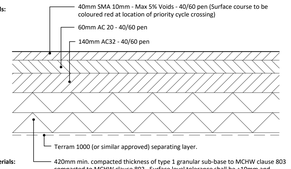
## Notes & Specification

1. Pavement construction shown below shall be generally constructed in accordance with the current Highways Agency Manual of Contract Documents for Highway Works, Volume 1, Specification for Highway Works (MCHW).
2. Bituminous mixtures shall be to the current BS EN 13108 series, BS 594987 and PD 6691.
3. If this pavement construction does not extend to a total thickness of 450mm and thus does not penetrate soils which may be affected by frost action. There is a risk of frost heave of the sub grade occurring in prolonged severe winter events causing damage to the pavement. Thickening of the pavement towards 450mm will reduce the risk.
4. 400mm compacted thickness of granular sub-base alone will carry up to 3200 standard 8 tonne axles producing up to 50mm of rutting in turning as based on a sub grade CBR of 2%. Additional thickening to carry construction traffic in excess of 3200 standard 8 tonne axles will be required. Any surface damage to the sub-base due to the construction traffic shall be repaired to the satisfaction of the Engineer prior to the placement of the bound materials.
5. The sub grade CBR shall be measured and reported to the Engineer to check the pavement design prior to construction.
6. Where pavements are constructed on subgrades that have volume change potential and where roots of vegetation are below the pavement formation, there is a risk that movement may occur resulting in cracking being evident in the surface course, particularly during prolonged periods of dry weather. To reduce this risk, the formation depth shall be increased.
7. Where SMA is used for resurfacing, the binder course shall be regulated where required if not replacing completely and a proper polymer-modified bond coat applied before surfacing.
8. All bituminous layers shall be 40/60 pen and 'warm-mix' if available.

## Pavement Construction

**Bound Materials:**




**Unbound Materials:** 420mm min. compacted thickness of type 1 granular sub-base to MCHW clause 803 compacted to MCHW clause 802. Surface level tolerance shall be +10mm and -30mm from the design levels.

**Formations/Subgrade:** Subgrade deemed frost susceptible and assumed to exhibit a CBR value of 3-4% subject to measurement on site (see note 5 above). Refer to adjacent table for alternative foundation thicknesses if onsite CBR results are less than assumed.

Prior to placement of the sub-base the formation shall be trimmed and rolled to MCHW clause 616. Any soft areas shall be brought to the attention of the Engineer for selection of the appropriate remedial measures. Surface level tolerance be +20mm and -30mm from design levels.

**Pavement Loading Limits:**

1. This pavement has been designed to receive heavy weight commercial vehicles, up to 8 tonne standard axle load with reference to the Quarry Products Association Publication no. 2.
2. The pavement is unable to accommodate jockey wheel/pad loads.
3. The surface course material may be subject to damage due to tight manoeuvres of heavy vehicles and fork lift trucks particularly in hot weather conditions.

### Bituminous Carriageway Construction /Carriageway Surfaced Red

| Foundation CBR Table | | | |
|---|---|---|---|
| CBR (%) | Subbase on Capping (mm) | | Subbase Only (mm) |
| | Subbase Thickness | Capping Thickness | |
| Less than or equal to 2.5 | Ground Stabilisation | | Ground Stabilisation |
| 2.5 - 5.0 | 250 | 420 | 420 |
| 5.0 - 7.5 | 200 | 250 | 265 |
| 7.5 - 10.0 | 165 | 220 | 240 |
| 10.0 - 12.5 | 150 | 200 | 220 |
| 12.5 - 15 | 150 | 170 | 210 |
| Greater than or equal to 15.0 | 150 | 150 | 200 |

- All subbase is to be Type 1 in compliance with MCHW1 clause 803.
- All capping is to be 6F2 or 6F5 in compliance with MCHW1 clause 613.
- Grading certificates for all granular fill are to be provided for every 500 tonnes.
- Foundations on cohesive soils are to use subbase on capping foundation type.

**Ground Stabilisation**
Method and design of ground stabilisation is to be approved by OCC's engineer prior to implementation.
Methods available include:

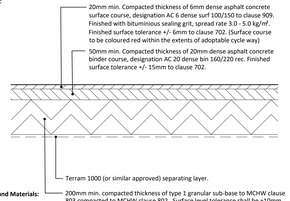
- Lime/cement soil stabilisatin - with cohesive soils
- Increased capping - if a suitable load bearing soil is within 1m of formation
- Geo-grid - if both of the above options are not possible

## Notes & Specification

1. Pavement construction shown below shall be generally constructed in accordance with the current Highways Agency Manual of Contract Documents for Highway Works, Volume 1, Specification for Highway Works (MCHW) and Interim Advice Note 101/07.
2. Bituminous mixtures shall be to the current BS EN 13108 series, BS 594987 and PD 6691.
3. The sub-base has not been designed to receive construction traffic. Any surface damage to the sub-base due to construction traffic shall be repaired to the satisfaction of the Engineer prior to the placement of the bound materials.
4. The sub grade CBR shall be measured by laboratory tests and reported to the Engineer to check the pavement design prior to construction.
5. Where pavements are constructed on subgrades that have volume change potential and where roots of vegetation are below the pavement formation, there is a risk that movement may occur resulting in cracking being evident in the surface course, particularly during prolonged periods of dry weather. To reduce this risk, the formation depth shall be increased.

## Pavement Construction

**Bound Materials:**




**Unbound Materials:** 200mm min. compacted thickness of type 1 granular sub-base to MCHW clause 803 compacted to MCHW clause 802. Surface level tolerance shall be +10mm and -30mm from the design levels.

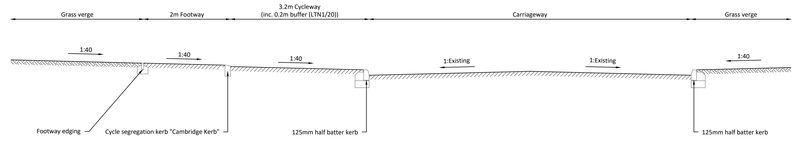
**Formations/Subgrade:** Subgrade deemed frost susceptible and assumed to exhibit a CBR value of 3-4% refer to adjacent table for sub-grade thickness based on CBR of localised ground.

Prior to placement of the sub-base the formation shall be trimmed and rolled to MCHW clause 616. Any soft areas shall be brought to the attention of the Engineer for selection of the appropriate remedial measures. Surface level tolerance be +20mm and -30mm from design levels.

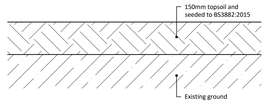
**Pavement Loading Limits:**

1. The pavement is unable to accommodate jockey wheel/pad loads.
2. The surface course material may be subject to damage due to tight manoeuvres of heavy vehicles and fork lift trucks particularly in hot weather conditions.

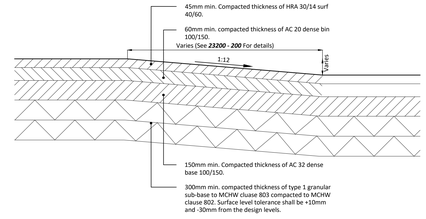
### Bituminous Footway Construction /Cycleway Construction



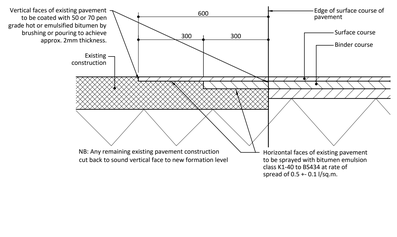

### Typical Section Through Shared Route and Carriageway



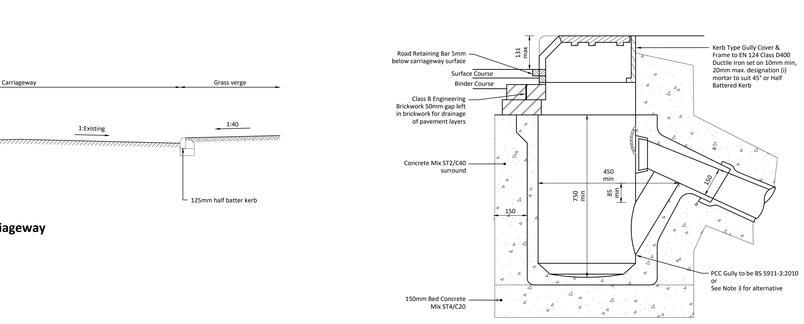

### Typical Highway Verge Detail




### Typical Transition Ramp Construction Detail



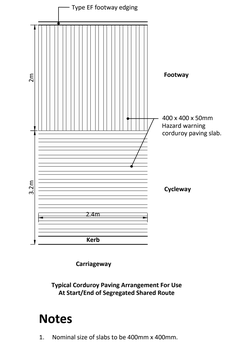

### Typical Tie In To Existing Construction Detail




### Notes

1. All dimensions in millimetres.
2. Mortar for brickwork shall be designation (i) unless shown or instructed otherwise.
3. Alternative Types of Gully Pot: UPVC former But with Concrete Mix ST4/C20 surround.
4. Where a PCC Gully is to be connected to UPVC Pipes, the connection is to be made using an approved adapter.

### Kerb Offlet Gully Detail

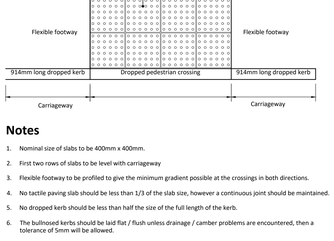



**Typical Corduroy Paving Arrangement For Use At Start/End of Segregated Shared Route**

### Notes

1. Nominal size of slabs to be 400mm x 400mm.
2. Corduroy paving slabs to be buff coloured

### Typical Corduroy Paving Detail




### Notes

1. Nominal size of slabs to be 400mm x 400mm.
2. First two rows of slabs to be level with carriageway
3. Flexible footway to be profiled to give the minimum gradient possible at the crossings in both directions.
4. No tactile paving slab should be less than 1/3 of the slab size, however a continuous joint should be maintained.
5. No dropped kerb should be less than half the size of the full length of the kerb.
6. The bullnosed kerbs should be laid flat / flush unless drainage / camber problems are encountered, then a tolerance of 5mm will be allowed.

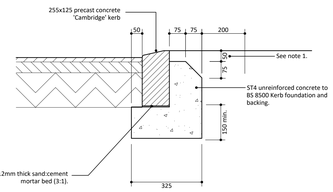
### Typical Pedestrian Crossing Arrangement

## General Notes

1. This drawing is to be used in conjunction with all relevant drawings, specifications and details.
2. All dimensions are in metres unless noted otherwise.
3. Do not scale from this drawing.
4. All works within the highway must comply with current health & safety standards. All signing to comply with chapter 8 'Traffic Safety Measures and Signs for Road Works and Temporary Situations' of the Traffic Manual.

**For further Section 278 details see JPP drawings:**

- 23200 - 200 - *General Arrangement, Kerbing & Land Dedication*
- 23200 - 201 - *Site Clearance & Existing Services*
- 23200 - 202 - *Traffic Signs And Road Markings & Swept Path Analysis*
- 23200 - 203 - *Proposed Levels Plan*
- 23200 - 204 - *S278 Construction Details*



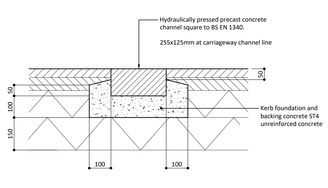

### Notes

1. Kerb backing normally brought up to 50mm below top of kerb, but where final surface of adjacent foot way is flagged, kerb backing shall finish 75mm below top of kerb.
2. Gap between kerbs shall be 1 to 2mm.
3. Radius kerbs shall be used where the radius is less than 12m.
4. Kerb face to be shuttered and mechanically vibrated to ensure proper compaction.

### Limitations Of Use

5. For use as an edging to pavements accommodating normal traffic loadings and manoeuvres.
6. Edging may fail or be damaged by direct impact from heavy vehicle loads.

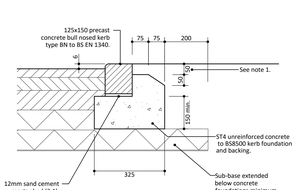
### Precast Concrete 'Cambridge' Kerb




### Notes

1. Kerb backing normally brought up to 50mm below top of kerb, but where final surface of adjacent foot way is flagged, kerb backing shall finish 75mm below top of kerb.
2. Gap between kerbs shall be 1 to 2mm.
3. Precast concrete edgings shall be cut to accommodate tight radii.
4. Kerb face to be shuttered and mechanically vibrated to ensure proper compaction.

### Precast Concrete Channel Block Detail



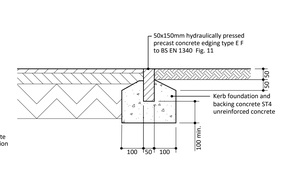

### Notes

1. Kerb backing normally brought up to 50mm below top of kerb, but where final surface of adjacent foot way is flagged, kerb backing shall finish 75mm below top of kerb.
2. Gap between kerbs shall be 1 to 2mm.
3. Precast concrete edgings shall be cut to accommodate tight radii.
4. Kerb face to be shuttered and mechanically vibrated to ensure proper compaction.

### Limitations Of Use

5. To be used for edging footways only

### Precast Concrete Bullnosed Kerb



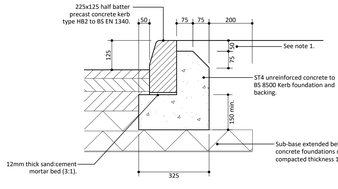

### Notes

1. Kerb backing normally brought up to 50mm below top of kerb, but where final surface of adjacent foot way is flagged, kerb backing shall finish 75mm below top of kerb.
2. Gap between kerbs shall be 1 to 2mm.
3. Precast concrete edgings shall be cut to accommodate tight radii.
4. Kerb face to be shuttered and mechanically vibrated to ensure proper compaction.

### Limitations Of Use

5. To be used for edging footways only

### Precast Concrete Footway Edging



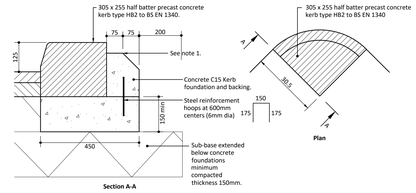

### Notes

1. Kerb backing normally brought up to 50mm below top of kerb, but where final surface of adjacent foot way is flagged, kerb backing shall finish 75mm below top of kerb.
2. Gap between kerbs shall be 1 to 2mm.
3. Radius kerbs shall be used where the radius is less than 12m.
4. Kerb face to be shuttered and mechanically vibrated to ensure proper compaction.

### Limitations Of Use

5. For use as an edging to pavements accommodating normal traffic loadings and manoeuvres.
6. Edging may fail or be damaged by direct impact from heavy vehicle loads.

### Precast Concrete Half Battered Kerb




### Notes

1. Kerb backing normally brought up to 70mm below top of kerb, but where final surface of adjacent foot way is flagged, kerb backing shall finish 75mm below top of kerb.
2. Gap between kerbs shall be 1 to 2mm.
3. Radius kerbs shall be used where the radius is less than 12m.
4. Kerb face to be shuttered and mechanically vibrated to ensure proper compaction.

### Limitations of Use

1. Detail to be used where foundation concrete, kerb laying and haunching are carried out in separate operations.
2. For use as an edging to pavements accommodating normal traffic loadings and manoeuvres.
3. Edging may fail or be damaged by direct impact from heavy vehicle loads.

### Precast Concrete Half Batter Quadrant Kerb Detail

| Rev | | | By | Checked | |
|---|---|---|---|---|---|
| Rev | C | 'Cambridge' kerb detail included and carriageway construction material revised following comment from Oxfordshire Highways on 02.02.2022 | HS | HS | 02.02.2022 |
| Rev | B | 150mm channel blocks removed from ramp detail, bullnose kerb upstand revised from 25mm to 6mm and typical shared route cross section included following comments from Oxfordshire highways on 18.01.2022 | HS | HS | 18.01.2022 |
| Rev | A | Ramp detail added following comments from Oxfordshire highways Dec 2021. Page size amended from A1 to A0. | JW | HS | 04.01.2022 |


**Northampton**
4 Ironstone Way, Brixworth,
Northampton NN6 9UD
T: 01604 781811

**Warwick**
Unit 12A. Warwick Innovation Centre,
Warwick Technology Park, Gallows Hill, Warwick, CV34 6UW
T: 02476 100530

**Milton Keynes**
Suite 2b, 2nd Forum, Rockingham Drive,
Linford Wood, Milton Keynes. MK14 6LY
T: 01908 889433

**Poole**
Suite B, Branksome Park House, Branksome Buisness Park,
Bourne Valley Road, Pool, Dorset, BH12 1ED
T: 01202 540888

**E:** mail@jppuk.net
W: jppuk.net


- Infrastructure Design
- Structural Engineering
- Development Planning
- Geotechnical & Environmental
- Surveying
- Professional Advice

| | |
|---|---|
| **Drawn By:** | JW |
| **Chkd By:** | HS |
| **Scale @ A0:** | NTS |
| **Date:** | December 2021 |
| **Status:** | FOR TECHNICAL APPROVAL |
| **Project No.:** | 23200 |

**Client** Marbank Construction Ltd.

**Project** Proposed Development
Morley Site, Arkwright Road
Bicester

**Title** Section 278 Works
Construction Details

**Drawing No:** 204 **Rev:** C