

Note in response to a document submitted by Mr Crosby OBJ/34/ Supplemental Widths II

1. In a supplementary document submitted by Mr Crosby OBJ/34/ Supplemental Widths II, Mr Crosby contends that his submission contains relevant information concerning the recommended minimum width of pedestrian routes beside carriageways and the recommendation of the separation between pedestrian routes and vehicle carrying carriageways
2. It is noted that the document referred to is DMRB Volume 6 Section 3 TA 90/05 The Geometric Design of Pedestrian, Cycle and Equestrian Routes. The Summary of this Advice Note states that 'This Advice Note provides guidance on the geometric design for NMU off-carriageway routes associated with trunk road or motorway improvement routes'. It is not, therefore, directly applicable to the diversionary route proposed for users of S08, which proposes creation of a new field-edge footpath to the east of the railway, and use existing public rights of way, and the use of the existing footway running alongside the B1113 for a short distance to connect to the footpath network to the west.
3. On Day 11 of the public inquiry the matter of the existing width of the footway adjacent to B1113 was addressed.
4. A number of guidance documents were considered by Mott MacDonald in developing, and appraising, the proposed diversionary routes for the Order scheme. These are detailed at paragraph 1.11.6 of the Proof of Evidence of Susan Tilbrook NR32/1. It is noted that the document referred to by Mr Crosby (TA 90/05) is included in that list, and a copy of the document is at Tab D of NR-INQ-15. It is common ground with the Ramblers Association that no specific guidance exists as to the width of footways to be provided on rural roads.
5. Reference is also made to TD 27/05 Cross Sections and Headrooms at paragraph 1.11.6 of the Proof of Evidence of Susan Tilbrook NR32/1. TD27/05 defines the cross-section as "The assembly of the various components of the highway between the highway boundaries, measured at right angles to the line of the highway. The cross-section includes carriageways, central reserve, separator zones, hard shoulders, hardstrips, verges including any footway, cycle track or bridleway, cutting or embankment slopes and berms.". Tab C of NR-INQ-15 document provides extracts of TD27/05 and a further relevant extract from this document is appended to this note (Appendix A).
6. Paragraph 4.7.10 of TD 27/05 refers to a number of reference documents regarding the provision for NMUs on all-purpose roads, including TA90. Paragraph 4.7.11 of TD 27/05 states "Where footways are provided, the widths must be in accordance with HD 39 (DMRB 7.2.5)". The relevant extract from HD 39/16 is appended to this note (Appendix B).
7. Section 2.10 of HD 39/16, states "The geometry and gradients for footways shall be in accordance with published DfT Inclusive Mobility guidance."
8. The width of footways along the B1113 was raised during cross examination of Ms Tilbrook on Day 11 of the inquiry. The Inspector's attention was drawn to the guidance on widths set out in DfT's Inclusive Mobility document, which noted the minimum widths that would be allowable. This was discussed in the context of the existing users of the level crossing and the likely use of the footway by the anticipated low numbers of users diverted from the level crossing.

9. Mr Crosby also contends, in his supplementary note, that there must be a physical separation distance between the edge of the footway and the carriageway, as set out in TA 90/05
10. In considering the existing footway, Mott MacDonald noted that the guidance in Figure 2.1 of HD 39/16 shows that a rural footway can be designed without a physical separation from the carriageway and would in this instance be classified as a pedestrian only footway which would not require the design to accommodate vehicle overrun.
11. A typical cross section of such a non-separated footway is shown in figure 3.1 of HD 39/16.
12. Mott MacDonald consider that the existing footway in question therefore adhered to appropriate design guidance and did not require amendments to provide a separation from the carriageway.
13. In conclusion, there are several design guidance documents that relate to the design and assessment of pedestrian facilities. The assessment of the suitability of the existing footway adjacent to the B1113 has been carried out in the context of the wider documents referenced within DMRB and DfT's Inclusive Mobility guidance and is considered suitable for use by existing users of Stacpool Level Crossing.

Appendix A

Extract from TD 27/05

VOLUME 6 ROAD GEOMETRY
SECTION 1 LINKS

PART 2

TD 27/05

CROSS-SECTIONS AND HEADROOMS

SUMMARY

This Standard sets out the dimensional requirements for the highway cross-sections for all-purpose and motorway trunk roads, both at and away from structures. It also gives requirements for headroom at structures.

INSTRUCTIONS FOR USE

1. Remove Contents pages from Volume 6 and insert new Contents page for Volume 6 dated February 2005.
2. Remove TD 27/96 from Volume 6, Section 1 which is superseded by this Standard and archive as appropriate.
3. Insert TD 27/05 into Volume 5, Section 1.
4. Please archive this sheet as appropriate.

Note: A quarterly index with a full set of Volume Contents Pages is available separately from The Stationery Office Ltd.



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**THE DEPARTMENT FOR REGIONAL DEVELOPMENT
NORTHERN IRELAND**

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REGISTRATION OF AMENDMENTS

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VOLUME 6 ROAD GEOMETRY
SECTION 1 LINKS

PART 2

TD 27/05

CROSS-SECTIONS AND HEADROOMS

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6. Headrooms at Structures
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Annex A Features Commonly Occurring in the
 Highway Cross-Section

Annex B Rural Motorway Widening, Cross-Section
 and Layout at Physical Restraints

4.7.6 Where it is necessary to accommodate communications ducting and chambers, a minimum verge width of 2.0m must be provided.

4.7.7 The verge offers an important component in highway drainage systems, including the storage of snow displaced from the carriageway. It offers an area to support utility plant and to house highway equipment. Congested verges with insufficient room for necessary roadside components present both safety and engineering difficulties.

4.7.8 The concept of providing wide verges to slow and contain errant vehicles has significant land take implications. Research has indicated that only a small proportion of injury accidents would be avoided if verges were doubled in width. Consequently, vehicular safety aspects will not normally be a factor when choosing a verge width greater than the minimum width, provided visibility requirements are met and space exists for any VRS that may be required.

4.7.9 Verges should be sufficiently level and free from hazards to permit their occasional use by NMUs in the absence of dedicated facilities. Footways, cycle tracks and other NMU facilities are usually provided within highways in urban areas, but are less frequent in rural areas.

4.7.10 Provision for NMUs on all-purpose roads must be made where a local need has been identified and agreed with the Overseeing Organisation in accordance with **TA 90 (DMRB 6.3.5)**, **TA 91 (DMRB 5.2.4)**, **HD 42 (DMRB 5.2.5)** and **Environmental Assessment (DMRB 11.0)**.

4.7.11 Where footways are provided, the widths must be in accordance with **HD 39 (DMRB 7.2.5)**.

4.8 Berms and Side Slopes

4.8.1 Berm and side slope widths should be chosen to suit the local situation. The width of berm will depend upon:

- i. terrain;
- ii. environmental design features;

- iii. engineering and geotechnical measures used to accommodate changes in ground levels;
- iv. the need to accommodate various types and widths of drain and other services in any berm;
- v. maintenance requirements.

4.8.2 A degree of flexibility is available to the Design Organisation when selecting the berm width although a desirable width of 3.0m is recommended. The berm may however provide a reasonable route for NMUs and Design Organisations should consider their needs to determine if the chosen width is adequate.

4.8.3 Whenever practicable, side slopes adjacent to emergency roadside telephones should be kept to a minimum angle to assist motorists in waiting at the highway boundary in the event of an emergency or breakdown. See **TA 73 (DMRB 9.4.2)** for further advice on location of emergency telephones.

4.8.4 At all sites where cattle or horses will be expected to cross the road, any side slope angles will have an impact on highway safety. Alternative means of crossing are described in **TA 56 (DMRB 8.2)** and **TA 57 (DMRB 6.3)**.

4.9 Wide Highway Corridors

Motorway Lane Provision

4.9.1 Dual 4-lane Motorway remains the maximum standard of provision in the UK. In exceptional circumstances it may be necessary to provide wider carriageways to link closely spaced junctions in order to provide reasonable lane continuity and sufficient capacity. Where weaving flows are high it may be more desirable to provide link roads. For further guidance see **TD 22 (DMRB 6.2.1)**.

4.9.2 Design Organisations should be aware that for wide carriageways, the size of items such as storage tanks and gantry substructures can be considerable and adequate width should be allowed in verges and central reserves. Drainage on wide carriageways should also be considered at an early stage in the design process with reference to **TA 80 (DMRB 4.2.2)**.

4.9.3 Wide carriageways may also create difficulties for maintenance (including provision of a winter service) and incident management. Also see Section 3.2.

Appendix B

Extract from HD 39/16

**VOLUME 7 PAVEMENT DESIGN AND
MAINTENANCE**

**SECTION 2 PAVEMENT DESIGN AND
CONSTRUCTION**

PART 5

HD 39/16

FOOTWAY AND CYCLEWAY DESIGN

SUMMARY

This part sets out the requirements and advice for new footway construction. It covers footways constructed from common materials that are subject to a range of pedestrian traffic and some overrun by vehicular traffic.

INSTRUCTIONS FOR USE

This is a new document to be incorporated into the Manual.

1. Insert HD 39/16 into Volume 7, Section 2, Part 5.
2. Archive this sheet as appropriate.

Note: A quarterly index with a full set of Volume Contents Pages is available separately from The Stationery Office Ltd.



HIGHWAYS ENGLAND

HD 39/16

Volume 7, Section 4,

Part 5



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Registration of Amendments

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HD 39/16

FOOTWAY AND CYCLEWAY DESIGN

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 C Compaction specification by air voids

 D Compaction by method specification

 E Worked Examples

1. INTRODUCTION

General

- 1.1 This part provides guidance on new footway and cycleway construction. It covers footways and cycleways constructed from common materials and subject to a range of pedestrian traffic and some overrun by vehicular traffic. The design of pedestrianised areas is not covered since the number of delivery vehicles usually means that a road pavement design will be required.
- 1.2 Guidance is provided on the construction of footways surfaced with bituminous material, concrete or clay pavers, precast concrete flags and in-situ concrete. Designs for paver and flag footways, in the situation where there is overrun by heavy vehicles, remain to be validated.

Implementation

- 1.3 This document shall be implemented in accordance with GD 1. Safety risk assessments shall be carried out in accordance with GD 4. An assessment as to the applicability of an equality impact assessment (EqIA) shall be carried out for all designs. Where the assessment indicates that an EqIA is required, then the designer shall carry out an EqIA.

This part has been updated for the purposes of EU compliance with additional minor changes throughout. Attention is also drawn to the change in clause 4.11 for construction topped by natural stone slabs.

Mutual Recognition

- 1.4 Where there is a requirement in this specification for compliance with any part of a British Standard or other technical specification, that requirement may be met by compliance with the Mutual Recognition clause in GD 1.

2. DESIGN CONSIDERATIONS

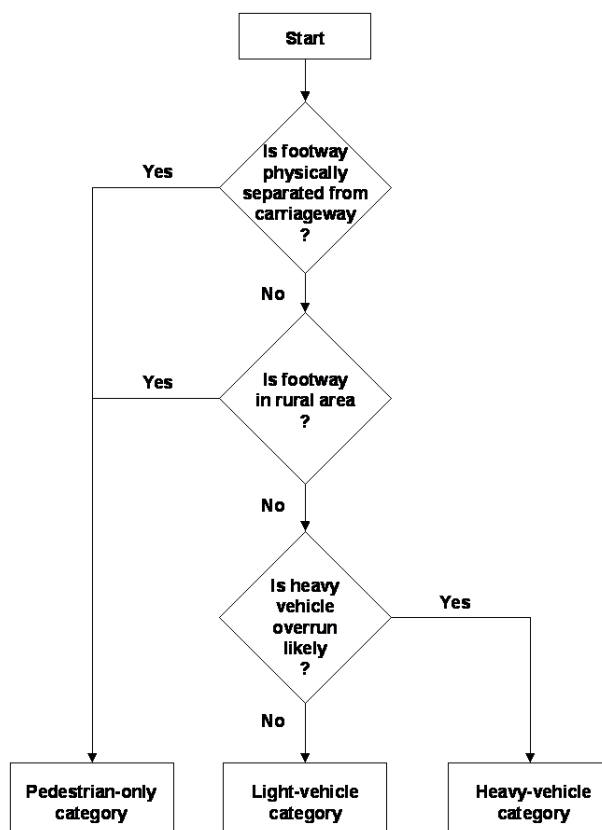
Introduction

- 2.1 Maintaining Agents and Local Authorities spend a significant amount of their highway maintenance budgets on footways and cycleways in order that all pedestrians, including those with mobility difficulties, and cyclists can travel in comfort. Footway and cycleway surfaces deteriorate for a variety of reasons and it is important that the initial construction is such that subsequent deterioration is minimised. Although it is expected that the upper layers will need attention because of general wear, it is recommended that the foundations of footways and cycleways should be sufficiently robust to give good performance over a design life of 40 years.
- 2.2 Research has been carried out at the Transport Research Laboratory (TRL) to identify the causes of failure in footways and thus to recommend suitable designs to improve the surface condition of footways over their design life. Vehicle overrun and works by Statutory Undertakers have been identified as the most common causes of failure in footways. It is hoped that adherence to the New Roads and Street Works Act 1991 (Specification for the reinstatement of openings in highways), or the NIRAUC Specification for the Reinstatement of Openings in Roads (1995) in Northern Ireland, will ensure improvement in reinstatements after utility works and consequently in the ensuing condition of the footway surface. Growth of vegetation, natural ageing of bituminous material, and poor design and construction have also been identified as significant causes of deterioration.

Selection of Footway and Cycleway Category

- 2.3 To choose the appropriate footway/cycleway design it is necessary to consider the pedestrian and vehicular traffic which the surface may have to support and the characteristics of the ground on which it is to be constructed. Designs are given for three construction categories, the appropriate category being chosen according to the risk and type of vehicle overrun and on the amount of pedestrian usage.

The category required is selected by following the flowchart in Figure 2.1.



Pedestrian/cycle-only:	Footways and cycleways designed for pedestrian/cycle use only.
Light-vehicle:	Footways and cycleways which will support overrun by light vehicles
Heavy-vehicle:	Footways and cycleways which will support overrun by heavy vehicles.

Figure 2.1: Flowchart for Selection of Footway/cycleway Category

Notes on Figure 2.1

1. The footway/cycleway is considered to be physically separated from the carriageway if there is a verge of width 3m or more, closely spaced trees or other physical obstructions such that vehicular traffic cannot mount the footway/cycleway.
2. Any footway/cycleway in a residential area is likely to be used for parking private cars. However, if the footway/cycleway is in a rural area it may be sensible to adopt the pedestrian-only design, even if vehicle overrun is not physically prevented.
3. There are many situations where light vehicle overrun is common, but overrun by heavy vehicles would not be expected to occur more than very occasionally. This may apply to domestic crossings (access to private driveways); situations where cars may park between obstructions that would prevent heavy vehicles parking; and footways/cycleways adjacent to roads on housing estates. Some heavy vehicle overrun is to be expected when footways are adjacent to roads in areas where deliveries take place, such as outside local shops. Obstructions, such as broken down vehicles, will cause traffic to overrun the footway occasionally.
4. 'Pedestrian only' footways/cycleways are not designed to support any type of vehicle use, not even small cleaning and maintenance vehicles, except those that are pedestrian controlled.

Soil Type	Plasticity Index	Design CBR%
Plastic Clay	50 or greater	2+
Silty Clay	40	2
Silty Clay	30	3
Sandy Clay	20	3
Sandy Clay	10	2+
Silt	-	Less than 2
Sand (poorly graded)	-	7*
Sand (well graded)	-	10*
Sandy Gravel (well graded)	-	15*

Notes: + CBR may be less than 2 if construction conditions are poor.

* Indicates estimated values assuming some probability of the material saturating in service.

Table 2.1 Equilibrium CBR Values

Soil Condition	CBR
Very soft, exudes between fingers when squeezed	Less than 1%
Can be moulded by light finger pressure	Between 1 and 2%
Can be moulded by strong finger pressure	Between 2 and 3%
Can be indented by a thumbnail but not by a thumb	More than 6%

Table 2.2 Rough Guide to CBR

Geometry

- 2.10 When assigning geometric parameters to footways, the comfort of the user shall be taken into account, together with the necessity for providing adequate surface drainage. Steep gradients or crossfalls make it difficult for elderly or encumbered pedestrians to walk on the footway, while insufficient gradients would not facilitate the removal of surface water. The geometry and gradients for footways shall be in accordance with published DfT inclusive mobility guidance. Where possible the footway width should be sufficient to allow two wheelchairs or double buggies to pass. Shared footway and cycleways should follow the geometrical requirements for footways.
- 2.11 Crossfall should be limited to that absolutely necessary to dispose of surface water. Crossfalls steeper than about 3% are uncomfortable to walk on and if the slope runs towards a road it can be dangerous, as wheeled users will tend to edge down the crossfall.

Edge Restraints

- 3.15 A requirement of all footway and cycleway constructions is edge restraint, which is provided at the front by a kerb and at the back, unless the footway abuts a wall or building, by an edging (Figure 3.1). Good edge restraint is essential to prevent the footway/cycleway spreading causing wide gaps in a segmental footway/cycleway or longitudinal cracks in a bituminous footway/cycleway which might allow water ingress. Wherever footways and cycleways do not abut a kerb or existing boundary wall, precast concrete edging, laid on and backed with concrete to grade C7.5P, should be used. The sub-base should be extended beyond and beneath the edging. There should be a minimum of 100mm of sub-base under the concrete bed of the edge restraint. Common practice is to extend the carriageway formation and overlying sub-base under the kerb bed, which would normally give more than the minimum requirement of sub-base.

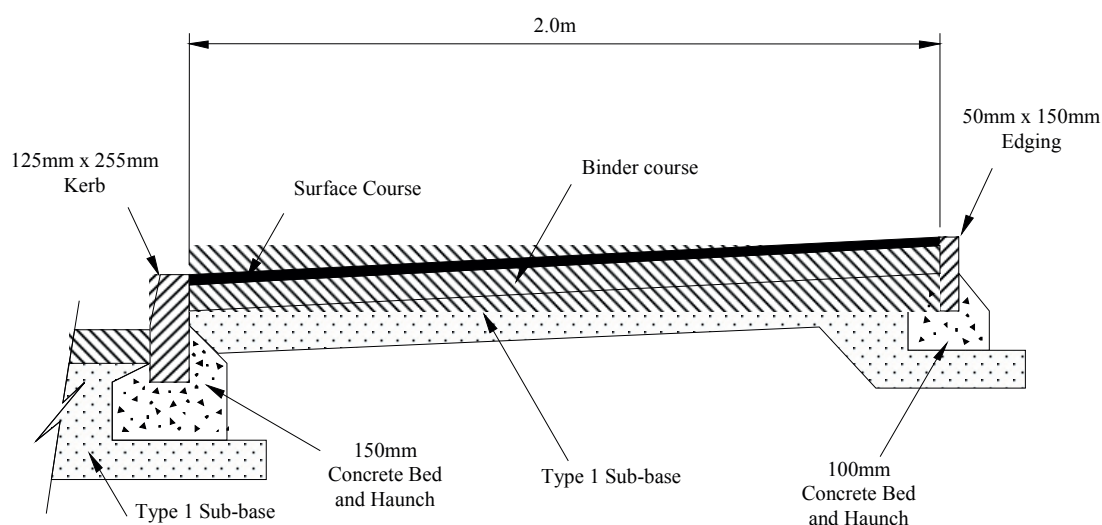


Figure 3.1: Typical Pedestrian-only Footway Cross-section