paver</p>	<p>Diamond patterned or dragfaced square edged</p>
6. Concrete Setts	<p>Lay-bys on Street Type 2a.</p>	<p>120x160 or 240x160x80mm</p>	<p>Marshalls Mistral</p>	<p>Harvest Buff textured</p>

Proposed Surfacing Materials to Street (continued):

Material	Use/Application (as defined in Part 3)	Sizes	Product reference and supplier (or equal approved)	Finish
Flags				
7. Buff Yorkstone Flags	Pavements on Street Types 1a, 1b, 1c and 3a. Surfacing to Street Type 4a (non vehicular).	450mm wide x 450 – 900mm random length x 100mm thick minimum on any areas vehicles may have access, otherwise 75mm thick. Smaller size: 300mm wide x 450-600mm random length to Street Type 3a.	Marshalls Cromwell or Greenmoor depending on location.	Cromwell – diamond sawn (7b) Greenmoor – Rustic finish (7a)
8. Buff Concrete Flag	Pavements on Street Types 2a, 2b and 3b. Surfacing on Street Type 4b (non-vehicular)	450x450mm x 100mm thick any areas vehicles may use, otherwise 70mm.	Marshalls Perfecta	Smooth ground in Natural
Tactile Paving Flags				
9. Red Granite Tactile (must comply with Department for Transport's current standards – see section 8.5 for further detail)	Controlled crossings on Street Types 1a, 1b, 1c and 3a.	400 x 400x minimum 100mm (thickness must be adequate to withstand vehicle overrun)	Marshalls GRA938 Red Granite	Sand blasted and water jet finish (Format and finish must comply to Department for Transport's current standards)

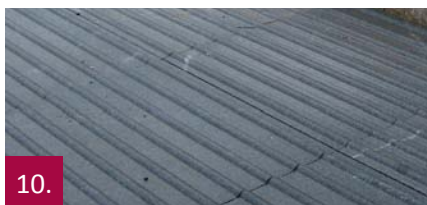


Proposed Surfacing Materials to Street (continued):

Material	Use/Application (as defined in Part 3)	Sizes	Product reference and supplier (or equal approved)	Finish
Tactile Paving Flags				
10. Black Granite Tactile (must comply with Department for Transport's current standards – see section 8.5 for further detail)	Uncontrolled crossings and hazard warning on Street Types 1a, 1b, 1c and 3a.	400 x 400 x minimum 100mm (thickness must be adequate to withstand vehicle overrun)	Marshalls GRA 921 Black Granite	Sand blasted and water jet finish (Format and finish must comply to Department for Transport's current standards)
11. Standard red fibre reinforced concrete blister tactile	Controlled crossings on Street Types 2a, 2b and 3b.	400 x 400 x 65mm	Marshalls or Charcon	N/A
12. Standard buff fibre reinforced concrete blister and hazard warning tactile	Uncontrolled crossings and hazard warning on Street Types 2a, 2b and 3b.	400 x 400 x 65mm (for blister tactile), 50mm thick for other hazard warning tactiles.	Marshalls or Charcon	N/A
Kerbs and Channels				
13. Silver grey granite kerbs	150/300mm kerbs to Street Types 1a, 1b, 1c, 2a, 2b (potential alternative material), 3a, 3b (potential alternative material) and 4a. Kerb width selected must be appropriate to the scale of the street.	300mm wide x random length (minimum length 500mm) or 150mm wide x random length (minimum length 500mm). Overall kerb depth for raised kerbs should be the intended kerb height plus 125mm min. Overall kerb depth for flush kerbs should be the intended kerb upstand plus 200mm minimum.	Marshalls GRA917 Silver Grey Granite	Fine picked
14. Silver grey granite channels	300mm wide channels to be used in conjunction with 300mm wide granite kerbs. 300mm wide channels to be used as optional 'Wheelers' to Street Types 3a and 4a (vehicular).	300mm wide x random length (minimum length 500mm). Minimum 150mm thick.	Marshalls GRA917 Silver Grey Granite	Fine picked
15. Silver grey granite setted channel	To be used in conjunction with 150mm wide granite kerbs.	200x100x150mm May be feasible to reduce thickness of units to min. 100mm. Dependent on intensity of traffic, testing (sample areas) and detailed design/investigation.	Marshalls GRA917 Silver Grey Granite	Sawn flamed surface with cropped sides and base and tumbled to round off edges. Laid as 3 rows in staggered bond.

Proposed Surfacing Materials to Street (continued):

Material	Use/Application (as defined in Part 3)	Sizes	Product reference and supplier (or equal approved)	Finish
16. Concrete bus stop kerb	To bus stop lay-bys in city centre Granite version available for important/ sensitive city centre locations. To be used, unless there are issues relating to drainage/ crossfall of pavements or heritage concerns.	160mm height	Brett KK160 Standard Kassel kerb	N/A
17. Standard concrete kerbs	Kerbs to Street Types 2a (potential alternative material), 2b, 3b, 4b	125mm wide x255mm deep	Marshalls HB2 (half battered)	N/A
Other				
18. Mastic asphalt imprint	Carriageways on Street Type 1c (potential alternative material) and 4b (vehicular). Street intersections and pedestrian crossings on Street Type 1c. Vehicle entry points on Street Type 4b (vehicular).	Pattern to match material being replicated – setts or flags	Suitably experienced installer	To match finish of granite setts or Yorkstone setts or flags
19. Tarmacadam (Tarmacadam to BS EN 13108-4 : 2006, to be designed in accordance with the Highways Agency's 'Design Manual for Roads and Bridges' and agreed with the Council's Highways team).	Carriageways on Street Types 1c, 2a, 2b, 3a, 3b and 4b (vehicular as potential alternative material). Pavements on Street Type 3b (potential alternative material) Street intersections and pedestrian crossings on Street Type 2a, 2b and 3b. Lay-bys on Street Type 2b. Surfacing to Street Type 4b (non-vehicular as potential alternative material)	N/A	N/A	N/A



10.



14.



15.



18.

Surfacing Materials to Open Spaces

General Guidance:

- A basic palette of yorkstone and granite should be replicated in hard surfaced key public spaces and squares in the city in order to achieve consistency with the surrounding streets.
- In addition, where heavily used vehicular routes run through spaces, tarmacadam or mastic imprinted surfacing should still be used.

- The design of surfacing of each space should be treated individually with varied use of the basic palette and the addition of other natural stone materials, subject to agreement by the Council.
- Distinct and bespoke surfacing designs would be appropriate in these locations and there is scope to support interpretive themes for bespoke surfacing.

- All new concrete and natural stone surfacing should be protected using a surface sealant (see page 291 for more details).

The following table sets out the standard palette of materials for hard surfaced public spaces and squares, as well as footways through green spaces (see Pedestrian Link Types shown in Part 3, Section 3.8). The final selection of materials should be based on a more detailed street audit carried out by the council's conservation officers, to ascertain any historic precedents or underlying materials that could be restored.

Proposed Surfacing Materials to Open Spaces:

Material	Use/Application (as defined in Part 3)	Sizes	Product reference and supplier (or equal approved)	Finish
Setts				
1. Granite	City Centre spaces/ squares.	Either 200x100x150mm or 300x200x150mm (Larger size should be used create a smoother surface for pedestrians in areas of intensive use) May be feasible to reduce thickness of units to min. 100mm. Dependent on intensity of traffic, prior testing (sample areas) and detailed design/investigation.	Marshalls Portuguese Granite, mix of: Mandin beige Lapa grey Alentejo grey Marshalls Chinese Granite alternative mix: GRA 998 Silver Grey GRA90 Beige GRA903 Mid Grey	Sawn flamed surface with cropped sides and base and tumbled to round off edges. Hand picked setts to be used in historic settings to match existing finish.
Flags				
2.. Buff Yorkstone Flags	City Centre spaces/ squares. Pedestrian Link Type 5a.	450x450mm – up to 900mm random length x 100mm thick in any areas vehicles may use (riven maximum 90mm thick), otherwise 75mm thick.	Marshalls Cromwell or Greenmoor depending on location.	Cromwell – diamond sawn or riven (use riven where there is a historic precedent) (2a) Greenmoor – Rustic finish (2b)

Proposed Surfacing Materials to Open Spaces (continued):

Material	Use/Application (as defined in Part 3)	Sizes	Product reference and supplier (or equal approved)	Finish
Kerbs				
3. Silver grey granite kerbs and edgings	City Centre spaces/ squares (150/300mm wide kerb). Kerb width selected must be appropriate to the scale of the street. Pedestrian Link Types 5a and 5b (100mm wide kerb).	100/150/300mm wide x random length (minimum length 500mm) . Overall kerb depth for raised kerbs should be the intended kerb height plus 125mm min. Overall kerb depth for flush kerbs should be the intended kerb upstand plus 200mm minimum.	Marshalls GRA917 Silver Grey Granite	Fine picked
4. Standard concrete kerbs	Pedestrian Link Types 5c and 5d.	50mm wide x150mm deep	Marshalls EF – Flat Top Pin Kerb	N/A
Other				
5. Resin bound surfacing	Pedestrian Link type 5b.	6mm aggregate	Sureset 6mm Harvest Buff	N/A
6. Tar and chip surface dressing	Pedestrian Link Type 5c.	6mm aggregate	Henry Williams and Son (Roads) Ltd – Croxden gravel with bitumen emulsion binder	All loose chippings removed.
7. Resin bonded surface dressing (laid onto tarmacadam surface)	Alternative for Pedestrian Link Type 5c.	2-5mm aggregate	Addagrip, Addastone 2-5mm Rhine Gold	N/A
8. Mastic imprinted surfacing	City Centre spaces/ squares with high traffic flow on carriageways running through the space.	Pattern to match material being replicated – setts or flags	Suitably experienced installer	To match finish of granite setts or yorkstone setts or flags
9. Tarmacadam (Tarmacadam to BS EN 13108-4 : 2006, to be designed in accordance with the Highways Agency's 'Design Manual for Roads and Bridges' and agreed with the Council's Highways team where it is part of the adoptable highway).	Pedestrian Link Type 5d.	N/A	N/A	N/A



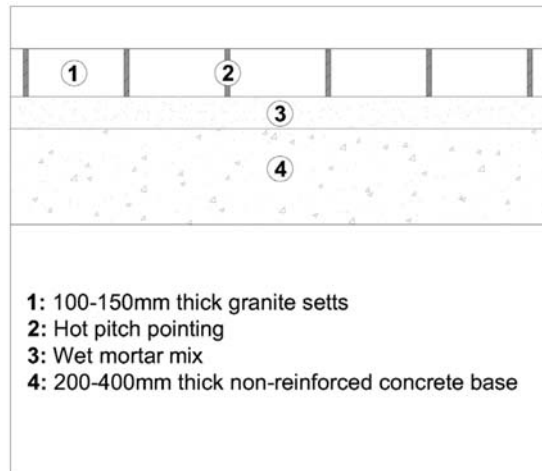
Construction Options for Setted Carriageways:

Setted carriageways are particularly vulnerable to wear and tear, especially where traffic flows are high and vehicles turning. However, as a historic city and visitor destination, it is important that tarmac is not the sole material used on carriageways in Chester. There are a range of options available as to the method of construction for setted carriageways and the correct application will ensure a robust, durable and attractive surface. Part 8 proposes that, as part of the 'outline designs and next steps', test areas are prepared so that construction options can be tested, in order to inform future implementation.

Construction details have been purposely excluded from the PRDG as exact specifications will need to be approved by the Council's highway department, as well as be compliant with BS7533. However, the following sets out five options available along with illustrations and their advantages and disadvantages. This information will help in deciding which construction method to use.

Option 1 - Existing Construction Detail (Rigid base and bedding with flexible pitch jointing):

- Non-reinforced concrete base between 200 and 400mm thick dependent on California Bearing Ratio (CBR). Tests to be carried out and results to be submitted to council highway's department for approval.
- 100 - 150mm thick granite setts bedded on wet mortar mix.
- Pointed with hot pitch.



For illustrative purposes only

Advantages:

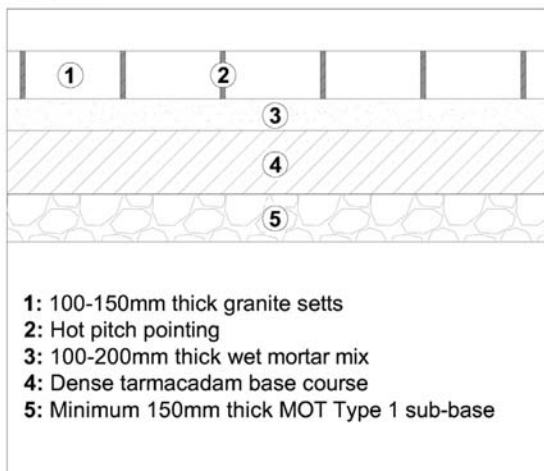
- Tried and tested system in Chester.
- Hot pitch allows for movement of setts without joints cracking.

Disadvantages:

- Large vehicles turning on setts may induce failure as the system is not sufficiently rigid.
- Difficult to access utilities and reinstate due to the concrete slab.
- Pitch pointing, although traditional is not the neatest and most attractive.
- Produces an uneven surface due to wide jointing.
- Pitch jointing can be difficult to remove from the setts making them difficult to reuse.
- Pitch is difficult and time consuming to use.

Option 2 – Flexible base with flexible pitch jointing

- MOT Type 1 sub-base, 150mm thick minimum. Thickness dependent on CBR. Tests to be carried out and results to be submitted to council highway's department for approval.
- Dense tarmacadam base course between 100 and 200mm thick dependent on traffic loading and CBR test results (Highways to approve).
- 100 - 150mm thick granite setts bedded on wet mortar mix (150 mm ST3 concrete).
- Pointed with hot pitch.



For illustrative purposes only

Advantages:

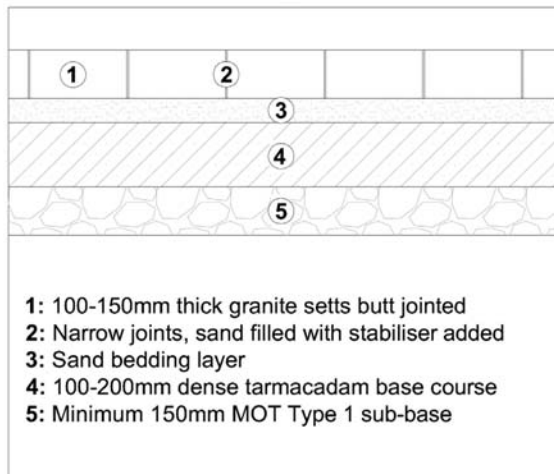
- Flexible construction and hot pitch allows for movement of setts without joints cracking.
- Flexible system makes it easy to excavate tarmacadam base for utilities access and reinstatement.

Disadvantages:

- Large vehicles turning on setts may induce failure as the system is not sufficiently rigid.
- Pitch jointing although traditional is not the neatest and most attractive.
- Produces an uneven surface due to wide jointing.
- Pitch jointing can be difficult to remove from the setts making them difficult to reuse.
- Pitch is difficult and time consuming to use.

Option 3 – Flexible base with flexible sand bed and jointing

- MOT Type 1 sub-base, 150mm thick minimum. Thickness dependent on CBR. Tests to be carried out and results to be submitted to council highway's department for approval.
- Dense tarmacadam base course between 100 and 200mm thick, dependent on traffic loading and CBR test results (Highways to approve).
- 100 - 150mm thick granite setts butt jointed bedded on sand.
- Narrow joints sand filled with sand stabiliser and surface sealer added, such as Ultrascape Joint Fix (or equal approved), to prevent loss of sand through street cleansing activities.



For illustrative purposes only

Advantages:

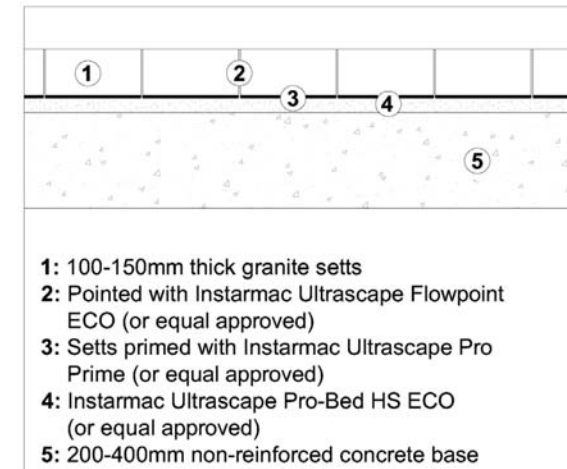
- Traditional tried and tested method
- Flexible system makes it easy to remove and reuse setts and excavate tarmacadam base for utilities access and reinstatement.

Disadvantages:

- Large vehicles turning on setts may induce failure due to point loading and twisting 'plucking' out individual setts.
- Sand loss due to cleansing activities over time.

Option 4 – Rigid Concrete Construction

- Non-reinforced concrete base between 200 and 400mm thick dependent on CBR. Tests to be carried out and results to be submitted to council highway's department for approval.
- 100 - 150mm thick granite setts bedded on Instarmac's Ultrascape Pro-Bed HS ECO with 20% recycled glass (or equal approved).
- Setts primed prior to bedding using Instarmac's Ultrascape Pro-Prime (or equal approved).
- Pointed with Instarmac's Ultrascape Flowpoint ECO with 5mm joints (or equal approved).



For illustrative purposes only

Advantages:

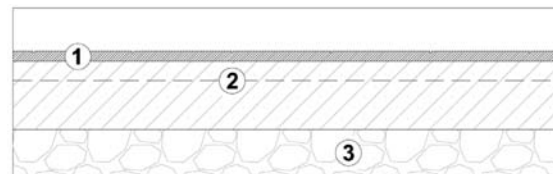
- Tried and tested across the UK
- Very strong rigid system reduces risk of failure if properly laid.
- Produces an even surface as it allows a larger unit to be used and jointing is flush. This is neat and attractive and provides good access for all.

Disadvantages

- Expensive.
- Difficult to access utilities and reinstate due to concrete slab and strength of mortar making it difficult to lift and reuse setts.
- Very difficult to remove mortar from the setts without causing damage. This makes setts very difficult to reuse.

Option 5 - Mastic asphalt imprint

- MOT Type 1 sub-base, 150mm thick minimum. Thickness dependent on CBR. Tests to be carried out and results to be submitted to council highway's department for approval.
- Dense tarmacadam base course between 100 and 200mm thick and/or 60mm binder course, dependent on traffic loading and CBR test results (Highways to approve). Alternatively, C40 reinforced/non-reinforced concrete between 150-250mm thick dependent on traffic loading and CBR test results (Highways to approve) and interlayer (i.e. glass fibre) to allow movement.
- 15-30mm thick layer of coloured mastic asphalt paving, sand rubbed and printed with a minimum PSV of 60 (or 55 if used in the footway). Incorporate natural, self-coloured granite so that colours do not fade with use.



- 1:** 15-30mm thick layer of coloured mastic asphalt
2: 100-200mm thick dense tarmacadam base course and/or 60mm binder course
 (or 150-250mm thick non-reinforced concrete and interlayer (i.e. glass fibre)
3: Minimum 150mm MOT Type 1 sub base

For illustrative purposes only

Advantages:

- Tried and tested system in Chester.
- Cost effective.
- Durable solution in trafficked areas.
- If executed well can be perceived as a stone surface.
- Can be laid on existing binder and base layers if in good condition.

Disadvantages:

- Can look cheap if executed poorly.
- Very difficult to patch repair if cracks appear or if underground services need to be accessed.

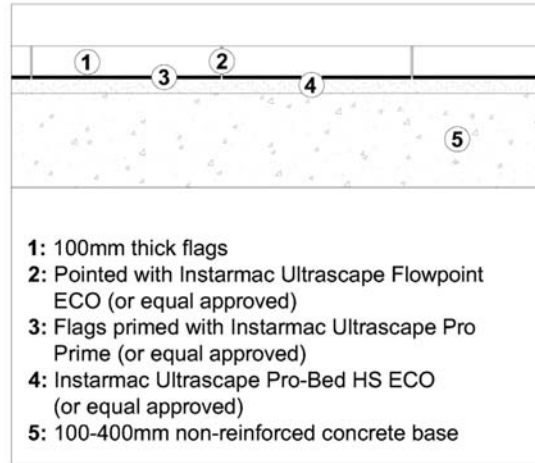
Construction of Footways to Allow Vehicle Overrun:

In addition to setted carriageways, it is important that vulnerable footways and pedestrianised areas are constructed to withstand vehicle loading. This will require flags to be specified at thicknesses up to 100mm, supported by a rigid concrete construction (based on Option 4 shown previously).

A construction detail has been purposely excluded from the PRDG as exact specifications will need to be approved by the council highway's department, as well as be compliant with BS7533. However, the following provides some initial guidance. Part 8 proposes that, as part of the 'next steps', test areas are prepared so that construction options can be tested, in order to ensure successful future implementation.

Footway Overrun - Rigid Concrete Construction

- Non-reinforced concrete base between 100 and 400mm thick dependent on CBR. Tests to be carried out and results to be submitted to Council Highway's department for approval.
- 100 mm thick flags bedded on Instarmac's Ultrascape Pro-Bed HS ECO with 20% recycled glass (or equal approved).
- Flags primed prior to bedding using Instarmac's Ultrascape Pro-Prime (or equal approved).
- Pointed with Instarmac's Ultrascape Flowpint ECO (or equal approved).



For illustrative purposes only

Surfacing Sealer and Surface Protection

All new concrete and stone paving should be finished with a suitable sealer to protect surfacing against staining (including oils), bird excrement, algal/moss growth, graffiti and chewing gum. The use of a sealer will reduce cleansing requirements and in turn reduce maintenance costs. A suitable sealer for use in Chester is Charcon's Urban Surface Protection (USP) water based polymer (or equivalent approved). This is chemically inert and environmentally friendly. The USP treatment makes surfaces non-porous and provides non-stick properties, without effecting surface colour and anti slip properties. It is advisable to apply the sealant prior to laying. This prevents the need for cleaning however the sealant can be applied retrospectively. Products normally last for 5 years and consideration should be given to setting aside a budget as part of the initial implementation to allow for reapplication.



Paving Layout and Cutting

It is essential that paving layout and cutting is carefully considered prior to implementation so that surfacing is neat and attractive, durable and easy to maintain. This section sets out some basic principles that should be followed in all paving schemes.

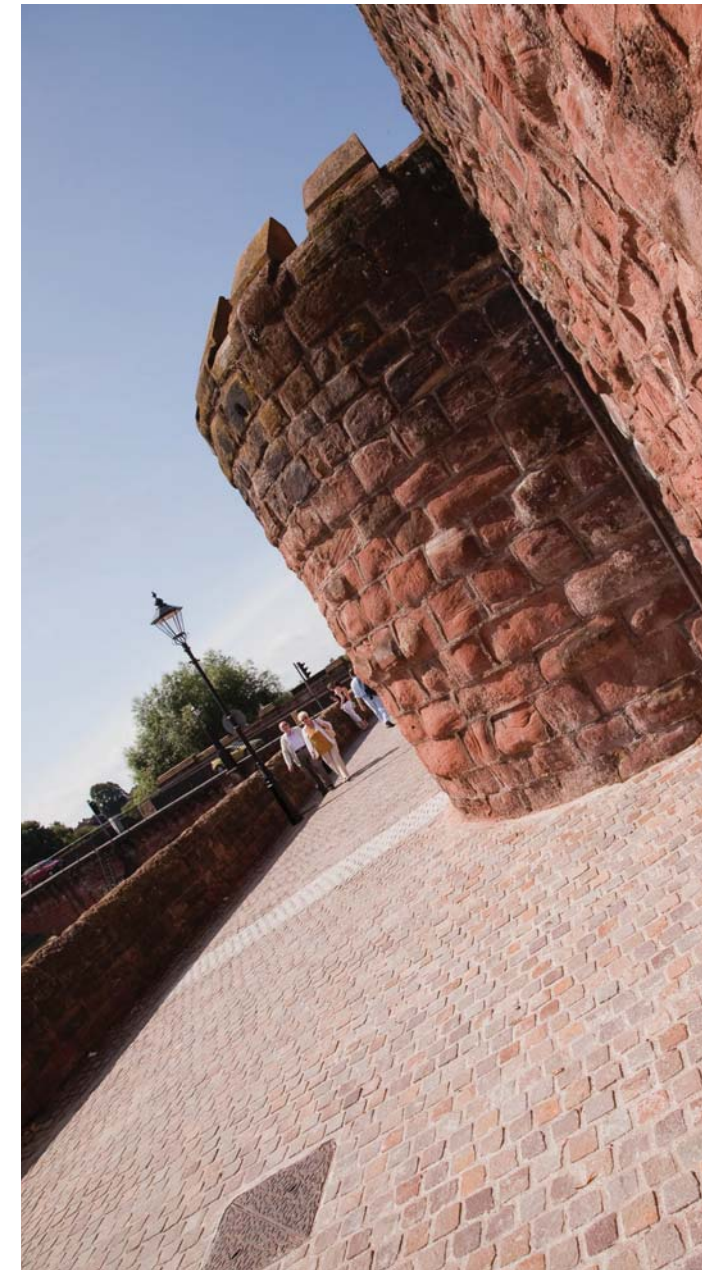
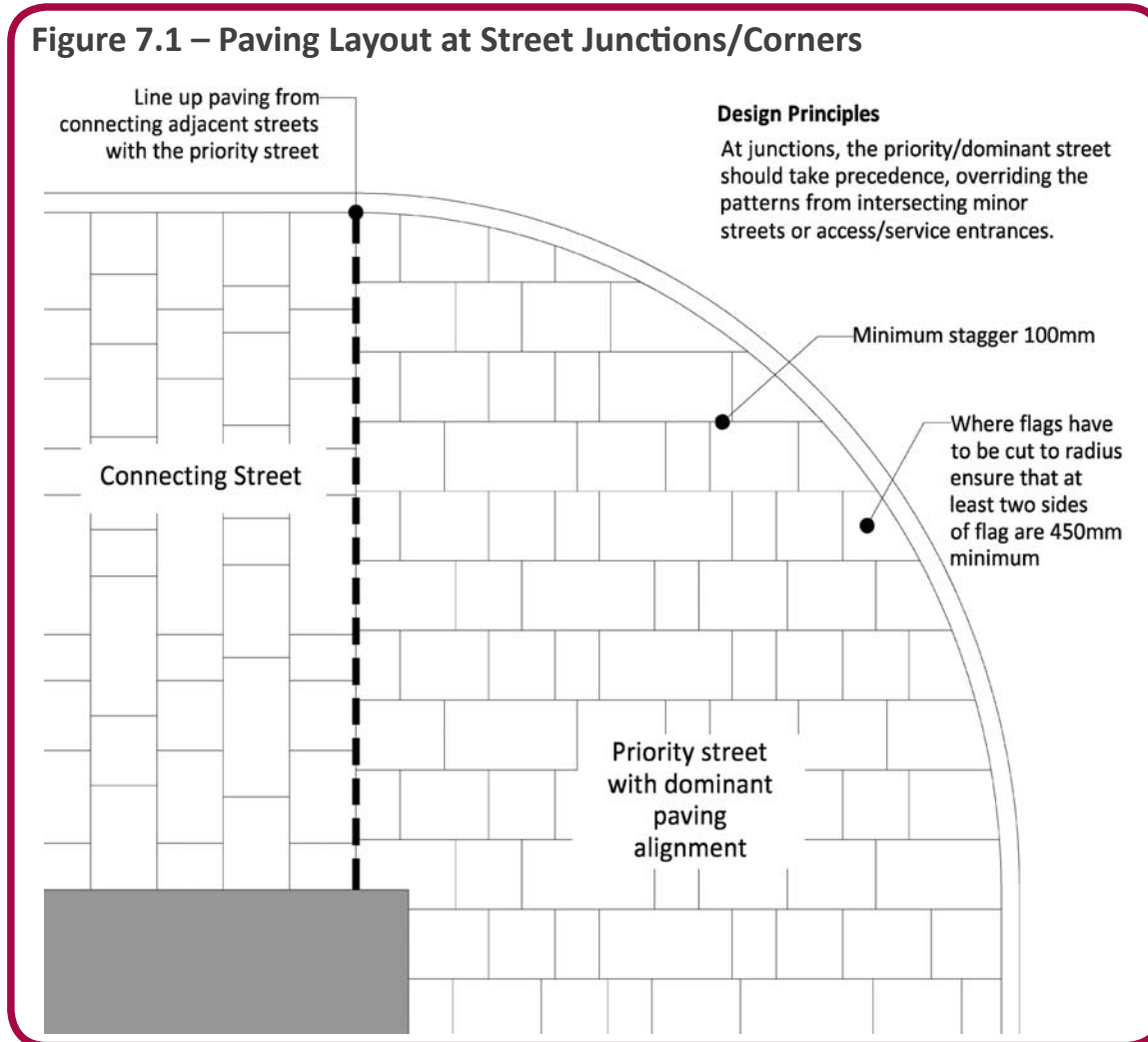


Paving during construction and following completion using rigid concrete construction, St Helens

Paving layout at street junctions/corners

Figure 7.1 illustrates a simple approach to paving layout at pavement junctions, which should be used unless there is a historic precedent for an alternative arrangement. At each location a decision needs to be made as to which street takes priority. The paving alignment on the priority street should run through to the junction, with the connecting street paved up to this.

Figure 7.1 – Paving Layout at Street Junctions/Corners



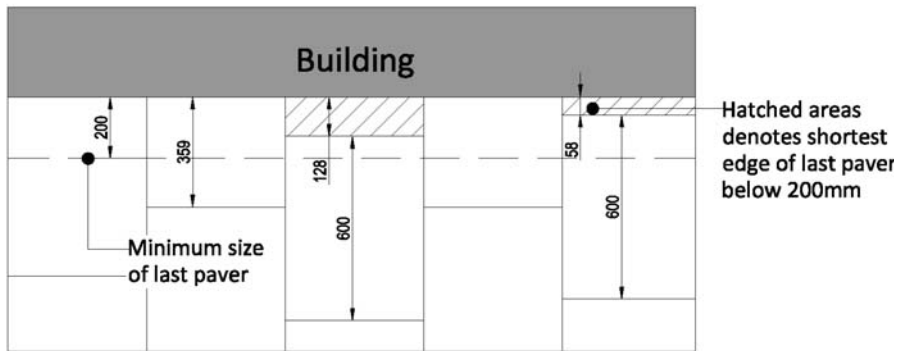
Resurfacing scheme recently completed at The Groves

Laying pavers up to buildings and features

Figures 7.2 and 7.3 illustrate the correct method for paving up to a building, feature or kerb. Paving layouts should be carefully planned on site so that no unit is less than 200mm.

Figure 7.2– Laying pavers up to a building

X Avoid



✓ Prefer

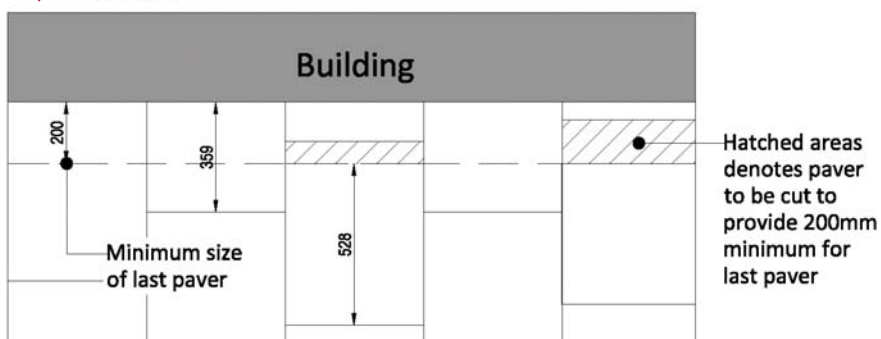
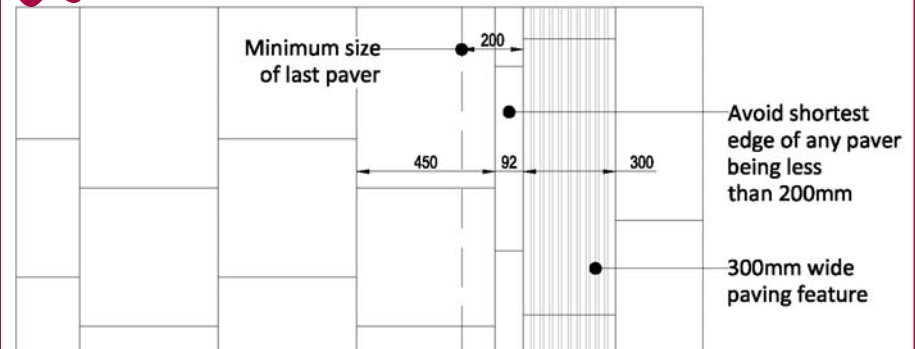


Figure 7.3 – Laying pavers up to a feature or kerb

X Avoid



✓ Prefer

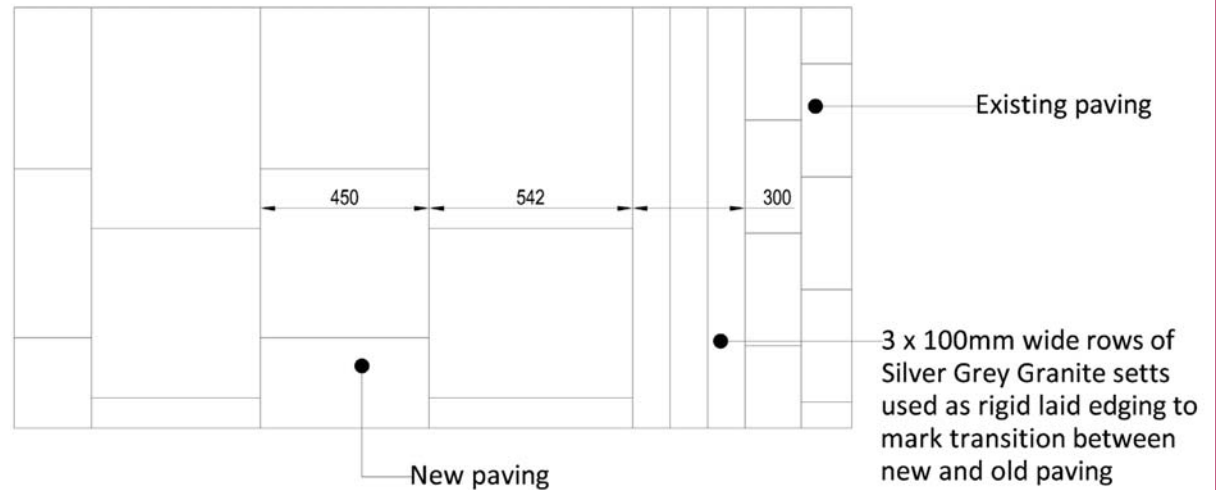
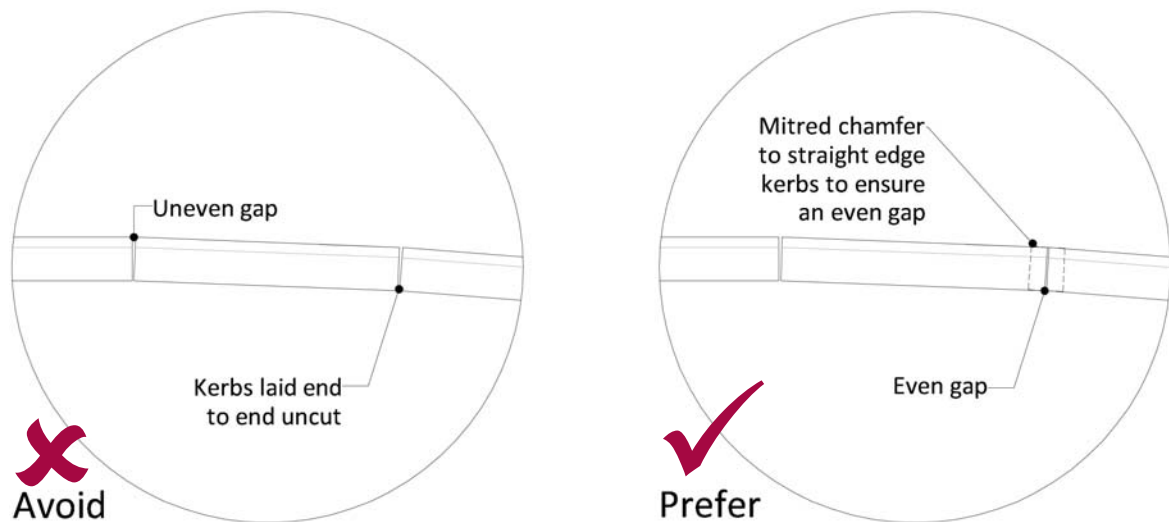


Laying new paving up to areas of existing paving

Figure 7.4 illustrates the preferred approach for laying new paving up to area of existing paving, using three bands of 100mm wide silver grey granite setts (rigid laid) to mark the transition between the two areas. Again, the new paving layout should be carefully planned on site so that no unit is less than 200mm.

Laying Kerbs to a Radius

Figure 7.5 shows the correct method for laying straight kerbs to a radius. Straight kerbs should only be used for radii greater than 20 metres. Mitred chamfer cuts should be made on site to ensure an even joint between units.

Figure 7.4 – Laying new pavers up to an area of existing paving**Figure 7.5 – Laying straight edge kerbs to a radius**

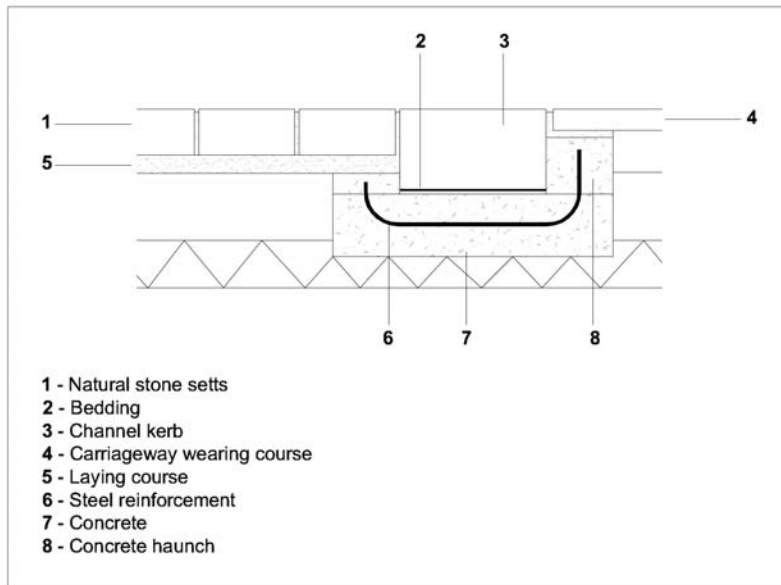
Laying Flush Kerbs

Figure 7.6 illustrates the preferred method for laying flush kerbs (proposed for some of the street types in Part 3). The preferred approach is taken from BS 7533-7:2002 and includes steel reinforcement to the concrete haunching.

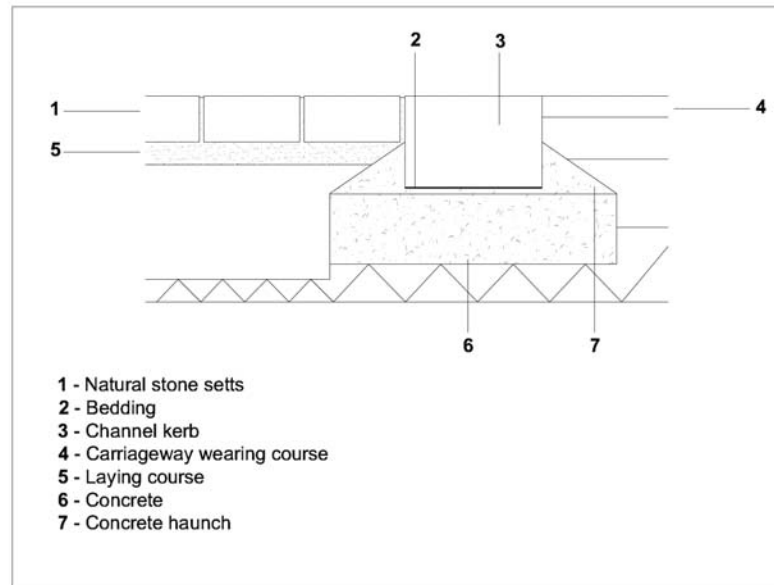
Figure 7.6 – Laying Flush Kerbs



Prefer



Avoid



Locating Street Furniture in Paving

- Generally, street furniture such as lighting columns and bollards should act as setting out points for the laying of paving.
- Paving should butt-up as close as possible to street furniture to ensure a neat finish and any gaps should be filled with mortar for ease of maintenance.

Detail 1:

- Wherever possible, slabs should be core drilled to 3mm larger than bollards/posts and pavers should then be installed over the top of the bollard/post. Where slabs are drilled, a minimum width of 100mm should be allowed from the bollard to the paver edge.

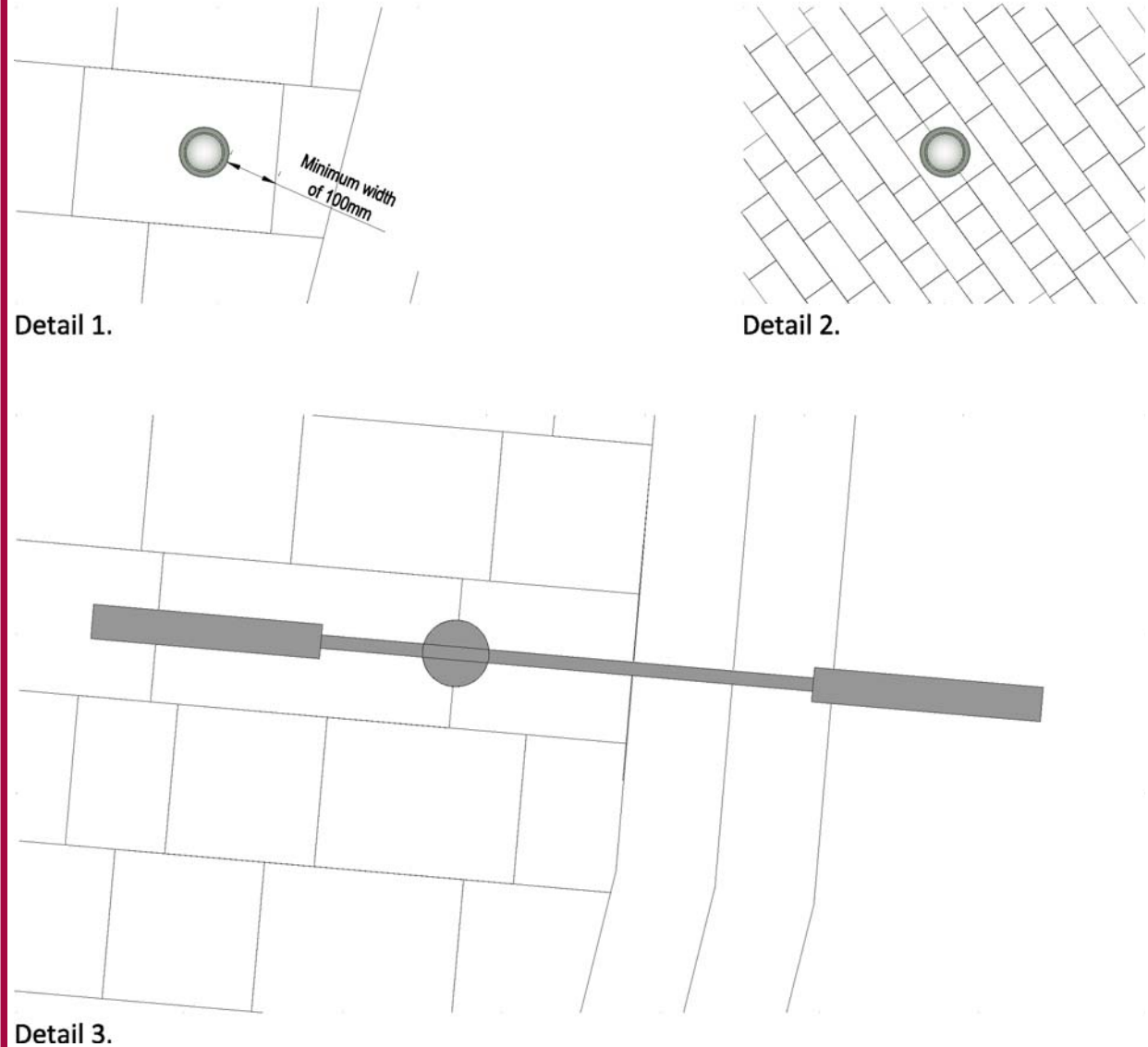
Detail 2:

- Where bollards/posts are placed within areas laid with setts a special unit could be cut and laid round the bollard/post. The joint should line up with the paving line.

Detail 3:

- With taller posts/lighting columns, paving should be laid out so that the post/column is centred on a paving joint. Where this is not possible and the post/column position falls within a single paving unit, a perpendicular cut should be made so that the slab can be fitted around the column/post. This cut must be in line with the surrounding paving joints.

Figure 7.7 – Locating Street Furniture Within Paving





Good example of post positioned to neatly sit within paving layout, Berkley Square, Liverpool.



Example of well planned paving layout in Hull - paving units match and align with tree grilles.

Access Covers

The following general principles apply to the design of access covers. Figures 7.8 and 7.9 helps to illustrate a number of these points.



Where access covers are not in-line with paving it results in awkward cuts and a less seamless finish



In-line access covers blend into the paving surface

- New access covers installed by utility providers should be orientated in line with the surrounding paving pattern. Wherever possible (as part of new public realm works), existing access covers should be realigned to be in line with paving (see Figure 7.9).
- In order to maximise the visual quality of the public realm, all new access covers in the city should be recessed paved infill access covers.

Existing access covers should be replaced with recessed access covers as and when opportunities arise. Particular priority should be given to the installation of recessed access covers in areas of natural stone paving.

- All changes to existing and proposals for new access covers must be approved by the utility provider.
- In order to help recessed access covers blend in, the infill material used should exactly match the surrounding paving material and should be laid to form a continuation of the surrounding paving pattern.
- Access covers should be positioned in relation to the paving pattern so that paving inside or surrounding the frame is no less than 100mm. Where infill paving sizes would be less than 100mm, ghost cuts should be used (see Figure 7.8).
- Access covers and frames should be specified that provide sufficient capacity to withstand anticipated loading.
- Recessed access covers should be designed and specified so that with the paving installed they can still be manually lifted by a single person. Where access covers are too large and therefore too heavy, a series of smaller access covers should be used.

Figure 7.8 – Section through recessed access cover

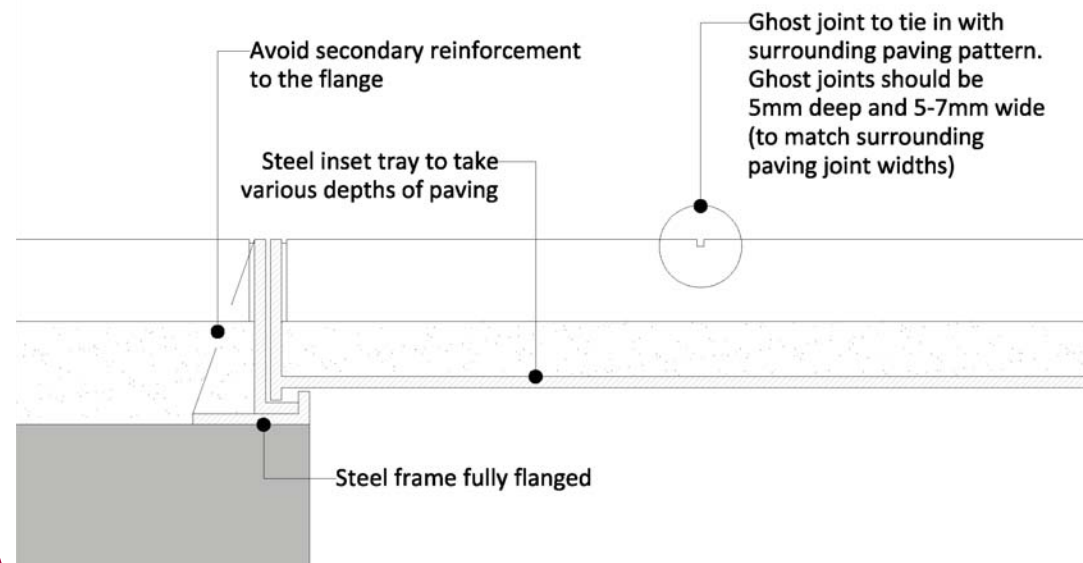
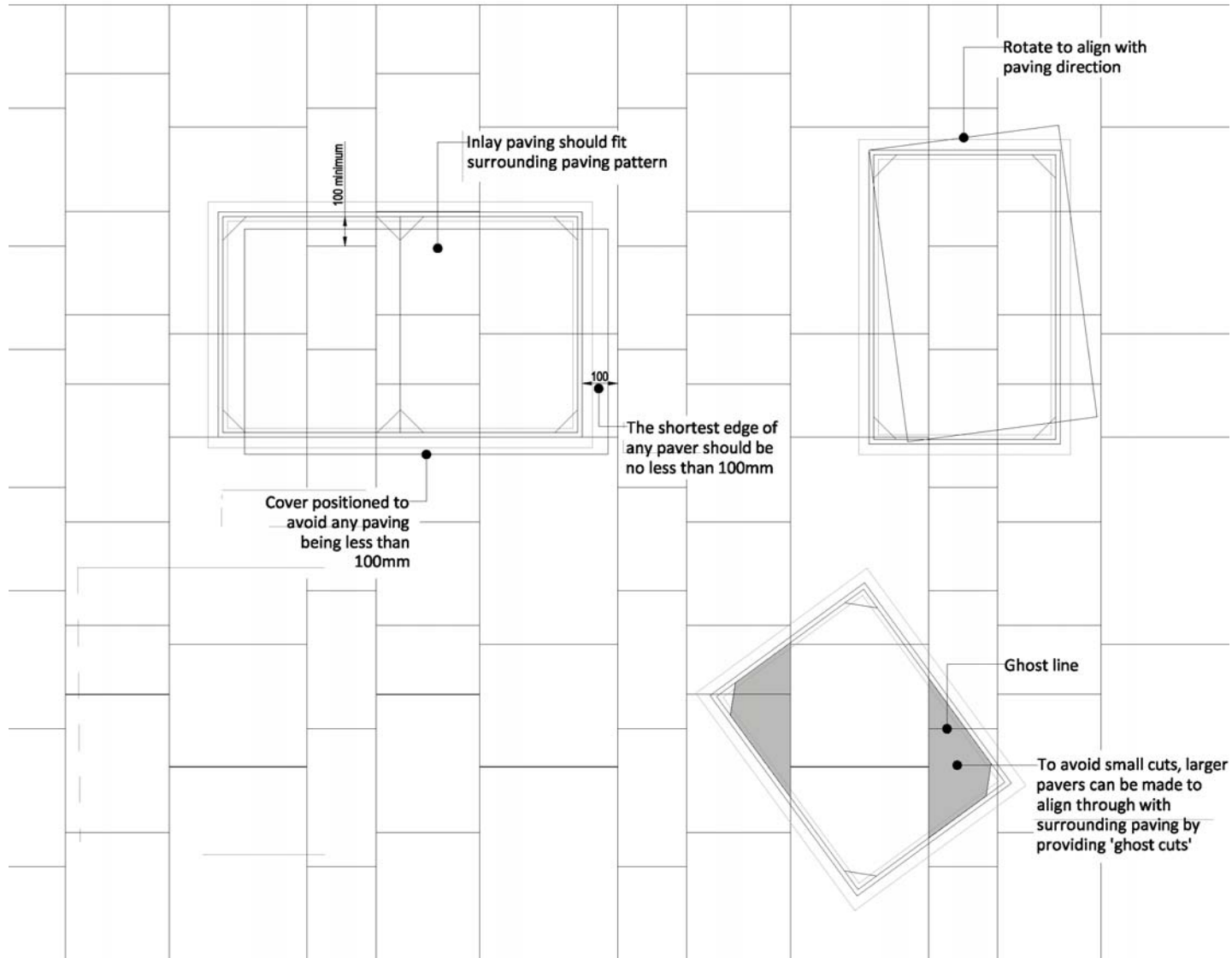


Figure 7.9 – Recessed paved infill access covers



Road Markings

Road markings act as a visual detractor in the public realm. The following principles should be employed to minimise their impact whilst providing clear instructions to traffic.

- In collaboration with the council's highways department, road markings should be kept to a minimum across Chester city centre. The photographs below provide a good examples of locations where double yellow lines are not needed.
- All of the city centre is in a conservation area, and so in order to reduce their visual impact all yellow lines should be reduced to a width of 50mm (with a gap of 50mm between double yellow lines). The bright yellow paint colour normally used should be replaced with Primrose Yellow (BS 310).
- Where lining is being replaced, old lines should be removed first. Where this is not possible new lines should sit directly on top of old markings.
- A number of streets within the city centre core are subject to traffic regulation orders that prevent the need for yellow lines. This works well on streets with setted carriageways as signage is discreetly mounted on timber bollards. In the future where new setted carriageways are implemented consideration should be given to extending traffic regulation orders to cover these streets.



Double yellow lanes on bollarded pedestrian alleyways

- Where traffic regulation orders cannot be extended to newly setted carriageways, yellow lines should be positioned on a natural stone channel that runs parallel to the kerb (rather than on the setts themselves).
- On tarmacadamed carriageway streets which have a natural stone channel, yellow lines should be installed on the tarmacadamed (rather than on the stone channel).



Example of signage mounted to bollard on street subject to traffic regulation order with a setted carriageway.



Paving Scheme Outside the New HQ Building