



Bonneagar Iompair Éireann  
Transport Infrastructure Ireland

## TII Publications

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### Conservation and the use of Secondary and Recycled Materials

CC-PAV-04004  
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Withdrawn

## NRA ADDENDUM TO

### HD 35/04

## CONSERVATION AND THE USE OF SECONDARY AND RECYCLED MATERIALS

This Addendum supersedes the NRA Addendum dated December 2000 to Standard HD 35/95. The revisions have arisen due to the publication of Standard HD35/04, dated November 2004, which supersedes HD 35/95.

Standard HD 35/04– Conservation and the use of Secondary and Recycled Materials – is applicable in Ireland with the following amendments:

### GENERAL

1. At several locations:

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

For: “Specification for Highway Works (MCHW 1)” or “Specification (MCHW 1)”  
Read: “NRA Specification for Road Works”.

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# SPECIFIC

## Chapter 1 – Introduction

- 1.1 Page 1/1, Paragraph 1.3:  
Delete Paragraph 1.3 and replace with:  
“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.”

## Chapter 2 – Provision for the use of secondary and recycled materials

- 2.1 Page 2/1, Paragraph 2.2:  
Delete second sentence: “The Landfill Tax and Aggregate Levy . . . unit of construction value.”
- 2.2 Page 2/1, Paragraph 2.4:  
Delete Paragraph 2.4.
- Page 2/1, Paragraph 2.5, line 1:  
Delete first sentence “The Specification . . . primary aggregates.” and replace with:  
“The NRA Specification for Road Works permits reclaimed materials, such as crushed concrete and mineral by-products, such as road planings, PFA, to be used in place of natural aggregates.”
- 2.3 Page 2/1, Paragraph 2.6, line 12:  
Delete fourth sentence “Similarly the re-use . . . cost effective.” and replace with:  
“Similarly the re-use of old pavement quality concrete, after crushing and grading, as aggregate for hydraulically bound materials in composite pavements is likely to prove efficient and cost effective.
- 2.4 Page 2/2, Table 2.1:  
Delete Table 2.1 and replace with revised Table 2.1 enclosed on Page 5.
- 2.5 Page 2/4, Paragraph 2.12, line 7:  
Delete second sentence “Weathered steel slags . . . granular fill.”
- 2.6 Page 2/4, Paragraph 2.13:  
Delete Paragraph 2.13 and replace with:  
“Recycled concrete can comply with the NRA Specification (MCDRW 1) and is named.

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Agreement of the NRA Head of Engineering shall be obtained and an appropriate material specification agreed before other unbound secondary and recycled materials, not named in the NRA Specification (MCDRW 1), can be used”

2.7 Page 2/4, Paragraph 2.14:

Delete Paragraph 2.14 and replace with:

“Cement Bound Material (CBM), using recycled coarse and/or concrete aggregate is named within the NRA Specification (MCDRW 1). Table 2.1 shows that all the secondary and recycled aggregate materials except for recycled glass can meet the NRA Specification (MCDRW 1). Agreement of the NRA Head of Engineering shall be obtained and an appropriate material specification agreed before alternative recycled binders, not named in the NRA Specification (MCDRW 1), can be used”

2.8 Page 2/5, Paragraph 2.19:

Delete Paragraph 2.19 and replace with:

“Agreement of the NRA Head of Engineering shall be obtained and an appropriate material specification agreed before secondary and recycled materials, not named in the NRA Specification (MCDRW 1), are used within bitumen bound layers”

2.9 Page 2/5, Paragraph 2.20:

Delete Paragraph 2.20 and replace with:

“Reclaimed bituminous materials can be used for hot mix recycling in the production of bituminous base and binder courses, as detailed in the NRA Specification (MCDRW 1).”

2.10 Page 2/5, Paragraph 2.22, Line 1

Delete: “Cold deep recycling . . . HD 31 (DMRB 7.4.1).” And replace with:

“Cold deep recycling of bitumen bound pavements is covered within the NRA Interim Advice Note on Low-Energy Pavements.”

2.11 Page 2/5, Paragraph 2.23,: Line 1

Delete first sentence: “Recycled concrete, crushed . . . Specification (MCHW 1)” and replace with:

“Aggregates for all pavement concrete shall be natural material as required by the NRA Specification (MCDRW 1). Agreement of the NRA Head of Engineering shall be obtained and an appropriate material specification agreed before alternative recycled aggregates, not named in the NRA Specification (MCDRW 1), can be used”

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- 2.12 Page 2/5, Paragraph 2.26,:  
Delete Paragraph 2.26
- 2.13 Page 2/6, Paragraph 2.32:  
Delete Paragraph 2.32 and replace with:  
“The use of recyclable materials should comply with the requirements of the Environmental Protection Agency and the Regional Fisheries Boards.”
- 2.14 Page 2/6, Paragraphs 2.33 and 2.34:  
*[Note: The above paragraphs provide detailed advice on the handling, storage, processing and deposition of waste materials used in the UK. For use in Ireland the relevant legislation includes the Environmental Protection Agency Act 1992, The Water Pollution Acts 1977, 1990, The Waste Management Act 1996 (and the Regulations made under its powers), The Protection of the Environment Act, 2003 and the Waste Framework Directive 2006. Design Organisations shall agree with the NRA the procedures and legislation to be followed.]*

### Chapter 3 – References

- 3.1 Page 3/1, References:  
Delete: “Design Manual for Roads and Bridges - The Stationery Office (TSO).” and replace with:  
“NRA Design Manual for Roads and Bridges “
- 3.2 Page 3/1, References:  
Delete references to HD 30, HD 31 and HD 32 which are not applicable in Ireland
- 3.3 Page 3/1, References:  
Delete: “Manual of Contract Documents for Highway Works Volume 1 (MCHW 1) - The Stationery Office (TSO).” and replace with:  
“NRA Manual of Contract Documents for Road Works, Volume 1 (MCDRW 1): Specification for Road Works “
- 3.4 Page 3/1, References:  
Delete: “Environmental Protection Act 1990. HMSO 1990” and replace with:  
“The Water Pollution Act 1977.”  
“The Water Pollution Act 1990.”
- 3.5 Page 3/1, References:  
Add the following text:  
“Environmental Protection Agency Act 1992.”
- 3.6 Page 3/1, References:  
Add the following text:  
“The Waste Management Act 1996.”
- 3.7 Page 3/1, References:  
Add the following text:  
“The Protection of the Environment Act, 2003.”

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Page 3/1, References:

Add the following text:

“The Waste Framework Directive 2006.”

#### Chapter 4 – Enquiries

4.1 Page 4/1, Enquiries:

Delete text and replace with:

“4.1 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”

APPLICATION & SERIES	Pipe Bedding	Embankment and Fill	Capping	Unbound Mixtures for Sub-base	Hydraulically Bound Mixtures for Sub-base and Base	Bitumen Bound Layers	PQ Concrete
MATERIAL	500	600	600	800	800	900	1000
Blast furnace Slag	✓	✓	✓	✓	✓	X	X
Burnt Colliery Spoil	X	✓	✓	✓	✓	X	X
China Clay Sand/Stent	✓	✓	✓	✓	✓	✓	X
Coal Fly Ash/Pulverised Fuel Ash (CFA/PFA)	✓	✓	✓	X	✓	✓	X
Foundry Sand	✓	✓	✓	✓	✓	✓	X
Furnace Bottom Ash (FBA)	✓	✓	✓	X	✓	X	X
Incinerator Bottom Ash Aggregate (IBAA)	✓	✓	✓	✓	✓	X	X
Phosphoric Slag	✓	✓	✓	✓	✓	X	X
Recycled Aggregate	✓	✓	✓	✓	✓	✓	X
Recycled Asphalt	✓	✓	✓	✓	✓	✓	✓
Recycled Concrete	✓	✓	✓	✓	✓	✓	X
Recycled Glass	✓	✓	✓	✓	X	✓	X
Slate Aggregate	✓	✓	✓	✓	✓	✓	X
Spent Oil Shale/Blaise	X	✓	✓	✓	✓	X	X
Steel Slag	✓	X	X	✓	✓	X	X
Unburnt Colliery Spoil	X	✓	X	X	✓	X	X

**TABLE 2.1: NRA SPECIFICATION FOR ROAD WORKS  
APPLICATION OF SECONDARY AGGREGATES**

**KEY:**

✓ Specific (permitted as a constituent if the material complies with the NRA Specification (MCDRW 1)) or General Provision (permitted as a constituent if the material complies with the NRA Specification (MCDRW 1) requirements but not named within the NRA Specification (MCDRW 1))

x Not Permitted

**IMPORTANT NOTES:**

Table 2.1 is for guidance only and reference must be made to the accompanying text and the NRA Specification (MCDRW 1). Materials indicated as complying with the NRA Specification (MCDRW 1) for a particular application may not necessarily comply with all the requirements of the series listed, only particular clauses. Reference should also be made to the Specification (MCHW 1) for any maximum constituent percentages of specific recycled or secondary aggregates.