

SCHEDULE 4 CONSTRUCTION AND HANDBACK REQUIREMENTS

Part 2 Construction Requirements

1. Design and Construction

- 1.1 The Works shall be designed and constructed in accordance with the following integrated documentation:
 - 1.1.1 the Standards and Advice Notes listed in Annex 1 forming part of the DMRB, as amended by Annex 2 and by the Departures from Standard referred to in Annex 8;
 - 1.1.2 the SHW, as amended by Annex 4 and extended by the following Appendices (the "**Numbered Appendices**"):
 - 1.1.2.1 Appendix 0/1: Contract-Specific Additional, Substitute and Cancelled Clauses, Tables and Figures;
 - 1.1.2.2 Appendix 0/2: Contract-Specific Minor Alterations to Existing Clauses, Tables and Figures; and
 - 1.1.2.3 other numbered appendices identified in Appendix 0/3 and contained in Annex 5;
 - 1.1.3 HCD and the drawings listed in Appendix 0/4 but, where a purpose is indicated in such Appendix opposite any reference to any drawing, only to the extent of such purpose; and
 - 1.1.4 Circular Roads and other documents listed in Annex 3.
 - 1.1.5 MCHW, Volume 5, Section 1, Parts 1, 2 and 3
MCHW, Volume 5, Section 2, Parts 2, 3, 4 and 5
MCHW, Volume 5, Section 3, Parts 4 and 5
MCHW, Volume 5, Section 7, Parts 2 and 3.
- 1.2 In complying with paragraph 1.1.2 above effect shall be given to the Notes for Guidance, which shall be interpreted in a manner consistent with the principles set out in Annex 4.
- 1.3 **Reference Dates**
 - 1.3.1 Subject to paragraph 1.3.3 below, a reference to any of the following documents in this Part 2 of Schedule 4 shall be deemed to be a reference to the edition of the same which is set against such document below:

- | | | |
|---------|------------------------|-------------|
| 1.3.1.1 | the SHW | March 1998; |
| 1.3.1.2 | the HCD | March 1998; |
| 1.3.1.3 | the Notes for Guidance | March 1998; |
| 1.3.1.4 | MCHW, Volume 5 | April 1998. |
- 1.3.2 A reference to any standard or specification in this Part 2 of Schedule 4 which is not identified in paragraph 1.3.1 above shall be deemed to be a reference to the edition or version of the same current as at 18 September 1998, including any updates or revisions prior to such date.
- 1.3.3 A reference in this Part 2 of Schedule 4 to any document which is a draft document shall be deemed to be a reference to the draft of the relevant document current as at 18 September 1998 and contained in a CD Rom marked "A55 Llandegai to Holyhead Disk 4."
- 1.3.4 The date "**stated in the Contract**" referred to in the SHW (Clauses 004.2 and 004.3) shall be 18 September 1998.
- 1.4 In considering matters offered as equivalent under Clauses 104 and 105 of the SHW, the Department's Agent shall give effect to Advice Note SA2/92 (MCHW 0.3.2).
- 1.5 An additional clause for the SHW as indicated by a suffix "**AR**" in Appendix 0/1 is a contract-specific alteration.
- A substitute clause for the SHW as indicated by a suffix "**SR**" in Appendix 0/1 is a contract-specific alteration.
- A cancelled clause for the SHW as indicated by a suffix "**CR**" in Appendix 0/1 is a contract-specific alteration.
- 1.6 Insofar as any of the Numbered Appendices may conflict or be inconsistent with any provision of the SHW the Numbered Appendices shall prevail.
- 1.7 Any reference in the SHW or HCD to a clause number shall be deemed to refer to any substitute clause of that number in Appendix 0/1.
- 1.8 Where a clause in the SHW is altered any original table referred to in that clause shall apply unless the table is altered pursuant to this Agreement. Where a table is altered any reference in a clause of the SHW to the original table shall be deemed to refer to the altered table.
- 1.9 The DBFO Co shall give effect to the following Advice Notes contained in MCHW Volume 0:

- 1.9.1 SA 1/95
- 1.9.2 SA 3/93
- 1.9.3 SA 5/92
- 1.9.4 SA 6/92

- 1.10 All references in the DMRB and the MCHW and the documents incorporated therein to the "**Contractor**" shall be deemed to be references to the DBFO Co and all references to the "**Overseeing Department**" and the "**Overseeing Organisation**" shall be deemed to be references to the Department.
- 1.11 All references in the DMRB and the MCHW and the documents incorporated therein to the "Site" shall be deemed to be references to lands and other places on, under, in, or through which the Works are to be executed and all references to the "**Contract**" shall be deemed to be references to this Agreement.
- 1.12 All references in this Part 2 of Schedule 4 to an Annex shall be deemed to be references to the relevant Annex to this Part 2 of Schedule 4. All references in this Part 2 of Schedule 4 to an Appendix shall be deemed to be references to the relevant Numbered Appendix in Annex 5 to this Part 2 of Schedule 4.
- 1.13 Any reference in this Schedule 4 to a British Standard permits the use of an equivalent European standard.
- 1.14 In the event of any conflict between the provisions of the SHW and the provisions of the Notes for Guidance, the provisions of the SHW shall prevail.

2. **Testing and Examination**

- 2.1 The Designer shall complete Appendix 1/5 in accordance with Table NG1/1 of the Notes for Guidance and submit it in accordance with the Design and Certification Procedure. Subject to paragraph 2.3 below, testing shall be carried out as required by an Appendix 1/5 to which there has been no objection under the Review Procedure.
- 2.2 All such tests shall be carried out by the Testing Contractor.
- 2.3 Frequencies of testing (as required in accordance with Appendix 1/5) may be changed as provided for in paragraphs 2.4 and 2.5 below.
- 2.4 Where material properties are found to be variable or to comply only marginally with the Construction Requirements, or where conditions otherwise indicate, the Designer shall increase the frequency of testing as appropriate. Such increase shall be deemed to be a DBFO Co's Change.
- 2.5 Where material properties are found to be consistently in excess of the minimum specified in the Construction Requirements or well below specified maximum limits as applicable, or where conditions otherwise indicate, the Designer may propose to reduce the frequency of testing as considered appropriate. Such reduction shall be submitted to the Department's Agent under the Review Procedure.

3. Structures

3.1 New Structures

New structures to be designed and constructed by the DBFO Co are listed in Annex 6.

3.2 Existing Structures

Existing structures requiring assessment, initial maintenance, demolition, strengthening or reconstruction are listed in Annex 7.

3.3 Agreed Departures from Standard

Details of Departures from Standard for structures referred to in paragraphs 3.1 and 3.2 above are given in the TAFs contained in Annex 6 and to the extent that they refer to structures are also listed in the Departures from Standards contained in Annex 8.

4. Highways

Details of Departures from Standard relating to highway design are set out in Annex 8.

5. Archaeology

The DBFO Co shall comply with the archaeological requirements contained in Annex 13.

6. Planted Areas Including Habitat Areas

6.1 General

Existing vegetation to be retained in accordance with Annex 9 shall be protected and managed in accordance with the requirements of Annex 9 and maintained in good condition so that it remains a healthy and viable element of the Project.

6.2 Planting shall comply with the requirements of Annex 10.

6.3 Areas with primary or specific ecological objectives shall be provided, protected and managed in accordance with Annex 11.

7. Traffic Control and Communications Systems

The requirements for traffic control and communications systems incorporated in the Construction Requirements shall be applied in conjunction with the Communications Requirements and the Core Communications Requirements.

8. Further Design and Other Requirements

The DBFO shall comply with the requirements contained in Annex 14.

9. Noise

The DBFO Co shall carry out Works relating to noise as set out in Part 6 of Schedule 4.

10. **Railtrack Works Agreement**

- 10.1 The DBFO Co shall comply with all of the obligations assumed by it pursuant to the Railtrack Appointment in designing and constructing the Works under the Railtrack Works Agreement.
- 10.2 In the event of a conflict between the provision of this Agreement and the Railtrack Works Agreement, the provisions of the Railtrack Works Agreement shall prevail.

**Annex 1
to Part 2 of Schedule 4**

List of Standards and Advice Notes

This Annex 1 lists the Standards and Advice Notes, their amendments, and their Interim Advice Notes forming part of the DMRB. The list assumes that the DMRB is adopted (in whole or in part).

1. The Standards and Advice Notes listed in the August 1997 issue of the document contained in Volume 1, Section 0, Part 2 of the Design Manual for Roads and Bridges (DMRB: Volume Contents Pages and Alpha-Numeric Index), as amended by Annex 2 to this Part 2 of Schedule 4, save that the following Standards and Advice Notes shall be deemed to be deleted from the said document:
 - 1.1 BD 2/89 Technical Approval of Highway Structures on Motorways and other Trunk Roads Part I: General Procedures
 - 1.2 BD 2/89 Technical Approval of Highway Structures on Motorways and other Trunk Roads Part III: Procedures for Tunnels
 - 1.3 BA 32/89 Technical Approval of Highway Structures on Motorways and other Trunk Roads Part I: General Procedures
 - 1.4 BE 1/74 The Independent Checking of Erection Proposals and Temporary Works Details for Major Highway Structures on Trunk Roads and Motorways (and Amendment List No.1 dated 17/4/78)
 - 1.5 BE 23 Shear Key Decks (and Amendment No.1 to Annex, dated June 1971)
 - 1.6 BE 5/75 Rules for the Design and Use of Freyssinet Concrete Hinges in Highway Structures
 - 1.7 HA 12/81 Management of Contractual Claims
 - 1.8 HA 19/82 Engineer/Contractor Relationship on Trunk Road Contracts
 - 1.9 HD 13/87 Documentation Requirements for Ground Investigation Contracts
 - 1.10 HA 34/87 Ground Investigation Procedure
 - 1.11 BE 3/78 Reinforced and Anchored Earth Retaining Walls and Bridge Abutments for Embankments
2. The following Interim Advice Notes:
 - 2.1 IA.1 TD 37/93 Scheme Assessment Reporting
 - 2.2 IA.2 DMRB 11.43 The Non-Technical Summary
 - 2.3 IA.3 BA 50/93 Post Tensioned Concrete Bridges

2.4	IA.4	BD 44/95	The Assessment of Concrete Highway Bridges and Structures
2.5	IA.5	BD 24/92	The Design of Concrete Highway Bridges and Structures. Use of BS 5400: Part 4: 1990
2.6	IA.6	BD 62/94	As Built, Operative and Maintenance Records
2.7	IA.7	BD 63/94	Inspection of Highway Structures
2.8	IA.8	BA 63/94	Inspection of Highway Structures
2.9	IA.11	HA 71/95	Correction to formulae in Annex C for calculating mean annual flood
2.10	IA.15		Thaumasite Sulfate Attack
3.	The following draft Standards, draft and Advice Notes and draft amendments to Advice Notes:		
3.1	HD 31/94	Amendment No. 2. Surface Treatments	
3.2	BA 55/94	Amendment. The Assessment of Bridge Sub-structure, foundations, retaining walls	
3.3	TA 78/97	Design of Road Markings at Roundabouts	
3.4	BA 16/97	The Assessment of Highway Bridges and Structures Amendment No. 1	
3.5	BD 76/98	Wind loading for Highway Bridges (Replaces part of BD 37/88)	
3.6	BA 73/98	Assessment of scour at Highway Bridges	
3.7	TD 48	Motorway Closed Circuit Television Systems	

**Annex 2
to Part 2 of Schedule 4**

Amendments to the Standards and Advice Notes listed in Annex 1

All references in the DMRB to Departures from Standard and submission to the (Overseeing) Department or Organisation for their approval shall be deemed to be references to Alternative Proposals and submissions for their review in accordance with the Design and Certification Procedure. All references in this Annex 2 to Part 2 of Schedule 4 are references to the Design and Certification Procedure set out in Part 3 of this Schedule 4. (See also paragraphs 1.10 and 1.11 of Part 2 of Schedule 4.)

[NB: Note. Pages 9 to 19 of this Annex list only those Standards and Advice Notes which are amended by the subsequent pages of this Annex.]

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Highway Structures: Approval Procedures and General Design

Section 1 - Approval Procedures

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Section 2 - Other Procedural Documents

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Part 2	BA 28/92	Evaluation of Maintenance Costs in Comparing Alternative Designs for Highways Structures

Section 3 - General Design

Part 1	BD 24/92	The Design of Concrete Highway Bridges and Structures Use of BS 5400: Part 4: 1990
Part 2	BD 15/92	General Principles for the Design and Construction of Bridges Use of BS 5400: Part 1: 1988
Part 3	BD 49/93	Design Rules for Aerodynamic Effects on Bridges
Part 4	BA 40/93	Tack Welding of Reinforcing Bars
Part 5	BD 60/94	Design of Highway Bridges for Collision Loads
Part 6	BA 59/94	Design of Highway Bridges for Hydraulic Action
Part 7	BD 57/95	Design for Durability
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Part 9	BD 58/94	The Design of Concrete Highway Bridges and Structures with External Unbonded Prestressing
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Part 11	BA 41/94	The Design and Appearance of Bridges
Part 13	BA 53/94 BD 9/81	Bracing Systems and the Use of U-Frames in Steel Highway Bridges Implementation of BS 5400: Part 10: 1980, Code of Practice for Fatigue

BD 10/97	Design of Highway Structures in Areas of Mining Subsidence
BD 13/90	Design of Steel Bridges Use of BS 5400: Part 3: 1982
BD 16/82	Design of Composite Bridges Use of BS 5400: Part 5: 1979 (and Amendment No. 1 dated 10 December 1987)
BD 37/88	Loads for Highway Bridges (Clause 5.3.9 is superseded by BD 49/93. For the assessment and strengthening of bridges, Clause 6.8.1 and Table 15 are superseded by the collision loading given in BD 48/93. Clauses 6.8 and 7.2 are superseded by BD 60/94, except as described in paragraph 2.2 of BD 60/94)

DMRB VOLUME 2**Highway Structures: Design (Substructures and Special Structures), Materials**

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Part 1	BD 41/97	Reinforced Clay Brickwork Retaining Walls of Pocket-type and Grouted-Cavity Type Construction
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	BD 31/87	Buried Concrete Box Type Structures
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Part 3	BD 52/93	The Design of Highway Bridge Parapets
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Part 6	BD 33/94	Expansion Joints for Use in Highway Bridge Decks

Part 7	BD 7/81	Weathering Steel for Highway Structures
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Part 6	BA 39/93	Assessment of Reinforced Concrete Half-Joints
Part 7	BD 48/93	The Assessment and Strengthening of Highway Bridge Supports
Part 8	BA 54/94	Load Testing for Bridge Assessment
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Part 10	BA 52/94	The Assessment of Concrete Structures Affected by Alkali Silica Reaction
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Section 2 - The Good Roads Guide - Motorway Widening

Part 1	HA 62/92	Widening Options and Techniques
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Section 3 - The Good Roads Guide - Improving Existing Roads

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Section 5 - Environmental Barriers

Part 1	HA 65/94	Design Guide for Environmental Barriers
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Section 6 - Archaeology

Part 1	HA 75/95	Trunk Roads and Archaeological Mitigation
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DMRB VOLUME 1

DOCUMENT: BD 2/79 Technical Approval of Highway Structures on Motorways and Other Trunk Roads Part IV: Procedures for Lighting Columns

Para No.	Description
2.1	Delete "BD 26/86" and insert "BD 26/94"
Para 2.2	Delete text and insert: "Lighting Columns outside the scope of Part IV shall be subject to the Design and Certification Procedures in Part 3 of Schedule 4."
Para 3.1	Delete text and insert: The definitions in the Agreement will apply.
Para 4.1	Delete "Appendix A" and insert "Part 3 of Schedule 4."
Para 4.2	Delete "Department" and insert "Department's Nominee"
Para 5	Delete
Appendix A	Delete.

DMRB VOLUME 1

DOCUMENT: BD 36/92 Evaluation of Maintenance Costs in Comparing Alternative Designs for Highways Structures

Para No.	Description
1.1	Add "BE 5/76 has since been withdrawn from DMRB"
1.5	Delete
3.1	Delete "Technical Appraisal procedures" and insert "the requirements of Schedule 4 Part 3"
3.9	Delete "Bridges Division of the Overseeing Department" and insert "the Department's Nominee"

DMRB VOLUME 1

DOCUMENT: BA 28/92 [Evaluation of Maintenance Costs in Comparing](#) Alternative Designs
for Highways Structures

Para No.	Description
1.3	Add "BE 5/76 has since been withdrawn from the DMRB".
1.8	Delete
2.5	Delete "Bridges Division of the"
5.1	Delete "Bridges Division of the"
6.2	Delete reference to BE 5/76

DMRB VOLUME 1

DOCUMENT: BD 24/92 The Design of Concrete Highway Bridges and Structures
Use of BS 5400: Part 4: 1990

Para No.	Description
1.4	Delete whole paragraph.

DMRB VOLUME 1

DOCUMENT: BD 15/92 General Principles for the Design and Construction of Bridges
Use of BS 5400: Part 1: 1988

Para No.	Description
1.5	Delete whole paragraph.

DMRB VOLUME 1

DOCUMENT: BD 49/93

Design Rules for Aerodynamic Effects on Bridges

Para No.	Description
1.4	Delete whole paragraph.
Annex A 2.1.1.2, 2.1.3.1, 2.1.2.1(a), 2.1.3.3, 2.2, 3.1.2, 3.2.1, 3.2.2, 5.1.6	Add a further paragraph to each Clause or sub-Clause as follows: "Detailed proposals for wind tunnel testing shall comply with the requirements of this Standard and any additional requirements in the Construction Requirements and shall be reviewed in accordance with Part 3 of Schedule 4."
3.1.3	Add a further paragraph as follows: "Detailed proposals relating to acceptance levels of pedestrian discomfort shall comply with the requirements of this Standard and any additional requirements in the Construction Requirements and shall be reviewed in accordance with Part 3 of Schedule 4."
3.3	Add a further paragraph as follows: "Detailed proposals relating to dynamic analysis discomfort shall comply with the requirements of this Standard and any additional requirements in the Construction Requirements and shall be reviewed in accordance with Part 3 of Schedule 4."

DMRB VOLUME 1

DOCUMENT: BA 40/93

Tack Welding of Reinforcing Bars

Para No.	Description
1.6	Delete whole paragraph.
Chapter 2	Delete title and insert "TACK WELDING"
2.1	Delete existing text and insert: "The Specification for Highway Works allows the use of tack welding provided that the fatigue life, durability and other properties of the concrete member are not adversely affected by the welding. In addition to the guidelines given in the Notes for Guidance on the Specification for Highway Works, the DBFO Co should adopt the following requirements and procedures."
2.3	Delete "and should be submitted to the Engineer for approval".
2.4	Delete "the Engineer" and insert "the Designer".
2.7	Delete "the Engineer" and insert "the Designer".

DMRB VOLUME 1

DOCUMENT: BD 60/94 Design of Highway Bridges for Collision Loads

Para No.	Description
1.6	Delete whole paragraph. Additional Note Vehicle Collision Loads on Superstructures Departmental Standard BD 60/94 specifies current design criteria for vehicle collision loading on new highway bridges. The DBFO Co shall adopt the following criteria: A. Where a guaranteed minimum headroom clearance of 5.7m will be permanently maintained, collision loading on the superstructure need not be considered. B. Where it can be demonstrated there has been full compliance with BD 60/94, relevant details should be sent to the Technical Appraisal Authority (TAA) and no further action is required. C. Superstructures not covered by A and B above shall be assessed and strengthened to meet the requirements of BD 60/94.

DMRB VOLUME 1

DOCUMENT: BA 59/94 The Design of Highway Bridges for Hydraulic Action

Para No.	Description
1.10	Delete whole paragraph.

DMRB VOLUME 1

DOCUMENT: BD 57/95 Design for Durability

Para No.	Description
1.6	Delete whole paragraph.
2.11	Delete "contractor" insert "DBFO Co" Delete "Approval in Principal" and insert "Technical Appraisal Form"

DMRB VOLUME 1

DOCUMENT: BA 57/95 Design for Durability

Para No.	Description
1.11	Delete whole paragraph.
6.7	Delete "MCHW Vol 5 Section 2 for maintenance painting" and insert "Design Manual for Roads and Bridges (DMRB)"

DMRB VOLUME 1

DOCUMENT: BD 58/94 The Design of Concrete Highway Bridges and Structures with
External Unbonded Prestressing

Para No.	Description
1.4	Delete whole paragraph.

DMRB VOLUME 1

DOCUMENT: BA 58/94 The Design of Concrete Highway Bridges and Structures with
External Unbonded Prestressing

Para No.	Description
1.4	Delete whole paragraph.
1.5	Delete last sentence.

DMRB VOLUME 1

DOCUMENT: BA 41/94 The Design and Appearance of Bridges

Para No.	Description
5.8	3rd sentence, delete "The" Last sentence and footnote 2, delete entirely.

DMRB VOLUME 1

DOCUMENT: BA 53/94 Bracing Systems and the Use of U-Frames in Steel Highway Bridges

Para No.	Description
1.4	Delete whole paragraph.

DMRB VOLUME 1

DOCUMENT: BD 9/81 Implementation of BS 5400: Part 10: 1980, Code of Practice for Fatigue

Para No.	Description
3.1	Add an additional paragraph as follows: "Non-standard design criteria shall be as given in the Construction Requirements."

DMRB VOLUME 1

DOCUMENT: BD 10/97 Design of Highway Structures in Areas of Mining Subsidence

Para No.	Description
	Add an additional Clause 1.6 to page 1/1 as follows: "1.6. TECHNICAL APPRAISAL Detailed proposals in respect of the nature, extent and magnitude of mining subsidence and design and detailing requirements to minimise the effects shall comply with the requirements of this Standard and any additional requirements in the Construction Requirements and shall be reviewed in accordance with Part 3 of Schedule 4."

DMRB VOLUME 1

DOCUMENT: BD 13/90 Design of Steel Bridges
Use of BS 5400: Part 3: 1982

Para No.	Description
4.4	Add an additional sentence as follows: "Detailed proposals for the treatment of patch loading on webs shall be reviewed in accordance with Part 3 of Schedule 4."

DMRB VOLUME 1

DOCUMENT: BD 16/82 Design of Composite Bridges
 Use of BS 5400: Part 5: 1979 (and Amendment No.1 dated 10
 December 1987)

Para No.	Description
(BS 5400: Part 5: 1979)	
5.2.6.3	Delete "The engineer" and insert "The Designer"
9.5.3	Add to the last sentence: "in accordance with the requirements of Part 3 of Schedule 4."
10.1	Add to the last sentence: "and their use has been reviewed in accordance with the requirements of Part 3 of Schedule 4."
10.2.1	Delete "at the discretion of the engineer"
10.4	Add to the last sentence of the second paragraph: "in accordance with the requirements of Part 3 of Schedule 4."
11.3.2	Delete "the engineer" and insert "the Designer".
12.1	Delete "The engineer" and insert "The Designer".

DMRB VOLUME 1

DOCUMENT: BD 37/88 Loads for Highway Bridges (Clause 5.3.9 is superseded by BD 49/93 for the assessment and strengthening of bridges, Clause 6.8.1 and Table 15 are superseded by the collision loading given in BD 48/93. Clauses 6.8 and 7.2 are superseded by BD 60/94, except as described in paragraph 2.2 of BD 60/94).

Para No.	Description
APPENDIX A	Add an additional sub-Clause 4.8 as follows: "4.8 Detailed proposals relating to the loading to be used for the design of highway bridges and associated structures shall comply with the requirements of this Standard and any additional requirements in the Construction Requirements and shall be reviewed in accordance with Part 3 of Schedule 4."
5.1.2.1	In the last sentence, delete "the engineer" and insert "the Designer".
5.6.1	Delete "the engineer shall" and insert "the Designer shall"

DMRB VOLUME 2

DOCUMENT: BD 41/97 Reinforced Clay Brickwork Retaining Walls of Pocket-type and Grouted - Cavity Type Construction. Use of BS 5628: Part 2

Para No.	Description
1.4	Delete last sentence.
1.8	Delete whole paragraph.
1.9	Delete whole paragraph.
B.4.4	Delete whole paragraph and insert: "Where cohesive fill material, other than PFA, is to be used the Designer shall specify the moisture conditions for acceptability. If the specified range is not close to the moisture condition of the material at the long-term equilibrium state, the Designer shall supply the Department's Agent with written evidence that the design of the retaining wall takes account of consequential volume change of the material in the long term and associated effects such as increased earth pressure."

DMRB VOLUME 2

DOCUMENT: BD 42/94 Design of Embedded Retaining Walls and Bridge Abutments
(Unpropped or Propped at the Top)

Para No.	Description
1.6	Delete last sentence.
1.14	Delete whole paragraph.

DMRB VOLUME 2

DOCUMENT: BD 30/87 Backfilled Retaining Walls and Bridge Abutments

Para No.	Description
3.	Delete whole clause.
4.7	Delete whole sub-Clause.
5.4.1	Delete "the Engineer" and insert "the Designer"
5.4.3	Line 3, delete "can be taken on 30%, but"
5.4.4	Line 3, delete "in the Contract" and insert "in the Construction Requirements"
6.1	Line 2, delete "on the contract drawings" and insert "in the Construction Requirements"
6.3.1	Add "and shall be shown in the Construction Requirements"
6.3.2	Delete "on the contract drawings" and insert "in the Construction Requirements"

DMRB VOLUME 2

DOCUMENT: BD 32/88 Piled Foundations

Para No.	Description
4.3	Add an additional sub-Clause 4.3.3 as follows: "4.3.3 Detailed proposals relating to soil generated lateral loading on piles shall comply with the requirements of this Standard and any additional requirements in the Construction Requirements and shall be reviewed in accordance with Part 3 of Schedule 4."

DMRB VOLUME 2

DOCUMENT: BD 70/97 Strengthened/Reinforced Soils and Other Fills for Retaining Walls and Bridge Abutments.

Para No.	Description
9.6.4	Line 11 Delete "should be agreed with the appropriate authority at the design stage" and insert "shall comply with any additional requirements in the Construction Requirements and shall be reviewed in accordance with Part 3 of Schedule 4."

DMRB VOLUME 2

DOCUMENT: BD 26/94 Design of Lighting Columns

Para No.	Description
1.2	Delete last sentence.
1.5	Delete whole paragraph.
5.1	Delete "The Engineer shall" and insert "The Designer shall" Also add a further sentence as follows: "Any specific requirements of the Construction Requirements shall take precedence over the above requirements."
6.2	Delete "The Engineer shall" and insert "The Designer shall"

DMRB VOLUME 2

DOCUMENT: BA 48/93 Pedestrian Protection at Head Walls, Wing Walls and Retaining Walls

Para No.	Description
2.5	Delete whole paragraph.

DMRB VOLUME 2

DOCUMENT: BD 51/94 Design Criteria for Portal and Cantilever Sign/Signal Gantries

Para No.	Description
1.2	Delete whole paragraph.
1.6	Delete last sentence.
2.2	Delete whole paragraph.
2.4	Delete "with the Technical Approval Authority (TAA)" and insert "in accordance with Part 3 of Schedule 4".
2.5	Delete "shall only be carried out with the approval of the TAA" and insert "shall be subject to the provisions of Part 3 of Schedule 4".
2.7	Delete "or to the Overseeing principle" and insert "at the time of agreement in principle".

DMRB VOLUME 2

DOCUMENT: BD 12/95 Design of Corrugated Steel Buried Structures With Spans not exceeding 8m (Including Circular Arches)

Para No.	Description
All occurrences	Delete "Employer" and insert "Department". Delete "Outline Approval in Principle" and insert "Technical Appraisal Form". Delete "Employer's Requirements" and insert "Construction Requirements".
1.10	Delete whole paragraph.
8.11.3	Delete "Design Organisation" and insert "Designer".
16.1	Delete "are given in Standard SD4 (MCHW 0.2.4)" and insert "are detailed in Part 3 of Schedule 4."
16.2 first para and (i) to (xviii)	Delete and insert "The DBFO Co shall submit the following information as part of the Design and Certification Procedure: "(i) Public safety requirements including lighting and protection for pedestrians around headwalls. (ii) Aesthetic requirements including colour of coatings."
16.3-16.5	Delete.
Appendix A A1	Delete "Highways Agency of the"
A2	Delete "Bridges Engineering Division, The Highways Agency" and insert "the Department's Nominee".
A3	Delete "Highways Agency or its authorised representative" and insert "Department's Nominee".
A4	Delete "Highways Agency" and insert "Department's Nominee".
A5	Delete "Bridge Engineering Division (BE)" and insert "Department's Nominee". Delete "Highways Agency" and insert "Department's Nominee".
A5.5	Delete "BE Division" and insert "the Department".
A.5 last paragraph	Delete "Highways Agency".
Appendix B para B.1	Delete "Highways Agency of the Department of Transport" and insert "Department's Nominee".
Appendix B para	Delete "Department" and insert "Department's Nominee".

Para No.	Description
B2.4 Appendix B para B.5	Delete "Highways Agency of the Department of Transport" and insert "Department's Nominee".

DMRB VOLUME 2

DOCUMENT: BD 67/96 Enclosures of Bridges

Para No.	Description
1.7	Delete.
3.1	Delete "Approval" and insert "Appraisal"
3.7	Delete "existing" and insert "existing"
4.3	Delete "Design Organisation" and insert "Designer"

DMRB VOLUME 2

DOCUMENT: BA 67/96 Enclosure of Bridges

Para No.	Description
1.3	Delete.
3.27	Delete "Approval" and insert "Appraisal"
5.11	Delete "Bridges Engineering Division" and insert "Department's Nominee"
5.18	Delete "It will be necessary ... (AIP)" and insert "The category of structure will be determined in accordance with the Design and Certification Procedures in Schedule 4 Part 3"
5.19	Delete, and "A TAF should be submitted for the enclosure alone"
5.20	Delete, and insert "It will be necessary to identify in the TAS any documents specific to the materials/systems proposed"
6.2	Delete references to BD2 and BA32

DMRB VOLUME 2

DOCUMENT: BD 31/87 Buried Concrete Box Type Structures

Para No.	Description
6.8	Delete text of this sub-Clause and insert: "The Construction Requirements shall contain details of design and construction as identified in sub-Clauses 6.1 to 6.7"

DMRB VOLUME 2

DOCUMENT: BE 7/77

Departmental Standard (Interim) Motorway Sign/Signal Gantries

Para No.	Description
1.3	Delete whole paragraph.
3.1.4	Delete "Reference should be made ... following locations" and insert "The Construction Requirements will identify particular requirements for the use of gantries in the following locations"
3.2	Delete "The users are" and insert "The Designer is"
3.2.5	Delete this sub-Clause.
4.3	Delete "Users" and insert "The Designer", and add "and complying with the Construction Requirements"
4.3.8	Delete "(In urban situations ...is involved)"
5.2	Delete "Users are" and insert "the Designer is"
5.3	Delete "the user" and insert "the Designer"
5.5	Delete "the user" and insert "the Designer"
6.2, 6.3, 6.4	Delete sub-Clauses 6.2, 6.3 and 6.4. Add an additional sub-Clause as follows: "6.2 Standard drawings shall be made available by the Department in accordance with the Construction Requirements"
7.1	Delete text of this sub-Clause and insert: "Requirements for electrical equipment and lighting for gantries shall be given in the Construction Requirements".
7.4	Delete "the user" and insert "the Designer".
8	Delete whole Clause.

DMRB VOLUME 2

DOCUMENT: TD 19/85 Safety Fences and Barriers (and Amendment No.1 dated November 1986)

Para No.	Description
3.4.2.1	Delete "timber or".
4.3.1(a)	Delete "Motorway"
4.3.1(b)	Delete.
4.3.1(e)	Delete ", but where the difference for approval".
4.3.2(c)	Delete ", but where the difference costs and benefits".
4.3.2(e)	Delete.
4.5.1	Delete whole paragraph.
6.1.1	Amend last sentence to read: ".... may be obtained through the Department's Agent to whom all such cases shall be referred."
6.2.1	Amend last sentence to read: ".... may be obtained through the Department's Agent to whom all such cases shall be referred."
Table 1	Blocked Out Beam. Delete "530" and insert "for new works, 610".

DMRB VOLUME 2

DOCUMENT: TA 45/85 Treatment of Gaps in Central Reserve Safety Fences

Para No.	Description
3.1 Fig. 1(a) Fig. 1(b)	The following advice applies to the closure of gaps in central reserve safety fencing and supersedes the reference to removable safety fences in paragraph 3.1 and fig. 1(a) and the layout of traffic cylinders shown in fig. 1(b): (i) Permanent or Semi-permanent Closure of Gaps. The gaps should be closed with Tensioned Corrugated Beam safety fencing as shown on HCD (MCHW 3.2) drawing GA/16, Open Box Beam safety fencing as shown on drawing GA/31, or Wire Rope Safety Fencing in accordance with the requirements of Standard TD32/93 (DMRB 2.2.3) and HCD drawings GA/15 to GA/54, as appropriate. (ii) Temporary Closure of "Open" Type Emergency Crossing Points. The emergency crossing points should be closed with traffic cylinders as shown on HCD drawing GA/17 or GA/32 as appropriate.

DMRB VOLUME 2

DOCUMENT: BD 20/92 Bridge Bearings
Use of BS 5400: Part 9: 1983.

Para No.	Description
1.3	Delete whole paragraph.
3.4	Delete last sentence.

DMRB VOLUME 2

DOCUMENT: BD 52/93 The Design of Highway Bridge Parapets

Para No.	Description
1.4	Delete whole paragraph.
1.5	Add "and the Construction Requirements" to the end of the first sentence and delete subsequent text of this paragraph.
2.4	Add "Where parapets are provided, gaps between 100mm and 2.0m shall be protected (usually by steel mesh) and capable of supporting a uniformly distributed load of 0.75 Kn/m ² together with a patch load of 1 Kn over an area of 200mm x 200mm in the most adverse position."
2.15	Delete last sentence.
3.20	Delete "to the approval of the Engineer".
6.4ii	Delete the final sentence and replace with: "The mesh infilling may be omitted where identified in the Construction Requirements."
8.1	Delete the second sentence and replace with: "The Construction Requirements will identify those railways with existing or programmed overhead electrification, where applicable."

DMRB VOLUME 2

DOCUMENT: BD 47/94 Waterproofing and Surfacing of Concrete Bridge Decks

Para No.	Description
1.10	Delete whole paragraph.
2.5	Delete "with the Technical Approval Authority (TAA)" and insert "in accordance with Part 3 of Schedule 4".
2.6 & 2.8	Delete "with the TAA" and insert "in accordance with Part 3 of Schedule 4".
Appendices A, B and C	Appendices A, B, and C are addressed to manufacturers and suppliers of waterproofing systems. They are thus not directly applicable to the DBFO Co but are retained for its information.

DMRB VOLUME 2

DOCUMENT: BA 47/94 Waterproofing and Surfacing of Concrete Bridge Decks

Para No.	Description
1.5	Delete whole paragraph.
6.1	Delete "Engineer" and insert "Department's Agent".

DMRB VOLUME 2

DOCUMENT: BD 33/94 Expansion Joints for Use in Highway Bridge Decks

Para No.	Description
1.6	Delete whole paragraph.
Annex A	Annex A is addressed to manufacturers and suppliers of expansion joints. It is thus not directly applicable to the DBFO Co but is retained for its information.

DMRB VOLUME 2

DOCUMENT: BD 7/81

Weathering Steel for Highway Structures

Para No.	Description
4.4	Add a further sentence as follows: "Areas to be blast cleaned shall be identified in the Construction Requirements".
4.5	Add a further sentence as follows: "These measures shall be identified in the Construction Requirements".
4.6	Add a further sentence as follows: "These measures shall be identified in the Construction Requirements".
6.2	Add a further sentence as follows: "The classification of the environment shall be identified in the Construction Requirements".
8.1	Delete "the Engineer" and insert "the Designer".
8.2	Delete "by the Engineer Maintenance Authority" and insert "by the Designer to the Department's Agent".
8.3	Delete "the Engineer shall provide the appropriate RC (R&T)" and insert "the Designer shall provide the Department's Agent".
Appendix C	Delete this Appendix.

DMRB VOLUME 2

DOCUMENT: BE 1/73 Reinforced Concrete for Highway Structures (and Amendment List No.1 dated 31 December 1979) (Relevant parts for the design of buried precast concrete pipes and sign/signal gantries only.)

Para No.	Description
2.4	Delete "by the Engineer".

DMRB VOLUME 2

DOCUMENT: BD 35/93 Quality Assurance Scheme for Paints and Similar Protective Coatings

Para No.	Description
1.4	Delete whole paragraph.
3.1, 3.2, 4.5	Delete "the Engineer" and insert "the Designer" in all instances that it occurs.
ANNEX A p.A/1 "	Line 2, delete "Engineers". iv. delete "the Engineer" and insert "the Designer".
pp A/9-A150	In Sections 11, delete "Engineer" and insert "Designer" in all instances that it occurs.
General Notes Section pp 12-25	Delete "Engineer" and insert "Designer" in all instances that it occurs.

DMRB VOLUME 2

DOCUMENT: BA 27/93 Quality Assurance Scheme for Paints and Similar Protective Coatings

Para No.	Description
1.4	Delete whole paragraph.
2.7	Line 6, delete "by the Engineer". Delete last sentence and insert: "Detailed requirements shall be given in the Construction Requirements".
2.8, 3.1, 4.2, 5.5, 5.9, 5.10	Delete "Engineer" and insert "Designer" in each instance that it occurs.
Annex A	Delete "Supervising Engineer" and insert "Designer" in each instance that it occurs.

DMRB VOLUME 2

DOCUMENT: BE 8/75 Painting of Concrete Highway Structures

Para No.	Description
2.	Delete the final sentence and insert: "In all circumstances their use shall be subject to there being no objection pursuant to the Design and Certification Procedure".

DMRB VOLUME 2

DOCUMENT: BD 43/90 Criteria and Material for the Impregnation of Concrete Highway Structures

Para No.	Description
3.2	Delete text of this sub-clause and insert: "Any additional specific requirements for safety shall be included in the Construction Requirements."
4.1	Delete first sentence and insert:
5.1(a)	"The Construction Requirements shall contain details of members to be impregnated."
6.	Delete whole section.
7.	Delete whole section.

DMRB VOLUME 3

DOCUMENT: BD 45/93 Identification Marking of Highway Structures

Para No.	Description
1.4	Delete "Overseeing".
1.5	Delete first and second sentence.
1.6	Delete paragraph.
Appendix A 9.	Delete "Maintenance Agents are to" and insert "The DBFO Co shall".
13.	Delete "Maintenance Agent" and insert "DBFO Co".

DMRB VOLUME 3

DOCUMENT: BD 63/94 Inspection of Highway Structures

Para No.	Description
Interim Advice Note IA.7	In paragraphs 1.2 and 2.1, delete "Highways Agency" and replace by "the Department's".
1.3	Delete "Overseeing Organisations" and insert "Department's".
1.5	Delete "MA's and Overseeing Organisations" and insert "the DBFO Co and the Department's Representative".
1.7	Delete "Overseeing Organisation's roads" and insert "Project Road".
Note:	Delete "MA and the Overseeing Organisation" and insert "DBFO Co and the Department's Representative".
2.1	Delete "MA" and insert "DBFO Co".
2.3	Delete "MA's" and insert "The DBFO Co". Delete "MA" and insert "DBFO Co". Delete "Overseeing Organisation" and insert "Department's Representative".
2.8	Delete whole paragraph and insert "Principal Inspections shall be carried out at intervals as stated in Part 2 of Schedule 6 of the Contract".
2.11	Delete "Overseeing Organisation" and insert "Department's Representative".
3.1	Delete paragraph.
3.2	Delete "MA" and insert "Department".
3.3	Delete "MA" and insert "Department". Delete "MA and Overseeing Organisation" and insert "DBFO Co and the Department".
3.4	Delete paragraph.
3.5	Delete paragraph.
3.6	Delete paragraph.
3.7	Delete paragraph
3.8	
4.1	Delete "a MA" and insert "the Department". Delete "Overseeing Organisations" and insert "Department's". Delete "British Rail" and insert "Railtrack plc".

Para No.	Description
4.2(a)	Delete "MA's" and insert "The DBFO Co". Delete "Overseeing Organisation" and insert "Department's Representative".
4.2(b)	Delete "MAs" and insert "DBFO Co".
4.2(d)	Delete "MA and the Overseeing Organisation" and insert "DBFO Co and the Department".
4.3	Delete "Overseeing Organisation" and insert "Department's Representative".
4.4	Delete "BR" and insert "Railtrack plc".

DMRB VOLUME 3

DOCUMENT: BA 63/94 Inspection of Highway Structures

Para No.	Description
1.1	Delete "Overseeing Organisation's" and insert "Department's" Delete "Overseeing Organisation's" and insert "Department's".
1.3	Delete "Overseeing Organisations road" and insert "Project Road".
Note:	Delete "MA and the Overseeing Organisation" and insert "DBFO Co and the Department's Representative".
1.4	Delete "Overseeing Organisation" and insert "Department".
1.6	Delete "an MA" and insert "the DBFO Co". Delete "Overseeing Organisation" and insert "Department's Representative".
1.7	Delete paragraph and insert "1.7 The Inspection procedures required are given in Appendix C".
2.4	Delete "are often" and insert "may be". Delete "MAs" and insert "the DBFO Co". Delete "MA" and insert "DBFO Co".
2.5	Delete "the Appendices for the relevant Overseeing Organisations" and insert "Appendix C".
2.6	Delete paragraph.
2.8	Delete "MA requesting the inspection" and insert "DBFO Co".
3.1	Delete "MA" and insert "DBFO Co".
3.14	Delete "MAs" and insert "the DBFO Co".
Appendix A	Not applicable.
Appendix B	Not applicable.
Appendix C	For the purposes of advice given to this Appendix references to the Maintaining Agent shall be deemed to refer to the DBFO Co
Appendix D	Not applicable.

DMRB VOLUME 3

DOCUMENT: BD 53/95 Inspection and Records of Road Tunnels

Para No.	Description
1.5	Delete paragraph.
1.6	Delete first sentence and replace with "The DBFO Co shall be the Tunnel Operating Authority (TOA)".
1.8	Delete "MA's and Overseeing Organisations" and insert "the DBFO Co and the Department's Representative".
3.3	Delete "MA and tunnel owner" and insert "Department's Representative".
3.11	Delete "agreed with the OO but" and insert "which".
3.11(i)	Delete "but exceptionally up to ten years".
3.14	Delete "MA" and insert "the Department's Representative".
3.17(iii) Note	Delete "MA and OO" and insert "the Department's Representative".
4.1	Delete "a new or" and insert "an".
4.2	Delete paragraph.
4.3	Delete paragraph.
4.4	Delete "MA/TOA" and insert "new TOA".
4.5	Delete "MA" and insert "new TOA".
4.6	Delete paragraph.
4.7	Delete paragraph.
4.8	Delete paragraph.
4.9	Delete paragraph.
4.10	Delete "MA/TOA" and insert "TOA".
6.2	Delete "Overseeing Organisation (OO)" and insert "Department's Representative".
6.3	Delete paragraph.
6.4	Delete sentence and replace with "The TOA shall provide all appropriate copies of records to the Department's Representative".
6.8	Delete "OO" and insert "Department's Representative".

Para No.	Description
6.10	Delete "respective OOs" and insert "the Department" Delete "OO" and insert "Department's Representative".

DMRB VOLUME 3

DOCUMENT: BD 62/94 As Built, Operational and Maintenance Records for Highway Structures

Para No.	Description
1.2	Delete "Designer/Engineer or Maintaining Agent (MA)" and insert "DBFO Co".
1.2	Delete "Overseeing Organisations" and insert "Technical Appraisal Authority's".
1.6	Delete "Overseeing Organisations road's" and insert "Project Road".
2.1	Delete "Overseeing Organisation" and insert "Technical Appraisal Authority".
2.2	Delete "Engineer/Designer for the works" and insert "DBFO Co". Delete "The Engineer" and insert "The DBFO Co". Delete "Overseeing Organisation" and insert "Technical Appraisal Authority".
2.3	Delete "Overseeing Organisation" and insert "Technical Appraisal Authority".
2.5	Delete "Overseeing Organisation's" and insert "Technical Appraisal Authority". Delete "Overseeing Organisation" and insert "Technical Appraisal Authority".
Appendix A	Not applicable
Appendix C	
C.1 para 1	Delete "Engineer" and replace by "DBFO Co".
C.1 para 3	Delete "Overseeing Authority" and replace by Technical Appraisal Authority".
C.1 para 6.2	Delete last sentence
C2.1 (i)	Delete "Engineer/Designer" and replace by "DBFO Co".
C2.2 (i)	Delete "Engineer/Designer" and replace by "DBFO Co".

DMRB VOLUME 3

DOCUMENT: BA 30/94 Strengthening of Concrete Highway Structures Using Externally Bonded Plates

Para No.	Description
1.4	Delete last sentence.
1.7	Delete whole paragraph.
5.2	Delete "Engineer" and insert "Department's Agent".
5.3	Delete "Engineer" and insert "Department's Agent".
6.1	Delete "Engineer" and insert "Department's Agent".
7.1	Delete "The Engineer Maintaining Agent" and insert "The DBFO Co should prepare a manual of procedures for inspection and maintenance for the strengthened structure".
7.4	Delete "Maintaining Agent" and insert "DBFO Co".
7.5	Delete "Maintaining Agent" and insert "DBFO Co".

DMRB VOLUME 3

DOCUMENT: BD 27/86

Materials for the Repair of Concrete Highway Structures.

Para No.	Description
3.4(a)	)
3.8(b)	)
4.2(a)	)
4.5(a)	)
4.5(b)	) Delete "Engineer" and insert "Designer" at each occurrence
4.5(d)	)
4.5(e)	)
4.6(a)	)
5.5(b)	)
5.8(a)	)
7.1(d)	)
7.3(e)	)
4.4(a)	) After "supply" insert "to the Designer" at each occurrence
6.2(a)	)
5.5(a)	After "shall demonstrate" insert "to the Designer".
6.1(a)	Add the following text to the end of the existing paragraph. "Pre-batched styrene-butadiene rubber, polymer-modified, shrinkage compensated, cementitious mortars together with appropriate bond coats, primers or slurry coats as recommended by the manufacturer are acceptable for use for minor repairs."

DMRB VOLUME 3

DOCUMENT: BA 35/90 Inspection and Repair of Concrete Highway Structures.

Para No.	Description
2.1	Delete text and insert the following: "2.1 This Advice Note is intended to assist those responsible for carrying out repair of concrete highway structures. It supersedes Advice Note BA 23/86."
3.2	Delete "The Engineer should consult" and insert "Consultations should be held with."
5.	Not applicable.
6.	Not applicable.
7.	Not applicable.
8.3	Delete "The Engineer should ensure that concrete removal is programmed" and insert "Concrete removal should be programmed".
8.5.2	Delete "A separate item Bill of Quantities."

DMRB VOLUME 3

DOCUMENT: BD 21/91 The Assessment of Highway Bridges and Structures Amendment
No. 1

Para No.	Description
Additional Note	Existing bridges which are to be retained as part of the Permanent Works shall be assessed using the 40 tonnes Assessment Live Loading as detailed in this Standard, and where appropriate repaired or strengthened so as to meet such requirements.
	Any reference in this Standard to Assessment Live Loadings less than 40 tonnes, or to weight and/or lane restrictions for existing bridges, shall be ignored.
3.4	Delete "by the Technical Approval Authority" and insert "in accordance with Part 3 of Schedule 4."
Table 3/1	Final note: Delete "if the highway authority can ensure that the thickness of road surfacing is not increased during the remaining life of the bridge" and insert "providing that the DBFO Co can ensure that the thickness of road surfacing is not increased during the Contract Period and that the reduction has been reviewed in accordance with Part 3 of Schedule 4."
Chapter 9	Delete.

DMRB VOLUME 3

DOCUMENT: BA 16/97 The Assessment of Highway Bridges and Structures

Para No.	Description
Additional Note	Existing bridges which are to be retained as part of the Permanent Works shall be assessed using the 40 tonnes Assessment Live Loading as detailed in Standard BD 21/93, and where appropriate repaired or strengthened so as to meet such requirements.
3.23	Any reference to Assessment Live Loadings less than 40 tonnes, or to weight and/or lane restrictions for existing bridges, shall be ignored. Delete second paragraph.

DMRB VOLUME 3

DOCUMENT: BA 38/93 Assessment of the Fatigue Life of Corroded or Damaged
Reinforcing Bars

Para No.	Description
1.7	Delete "Technical Approval Authority" and insert "Department's Agent".
1.12	Delete whole paragraph.
3.12	Delete "Technical Approval Authority" and insert "the Department".

DMRB VOLUME 3

DOCUMENT: BA 39/93 Assessment of Reinforced Concrete Half-Joints

Para No.	Description
1.8	Delete whole paragraph.
2.1	Delete "Technical Approval Authority" and insert "the Department".

DMRB VOLUME 3

DOCUMENT: BD 48/93 The Assessment and Strengthening of Highway Bridge Supports

Para No.	Description
1.5	Delete last sentence.

DMRB VOLUME 3

DOCUMENT: BA 54/94 Load Testing for Bridge Assessment

Para No.	Description
1.9	Delete whole paragraph.
3.16	Delete "Design Organisations" and insert "The DBFO Co".

DMRB VOLUME 3

DOCUMENT: BA 55/94 The Assessment of Bridge Substructures and Foundations, Retaining Walls and Buried Structures

Para No.	Description
1.7	Delete whole paragraph.

DMRB VOLUME 3

DOCUMENT: BA 52/94 The Assessment of Concrete Structures Affected by Alkali Silica Reaction

Para No.	Description
1.4	Delete whole paragraph.

DMRB VOLUME 3

DOCUMENT: BA 51/95 The Assessment of Concrete Structures Affected by Steel Corrosion

Para No.	Description
1.7	Delete whole paragraph.

DMRB VOLUME 3

DOCUMENT: BD 44/95 The Assessment of Concrete Highway Bridges and Structures

Para No.	Description
1.5	Delete whole paragraph.

DMRB VOLUME 4

DOCUMENT: HA 44/91 Earthworks Design and Preparation of Contract Documents
(Incorporating Amendment No.1 dated April 1995) (Paragraph 3.5
superseded by paragraph 2.22 of SA 3/93 (MCHW 0.3.3))

Para No.	Description
1.9	Delete.
1.13	Delete and replace with: "The Designer is as defined in the Agreement."
1.14	Delete and replace with: "The Department's Agent is as defined in the Agreement."
1.16	Delete and replace with: "Conditions of Contract (COC) means the Agreement."
3.	Amend heading to "SPECIFICATION FOR HIGHWAY WORKS".
3.2	Delete.
3.5	Delete paragraph 2.22 of SA 3/93 and replace with: "The DBFO Co will be responsible for classification and determining acceptability based on the Designer's limits and criteria including the appropriate sampling and testing for compliance."
3.6	First and second sentences to read: "The DBFO Co will need to carry out the required sampling and testing for acceptability of all materials used on the site to prove to itself, the Designer and the Department's Agent that the correct materials are being used. Therefore the DBFO Co/Designer must specify what tests it will carry out and give a frequency of testing for each test together with any other relevant information." Third and fourth sentences: delete. Sixth sentence: delete. Seventh sentence to read: "All relevant information on sampling and testing should be included in Appendices 1/5 and 6/1."
3.7	Delete.
3.8	First sentence - delete. Second sentence to read: "The DBFO Co/Designer must list the tests together with the source reference for each test (BS, ASTM, SHW, etc) which it will carry out in Appendix 6/1 or make cross-reference to details in Appendix 1/5."

Para No.	Description
	Third sentence to read: "Details of submission of test results to the Department's Agent must also be set out."
3.9	Delete.
3.13	Delete.
3.14	Delete.
Fig 6/1 (referred to as Fig 3/1 in 3.14)	Delete.
3.15 to 3.28 inc.	Delete.
3.29	Add before 3.29: Advice for Classification and Acceptability
3.29	Delete "However" in line 1.
3.36	Third sentence: Delete all words after "placed" and add full stop.
3.37 and 3.38	Delete.
3.43	Delete.
3.45	Delete everything from "This aspect needs early consideration"
3.46	Delete.
4.50	Second sentence to read: "It is essential the DBFO Co or its Designer designates one or more individuals to co-ordinate the readings and analysis of results."
4.51	First sentence - delete.
4.52	First sentence - delete "or MMHW" in line 2.
5.12	Last sentence to read: "The DBFO Co or its Designer therefore may reduce the compaction requirement if it is found to consistently cause instability on site."
5.16	Second sentence to read:

Para No.	Description
	"The DBFO Co must state in Appendix 6/1 where such a relaxation is proposed."
5.19	Third sentence, at end delete "Resident Engineer" and insert "Designer".
5.20	First and second sentences to read: "Materials which cannot be separated from the chalk and are therefore included with it, such as flint bands or any other material may affect the DBFO Co's construction method of working. Where infilling occurs of solution features by overlying material, the infilling material should be excavated separately and kept separate from the chalk; the excavated material is usually classified as unacceptable."
5.29	Fifth sentence to read: "It is the Department's policy that the DBFO Co should identify possible sources of this material for use as imported fill."
5.61	Third sentence to read: "The Designer should keep a record of the sources and SHW Clause 601 places the onus on the DBFO Co to provide the requisite data including the natural moisture content and the optimum moisture content and maximum dry density of each consignment."
5.67	Third sentence to read: "The local Environmental Health Officer (EHO) and Waste Regulation Officer (WRO) must be contacted and consulted regarding the treatment of any toxic waste material located within or affected by the scheme."
7.9	Second sentence: Delete all after "clear" in line 5. Third sentence: Delete "must be made aware that he".
7.31	Third sentence to read: "In deciding whether the Department's Agent or the DBFO Co should make arrangements for the installation of instruments for monitoring of property off the construction site the nature and condition of the property should be taken into account and an assessment made of the sensitivity of the situation regarding the occupiers of the property."
9.21	Second sentence: delete.
9.22	Fifth and sixth sentences to read: "The Designer is, therefore, often obliged to follow the advice provided by the specialist which carries out this process which, in many cases, will result in an end product specification being followed rather than a method specification. In other

Para No.	Description
	cases the choice between method and end product specification will depend on the type of material to be compacted, the conditions on site and the experience of the DBFO Co."
10.44	Sixth sentence to read: "The minimum value to be inserted in Appendix 6/1 is the value as the Designer considers appropriate."
10.47	Delete.
10.65	Delete.
10.66	Delete.
10.72	Sixth sentence to read: "For Class 7F material the Designer should indicate whether the upper limit for total sulphate is 1% or 0.25% in Appendix 6/1."
11.11	Second and third sentence - delete.
12.22	Last sentence - delete.
Annex A	Appendix 6/1. Classification Paragraph 1: Second and third sentences - delete. Second paragraph - delete.
Annex B	Delete.

DMRB VOLUME 4

DOCUMENT: HD 22/92 Ground Investigation and Earthworks Procedure for Geotechnical Certification (Incorporating Amendment No.1 dated June 1993 and Amendment No.2 dated April 1994)

Para No.	Description
1.3	Delete "and have been developed to accord with three stage consultancy agreements".
1.5	Delete complete paragraph and insert: This Standard also applies to Strengthened Earthworks.
1.6	Delete complete paragraph and insert: "All works by the DBFO Co involving earthwork operations/structural foundations, or complex geotechnical features shall be certified in respect of the geotechnical matters of such operations by the DBFO Co. The professional responsibility for the geotechnical work lies with the DBFO Co and any agreement or approval given by the Department's Nominee shall not relieve the DBFO Co of that responsibility."
1.7	Delete.
1.8	Delete paragraph and insert: "The DBFO Co shall nominate a chartered engineer with appropriate geotechnical experience to be responsible for the geotechnical aspects of the scheme; including the preparation of the Geotechnical Reports, the Design Certificate (Geotechnical), the geotechnical elements of the TAFs and the Design Certificate (Structural). This engineer shall be known as the Geotechnical Liaison Engineer (GLE) and shall liaise with the Department's Nominee on all the geotechnical aspects of the scheme."
1.9-1.21	Delete.
1.22	Delete paragraph and heading and insert: Heading "GEOTECHNICAL REPORT"
1.22	The Designer shall prepare a Geotechnical Report which shall be submitted to the Department's Nominee in accordance with Part 3 of Schedule 4. The Geotechnical Report is the Designer's detailed report on the existing geotechnical data provided by the Secretary of State updated as necessary together with any further investigations carried out by the DBFO Co. The Geotechnical Report shall include discussion of the implications and interpretation of those investigations. It shall also include detailed explanations of the design of all the geotechnical elements of the scheme and shall include the items set out in Appendix F. The information shown on the construction drawings must accord with the recommendations of the Geotechnical Report.

Para No.	Description
1.23-1.25	Following any additional work with geotechnical involvement as described in paragraph 1.6, and not reported on within the Geotechnical Report, the Designer shall produce a Supplementary Geotechnical Report. The contents of the Supplementary Geotechnical Report shall be as described in the preceding paragraph." Delete.
1.26	Delete first and second sentences and insert: "The Designer shall produce a Geotechnical Feedback Report and submit it to the Department's Nominee. The Designer shall prepare and record the information required as an ongoing task through the period of construction of the Works and the report shall be submitted within six months of the Permit to Use."
Appendix A - E	Delete.
Appendix F	Delete entire appendix and insert: "1.0 TITLE SHEET Clearly indicating the name of the project and scheme together with the title (eg Geotechnical Report or First Supplementary Geotechnical Report) and the date of the report. 2.0 CONTENTS Contents of all volumes listed in the front of each volume with the contents of the particular volume highlighted. 3.0 INTRODUCTION 3.1 Scope and object of the report 3.2 Description of project and scheme (including site description) 3.3 Other relevant information 4.0 EXISTING INFORMATION This section should be a review carried out by the Designer of all existing, geotechnically relevant information available on the project. The review should highlight the implications to the project of that information. The information should be updated as necessary when such information is of a time limited nature. 4.1 Topographical maps (old and recent) 4.2 Geological maps and memoirs 4.3 Air photographs (old and recent) 4.4 Records of mines and mineral deposits (including an updated Mineral Valuer's Report) 4.5 Land use and soil survey information (including contaminated land)

Para No.	Description
	4.6 Archaeological and historical investigation 4.7 Existing ground investigations (including those carried out for the Department and the results of those investigations) 4.8 Consultation with Statutory Bodies and Agencies 4.9 Other relevant information
5.0	FIELD AND LABORATORY STUDIES This section is to describe the investigations carried out by the Designer as part of his design process. 5.1 Walkover survey 5.2 Geomorphological/geological mapping 5.3 Ground Investigations (description of the investigations carried out by the Designer, including an outline of the aims and reasoning behind the requirement for the investigation.) 5.3.1 Description of fieldwork 5.3.2 Copies of exploratory hole records (may be bound as a separate volume if bulky) 5.3.3 Results of in situ tests 5.4 Drainage studies 5.5 Geophysical surveys 5.6 Pile tests 5.7 Other field work 5.8 Laboratory investigation 5.8.1 Description of tests 5.8.2 Copies of test results (may be bound separately with 5.3.2 above) (For sections 5.3.2 and 5.8.2 the information should also be provided in digital form as set out in the Association of Geotechnical Specialists publication "Electronic Transfer of Geotechnical Data from Ground Investigations" (2nd Ed 1994).)
6.0	GROUND SUMMARY This section is to describe the Designer's summary interpretation of the results of the investigations carried out in sections 1-5 above. The Ground Summary should provide the summary interpretation on the geography, topography, geology, hydrology, hydrogeology, geomorphology, man made features and historical development of the project and may be supplemented by a series of plans and overlays.
7.0	GROUND CONDITIONS AND MATERIAL PROPERTIES This section is to set out the Designer's interpretation of the ground conditions along the project route and should contain details and description of the various materials to be encountered together with the full justification for the parameters adopted for the geotechnical design.
	7.1 Topsoil

Para No.	Description
	7.2 Made ground including details of any contamination/contaminated areas. 7.3 Separate heading for each material 7.4 CBR/pavement design 7.5 Specification Appendices requirements 8.0 EARTHWORK DESIGN CRITERIA The text sections (paragraphs 8.1.1, 8.1.3 and 8.2.1 described below) of this section should include full details of the interpretation and justification for the design and include a layout drawing of that part of the works. The summary sheets (described in paragraphs 8.1.2, 8.1.4 and 8.2.2 below) should be a summary of that information. 8.1 Earthworks 8.1.1 Cutting Stability- Full details of the methods of analysis, soil parameters, factors of safety, drainage, slope angles, CBR and other considerations 8.1.2 Cutting Design Summary sheets (Form A) 8.1.3 Embankment stability - Full details of the methods of analysis, soil parameters, factors of safety, drainage, slope angles, CBR and other considerations 8.1.4 Embankment Design Summary sheets (Form B) 8.2 Structures not requiring a TAF and Strengthened Earthworks for which a SEAF is required: 8.2.1 Full details of the methods of analysis used for bearing capacity, pile design, settlement, soil reinforcement, protection of concrete and reinforcing elements against chemical attack and other considerations including, without limitation, soil/structure interaction. 8.2.2 Structure/Strengthened Earthworks Design Summary sheet (Form C) 8.3 Drainage 8.4 Pavement Design - Method of analysis, soil parameters, ground water assumptions. 8.5 Waste disposal 8.6 Ground Treatment including treatment of old mine workings etc. 8.7 Specification Appendices - Details of parameters and amendments for the specification appendices completed in Annex 1. 9.0 INSTRUMENTATION AND MONITORING 9.1 Full details of purpose, installation requirements, restrictions and frequency of readings 9.2 Predicted and critical readings and restrictions on work 9.3 Pile testing requirements

Para No.	Description
	10.0 REFERENCES ANNEX 1 Completed SHW Table 1/5 and Series 500 and 600 appendices including Tables 6/1, 6/2 and 6/3. ANNEX 2 Forms A, B and C"
Appendix G	Delete entire appendix.
Appendix H	Delete entire appendix and insert: "Format for Geotechnical Feedback Report 1.0 TITLE SHEET Clearly indicating the name of the scheme together with the title (eg Geotechnical Feedback Report) and date of the report. 2.0 CONTENTS Contents of all volumes listed in the front of each volume with the contents of the particular volume highlighted. 3.0 INTRODUCTION 3.1 Scope and object of the report 3.2 Limits of the area covered by the report 3.3 Other relevant information 4.0 EARTHWORKS 4.1 General description of the earthworks 4.2 Problems (Engineering/Technical/Economic) not envisaged in the Geotechnical Report and their solutions 4.3 Weather conditions 4.4 Application of suitability criteria 4.5 Haul conditions 4.6 Comparison of predicted and actual quantities of suitable and unsuitable material 4.7 Topsoil and planting 5.0 CUTTINGS 5.1 For each cutting, location of materials excavated and their subsequent destination in the Works (with dates)* 5.2 Plant used and details of problems encountered 5.3 Instability problems and unusual ground conditions 5.4 Ground water conditions and problems and drainage measures to overcome them 5.5 Contaminated and hazardous material encountered on site and the location of disposal, both on and off site 6.0 EMBANKMENTS

Para No.	Description
	6.1 For each embankment, source and location of all material placed (with dates)* 6.2 Plant used and details of problems encountered 6.3 Instability problems and unusual ground conditions 6.4 Foundation treatment, including drainage measures and treatment of soft areas 6.5 Settlement of foundation and fill material 7.0 SUBGRADE/CAPPING/PAVEMENT 7.1 Method of subgrade preparation, details of capping material used and details of any problems encountered 7.2 Method of placing each pavement layer and details of any problems 8.0 DRAINAGE 8.1 Details of temporary drainage and their effectiveness 8.2 Methods of installing permanent drainage and details of any problems encountered 9.0 IMPORTED MATERIALS 9.1 Types of imported materials and their use 9.2 Source of imported materials and their location in the Works (with dates)* 9.3 Acceptability and performance 10.0 STRUCTURE FOUNDATIONS 10.1 Record of soil and ground water conditions encountered 10.2 Temporary works required and their effectiveness 10.3 Details of any problems encountered 10.4 Pile logs summary, pile test results and other relevant information 10.5 Settlement records with dates of each major stage including backfill of abutments and approach fills 10.6 Settlement control stations 10.7 Details of as built foundations 11.0 TESTING 11.1 Summary of site laboratory testing 11.2 Separate section on each type of test giving a summary of all results together with comments on them and their effectiveness 12.0 INSTRUMENTATION 12.1 Location and details of instruments 12.2 Purpose, performance and usefulness 12.3 Readings (with dates) and predicted values 12.4 Details and effects of resulting action 12.5 Comment on need to continue monitoring or removal from site 13.0 SUMMARY OF PROBLEMS EXPERIENCED AND DESIGN

Para No.	Description
	CHANGES 13.1 Summary of problems and details of design changes to overcome them 13.2 Comments on how problems might be avoided in the future, including suggested revisions required to the SHW and DMRB NOTES 1. Items marked * (and others where possible) may be conveniently presented on longitudinal profiles and accompanying plans compiled as the construction proceeds. 2. Photographs should be included in the report to illustrate particular points."

project and scheme

Form A

**GEOTECHNICAL REPORT
CUTTING DESIGN SUMMARY**

CHAINAGE			MAX HEIGHT		Reference/ comments
SIDE SLOPE 1 in...N/W 1 in...S/E			TYPICAL HEIGHT		
SLOPE TOPSOIL DEPTH					
SOILS/GEOLOGY					
Strata		Typical depths			
PREVIOUS GROUND HISTORY					
GROUNDWATER/CHEMISTRY					
SLOPE STABILITY					
side slope	short term FOS	long term FOS	construction constraints/ recommendations		
EARTHWORKS					
	soil type	quantity	suitable criteria	% suitable	
TEMPORARY DRAINAGE					
anticipated requirements					
					Reference/

PERMANENT SLOPE DRAINAGE					comments
location	type	depth	backfill/filter	special measures	
PAVEMENT DESIGN					
chainage	subgrade	design CBR	capping thickness	special measures	
Design Traffic msa				pavement rigid/flexible/ composite	
PAVEMENT DRAINAGE					
location	type	depth	backfill/filter	special measures	
OTHER DESIGN FEATURES					
ASSOCIATED STRUCTURES					
chainage		type	special measures		

An A4/A3 size plan of the cutting is attached which shows the location of the exploratory holes and other design features

*project and scheme***Form B**

**GEOTECHNICAL REPORT
EMBANKMENT DESIGN SUMMARY**

CHAINAGE		MAX HEIGHT		Reference/ comments
SIDE SLOPE 1 in...N/W 1 in...S/E		TYPICAL HEIGHT		
SLOPE TOPSOIL DEPTH				
SOILS/GEOLOGY				
Strata	Typical depths			
PREVIOUS GROUND HISTORY				
GROUNDWATER/CHEMISTRY				
FOUNDATION TREATMENT				
chainage	treatment details			
SLOPE STABILITY				
side slope	short term FOS	long term FOS	construction constraints/ recommendations	
SETTLEMENT				
description	total settlement		time for 90%	
foundation				
embankment fill				

EARTHWORKS					Reference/ comments
	general fill	topping fill	drainage layer	capping layer	
Material					
quantity					
onsite/import					
DRAINAGE					
location	type	depth	backfill/filter	special measures	
PAVEMENT DESIGN					
chainage	subgrade	design CBR	capping thickness	special measures	
Design Traffic msa				pavement rigid/flexible/ composite	
OTHER DESIGN FEATURES					
ASSOCIATED STRUCTURES					
chainage		type	special measures		

An A4/A3 size plan of the embankment is attached which shows the location of the exploratory holes and other design features

project and scheme

Form C

**GEOTECHNICAL REPORT
STRUCTURE/STRENGTHENED EARTHWORKS DESIGN SUMMARY**

* delete as appropriate

NAME			CHAINAGE			Reference/ comments
TYPE			TAF/SEAF* Ref No.			
APPRAISAL METHOD: TAF/GEOTECHNICAL CERTIFICATION*			DESIGN LIFE 60/120 yrs*			
SOILS/GEOLOGY						
Strata		Typical depths				
PREVIOUS GROUND HISTORY						
GROUNDWATER/CHEMISTRY						
BEARING CAPACITY	spread footings					
		founding level (m AOD)	footing size	allowable bearing pressure (kN/m ²)		
PILE DESIGN						
structure element	founding stratum	toe level (m AOD)	pile dia (m)	pile length (m)	pile working load (kN)	

Pile type..... Criteria for selecting pile toe level..... allowance for negative skin friction within design	
--	--

STRENGTHENED EARTHWORK			Type			Reference/ Comments
Reinforcing Material			Slope Angle		Face Height (m)	
Facing Type			Fixing Details		Layer Spacing	
Interaction with other structural elements/features			Foundation Preparation		Element Spacing	
Drainage Control Measures						
SETTLEMENT						
structural element	founding level (mAOD)	immediate settlement (mm)	total settlement (mm)	time for 90%	settlement remaining at completion	
Differential settlement to be allowed for between adjacent supports ... mm						
GROUND MOVEMENTS						
associated earthworks						
cause of movement	settlement due to embankment loading	heave due to cutting excavation	subsidence due to mineral extraction	flowing water	other	
maximum movement (mm)						
measures to deal with movement						

CHEMICAL ANALYSIS					Reference/ Comments
type of test/sample	soil	soil: water	water	other	
Sulphate concentration					
chloride concentration					
ph					
redox					
other					
Buried Concrete classification Class ... (BRE Digest 363)					
Corrugated Steel Culvert ground/water classification					
OTHER DESIGN FEATURES					
NOTES					
An A3/A4 size drawing is attached which includes an elevation of the structure (approx scale 1:500) showing the foundations and ground conditions together with a location plan (approx scale 1:1250) showing the structure and exploratory holes.					

Notes for completion of Forms A, B & C

1. The forms illustrate the headings required. The form layout should be expanded as necessary to include all relevant information.
2. The column "Reference/Comments" should as a reference refer to the relevant section of the main Geotechnical Report. The comments are those thought pertinent by the Designer.

DMRB VOLUME 4

DOCUMENT: HA 48/93 Maintenance of Highway Earthworks and Drainage

Para No.	Description
1.7	Delete whole paragraph.
7.3	Delete "technical approval" and insert "technical appraisal".
9.2	Delete "and the appropriate Overseeing Department". Add a new sentence "The DBFO Co shall keep the Department's Agent informed."

DMRB VOLUME 4

DOCUMENT: HA 68/94 Design Methods for the Reinforcement of Highway Slopes by
Reinforced Soil and Soil Nailing Techniques

Para No.	Description
1.3	Delete "Technical Approval (see BD2:Part 1 (DMRB 1.1))." and insert "technical appraisal in accordance with Part 3 of Schedule 4."
1.8	Delete whole paragraph.
1.9	Delete last sentence.

DMRB VOLUME 4

DOCUMENT: 74/95 Design and Construction of Lime Stabilised Capping

Para No.	Description
4.2	Delete "These aims can has begun."
4.14	Delete "Main Works Contractor" and insert "DBFO Co".

DMRB VOLUME 4

DOCUMENT: HA 73/95 Site Investigation for Highway Works on Contaminated Land

Para No.	Description
10.6	Delete "Under Clause 29 of the ICE Conditions of Contract for Ground Investigation as amended by the appropriate Overseeing Organisations, the" and insert "The".

DMRB VOLUME 4

DOCUMENT: HA 43/91 Geotechnical Considerations and Techniques for Widening
Highway Earthworks

Para No.	Description
Contents Page	Delete "TECHNICAL APPROVAL" and insert "TECHNICAL APPRAISAL"
4. (Heading)	Delete "TECHNICAL APPROVAL" and insert "TECHNICAL APPRAISAL"
4.1	Delete "with a design height (Ref 15). R" and insert "and r" After "(Ref 4)," add "with a design retained height in excess of 1.5m" Delete "technical approval" and insert "technical appraisal"
4.3	Delete "technical approval" and insert "technical appraisal".
4.4	Delete "technical approval" and insert "technical appraisal". Delete second and third sentences.
4.5	Delete.
6.3.9	Delete final sentence.
6.4.9	Delete final sentence.
9.15	Delete and insert "Not used".

DMRB VOLUME 4

DOCUMENT: HA 71/95 The Effects of Highway Construction on Flood Plains

Para No.	Description
1.14	Delete whole paragraph.

DMRB VOLUME 4

DOCUMENT: HA 78/96 Design of Outfalls for Surface Water Channels

Para No.	Description
1.14	Delete.

DMRB VOLUME 4

DOCUMENT: HA 39/89 Edge of Pavement Details

Para No.	Description
3.1.5	Delete and replace with: "Responsibility for the design of the drainage system rests with the DBFO Co. The DBFO Co may choose from the full range of pipe types and materials given in the Specification for Highway Works and all the drain types 5,6,7,8 and 9 shown on Highway Construction Details F18 unless otherwise stated in the Construction Requirements."
3.2.1	Delete.
3.2.2	Delete.
3.2.3	Delete.
4.1	Delete "by the Designer" in 1st sentence. Delete "the Designer" in 2nd sentence.

DMRB VOLUME 5

DOCUMENT: TA 44/92 Capacities, Queues, Delays and Accidents at Road Junctions -
Computer Programs ARCADY/3 & PICADY/3 (TRRL)

Para No.	Description
1.9	Delete whole paragraph.

DMRB VOLUME 5

DOCUMENT: TD 11/82 Use of Certain Departmental Standards in the Design and
Assessment of Trunk Road Schemes

Para No.	Description
4.2	Delete "where necessary" at end of last sentence and insert "in accordance with Part 3 of Schedule 4". An Alternative Proposal shall be applied for in accordance with Part 3 of Schedule 4.

DMRB VOLUME 5

DOCUMENT: HA 46/92 Quality Assurance for Highway Design

Para No.	Description
1.1	Add after "Design Organisations (DO)", "including the Designer under a DBFO Contract".
1.5	Delete whole paragraph.
1.14	Delete whole paragraph.
4.6	Delete whole paragraph.
4.7	Delete whole paragraph.
Annex A	
1.3	Delete whole paragraph.
3.	Delete whole section.
4.	Delete whole section.
5.	Delete "requirements for certificates" and insert "Requirements for certificates are set out in the Agreement."
6.	Delete whole section.

DMRB VOLUME 5

DOCUMENT: HD 19/94 Road Safety Audits

Para No.	Description
1.14	Delete whole paragraph.
Note	Requirements for the application of this Standard are given in Part 3 of Schedule 4.

DMRB VOLUME 5

DOCUMENT: HA 42/94 Road Safety Audits

Para No.	Description
1.10	Delete whole paragraph.
Note	Requirements for the application of this Advice Note are given in Part 3 of Schedule 4.

DMRB VOLUME 5

DOCUMENT: TA 67/95 Providing for Cyclists

Para No.	Description
1.10	Delete whole paragraph.
3.1	Delete last sentence.
3.2	Delete whole paragraph.
3.6	Delete "by design organisations or Project Managers".

DMRB VOLUME 5

DOCUMENT: TD 37/93

Scheme Assessment Reporting

Para No.	Description
1.1	Delete "Design Organisations" and insert "the Designer". Delete "will normally be included ... case, advice should" and insert "shall". Delete "Overseeing Department's Project Manager" and insert "Department's Nominee".
1.3	Delete.
2.4	Add after the last sentence "The first two stages of assessment will have been completed. The third stage of assessment may also have been completed. However this will depend on the stage the scheme has reached within the statutory process."
2.6	Delete.
2.5	Renumber paragraph to 2.7. Delete the second sentence and the remainder of the paragraph.
3.1 to 3.31 inclusive	Delete.
4.1 to 4.55 inclusive	Delete.

DMRB VOLUME 5

DOCUMENT: TD 37/93 1A.1 Interim Advice Note

Para No.	Description
2.6	Delete.
2.7	Delete the second sentence and the remainder of the paragraph.

DMRB VOLUME 6

DOCUMENT: TD 9/93 Highway Link Design

Para No.	Description
0.9	Delete whole paragraph.
1.1 to 1.8 inclusive Table 1 Fig. 1	Replace with: "Design Speed The Design Speed for the horizontal and vertical alignment shall be as stated in the Construction Requirements. The minimum geometric parameters consistent with that Design Speed shall be provided except where the use of Relaxations and Departures from Standard has been justified in accordance with Paragraphs 1.15 to 1.28 (as amended)."
1.28	Add: "Approved lengths of WS2 road are listed in the Construction Requirements."
3.1	Add to last sentence: "or if so stated in the Construction Requirements."
3.2	Delete: "the Overseeing Department's current criteria." Add: "the Construction Requirements."

DMRB VOLUME 6

DOCUMENT: TD 27/96 Cross-Sections and Headrooms

Para No.	Description
1.6	Delete second sentence.
1.9	Delete "Design Organisation" and insert "Designer".
1.10	Delete "Design Organisation" and insert "Designer" (3 refs).
1.11	Delete "Design Organisations" and insert "The Designer".
	Delete "Design Organisation" and insert "Designer".
4.6(e)	Delete "Planning and Technical Approval Authority", and insert "and Planning Authorities".
	Add "f) The requirements of Part 3 of Schedule 4 (Design and Certification Procedure) must also be satisfied."
5.2	Delete and insert "The headroom provision at underbridges shall be as defined in the Construction Requirements."
5.12	Delete and insert "Greater headroom shall be provided where stated in the Construction Requirements".

DMRB VOLUME 6

DOCUMENT: TD 22/92 Layout of Grade Separated Junctions

Para No.	Description
1.3	Delete 2nd sentence, replace with: "Applications for Departures from Standard shall be submitted to the Department for agreement."
1.7	Delete whole paragraph.
2.2	Delete, replace with: "The design of junctions is affected by decisions taken on the degree of access to be provided on the scheme. This shall be as stated in the Construction Requirements."
2.3	Delete last sentence, replace with: "Site specific restrictions shall be as stated in the Construction Requirements."
2.5 & 2.6	Delete paras 2.5 and 2.6 and substitute: "Following through the flow chart, the network strategy, design year, and nature of the route (whether urban or rural, motorway or all purpose) have been determined by the Department and are stated in the Construction Requirements. The design year traffic flows, unless stated in the Construction Requirements, shall be determined by the DBFO Co."
2.7	Add to first sentence: "For any alternative proposal the Designer may produce, the first stage"
2.11	Add at end: "The Designer shall submit to the Department an operational check where required in the Construction Requirements."
3.1	Add at beginning: "Unless stated in the Construction Requirements, project to the 15th year after opening, shall be taken as the basis of design for merges, diverges and weaving sections."
4.4	Delete first sentence and replace with: "Design speeds for the main line shall be as stated in the Construction Requirements."

Para No.	Description
4.22	Add at the end of 2nd sentence: "unless stated in the Construction Requirements."
4.23	Replace 1st sentence: "For Rural All Purpose Roads the Desirable Minimum weaving length shall be 1 kilometre. Unless stated in the Construction Requirements, the Absolute Minimum is 450m for extreme cases as mentioned in 4.22."

DMRB VOLUME 6

DOCUMENT: TA 48/92 Layout of Grade Separated Junctions

Para No.	Description
1.6	Delete whole paragraph.
2.2	Delete whole paragraph.
2.3	Delete last sentence, replace with: "Any Alternative Proposals shall be applied for in accordance with Part 3 of Schedule 4."
2.6	Replace penultimate sentence with: "These alternatives should be considered if so stated in the Construction Requirements and in accordance with TA 30/82(DMRB 5.1)."
3.2	Delete last sentence.
4.2	Add to last sentence: "..... and if so stated in the Construction Requirements."
5.16	Add at end of paragraph: "unless details are specified in the Construction Requirements".

DMRB VOLUME 6

DOCUMENT: TD 16/93 Geometric Design of Roundabouts

Para No.	Description
1.10	Delete whole paragraph.
6.1	Delete first sentence and replace by: "The design of landscaping shall comply with the Construction Requirements."
Annex 1 Para 4	Delete the whole of paragraph after the second sentence.
Annex 1 Para 5	Delete whole paragraph and replace by: "The Designer shall in the first instance attempt to achieve an RFC value which does not exceed 85% based on a flow for 15 year high growth after opening. Where it is not possible to achieve these values the Designer shall achieve an RFC value which does not exceed 85% based on the maximum possible post opening high growth traffic flows. The Designer shall in all circumstances aim to achieve a reasonably balanced design in respect of achieving the same RFC value on all approaches."

DMRB VOLUME 6

DOCUMENT: TD 39/94 The Design of Major Interchanges

Para No.	Description
1.2	Delete whole paragraph.

DMRB VOLUME 6

DOCUMENT: TD 40/94 Layout of Compact Grade Separated Junctions

Para No.	Description
1.11	Delete whole paragraph.
1.15	Third sentence, delete "Design Organisation" and insert "Designer".
6.8	Second sentence, delete "Design Organisation" and insert "Designer".

DMRB VOLUME 6

DOCUMENT: TD 42/95 Geometric Design of Major/Minor Priority Junctions

Para No.	Description
1.10	Delete whole paragraph.
1.22	Delete second sentence and insert: "These are the sections with which the design must comply unless an Alternative Proposal has been agreed"
1.23	Delete "Design Organisation" and insert "Designer" (4 references)
1.24	Delete "Overseeing Organisations may be prepared to agree to a Departure from Standard" and insert "the Designer may propose an Alternative Proposal" Delete "Design Organisations" and insert "The Designer". Delete last sentence and insert "Any Alternative Proposal shall be applied for in accordance with Part 3 of Schedule 4."
6.1	Delete second sentence.
Annex 1 Para 6	Delete whole paragraph and replace by: "The Designer shall in the first instance attempt to achieve an RFC value which does not exceed 85% for an urban junction and 75% for a suburban or rural junction based on a flow for 15 year high growth after opening. Where it is not possible to achieve the above RFC values at the 15 years high growth flows, the RFC values shall be achieved based on the maximum possible post opening high growth traffic flows. The Designer shall in all circumstances aim to achieve a reasonably balanced design in respect of achieving the same RFC value on all approaches."

DMRB VOLUME 6

DOCUMENT: TD 41/95 Vehicular Access to All Purpose Trunk Roads

Para No.	Description
1.1	Delete whole paragraph.
All references	Delete "Design Organisation" and insert "Designer".

DMRB VOLUME 6

DOCUMENT: TA 18/81 Junction Layout for Control by Traffic Signals

Para No.	Description
3.2	For "highway engineer" substitute "Designer"
5.7	Delete paragraph and replace with: "Lane widths at signalled junctions should normally be between 3m and 3.6m although narrower lanes are acceptable in some instances where the minimum width permitted is stated in the Construction Requirements."

DMRB VOLUME 6

DOCUMENT: TA 23/81 Junctions and Accesses: Determination of Size of Roundabouts and Major/Minor Junctions

Para No.	Description
4.3	Delete whole paragraph.
8.3	Delete whole paragraph.

DMRB VOLUME 6

DOCUMENT: TD 36/93 Subways for Pedestrians and Pedal Cyclists Layout and Dimensions

Para No.	Description
1.5	Delete whole paragraph.
2.2	Add to the end of last sentence: "..... unless otherwise stated in the Construction Requirements."
2.4	Add to the end of 2nd and 3rd sentence: "..... where it is stated in the Construction Requirements."
2.7	Delete this paragraph and substitute: "The requirements of physical barriers to prevent cars and motorcycles being driven into subways or subway approaches shall be in accordance with the Construction Requirements".
4.5	Delete "may" and insert "shall" Add to the end of last sentence: "..... where stated in the Construction Requirements."
4.8	Add to the end of first sentence: "..... unless otherwise stated in the Construction Requirements."
5.2	Add to the end of paragraph: "..... unless otherwise stated in the Construction Requirements."
5.6	Add after "exceptionally difficult sites" in 2nd and 3rd sentences: "..... unless otherwise stated in the Construction Requirements."
5.7	Add to the end of second sentence: "..... unless otherwise stated in the Construction Requirements."
6.17	Delete "may be advisable" and insert "should be provided, unless otherwise stated in the Construction Requirements".

DMRB VOLUME 6

DOCUMENT: TA 66/95 Police Observation Platforms on Motorways

Para No.	Description
1.4	Delete whole paragraph.
2.1	Add a second sentence: "Initial consultation has identified the general locations shown in the Construction Requirements".

DMRB VOLUME 6

DOCUMENT: TA 57/87 Roadside Features (Chapter 2 is superseded by TA 69/96)

Para No.	Description
1.1.5	At end of paragraph, delete "considered" and add: "..... provided where stated in the Construction Requirements."
1.3.4	At end of paragraph, delete "may be considered" and add: "shall be provided where stated in the Construction Requirements."
1.3.5	At end of second sentence, delete "should be considered", add: "shall be provided where stated in the Construction Requirements."
1.4.3	Delete paragraph and replace with: "Rumble kerbs created by a serrated or ridged surface to the kerbing shall be provided as a means of alerting the drivers of errant vehicles, where stated in the Construction Requirements."
1.9.4	Delete paragraph and replace with: "Stone or other suitable composite construction for kerbs shall, where stated in the Construction Requirements, be used in conservation areas or for laybys within areas of natural beauty."
Sections 3.2 & 3.3	Delete paragraphs 3.2.1 to 3.2.3 and 3.3.1 to 3.3.5 and substitute: "The siting and frequency of rest areas shall be in accordance with the Construction Requirements."
3.4.3	Delete paragraph and replace with: "The facilities to be provided at picnic sites shall be as stated in the Construction Requirements."
3.4.6	Delete paragraph and replace with: "Unless stated otherwise in the Construction Requirements, overnight stopping areas for caravaners or campers should not be incorporated in the design of picnic area sites."
4.1.1	Delete from last sentence: "and its use should therefore be carefully considered." and replace with: "and shall be provided at sites listed in the Construction Requirements."

Para No.	Description
4.3.3	Delete paragraph, replace with: "At sites where space is limited and where the extra space required behind the safety fencing is not available, if so stated in the Construction Requirements, safety fencing should be provided as illustrated in Fig 6."
4.3.4	Add: "Alternative Proposals shall be submitted to the Department for agreement."
5.2	Delete paragraphs 5.2.1 to 5.2.5 and replace with: "If so stated in the Construction Requirements, anti-dazzle fencing shall be provided at the locations specified."
6.2	Delete paragraphs 6.2.1 to 6.2.3 and replace with: "If so stated in the Construction Requirements, arrester beds shall be provided at the locations specified."
7.2.1	Delete paragraph and replace with: "If so stated in the Construction Requirements, cattle grids shall be provided at the locations specified."
8.1.1	Add at end of sub-clause: "Cycle tracks are only required to be provided in the locations stated in the Construction Requirements and to the specification detailed therein."
8.4.5	Delete first sentence, replace with: "Grade separated road crossings for cyclists by means of subway or overbridge shall be provided, where so stated, in accordance with the Construction Requirements."
Sections 9 & 10	Delete whole Sections 9 and 10.
11.2.1	Delete paragraph and replace with: "Roadside facilities for ridden horses shall be provided, where so stated, in accordance with the Construction Requirements."
12.2.2 to 12.2.4	Delete paragraphs 12.2.2 to 12.2.4 and replace with: "Railway level crossings shall conform to the standards stated in the Construction Requirements."

DMRB VOLUME 7

DOCUMENT: HD 23/94 General Information

Para No.	Description
1.5	Delete whole paragraph

DMRB VOLUME 7

DOCUMENT: HD 35/95 Technical Information

Para No.	Description
1.3	Delete whole paragraph.

DMRB VOLUME 7

DOCUMENT: HD 24/96 Traffic Assessment

Para No.	Description
1.2	Delete whole paragraph.
2.5	Replace with: "Unless stated otherwise in the Construction Requirements the traffic flow for the New Road at the time of issue of the Completion Certificate shall be determined by the DBFO Co in accordance with Good Industry Practice."

DMRB VOLUME 7

DOCUMENT: HD 25/94 Foundations

Para No.	Description
1.4	Delete whole paragraph.
1.5	Delete last sentence.

DMRB VOLUME 7

DOCUMENT: HD 26/94 Pavement Design (Incorporating Amendment No.1 dated March 1995 and Amendment No. 2 dated February 1996)

Para No.	Description
1.2	Delete whole paragraph.
1.3	Delete last sentence.
2.2	Replace with: "Any preference for one or more of these pavement types is stated in the Construction Requirements. Otherwise design may be carried out for any of the permitted options."
2.14	Delete "Subject to the approval of the Overseeing Organisation, it" and insert "It".
5.12	Delete "Costs of the usebunds, PA etc)".
Fig 2.1, Note 1	Delete last two sentences.
Fig 2.2, Note 1	Delete last sentence.
Fig 2.2, Note 8	Delete.
Fig 2.4, Note 1	Delete last sentence.

DMRB VOLUME 7

DOCUMENT: HD 27/94 Pavement Construction Methods (Incorporating Amendment No.1 dated March 1995)

Para No.	Description
1.2	Delete whole paragraph.
1.3	Delete last sentence.
2.17	Delete last sentence.
4.11	Delete "engineer" and replace with "Designer".
4.13	Delete last sentence and replace with: "The use of modified binders is permitted if so stated in the Construction Requirements."
4.17	Delete "Engineer" and replace with "Designer".
5.17(c)	Replace with: "On tight radius curves and loops of radii less than 75 metres, or when gradients exceed 10 per cent, unless permitted in the Construction Requirements."
5.17(1)	Replace with: "Where traffic levels exceed 6,000 commercial vehicles per lane per day, unless permitted in the Construction Requirements."
5.21	Replace with: "Porous asphalt shall not be used on jointed concrete or flexible composite pavements unless permitted in the Construction Requirements."
5.25	Delete last two sentences and replace with: "Minor flooding may be experienced at locations with camber changes and rolling crowns shall be provided where stated in the Construction Requirements."
5.26	Delete last two sentences and replace with: "On trunk roads with kerbs, the detail proposed for motorways in a) above could be hazardous to cyclists. In this latter situation porous asphalt shall not be applied unless stated in the Construction Requirements."

Para No.	Description
5.27	Replace with: "The Construction Requirements shall provide design details for locations where open channels are unacceptable."
5.33	Replace with: "Porous asphalt shall only be considered for surfacing concrete bridge decks where permitted in the Construction Requirements."
5.64	Delete whole paragraph, including heading.
5.69	Delete whole paragraph.

DMRB VOLUME 7

DOCUMENT: HD 28/94 Skidding Resistance

Para No.	Description
1.4	Delete whole paragraph.
1.5	Delete last sentence.
2.22	Replace last sentence with: "In the event of a change in the material delivered to site the requirements of paragraph 2.21 shall apply to the replacement material."
2.24	Delete second sentence. Replace third sentence with: "Advice on the use of high PSV materials is given in the Notes for Guidance on the Specification (MCHW2) (Series NG900)."

DMRB VOLUME 7

DOCUMENT: HD 29/94 Structural Assessment Methods (Chapter 5 Paragraphs 5.38 - 5.46
inclusive superseded by HA 72/94)

Para No.	Description
1.2	Delete whole paragraph.
5.38 to 5.46	Delete all paragraphs and replace with: "Advice on the use and limitations of ground penetrating radar for pavement assessment is given in HA 72/94"

DMRB VOLUME 7

DOCUMENT: HD 30/97 Structural Assessment Procedure

Para No.	Description
1.5	Delete whole paragraph.

DMRB VOLUME 7

DOCUMENT: HD 31/94 Maintenance of Bituminous Roads (Incorporating Amendment No.1 dated March 1995)

Para No.	Description
1.2	Delete whole paragraph.
1.3	Delete last sentence.
2.14	Delete last sentence and replace with: "To assist gathering information on the use of modified binders, the DBFO Co shall obtain from the surface dressing contractor the details contained in Figure 2.4 and supply these to the Department's Representative."
2.15	Delete last sentence.
4.24	Delete fifth sentence.
5.28	Replace with: "To obtain data for resurfacing schemes where recycled materials have been used, the DBFO Co shall send to the Department's Representative the information listed in Figure 5.2."

DMRB VOLUME 7

DOCUMENT: HD 32/94 Maintenance of Concrete Roads

Para No.	Description
1.4	Delete whole paragraph.
1.5	Delete last sentence.

DMRB VOLUME 8

DOCUMENT: TD 35/91 All Purpose Trunk Roads. MOVA System of Traffic Control at Signals

Para No.	Description
2.2	Delete and substitute with: "MOVA control shall be incorporated at existing installations where specified in the Construction Requirements."
2.3	Delete.
2.4	Delete.

DMRB VOLUME 8

DOCUMENT: TA 13/81 Requirements for Installation of Traffic Signals and Associated Control Equipment

Para No.	Description
3.5	Delete "Departmental Standard BD 2/79 (Ref. 11)" and insert "Part 3 of Schedule 4."

DMRB VOLUME 8

DOCUMENT: TA 14/81 Procedures for Installation of Traffic Signals and Associated Equipment

Para No.	Description
2.3	Delete whole paragraph.
3.1	Delete definition of PURCHASER and substitute: ""Purchaser" means DBFO Co". Delete definition of HIGHWAY AUTHORITY.
4.2	Delete first sentence and substitute: "The Designer should produce a detailed plan as required in Appendix A of BS505 (Ref.2) of the layout of the site and signal installation."
7.4	Delete 1st sentence and substitute: "Where a particular type of duct is required this shall be stated in the Construction Requirements."
7.7	Amend 2nd sentence to read: "It is necessary to ensure that"
8.4	Delete "by the contractor and agreed with the Purchaser" and substitute: "in the Construction Requirements".
9.3	Delete paragraph and substitute: "Where signals are to become part of a UTC scheme the Department will have ascertained any local Post Office requirements with respect to UTC housing and private wire restrictions. The Construction Requirements will specify the equipment so as to meet these requirements."
10.1	Delete "contract drawing" and substitute "Construction Requirements".
10.2	Add at end: "if so specified in the Construction Requirements."
10.4	Delete "contract diagram" and substitute "Construction Requirements".
10.7	Delete "by the Purchaser" and substitute "in the Construction Requirements".
11.1	Delete "contract document" and substitute "Construction Requirements".
14.4	Delete "contract" and substitute "Construction Requirements".

Para No.	Description
14.2	Delete and substitute with: "The extent of tests required should be stated in the Construction Requirements."
Section 15.1	Delete whole section.
Appendix 1	Delete whole appendix.

DMRB VOLUME 8

DOCUMENT: TA 58/92 Traffic Signs and Road Markings for Lane Gains and Lane Drops on
All Purpose Dual Carriageway and Motorway Trunk Roads

Para No.	Description
1.10	Delete whole paragraph.
3.3	Delete "may also" in last sentence and replace with "should".

DMRB VOLUME 8

DOCUMENT: TD 6/79 Transverse Yellow Bar Markings at Roundabouts

Para No.	Description
1.2	Delete "prior HQ" and substitute "the Department's" and add "unless this is stated in the Construction Requirements".

DMRB VOLUME 8

DOCUMENT: TA 19/81 Reflectorisation of Traffic Signs (Clauses 7.6 and 7.7 are superseded by Chapter 8 of the Traffic Signs Manual)

Para No.	Description
4.2	Amend paragraph: "As stated in the Construction Requirements any sign for which greater target value is required and/or any sign with a green or blue background or which needs greater visibility distance must be reflectorised"
5	Delete.
7.2.2	Amend first sentence: ".....but where greater target value and/or legibility distance is required as stated in the Construction Requirements, materials to Table 1 or 1A of Annex C must be used."

DMRB VOLUME 8

DOCUMENT: TD 33/90 The Use of Variable Message Signs on All Purpose and Motorway Trunk Roads

Para No.	Description
6.7	Delete penultimate sentence and substitute: "Any departure from this requirement shall be in accordance with the Construction Requirements".
8.4	Delete paragraph and substitute: "The application of flashing amber lamps to any sign shall be where so stated in the Construction Requirements".
9.2.2	Delete 2nd sentence and substitute: "Such proposals will require authorisation in accordance with the procedure stated in the Construction Requirements".
9.3.5	Amend paragraph to read: "If a sign of class is to be used it shall conform to the character set, symbols and spacings specified in the Construction Requirements".
9.3.6	Delete second sentence and substitute: "Any proposed character set, symbols and spacings to be used for this class of sign shall be as stated in the Construction Requirements".
9.4.1	Delete last sentence and substitute: "Any sign of this type shall be in accordance with the Construction Requirements".
10.3	Delete last sentence and substitute: "The use of these messages shall be as stated in the Construction Requirements".
10.5	Delete last sentence and substitute: "Non-prescribed characters shall be in accordance with the Construction Requirements".

DMRB VOLUME 8

DOCUMENT: TA 60/90 The Use of Variable Message Signs on All Purpose and Motorway Trunk Roads

Para No.	Description
4.1	Delete paragraph and substitute: "The use of VMSs shall be as stated in the Construction Requirements".
4.2 & 4.2.1	Delete 4.2 first sentence and 4.2.1 first sentence & substitute: "The particular type of VMS to be used and the number and content of legends or messages required shall be as stated in the Construction Requirements".

DMRB VOLUME 8

DOCUMENT: TD 30/87 Design of Road Lighting for All Purpose Trunk Roads

Para No.	Description
1.4 & 1.5	Delete paragraphs 1.4 & 1.5 and substitute: "Road lighting shall be provided where stated in the Construction Requirements".
3.2.3	Delete paragraph and substitute: "Areas where special light control is required and its performance requirements shall be as stated in the Construction Requirements".
4.1	Add to end of sentence: "and subject to any extra requirements stated in the Construction Requirements".
4.3	Delete paragraph and substitute: "Lamp types shall be as stated in the Construction Requirements".
5.4	Consultations during the design procedure shall be carried out with interested parties as defined in the Construction Requirements.
6.1	Delete and replace with: "Design records shall be provided in accordance with the Construction Requirements."
6.2	Delete.
-	Design in accordance with the additional requirements of Appendix 1 to this Annex 2 "Lighting Performance Requirements for Rural Roundabouts".

DMRB VOLUME 8

DOCUMENT: TD 34/91 Design of Road Lighting for Motorway Trunk Roads

Para No.	Description
1.4	Delete paragraph and substitute: "Options for the modes and arrangements of lighting to be used shall be as stated in the Construction Requirements".
4.2.4	Delete whole paragraph & substitute: "Special light control requirements shall be imposed as stated in the Construction Requirements".
5.1.1	Delete paragraph and substitute: "Lantern arrangement and mounting height shall be in accordance with the options set out in Section 5 Reference 3 and as detailed in the Construction Requirements."
5.3.1	Delete paragraph and substitute: "The choice shall be as given in Clause 4 of Reference 3, except where it has already been determined and stated in the Construction Requirements".
6.3	Delete whole paragraph.
7.1.1	Delete and replace with: "Design records shall be provided in accordance with the Construction Requirements".
7.1.2	Delete.

DMRB VOLUME 8

DOCUMENT: TA 64/94 Narrow Lane and Tidal Flow Operations at Road Works on
Motorways and Dual Carriageway Trunk Roads with Full Width
Hard Shoulders

Para No.	Description
1.4	Delete last sentence.
1.7	Delete "Engineers" insert "The Designer".
1.13	Delete second and third sentences.
5.4	Delete "Resident Engineer's" insert "Department's Agent's".

DMRB VOLUME 10

DOCUMENT: HA 55/92 Landform and Alignment

Para No.	Description
0.7	Delete.
0.9 - 0.11	Delete.
1.5 para 2	Delete.

DMRB VOLUME 10

DOCUMENT: HA 56/92 Planting, Vegetation and Soils

Para No.	Description
0.7	Delete.
0.9 - 0.11	Delete.

DMRB VOLUME 10

DOCUMENT: HA 57/92 Integration with Rural Landscapes

Para No.	Description
0.7	Delete.
0.9 - 0.11	Delete.

DMRB VOLUME 10

DOCUMENT: HA 58/92 The Road Corridor

Para No.	Description
0.7	Delete.
0.9 - 0.11	Delete.

DMRB VOLUME 10

DOCUMENT: HA 60/92 Heritage

Para No.	Description
0.7	Delete.
0.9 - 0.11	Delete.

DMRB VOLUME 10

DOCUMENT: HA 61/92 Contract and Maintenance Implementation

Para No.	Description
0.7	Delete.
0.9 - 0.11	Delete.
Chapter 2	Delete Chapter and insert "For details of landscape requirements see the Construction Requirements".

DMRB VOLUME 10

DOCUMENT: HA 62/92 Widening Options and Techniques

Para No.	Description
0.7	Delete.
0.9 - 0.11	Delete.

DMRB VOLUME 10

DOCUMENT: HA 63/92 Improvement Techniques

Para No.	Description
0.9 - 0.11	Delete.

DMRB VOLUME 10

DOCUMENT: HA 65/94 Design Guide for Environmental Barriers

Para No.	Description
1.3	Delete last sentence.
1.5	Delete whole paragraph.

DMRB VOLUME 10

DOCUMENT: HA 75/95 Trunk Roads and Archaeological Mitigation

Para No.	Description
All occurrences	Delete "Design Organisation" and insert "Designer"

**Appendix 1 to Annex 2
to Part 2 of Schedule 4**

Lighting Performance Requirements for Rural Roundabouts

1. General

- 1.1 Road lighting for at-grade trunk road rural roundabouts ("**Rural Roundabouts**") shall be designed in accordance with the principles of BS 5489 Parts 1, 2 and 4 and the performance requirements of TA 30/87 in conjunction with the additional requirements of this Appendix 1.
- 1.2 The lighting of Rural Roundabouts shall be designed and constructed so as to:
 - 1.2.1 achieve harmony of the lighting infrastructure with the local landscape and ecology;
 - 1.2.2 employ cost effective lighting equipment;
 - 1.2.3 minimise routine maintenance;
 - 1.2.4 reduce energy consumption;
 - 1.2.5 minimise upward light spill;
 - 1.2.6 minimise light spill outside the highway boundary; and
 - 1.2.7 maximise light on the carriageway.

2. Road Surface Requirements - Roundabout Illuminance

- 2.1 Subject to paragraph 2.2 below, the minimum level of illuminance on the Rural Roundabout carriageway surface for all unlit rural trunk roads shall be 10 lux in line with the minimum recommended level of illumination within BS 5489: Part 4: 1992.
- 2.2 If lighting at a Rural Roundabout is complemented by lighting to or from the Rural Roundabout then the required illuminance value shall be as recommended in BS 5489 for the given class of road.

3. Equipment - Luminaire

The luminaire is the essential element through which the performance of the lighting system, the reduction in environmental impact and reduced energy consumption are achieved. The luminaire for Rural Roundabouts shall comply with the following criteria:

- 3.1 full cut-off optical enclosure - flat glass;
- 3.2 IP65, minimum, sealed optical unit and IP54, minimum, gear enclosure;
- 3.3 the enclosure, including canopies, gear compartment and mountings, shall be of one colour, grey and non-reflective. When applicable, the enclosure colour should harmonise with the painted column colour;

- 3.4 unit mounted horizontal to the road surface so as to prevent glare to traffic (i.e. so that the unit is not rotated about its longitudinal axis);
- 3.5 high-mast lighting shall not be used, due to the increased maintenance costs involved.

4. **Equipment - Column**

To minimise the day time appearance of the road lighting system for Rural Roundabouts, the columns shall be unobtrusive and shall harmonise with the surrounding environment whilst obtaining the optimum lighting performance. Each column shall comply with the following criteria:

- 4.1 the shaft shall be circular or multi-faceted cross-section with continuous tapering or parallel form above the base compartment;
- 4.2 the surface shall be mid-grey in colour in open areas and ark-grey or brown where adjacent to wooded areas;
- 4.3 where bracket arms are used they shall match the form and proportion of the column;
- 4.4 bracket arms shall be uptilted to a maximum of 5° from the horizontal;
- 4.5 columns exceeding 18m shall not be used due to the additional maintenance requirements;
- 4.6 in areas with mitigating landscape (for example woodland, cutting, etc) the column height shall not break the skyline.

5. **Equipment - Feeder Pillars**

- 5.1 Feeder pillars are the focal point of the electrical supply to the lighting installation and consideration shall be given to their location by balancing access, visibility and cabling needs.
- 5.2 The feeder pillar shall not be placed within the visibility envelope (as defined in TD 16/93) so as to prevent the feeder pillar obscuring the stopping sight.
- 5.3 The position, relative to the relevant roundabout shall be such as to minimise cabling, have easy access for maintenance personnel and be inconspicuous in its surroundings.
- 5.4 When located adjacent to or within trees and shrubbery, the feeder pillar shall be painted dark green.
- 5.5 Feeder pillars shall be located so that access is maintained around the feeder pillar including when the feeder pillar door(s) are open.

**Annex 3
to Part 2 of Schedule 4**

List of Circular Roads and Other Documents

The following lists of documents have been issued over a period of time either by the Welsh Office or its predecessors. They provide instruction, advice and guidance as appropriate on the technical and procedural aspects of design and construction. They should be read in the context of the date at which they were issued. Some titles and reference may subsequently be changed.

Documents marked * are not publicly available and copies are contained on CD Rom.

Number	Title
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Welsh Office Circulars

*67/75	Preservation of Mileposts
*45/79	Marking of Loop Detectors
*1/82	Bus Shelters and Bus Stop Signs on Trunk Roads
*60/91	Reflecting Road Studs
*50/94	Revision of the Traffic Signs Regulations and General Directions
*14/95	Design and Use of Scaffold Guards over Motorways and Trunk Roads
*3/96	Traffic Signs to Tourist Attractions and Facilities in Wales
*32/96	Road Humps
*49/96	Post-Tensioned Grouted Duct Concrete Bridges: CHE Memorandum 40/96
1/97	The Zebra, Pelican and Puffin Crossing Regulations and General Directions 1997
26/98	Thaumasite Problem

BE Endorsement

*1/91	Abnormal Indivisible Loads
*3/91	Cantilever Traffic Signal Masts
*6/91	Ground Anchors
*7/91	High Mast Lighting
*1/94	CCTV Mounting Poles

CHE Memorandum

*30/96	Normal and Low Containment Aluminium Parapets
*32/96	Dry Stone Walls
*42/96	The Operational Maintenance of Bridge Access Gantries and Runway
36/96	Liaison with NRA on Highway Construction and Maintenance Schemes
40/96	Post-Tensioned Grouted Duct Concrete Bridges
44/97	Sub-standard Aluminium Bridge Parapets Addendum No 1

EU Guidance Notes

*EU GN 4	Masonry and Brickwork Facing to Highway vehicle Containment parapets
*EU GN 37	Temporary Bridge Supports
*EU GN 42	Mortars For Minor Concrete Repairs
*EU GN 45	Permanent Formwork

*EU GN 49 Assessment of Bridge Deck Cantilevers: Accidental Wheel Loading

Communication

* Movement Control Circular 206/207: Drawings, Specifications and Instructions

* Welsh Office Electrical and Mechanical Specifications

Local Transport Notes

LTN 1/86	Cyclists at Road Crossings and Junctions HMSO, 1986. ISBN 0 11 550782 5
LTN 2/86	Shared Use by Cyclists and Pedestrians HMSO, 1986. ISBN 0 11 550783 3
LTN 2/87	Signs for Cycle Facilities HMSO, 1987. ISBN 0 11 550834 1
LTN 1/89	Making Way for Cyclists HMSO, 1989. ISBN 0 11 550908 9
LTN 1/94	The Design and Use of Directional Informatory Signs HMSO, 1994. ISBN 0 11 551610 7
LTN 2/94	Directional Informatory Signs Interim Design Notes HMSO, 1994. ISBN 0 11 551611 5
LTN 1/95	The Assessment of Pedestrian Crossings HMSO, 1995. ISBN 0 11 551625 5
LTN 2/95	The Design of Pedestrian Crossings HMSO, 1995. ISBN 0 11 551626 5

Traffic Advisory Leaflets

(The list of traffic advisory leaflets below is not comprehensive. Leaflets describing good design practice on specific schemes are not included but reference can be found in the Bibliographies 9/96 and 10/96 which are available from The Traffic Advisory Unit, DITM Division, Department of Transport, Zone 3/23 Gt Minster House, 76 Marsham Street, London SW1P 4DR.)

1/87	Measures to Control Traffic for the Benefit of Residents, Pedestrians and Cyclists
2/87	Planning Cycle Routes, "New Routes for Cyclists" - A Film Guide
1/88	Provision for Cyclists at Grade Separated Junctions
3/90	Urban Safety Management - Guidelines from the IHT
4/90	Tactile Markings for Segregated Shared Use by Cyclists and Pedestrians
4/91	Audible and Tactile Signals at Pelican Crossings
5/91	Audible and Tactile Signals at Controlled Crossings
7/91	20 mph Speed Limit Zones
2/93	20 mph Speed Limit Zone Signs
7/93	Traffic Calming Regulations
8/93	Advanced Cycle Stop Line for Cyclists
10/93	Toucan Crossings
11/93	Rumble Devices
12/93	Overrun Areas
13/93	Gateways
1/94	VISP - A Summary
2/94	Entry Treatments
3/94	Traffic Calming - Emergency Services
4/94	Speed Cushions
7/94	"Thumps"
9/94	Horizontal Deflections

1/95	Speed Limiter Signs - A Guide to Good Practice
2/95	Raised Rib Markings
3/95	Cycle Routes
5/95	Parking for Disabled People
6/95	Pedestrian Crossings - Assessment and Design
7/95	Traffic Islands for Speed Control. Missing
8/95	Traffic Models for Cycling
1/96	Traffic Management in Historic Areas
2/96	75 mm High Road Humps
4/96	Traffic Management and Emissions
5/96	Further Development of Advanced Stop Signs
6/96	Traffic and Vehicle Noise
7/96	Highways (Road Humps) Regulations 1996
10/96	Traffic Calming Bibliography
1/97	Cyclists at Road Narrowings
3/97	The "MOVA" Signal Control System
4/97	Rising Bollards
5/97	Cycles and Lorries
7/97	Supply and Demand for Cycle Parking
8/97	Cycling Bibliography
9/97	Cyclists at Roundabouts Continental Design Geometry
10/97	Halifax Historic Core Zone
11/97	Cycling to Work
12/97	Chicane Schemes
1/98	Speed Cushion Schemes
3/98	Traffic Calming Bibliography
4/98	Toucan Crossing Development

Stand-alone Publications

The Appearance of Bridges and Other Highway Structures 1996
 Disability Unit Circular 1/91
 Highway Safety Accident and Prevention 1986 (Guidelines 2nd ed. Published by the Institute of Highway and Transportation)
 The Noise Insulation Regulations 1975 Memorandum DoE Circular 114/75
 STATS 20 1994
 STATS 21 1995
 Lighting in the Countryside: Towards Good Practice, published by The Department of the Environment and The Countryside Commission, 1997 (ISBN 0-117533912).
 Welsh Office Highways Directorate Value for Money Manual
 Footways Design and Maintenance Guide

BF298069.06