

NRA ADDENDUM TO

HD 36/06

SURFACING MATERIALS FOR NEW AND MAINTENANCE CONSTRUCTION

This Addendum supersedes the NRA Addendum dated January 2005 to Standard HD 36/99. The revisions have arisen due to the publication of Standard HD36/06, dated November 2006, which supersedes HD 36/06. The main changes are as follows:

- Restrictions on the use of Polymer Modified Stone Mastic Asphalt (PMSA) have been removed.
- Introduction of restrictions on the use of High Friction Surfacing (HFS).
- The definition of low speed has been reduced to 65km/hr from 90km/hr

Standard HD 36/06 – Surfacing Materials for New and Maintenance Construction– is applicable in Ireland with the following amendments:

GENERAL

1. At several locations:

For: “Specification (MCHW1)” or “(MCHW1)”
Read: “NRA Specification for Road Works”;

For: “Notes for Guidance (MCHW2)”
Read: “NRA Notes for Guidance on the Specification for Road Works”;

For: “trunk road”
Read: “national road”.

For: “BS EN”
Read: “IS EN”

For: “Overseeing Organisation”
Read: “National Roads Authority”

SPECIFIC

Chapter 1 – Introduction

- 1.1 Page 1/1, Paragraph 1.4:
Delete Paragraph 1.4 and replace with:
“1.4 This Standard should be used forthwith for all schemes for the construction and/or improvement of national roads. The Standard should be applied to the design of schemes already being prepared unless, in the opinion of the National Roads Authority, application would result in significant additional expense or delay progress. In such cases, Design Organisations should confirm the application of this Standard to particular schemes with the National Roads Authority.”
- 1.2 Page 1/1, Paragraph 1.5, line 1:
Delete first sentence, “The construction ... (MCHW1).” and replace with:
“1.5 The construction of road pavements will normally be carried out under contracts incorporating the NRA Specification for Road Works.”
- 1.3 Page 1/1:
Add the following text:
“**Mandatory Sections**

1.6 Sections of this document which form part of the standards the National Roads Authority expects in design are highlighted by being contained in boxes. These are the sections with which the Design Organisation must comply or must have agreed a suitable Departure from Standards with the National Roads Authority. The remainder of the document contains advice and enlargement which is commended to Design Organisations for their consideration.

Departures from Standards

1.7 In exceptional situations, the National Roads Authority may be prepared to agree to a Departure from Standards where the standard is not realistically achievable. Design Organisations faced by such situations and wishing to consider pursuing this course shall discuss any such option at an early stage in design with the National Roads Authority. Proposals to adopt Departures from Standard must be submitted by the Design Organisation to the National Roads Authority and formal approval received BEFORE incorporation into a design layout.”

Chapter 2 – Surfacing Options

2.1 Page 2/1, Paragraphs 2.2 and 2.3:

Delete Paragraphs 2.2 and 2.3 and replace with:
“2.2 To remove the barriers to trade and to encourage innovation, the Construction Products Directive (CPD) of the European Union requires the introduction of performance related specifications wherever possible. Specification clauses of this type have been included in the NRA Specification for Road Works covering surfacings such as slurry surfacing (Clauses 918), surface dressings (Clause 922), High Friction Surfacing (Clause 924), Porous Asphalt (Clause 938), PMSA (Clause 942) and Hot Rolled Asphalt (Clause 943). Performance is assessed by testing samples from the laid material and testing the laid material in-situ.

2.3 Where Porous Asphalt is proposed for use on high speed roads (see Table 2.2.I (Ireland)) the approval of the National Roads Authority shall be sought and a Departure agreed.”

2.2 Page 2/1, Paragraph 2.4, line 4:

For: “Overseeing Organisations, as indicated in Tables 2.2(E), (S), (NI) and (W), taking account of the variations across the UK of a number of factors:”

Read: “National Roads Authority, as indicated in Table 2.2. I (Ireland), taking account of a number of factors:”

2.3 Page 2/1, Paragraph 2.7, line 7:

For: “...Table 2.2 to check permitted options:”

Read: “...Table 2.2.I (Ireland) to check permitted options”

2.4 Page 2/2, Paragraph 2.8, line 1:

Delete the first sentence.

2.5 Page 2/2, Paragraph 2.8, line 5:

For: “...without Departure approval.”

Read: “...without National Roads Authority approval.”

2.6 Page 2/2, Paragraph 2.9, line 2:

For: “Tables 2.2E, 2.2S, 2.2NI and 2.2W, for England, Scotland, Northern Ireland and Wales respectively.”

Read: “Table 2.2.I.”

2.7 Page 2/2, Paragraph 2.9, line 7:

Delete: “For Table 2.2S ... Overseeing Organisation”.

2.8 Pages 2/2 to 2/5, Tables 2.2E, 2.2W, 2.2S and 2.2NI:

Delete tables and replace with Table 2.2.I (Ireland) enclosed on Page 5

Chapter 3 – Texture and Aggregate Properties

- 3.1 Page 3/3 Table 3.1:
Delete Table 3.1 and replace with Table 3.1 (Ireland) enclosed on Page 6.
- 3.2 Page 3/4, Paragraphs 3.13 and 3.14:
Delete Paragraphs 3.13 and 3.14 and replace with:
- “3.13 The use of High Friction Surfacing shall require the prior approval of the National Roads Authority and shall only be permitted at the locations specified in Table 3.1(Ireland). This approval will be processed using the Departure from Standards procedure.
- 3.3 Page 3/4, Paragraph 3.17, line 4:
Delete “requiring the given investigatory level”
- 3.4 Page 3/4, Paragraph 3.18:
Delete Paragraph 3.18
- 3.5 Page 3/5, Paragraph 3.21, line 15:
For: “UKAS or equivalent”
Read: “INAB or equivalent”
- 3.6 Page 3/6, Paragraph 3.24, line 7:
Delete “i.e. the period before the investigatory level is reached”

Chapter 6 – References and Bibliography

- 6.1 Page 6/1, References:
Delete references to HD 28, HD 29 and HD 32 which are not applicable in Ireland
- 6.2 Page 6/1, References:
Delete reference to the Manual of Contract Documents for Highway Works and replace with:
“NRA Manual of Contract Documents for Road Works:

Volume 1: Specification for Road Works
Volume 2: Notes for Guidance on the Specification for Road Works.”

Chapter 7 – Enquiries

- 7.1 Page 7/1, Chapter 7:
Delete text and replace with:
“7.1 All technical enquiries or comments on this Standard
should be sent in writing to:

Head of Engineering
National Roads Authority
St Martin’s House
Waterloo Road
Dublin 4



.....
Tim Ahern
Head of Engineering

Flexible and Flexible Composite Pavements

				Use without restriction	Departure required
New Construction or Major Maintenance?	Yes	High speed? (85 th ile above 65 km/hr)	Yes	PMSMA Hot Rolled Asphalt (note 1)	Porous Asphalt
			No	PMSMA Hot Rolled Asphalt Coated Macadam (note 2) Surface Dressing	
	No (minor)	High speed? (85 th ile above 65 km/hr)	Yes	PMSMA Hot Rolled Asphalt (note 1) Surface Dressing (note 1)	Porous Asphalt
			No	PMSMA Hot Rolled Asphalt Coated macadam (note 2) Surface Dressing	Slurry Surfacing

Continuously Reinforced Concrete Pavements

				Use without restriction	Departure required
New Construction or Major Maintenance?	Yes	High speed? (85 th ile above 65 km/hr)	Yes	PMSMA	Porous Asphalt Hot Rolled Asphalt(note 1)
			No	PMSMA	Hot Rolled Asphalt(note 1)
	No (minor)	High speed? (85 th ile above 65 km/hr)	Yes	PMSMA Hot Rolled Asphalt (note 1) Surface Dressing (note 1)	
			No	PMSMA Hot Rolled Asphalt Surface Dressing	Slurry Surfacing

Continuously Reinforced Concrete Base Pavements

				Use without restriction	Departure required
New Construction or Major Maintenance?	Yes	High speed? (85 th ile above 65 km/hr)	Yes	PMSMA Hot Rolled Asphalt (note 1)	Porous Asphalt
			No	PMSMA Hot Rolled Asphalt	
	No (minor)	High speed? (85 th ile above 65 km/hr)	Yes	PMSMA Hot Rolled Asphalt (note 1) Surface Dressing (note 1)	Porous Asphalt
			No	PMSMA Hot Rolled Asphalt Surface Dressing	Slurry Surfacing

Note 1: See paragraph 2.6 in relation to noise

Note 2: For use only where the 85th percentile traffic speed is 50km/h or less

Table 2.2.I (Ireland): Permitted Pavement Surfacing Materials for New and Maintenance Construction

Site Category	Site Definition	Traffic characteristics						
		Design Speed (See NRA TD 9)						
		<85km/h	85km/h or more					
			Traffic (cv/lane/day)					
		0-250	251-500	501-750	751-1000	1000 - 2000	over 2000	
A1	Motorways where traffic is generally free-flowing on a relatively straight line	55	55	55	55	55	55	55
B1	Dual carriageways where traffic is generally free-flowing on a relatively straight line	55	55	55	55	55	55	60
B2	Dual carriageways where some braking regularly occurs (e.g. on 300m approach to an off-slip)	55	55	55	55	60	60	65
Q	Deceleration areas on approaches to roundabouts, pedestrian crossings, rail crossings and/or stop lines where frequent or sudden braking occurs but in a generally straight line.	65	68+	68+	68+	HFS	HFS	HFS
K	Downhill Gradients >4% within 300m of the approach to roundabouts, pedestrian crossings, rail crossings and/or stop lines where frequent or sudden braking occurs	HFS	HFS	HFS	HFS	HFS	HFS	HFS
C	Single carriageways where traffic is generally free-flowing on a relatively straight line	60	60	60	65	65	68+	68+
G1	Downhill Gradients >5% longer than 50m	60	65	68+	HFS	HFS	HFS	HFS
G2	Downhill Gradients >10% longer than 50m	65	68+	HFS	HFS	HFS	HFS	HFS
S1	Bends (radius <250m) on dual carriageways and motorways, including motorway link roads	60	65	68+	HFS	HFS	HFS	HFS
S2	Bends (radius <250m) on all single carriageways	60	65	68+	HFS	HFS	HFS	HFS
S3	Bends (radius <150m) on all types of road, including motorway link roads; other hazards that require combined braking and cornering	65	HFS	HFS	HFS	HFS	HFS	HFS
R	Roundabout circulation areas	65	68+	68+	68+	HFS	HFS	HFS

Notes:

1. Site categories are grouped according to their general character and traffic behaviour.
2. Motorway or dual carriageway slip roads may fit in a number of groups depending on their layout. For example, a free flowing section close to the main line would be in Group A1 or B1 whereas the end of an off-slip approaching a give way line or the point at which a queue develops would be in Group Q1. Some slip roads with gradients may be in Group Q2 or G1.
3. Where '68+' material is listed in this Table, none of the three most recent results from consecutive PSV tests relating to the aggregate to be supplied must fall below 68. See paragraph 3.21.
4. Throughout this Table, HFS means specialised high friction surfacing, incorporating calcined bauxite aggregate and conforming to Clause 924 of the NRA Specification for Road Works will be required. Where HFS is required on the approaches to a hazard, the minimum treatment length must be 50m. This may be extended where queuing traffic or sightlines indicate that 50m may not be sufficiently long.
5. Where designers are knowledgeable or have other experience of particular site conditions, an alternative PSV value can be specified, noting the restriction in paragraph 3.13 on the use of HFS.

Table 3.1 (Ireland): Minimum PSV of Chippings, or Coarse Aggregate in Unchipped Surfaces, for New Surface Courses