

## Design Manual for Roads and Bridges



Drainage  
General information

# CG 502

## The certification of drainage design

(formerly HD 49/16, HD 50/16)

Revision 0

### Summary

This document outlines the requirements for the certification of drainage design on motorway and all-purpose trunk roads.

### Application by Overseeing Organisations

Any specific requirements for Overseeing Organisations alternative or supplementary to those given in this document are given in National Application Annexes to this document.

### Feedback and Enquiries

Users of this document are encouraged to raise any enquiries and/or provide feedback on the content and usage of this document to the dedicated Highways England team. The email address for all enquiries and feedback is: [Standards\\_Enquiries@highwaysengland.co.uk](mailto:Standards_Enquiries@highwaysengland.co.uk)

**This is a controlled document.**

# Contents

<b>Release notes</b>	<b>2</b>
<b>Foreword</b>	<b>3</b>
Publishing information . . . . .	3
Contractual and legal considerations . . . . .	3
<b>Introduction</b>	<b>4</b>
Background . . . . .	4
Assumptions made in the preparation of this document . . . . .	4
<b>Terms and definitions</b>	<b>5</b>
<b>1. Scope</b>	<b>6</b>
Aspects covered . . . . .	6
Implementation . . . . .	6
Use of GG 101 . . . . .	6
<b>2. Certification</b>	<b>7</b>
Responsibilities . . . . .	7
Drainage certificate . . . . .	7
<b>3. Normative references</b>	<b>8</b>
<b>Appendix A. Drainage design certificate</b>	<b>9</b>
A1 Drainage design certificate . . . . .	9
A2 List of documents . . . . .	9
A3 Departures from standard (where applicable) . . . . .	9
A4 Report on the drainage design . . . . .	9
<b>Appendix B. Format for the report on the drainage design</b>	<b>10</b>
B1 Introduction . . . . .	10
B2 Data sources . . . . .	10
B3 Field studies . . . . .	10
B4 Site description . . . . .	10
B5 Design options . . . . .	10
B6 Proposed design . . . . .	10
B7 Residual risks . . . . .	10

## Release notes

Version	Date	Details of amendments
0	Oct 2019	CG 502 replaces HD 49/16 and HD 50/16. This full document has been re-written to make it compliant with the new Highways England drafting rules.

## **Foreword**

### **Publishing information**

This document is published by Highways England.

This document supersedes HD 49/16 and HD 50/16, which are withdrawn.

### **Contractual and legal considerations**

This document forms part of the works specification. It does not purport to include all the necessary provisions of a contract. Users are responsible for applying all appropriate documents applicable to their contract.

## **Introduction**

### **Background**

This document was developed as a requirement upon designers to certify that drainage designs comply with LA 113 [Ref 6.N] and CG 501 [Ref 1.N].

### **Assumptions made in the preparation of this document**

The assumptions made in GG 101 [Ref 2.N] apply to this document.

## Terms and definitions

### Terms

<b>Term</b>	<b>Definition</b>
Design organisation	The organisation responsible for the design of the scheme.

## 1. Scope

### Aspects covered

- 1.1 The requirements for certification of drainage design shall be applicable to motorway and all-purpose trunk roads, unless covered by the exemptions in Section 2.

### Implementation

- 1.2 This document shall be implemented forthwith on all schemes involving the design of drainage on the Overseeing Organisations' motorway and all-purpose trunk roads according to the implementation requirements of GG 101 [Ref 2.N].
- 1.3 Safety risk mitigation measures shall follow the ERIC hierarchy - Eliminate, Reduce, Isolate and Control for each identified safety risk.

### Use of GG 101

- 1.4 The requirements contained in GG 101 [Ref 2.N] shall be followed in respect of activities covered by this document.

## 2. Certification

- 2.1 Drainage technical compliance shall be demonstrated for motorway and all-purpose trunk road schemes except in the following instances:
- 1) a scheme which renews an existing asset or part of an asset and does not require amendments to the drainage system, for example resurfacing of a road using the same or very similar type of material as part of a renewal contract, does not need to demonstrate drainage technical compliance;
  - 2) a scheme or technology project which has no drainage implications, for example installation of a lighting column, does not need to demonstrate drainage technical compliance;
  - 3) a scheme which involves the construction or modification to a highway feature covering an area of land of less than one hectare and has an insignificant impact on the local drainage, for example construction of a small traffic island, does not need to demonstrate drainage technical compliance.
- 2.2 Drainage technical compliance shall be demonstrated for all temporary works proposals unless they meet the exemption requirements as described in Section 2 (Certification).

### Responsibilities

- 2.3 The drainage design shall be certified for compliance with LA 113 [Ref 6.N] and CG 501 [Ref 1.N].
- 2.4 Those signing the certificate of compliance shall certify that it is possible to construct and manage the scheme in accordance with the Manual of Contract Documents for Highway Works - SHW [Ref 4.N], (NG for SHW) [Ref 5.N] and HCD (MCHW 3) [Ref 3.N]).
- 2.5 Those signing the certificate of compliance shall have the technical knowledge and competence in design of highway drainage systems (e.g. chartered membership of a relevant engineering institution or equivalent: i.e. a Chartered or Incorporated Civil or Highway Engineer).
- 2.6 Those counter-signing the certificate of compliance shall have the authority of the design organisation to do so.
- 2.7 Compliance shall be demonstrated through the design organisation's quality management system.
- 2.8 Certification shall be provided with the final drainage design and prior to construction of any drainage work in the scheme.
- 2.8.1 For large schemes, preliminary certification may be carried out at earlier stages of the design process.
- 2.9 A copy of the design certificate, together with a report on the drainage design, shall be uploaded to the reports database on the Overseeing Organisation's data management system.
- 2.10 The report on the drainage design shall be formatted as described in Appendix B.
- 2.11 Any exceptions to certification of drainage technical compliance shall be proposed by the design organisation.
- 2.12 The reasons for the exception, and the Overseeing Organisation's approval of the exception, shall be recorded in the design documentation.

### Drainage certificate

- 2.13 A drainage design certificate in the format given in Appendix A shall be completed for all drainage designs unless they meet the exception requirements as described in Section 2 (Certification).
- 2.14 Where changes to the drainage design are required during the construction phase that affect the required performance, a revised certificate shall be submitted with a report explaining why the changes are necessary.
- 2.15 The revised certificate and report shall be uploaded to the report's database on the Overseeing Organisation's data management system.

### 3. Normative references

The following documents, in whole or in part, are normative references for this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Ref 1.N	Highways England. CG 501, 'Design of highway drainage systems'
Ref 2.N	Highways England. GG 101, 'Introduction to the Design Manual for Roads and Bridges'
Ref 3.N	Highways England. HCD (MCHW 3), 'Manual of Contract Documents for Highway Works Volume 3: Highway Construction Details'
Ref 4.N	Highways England. SHW, 'Manual of Contract Documents for Highway Works, Volume 1 Specification for Highway Works'
Ref 5.N	Highways England. (NG for SHW), 'Manual of Contract Documents for Highway Works, Volume 2 Notes for Guidance on the Specification for Highway Works'
Ref 6.N	Highways England. LA 113, 'Road drainage and the water environment'

## Appendix A. Drainage design certificate

Form of certificate to be used by the designer for certifying the design of drainage.

Scheme title .....

### A1 Drainage design certificate

"We certify that the documents listed below have been prepared by us with reasonable professional skill, care and diligence, and that in our opinion:

- a) accurately represent the work required by the Overseeing Organisation;
- b) with exception of any departure from standards given at A3 below, have been prepared in compliance with LA 113 [Ref 6.N] and CG 501 [Ref 1.N];
- c) constitute an appropriate drainage design for the scheme; and
- d) enable an appropriate drainage system to be constructed and managed in accordance with the Manual of Contract Documents for Highway Works".

### A2 List of documents

[List here all drawings (titles and numbers) and specification documents and any other works information necessary for the construction of the drainage works]

### A3 Departures from standard (where applicable)

[Give date and reference number of all approved departures from standards]

### A4 Report on the drainage design

[Give date and reference number of the report.]

On behalf of .....[name of organisation], I hereby certify the drainage design has been undertaken in accordance with items A1 and A3 above and accurately translated into the requirements for construction given at item A2 above.

Signed.....  
 Name.....  
 Position.....  
 Qualification(s).....  
 Date.....

On behalf of .....[name of organisation – to be the same as the designer's organisation], I hereby certify that the above signatory has the necessary knowledge and competence to undertake the drainage design covered by this certificate

Signed.....  
 Name.....  
 Position.....  
 Qualification(s).....  
 Date.....

## Appendix B. Format for the report on the drainage design

The following headings are to be included in the report.

### **B1 Introduction**

The name of the scheme, authorship and version number of the report. The version number and date of the report to be placed as a footer to every page.

### **B2 Data sources**

Reference to any previous reports. Results of any enquiries made and all sources of data. Negative or nil responses to be included.

### **B3 Field studies**

Any field activities carried out.

### **B4 Site description**

To include the limits of the study area, the topography, hydrology and hydrogeology. Any sensitive receptors. Any constraints.

### **B5 Design options**

Description of options considered.

### **B6 Proposed design**

Description of the proposed design. Any effects on the existing hydrology or hydrogeology and how these are mitigated.

### **B7 Residual risks**

Any residual flooding, pollution or erosion risks. How the design allows these risks to be managed.

© Crown copyright 2019.

You may re-use this information (not including logos) free of charge in any format or medium, under the terms of the Open Government Licence. To view this licence:

visit [www.nationalarchives.gov.uk/doc/open-government-licence/](https://www.nationalarchives.gov.uk/doc/open-government-licence/),  
write to the **Information Policy Team, The National Archives, Kew, London TW9 4DU**,  
or email [psi@nationalarchives.gsi.gov.uk](mailto:psi@nationalarchives.gsi.gov.uk).