SUMMARY

This document gives the overarching requirements and guidance for highway drainage design for the motorway and all-purpose trunk road network. It introduces the design documents given in Design Manual for Roads and Bridges (DMRB) Volume 4 Section 2 (4.2) and shall be read in conjunction with DMRB documents HD 33 (DMRB 4.2), HD 43 (DMRB 4.2) and HD 45 (DMRB 11.3.10).

INSTRUCTIONS FOR USE

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

1. Insert HD 49/16 into Volume 4, Section 2, Part 1.

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.
Highway Drainage Design
Principal Requirements

SUMMARY
This document gives the overarching requirements and guidance for highway drainage design for the motorway and all-purpose trunk road network. It introduces the design documents given in Design Manual for Roads and Bridges (DMRB) Volume 4 Section 2 (4.2) and shall be read in conjunction with DMRB documents HD 33 (DMRB 4.2), HD 43 (DMRB 4.2) and HD 45 (DMRB 11.3.10).
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PART 1

HD 49/16

HIGHWAY DRAINAGE DESIGN PRINCIPAL REQUIREMENTS

Contents

Chapter

1. Introduction
2. Design Policy
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1. **INTRODUCTION**

**General**

1.1 This document gives the overarching requirements and guidance for highway drainage design for the motorway and all-purpose trunk road network. It introduces the design documents given in Design Manual for Roads and Bridges Volume 4 Section 2 (DMRB 4.2).

**Scope**

1.2 Unless stated otherwise the requirements given on drainage design are applicable to the motorway and all-purpose trunk road network in England, Scotland, Wales and Northern Ireland (In Northern Ireland the guidance will be applicable to those roads designated by the Overseeing Organisation).

**Equality Impact Assessment (EIA)**

1.3 The requirements and guidance provided in this document are to enable designers to deliver drainage systems that should be beneficial to all. Any adverse or beneficial impacts that result from the introduction and adoption of this guidance are not expected to discriminate against any defined group in society. No equality impact assessment has been carried out in the development of this Standard as it is not considered relevant. However the impacts of drainage design on equality will need to be considered in any scheme specific EIA when such an impact is identified.

**Implementation**

1.4 This document should be used forthwith on all projects for the assessment, design, operation and maintenance of motorway and all-purpose trunk roads (and roads designated by the Overseeing Organisation in Northern Ireland) except where procurement of such works has reached a stage at which, in the opinion of the Overseeing Organisation, its use would result in a significant additional expenditure or delay progress (in which the decision must be recorded in accordance with the procedure required by the Overseeing Organisation).

**Basis of requirements and guidance**

1.5 The requirements and guidance in this document are given on the basis that the works will be constructed in accordance with the Manual of Contract Documents for Highway Works.
2. DESIGN REQUIREMENTS

Design for sustainability

2.1 Drainage shall be assessed and designed for sustainability in accordance with HD 45 and HD 33, taking into account the following principles and any constraints imposed by the project requirements:

a) Surface water is removed as quickly as possible from the carriageway.
b) The pavement and associated earthwork structures are effectively drained.
c) Road runoff is managed at its source where it is reasonably practical to do so.
d) Road runoff is managed on the surface where it is reasonably practical to do so.
e) The systems are cost-effective to operate and maintain over their design life.
f) The design takes into account the likely effects of climate change as outlined in Government Policies (and changes in impermeable area) over the design life of the systems.
g) The systems minimise the use of energy over their design life.
h) The effect of road runoff on the quality of receiving water bodies is minimised.
i) The generation of waste during construction and operation is minimised.

2.2 A record of all drainage constructed on motorways and trunk roads shall be made in accordance with HD 43 in England and Wales.

2.3 The drainage asset must be managed, operated and maintained in accordance with the relevant maintenance and management contract and the requirements given in this document.

Drainage from adjacent land

2.4 All run off from the existing land drainage system must be kept separate from the road drainage system. Any surface water from an external catchment (i.e. beyond the highway boundary) must not be connected to the road drainage system, refer to HA106 (DMRB 4.2).

2.5 In Scotland, water from adjacent land will normally be acceptable; however the designer must obtain the agreement of the Overseeing Organisation when considering the acceptance of water from adjacent land.

2.6 Where there is an existing connection of external drainage to the road drainage, either historical or by agreement, the right to connection may be permitted by the Overseeing Organisation to continue provided that the land use of the contributing catchment of the connection remains unaltered.

2.7 In designing new highway drainage systems or managing and operating existing highway drainage, new surface water connections from sites and/or proposed developments adjacent to the road must not be accepted.

2.8 Surface water flows from Local Authority side roads may be considered where there is no adequate alternative outfall, subject to agreement by the Overseeing Organisation.
3. LEGISLATION

Normative Legislation

3.1 The Water Framework Directive established a framework for the management of water resources throughout the European Union. Its key objectives are to prevent deterioration of, and to enhance and restore bodies of surface and ground water so they achieve good chemical and ecological status. More detail is contained in HD 45.

3.2 The 2006/118/EC Groundwater Daughter Directive to WFD was adopted in 2006. It established the criteria by which groundwater chemical status should be assessed, explained how trends in groundwater can be identified and if these are downward how they can be reversed.

3.3 The 2007/60/EC Management of Flood Risks Directive was adopted in 2007 and established a framework for management of flood risks throughout the European Union.

Certification

3.4 Details of the certification process for drainage design in England are given in HD 50. For details of the certification process in Scotland, Wales and Northern Ireland, designers should consult the appropriate Overseeing Organisation.

Informative Legislation

3.5 The following list details the legislation relevant to the design of drainage.


Flood Risk Management (Scotland) Act 2009.


The Flood and Water Management Act 2010.


The Water Environment (Controlled Activities) (Scotland) Regulations 2011.


The Construction (Design and Management) Regulations 2015.
4. NORMATIVE REFERENCES

4.1 Design Manual for Roads and Bridges (DMRB).

- HD 33 Design of Highway Drainage Systems (DMRB 4.2).
- HD 43 Drainage Data Management System for Highways (DMRB 4.2).
- HD 45 Road Drainage and the Water Environment (DMRB 11.3.10).
5. INFORMATIVE REFERENCES

5.1 Manual of Contact Documents for Highway Works.

Specification for Highway Works (MCHW 1).


Highway Construction Details (MCHW 3).
6. ENQUIRIES

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