

**INTERIM ADVICE NOTE 44/05
(IAN 44/05)
(REVISION 4 OF IAN 44)**

**INTERIM REQUIREMENTS FOR ROAD
RESTRAINT SYSTEMS
(VEHICLE & PEDESTRIAN)**

SUMMARY

This Interim Advice Note provides:

- Information and guidance on changes to the provision and procurement process in relation to Road Restraint Systems (Vehicle & Pedestrian) to ensure compliance with BS EN 1317-1 to 3 and DD ENV 1317-4:2002.
- Information on how the Non-Proprietary Safety Barrier Systems (NPSBS) are to be used.

INSTRUCTIONS FOR USE

This Revision 4 of IAN 44/05 supersedes Amendment No. 1 of IAN 44/05 issued on 3 February 2005.

For reference purposes, the previous versions of this IAN 44 have been:

- i) IAN 44/02 (Original) dated August 2002
- ii) IAN 44/02 (Revision 1) dated August 2003
- iii) IAN 44/02 (Revision 2) dated June 2004
- iv) IAN 44/05 (Revision 3) dated 20th January 2005
- v) IAN 44/05 Amendment No 1 dated 3rd Feb 2005

**INTERIM REQUIREMENTS FOR ROAD RESTRAINT SYSTEMS
(VEHICLE & PEDESTRIAN)**

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INTERIM REQUIREMENTS FOR ROAD RESTRAINT SYSTEMS (VEHICLE & PEDESTRIAN)

1 Introduction

1.1 This Advice Note provides guidance on changes to the provision and procurement process in relation to Road Restraint Systems (RRS) to ensure compliance with European Commission requirements for RRS as set out in BS EN 1317-1 to -3 and DD ENV 1317-4:2002, and in prEN1317-5 & -6 which are currently available as drafts. The introduction of the various parts of BS EN 1317 and DD ENV 1317-4:2002 ensures a consistent performance based Standard is used in the testing, manufacture and supply of RRS throughout the European Economic Area (EEA) and will thereby remove any 'barriers to trade'.

This update to the Advice Note also provides guidance and information on the Approved EN 1317 Road Restraint Systems and the use of the Non Proprietary Safety Barrier Systems (NPSBS).

1.2 The 'Interim Requirements for Road Restraint Systems (Vehicle and Pedestrian)' (IRRRS) (Revision 1) has been produced to ensure compliance with the various parts of BS EN 1317 and DD ENV 1317-4:2002. It includes criteria for determining the need for permanent and temporary safety barriers, vehicle parapets, terminals and transitions/connections between different types of safety barriers and vehicle parapets, crash cushions, pedestrian parapets, pedestrian guardrails, arrester beds and anti-glare screens.

The technical and safety advice for vehicle restraints systems have been reviewed and updated and is contained within the IRRRS (Revision 1) document dated December 2004;

The main updates to IRRRS (Revision 1) were;

- Protection of lighting columns in verges
- Containment Classes for End Terminals
- Protection at verge embankments
- Reduction of gaps in verge safety barriers
- Passive safety advice

1.3 BS EN 1317-1 to -3 and DD ENV 1317-4:2002 are performance based Standards which require Design Organisations to specify [in Appendix 4/1 (MCHW 2)], for a particular location, the following performance criteria:

- (i) 'Containment Performance Class' and 'Working Width Class' for safety barriers and transitions;
- (ii) 'Containment Performance Class' and 'Working Width Class' for vehicle parapets;
- (iii) 'Performance Class' and Lateral Displacement Zone Class for terminals; and
- (iv) 'Performance Level', 'Velocity Class', 'Lateral Displacement Zone Class' and type of crash cushion [redirective (R) or non-redirective (NR)] for crash cushions.

Design Organisations must NOT specify the use of any specific type/design of safety barrier or vehicle parapet etc., but instead requirements must be expressed in performance criteria terms stated above. Contractors will be allowed to formally propose for the HA's review / acceptance any safety barrier, vehicle parapet (except concrete vehicle parapets) or crash cushion that complies with the relevant parts of BS EN 1317 and, for terminals and transitions/connections, with DD ENV 1317-4:2002, and the 'Containment Performance Class', 'Performance Class', 'Performance Level', 'Working Width Class', 'Velocity Class' and 'Lateral Displacement Zone Class' criteria specified in Appendix 4/1 (MCHW 2) of the Contract.

1.4 Vehicle Restraint Systems proposed by Contractors must be subject to acceptance prior to use on a scheme specific basis. The acceptance process is detailed in Section 5 and also in the flowcharts at Appendices 4.1 to 4.4 inclusive.

1.5 The Highways Agency have previously allowed the use of the Non-Proprietary Safety Barrier Systems (NPSBS) on the Trunk Road Network through the departure from standard submission process. The reason for this was because there were insufficient approved EN 1317 compliant Proprietary road restraint systems to fulfil the needs of the Highway Agency. Recently, however, the number of approved EN1317 compliant road restraint systems have increased to such an extent that the use of the NPSBS is now no longer required. Therefore the NPSBS dated June 2002 and the NPSBS (Revision 1) dated July 2005 are now withdrawn for **new** Contracts on Highways Agency Roads. Consequently, the NPSBS (Revision 1) is only to be used for reference purposes, maintenance inspections, minor maintenance replacement works, and repair works for accident damage. The Containment Performance Classes and Working Widths stated in the NPSBS (Revision 1) are still deemed to be appropriate for existing safety barriers including 'like for like' repairs.

1.6 A number of barriers detailed in the NPSBS have recently been retested in accordance with the requirements of BS EN 1317-2 and are shown to comply. These vehicle restraint systems have been included in the Highways Agency's Approved Road Restraint System list and a copy of this list can be obtained by emailing:

RoadRestraintSystems@highways.gsi.gov.uk

It should be noted that it is the intention of the Highways Agency to hand over the rights to these products to Industry by the end of this financial year 2005/2006, with the view that they are taken on, re-named and promoted as proprietary systems. These will then replace the NPSBS in the Approved Road Restraint System List. However, in the interim, the Highways Agency will continue to provide information and guidance on these products.

1.7 For new Contracts, the Working Width Class's given in the Highways Agency's Approved Road Restraint System List must be used rather than the values given in the NPSBS (Revision 1). This is because the latest dynamic testing to BS EN 1317-2 has shown that the Working Widths of some of these safety barriers have increased from those detailed in the NPSBS (Revision 1) Data Sheets. The primary reason for this is that modern vehicles are more rigid and do not absorb as much impact energy as the older vehicles that were used in pre-EN 1317 tests. Consequently the safety barriers re-tested deflected more, resulting in larger Working Widths. Therefore the Working Width Classes shown on the Approved List must be used if Contractors are proposing to use these safety barriers on future Contracts.

1.8 For those Highways Agency's Schemes that have commenced on site, the Working Widths stated in the NPSBS (Revision 1) Data Sheets will be acceptable without the need for a Departure from Standard submission to the Overseeing Organisation.

1.9 For those schemes in the preparation stage that have not yet commenced on site, the Road Restraint Systems in the Approved Road Restraints Systems List **MUST** be used. For those schemes that have not commenced on site and have already proposed to use the NPSBS then the working width of the proposed safety barriers must be re-examined to determine if there is an increased risk to road users. Specific hazards that will need close examination are where Road restraint Systems are located adjacent to:

- Bridge piers
- Lighting columns,
- Large signposts
- Or other objects in close proximity to the system.

If a system from the Approved List cannot be accommodated then a Departure from Standard (DfS) submission is required.

1.10 The Transitions/Connections detailed in the NPSBS (Revision 1) are deemed acceptable for use on the Highways Agency's road network until amendments to DD ENV 1317-4:2002 are completed, at which time further testing of the Transitions/Connections may be required. A Departure from Standard submission is not required for the use of transitions /connections detailed in the NPSBS (Revision 1).

1.11 The Terminals listed in the NPSBS (Revision 1) are deemed acceptable for use on the Highways Agency's road network until amendments to DD ENV 1317-4:2002. These can be used where the speed limit is not greater than 50mph. These Terminals will also be accepted for use on the departure end of safety barriers on dual carriageway roads where the speed limit is greater than 50mph. A Departure from Standard submission is not required for the use of Terminals detailed in the NPSBS (Revision 1).

2 Withdrawal / Amendment of Standards

2.1 For those works defined in Section 3, Paragraph 3.1 below, the DMRB Standards, Advice Notes and IAN's are either amended or withdrawn and replaced as stated in Appendix 1.

2.2 For all Road Restraint System work outside the scope of Section 3, Paragraph 3.1 then those Standards and Advice Notes etc. referred to as being either amended or withdrawn in Paragraph 2.1 must still apply.

3 Implementation

3.1 The IRRRS (Revision 1) (dated December 2004) document is to be used on new contracts as follows (further guidance is given in the flowchart in Appendix 4.2 below)

- (i) All new highway work (including Targeted programme of Improvement Schemes (TPI's);
- (ii) All Maintenance Renewal Schemes where it has been identified during the pre design survey process that the Road Restraint System(s) need to be replaced, such as Road Restraint Systems that have reached the end of their useful life and are detrimental to safety, and those Road Restraint Systems not meeting current requirements for Containment.

3.2 The only exceptions are:

- (i) Minor Maintenance Road Restraint System replacement works (safety barrier, vehicle parapet, pedestrian parapet) due to accident damage, where there will be 'like for like' replacement;
- (ii) Schemes already under construction and those currently being prepared where this would result in significant additional cost or delay (consideration must be given to bringing those Road Restraint Systems up to current standards in future Maintenance programmes);
- (iii) Where existing Road Restraint Systems are to be dismantled and reinstated. Such systems must comply with current geometric design and installation requirements;

- (iv) Where existing Road Restraint Systems need to be continuously extended by up to 500 m, then the same system as the existing system may be used provided it meets the current containment requirements.

3.3 If in doubt, Design Organisations/ Agents must seek guidance from their Traffic Operations (TO) or Major Projects (MP) Project Sponsor, as applicable, on a scheme specific basis.

4 Formal Application to Use IRRRS (Revision 1)

4.1 Formal application to use the IRRRS (Revision 1) is required from Design Organisations/ Agents on a scheme specific basis. Such application must be made by means of a Departure from Standard for 'aspects not covered by Standard' submitted directly to the appropriate TO or MP Project Sponsor as applicable.

4.2 This procedure is to be followed to ensure that all work involving IRRRS (Revision 1) is accepted and recorded for audit and reporting purposes.

4.3 In addition, any departure from the requirements of IRRRS (Revision 1) must require a Departure from Standard submission for 'aspects not covered by Standard' from the Design Organisations / Agents to the TO or MP Project Sponsor as applicable. Further guidance is given in the flowchart in Appendix 4.4 below.

5 Formal Application to Use Proprietary Road Vehicle Restraint Systems

5.1 Contractors are allowed to formally propose, in accordance with Series 400 of the Contract Specification (MCHW 1), any safety barrier, vehicle parapet (except concrete vehicle parapets) or crash cushion that complies with the relevant parts of BS EN 1317 and with DD ENV 1317-4:2002 for a terminal and a transition/connection, and the 'Containment Performance Class', 'Performance Class', 'Performance Level', 'Working Width Class', 'Velocity Class' and 'Lateral Displacement Zone Class' requirements specified in Appendix 4/1 (MCHW 2) of the Contract documentation. Once the proposals are received by Design Organisations / Agents they must be submitted to the TO or MP Sponsor as applicable for review / acceptance. The TO or MP Sponsor must process the submission as follows:

(i) For those Vehicle Restraint Systems included in the Highways Agency's Approved Road Restraint Systems list.

A copy of the latest Highways Agency's Approved Road Restraint Systems list can be obtained by emailing to:

RoadRestraintSystems@highways.gsi.gov.uk

- (a)** These systems can be accepted for the Containment Performance Class', and 'Working Width' etc. requirements shown, without recourse to a Departure from Standard submission. Documentation showing compliance with and operation of the Quality Assurance requirements of Clause 104 (MCHW 1, Series 100) and the associated quality management schemes detailed in Appendix A (MCHW 1, Appendices) must however be submitted for acceptance.

(b) For those Vehicle Restraint Systems NOT contained in the Highways Agency's Approved Road Restraint Systems list.

These proposals will need to be accompanied by:

- Certification of compliance with BS EN 1317-1, BS EN 1317-2, BS EN 1317-3 and DD ENV 1317-4: 2002 as appropriate and other submission documents and information detailed in Appendix 4/2 (MCHW 2) of the Contract documentation;
- Documentation showing compliance with and operation of the Quality Assurance requirements of Clause 104 (MCHW 1) and the associated quality management schemes detailed in Appendix A (MCHW 1, Appendices).

The Contractor must be promptly notified of the decision taken in accordance with the timescales allowed under the Contract. Approved systems will be included in the Highways Agency's List of Approved Road Restraint Systems.

(ii) Vehicle Restraint Systems which require a Departure from Standard for 'aspects not covered by Standard' Submission by means of Departure Approval System (DAS).

The following require a Departure from Standard for 'aspects not covered by Standard' submission to DAS:

- (a) **Vehicle Parapet System Contained in Appendix 2**
- (b) **Vehicle Restraint Systems that depart from the Manufacturers' Specifications submitted and approved under the Appendix 4/2 (MCHW 2) procedures.**

Such proposals will need to be supported by a manufacturer's declaration confirming that the changes are acceptable. The departure submission will need to be carefully considered and this may take time depending on the exact nature of the departure presented.

5.2 Flowcharts of the above procedures are provided for guidance in Appendix 4.1 and 4.4 below.

5.3 In order to keep the number of Departure from Standard submissions to a minimum a single submission will be permitted for use of the same type of Vehicle Restraint System, where this is proposed by a Contractor at a number of different locations on any one scheme. In so doing, however, the exact location of each Vehicle Restraint System [as specified in Appendix 4/1 (MCHW 2)] will need to be defined on the submission to enable each to be entered into DAS on a location specific basis.

6 Incorporation into Contract Documents

6.1 A set of general guidance notes on incorporating IRRRS (Revision 1) requirements into contract documents is attached for information purposes in Appendix 5. Should any further guidance or advice be required, this should be sought from either TO or MP Project Sponsor as applicable.

7 Copies of IRRRS (Revision 1) and NPSBS (Revision 1)

7.1 The IRRRS (Revision 1) and NPSBS (Revision 1) are controlled documents and are only available in CD format by contacting the following e mail address:

ha.irrrs@mouchelparkman.com

Please note that electronic copies of the above documents cannot be issued.

7.2 To ensure a copy is despatched promptly please provide details of the scheme for which the IRRRS (Revision 1) is required together with full Company name, address, contact name, telephone number and email address.

7.3 IRRRS (Revision 1) is a controlled document so any future revisions will be made available to HA's staff and known external recipients of the document.

8. Contact for Technical Queries

8.1 All technical queries on IRRRS (Revision 1) should be directed by email to Daniel Ruth or Alan Smith in the Risk Management and Vehicle Restraint (RMVR) Team of Safety Standards and Research (SSR) at the following email addresses:

daniel.ruth@highways.gsi.gov.uk

or

alan.smith@highways.gsi.gov.uk

Appendix 1. - List of Documents Previously Withdrawn/ Amended

Standard / Advice Note IAN or CHE Memo	Title	Source	Aspect	Replacement Document
TD 19/85 and Amendments	Safety Fences and Barriers	DMRB 2.2.8	Totally withdrawn	IRRRS (Revision 1)
TD 32	Wire Rope Safety Fence	DMRB 2.2.3	Totally withdrawn	IRRRS (Revision 1)
TA 45	Treatment of Gaps in Central Reserve Safety Fences	DMRB 2.2	Chapters 1 to 4, 5 (Part) & 6 withdrawn Chapter 5 withdrawn	IRRRS (Revision 1) Chapter 4 TA 92 (DMRB 8.4.6)
TA 57	Roadside Features	DMRB 6.3	Chapter 1 [See HA39 (DMRB 4.2)] Chapter 2 - withdrawn Chapter 4 - withdrawn Chapter 5 – withdrawn Chapter 6 - withdrawn	TA69 (DMRB 6.3.3) IRRRS (Revision 1) Chapter 10 Chapter 12 Chapter 11
BA 48	Pedestrian Protection at Headwalls, Wingwalls and Retaining Walls	DMRB 2.2.2	Totally withdrawn	IRRRS (Revision 1) Chapter 10
BD 2	Technical Approval of Highway Structures	DMRB 1.1.1	Annex A1 Page A/2 Para 3.6, Delete Text “Road restraint system type” and replace with “Road Restraint System requirements”. Annex B1 Page B/2, Delete text “ENV 1317-4:2002 Road Restraint Systems – Part 4 Terminals and Transitions” and replace with “DD ENV 1317-4:2002 Road Restraint Systems - Part 4 Performance Classes, impact test acceptance criteria and test methods for terminals and transitions of safety barriers”. Annex B1 Page B/3, Delete text “TD 19/ (Date)*” and replace with “IRRRS (Revision 1) (Date)*”.	

Standard / Advice Note IAN or CHE Memo	Title	Source	Aspect	Replacement Document
BD 51	Design Criteria for Portal and Cantilever Sign/Signal Gantries	DMRB 2.2.4	<p>Those aspects concerning the provision of certain types/designs of Road Restraint Systems at portal and cantilever sign gantries.</p> <p>Amend 2nd sentence of para. 1.9 as follows: Delete “fences” and replace with “barriers” (twice).</p> <p>Replace para. 2.14 with “Vehicle restraint systems in accordance with Overseeing Organisations’ requirements shall be provided at gantry supports.”</p> <p>Replace Para. 2.15 with “Where the gantry support is located behind a very high containment vehicle restraint system the provision of further vehicle restraint systems are not generally required.”</p> <p>Amend Para 3.26 as follows: Delete “, dependent on the type and set out of restraint system provided as in Figure 2(a).” and replace with “and the requirements given in IRRRS (Revision 1) Figures 3-11 and 3-12”</p> <p>Replace Para. 4.21 with “The horizontal dimensional clearances of the structures and safety barriers shall be in accordance with IRRRS (Revision 1) & TD27 (DMRB 6.1.1). The clear headroom under the gantry shall be 5,700 mm minimum.”</p> <p>Remove “BD 52 ‘Design of highway bridge parapets’ (DMRB 2.3.3)” from Section 8.1</p> <p>Remove “BS6779: Parapets for vehicle containment on highways, Parts 1 and 2: 1992 and 1991” from Section 8.4</p> <p>Figure 2(a) Delete Figures 2(b) to 2(e) inclusive.</p>	<p>This Appendix and IRRRS (Revision 1)</p> <p>IRRRS (Revision 1) (Figures 3-11 and 3-12)</p>
IAN 14/98	Use of Crash Cushions	CHE Memo 48/98	Totally withdrawn	IRRRS (Revision 1) Chapter 9
Interim Amendment 1/99	Various amendments to MCHW 1 & MCHW 2	CHE Memo 81/99	Totally withdrawn	MCHW 1 Series 400 and MCHW 2 Series 400 NG
IAN 24	Use of Temporary Barriers at Roadworks	CHE Memo 63/98	Totally withdrawn	IRRRS (Revision 1) Chapter 7

Standard / Advice Note IAN or CHE Memo	Title	Source	Aspect	Replacement Document
IAN 26	TD19/85 Safety Fences and Barriers	CHE Memo 68/99	Totally withdrawn	IRRRS (Revision 1)
IAN 34	Use of "Varioguard" Temporary Safety Barriers at Roadworks	CHE Memo 68/99	Document totally withdrawn	Highways Agency's List of Approved Road Restraint Systems and MCHW 0 Section 3 Annex D Part 1 SA1/05
CHE Memo 24/95	Motorway Widening Cross-Section and Layout	CHE Memo 24/95	Document totally replaced	TD 27/05 Annex B (DMRB 6.1.2)
CHE Memo 145/05	Interim Advice Note 44/05 (Revision 3) of IAN 44 Interim Requirements for Road Restraint Systems (IRRRS) (Revision 1)	CHE Memo 145/05	Totally withdrawn	CHE 153 / 05

NOTES:

1. All references made within DMRB and MCHW to the withdrawn documents listed above must refer instead to the appropriate replacement document shown.
2. The documents listed above have been withdrawn / amended for the works defined in Section 3
3. Whilst every care has been taken in compiling the above list it must not be considered exhaustive. If it is thought that a particular document, or part thereof, has inadvertently been omitted then please bring to the attention of Daniel Ruth at the following email address:

daniel.ruth@highways.gsi.gov.uk

Appendix 2. - Vehicle Parapets

2.1 General

The designs listed in Section 2.2 of this Appendix are acceptable to the Highways Agency for use on its road network for the performance criteria shown.

Acceptance of systems listed in the Highways Agency's Approved Road Restraint Systems List does not exclude the use of a product offered by other manufacturers provided that the manufacturer can demonstrate that the product complies with the published parts of BS EN 1317 and meets the requirements of particular contract specifications. For the acceptance procedures reference must be made to Section 5 Paragraphs 5.1 and 5.2 of this IAN 44/05 (Revision 4).

NOTE: Enquiries regarding Working Width Class and other performance criteria for the Parapet system and Transitions listed below in this Appendix must be made to the Promoter.

2.2 Systems Acceptable for Use

2.2.1 Very High Containment Steel Parapets

Promoter

Highways Agency

Vehicle Restraints

C3

5 Broadway

Birmingham

B15 1BL

E-mail: daniel.ruth@highways.gsi.gov.uk

Product

**Containment
Performance Class**

Drawing References

P6 Parapet

H4a

HC/01B : HC/02B
HC/01B : HC/02B

P6 Parapet
Transitions

H2

HCT/A/01
HCT/A/02
HCT/B/01
HCT/B/02
HCT/B/03
HCT/C/01
HCT/C/02c
HCT/D/01
HCT/D/02

Appendix 3. - (Not used)

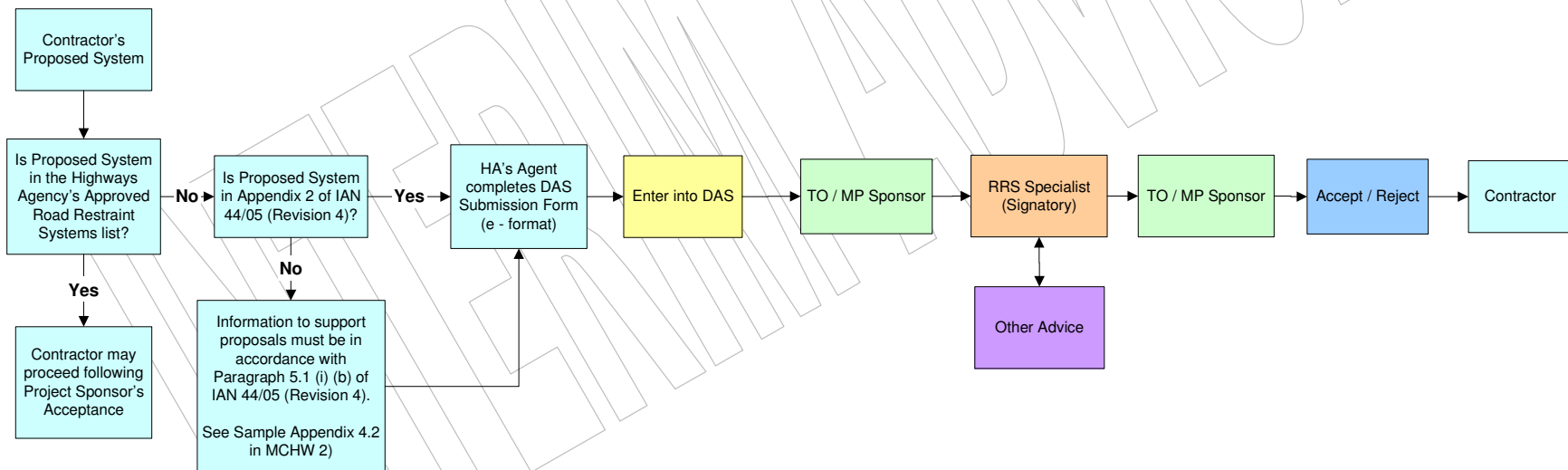


Appendix 4.1. - Road Restraint System Acceptance Procedure - Flowchart

Procedure for making a Formal Application to Use a Particular Proprietary Road Restraints System

- for those Vehicle Restraint Systems included in the Highways Agency's Approved Road Restraint Systems list and
- for Vehicle Restraint Systems which require a Departure from Standard for 'aspects not covered by Standard' Submission by means of Departure Approval System (DAS)

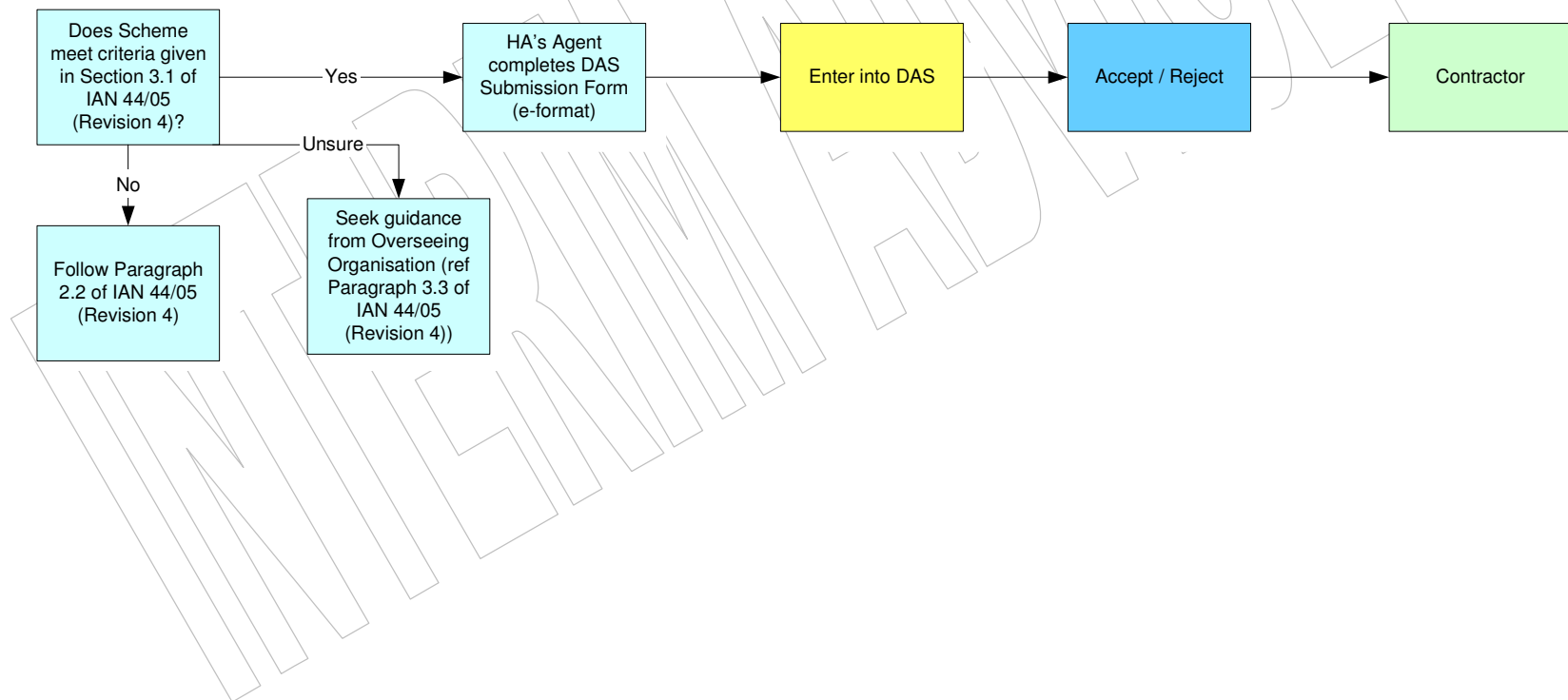
[IAN 44/05 (Revision 4) Paragraphs 5.1 (i) (a) (b) and 5.1 (ii) (a) refer.]



Appendix 4.2. - Road Restraint System Acceptance Procedure - Flowchart

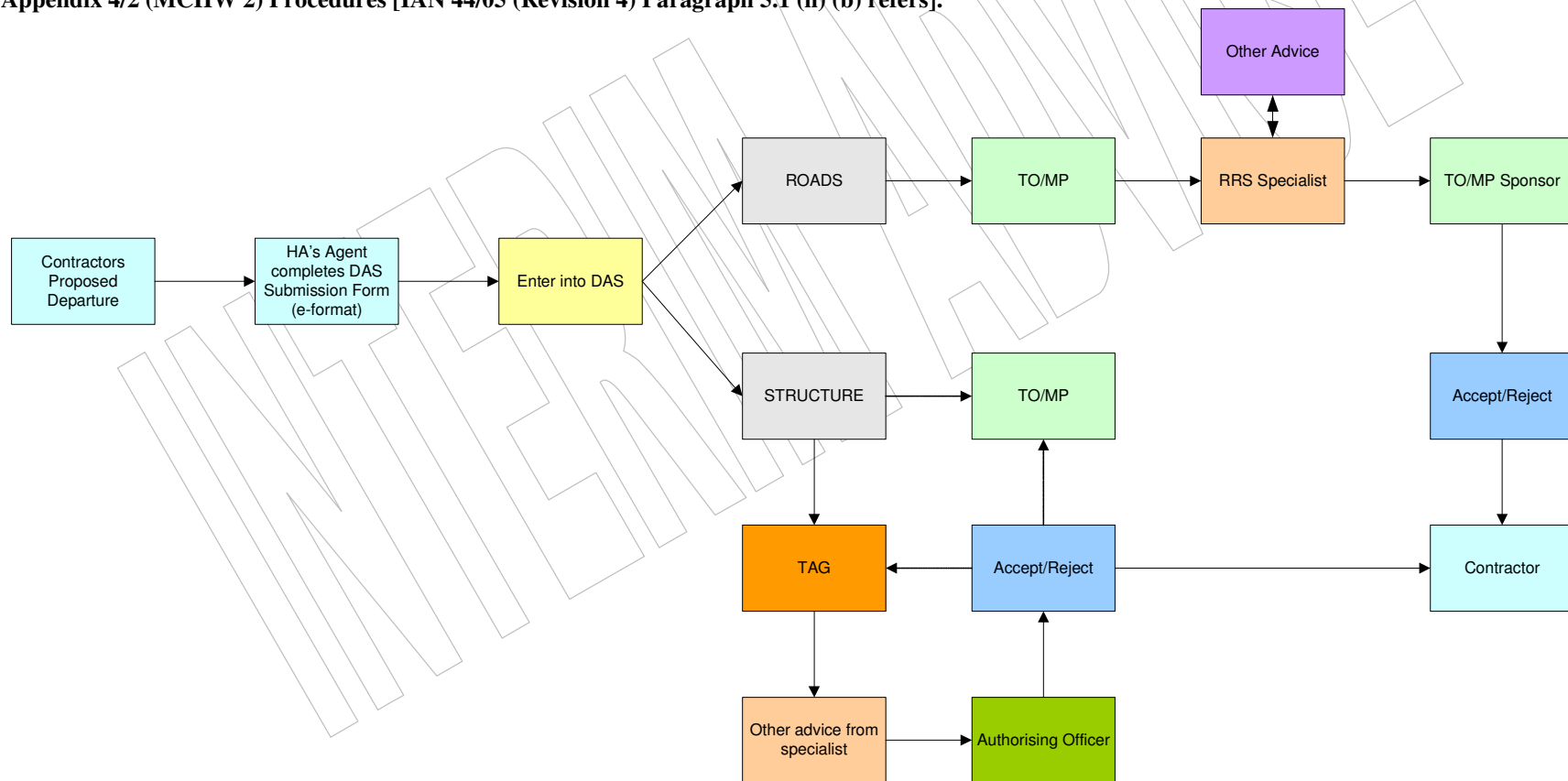
Procedure for Implementation of Interim Requirements for Road Restraint Systems (IRRS) (Revision 1)

[IAN 44/05 (Revision 4) Paragraphs 3.1, 3.2 and 3.3 refer]



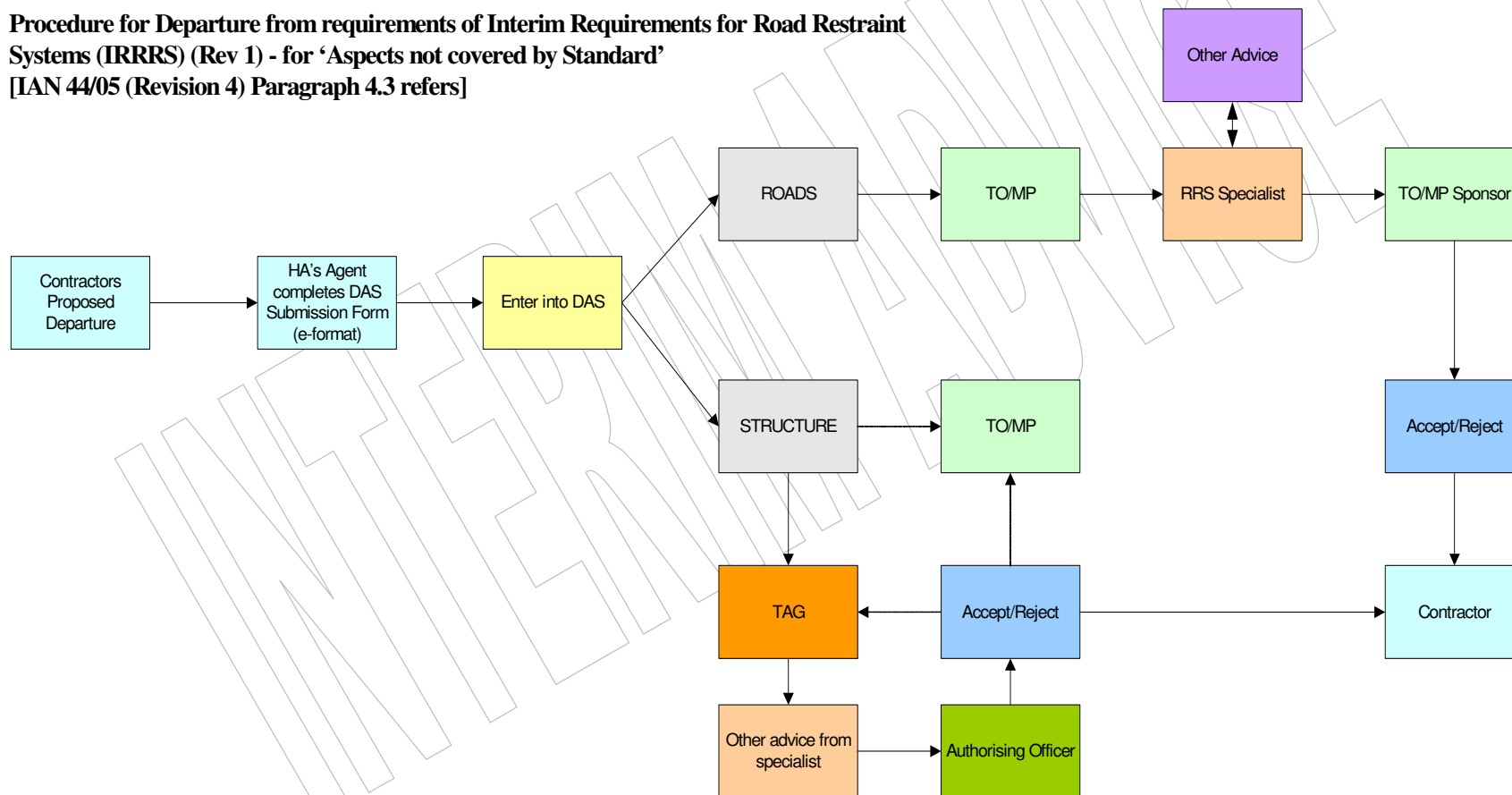
Appendix 4.3. - Road Restraint System Acceptance Procedure - Flowchart

Procedure for making a formal application to use Proprietary Road Vehicle Restraints Systems that Depart from the Manufacturers' Specifications submitted and approved under the Appendix 4/2 (MCHW 2) Procedures [IAN 44/05 (Revision 4) Paragraph 5.1 (ii) (b) refers].



Appendix 4.4 - Road Restraint System Acceptance Procedure - Flowchart

Procedure for Departure from requirements of Interim Requirements for Road Restraint Systems (IRRRS) (Rev 1) - for 'Aspects not covered by Standard'
 [IAN 44/05 (Revision 4) Paragraph 4.3 refers]



General Guidance on Incorporating Interim Requirements for Road Restraint Systems (IRRRS) (Revision 1) into Contracts

1 Introduction

1.1 To comply with European Requirements, as set out in the appropriate parts of BS EN 1317, an interim document entitled - 'Interim Requirements for Road Restraint Systems (Vehicle and Pedestrian)' (IRRRS) (Revision 1), was issued in December 2004 to replace various safety fence, vehicle and pedestrian parapet and pedestrian guardrail Departmental Standards, Advice Notes and associated documents and these are listed again in this Revision 4 of IAN 44/05.

1.2 HA Design Organisations / Agents must comply with IRRRS (Revision 1) where appropriate. In so doing they must ensure, when preparing contract documentation to procure work in accordance with IAN 44/05 (Revision 4), that relevant information from the IRRRS (Revision 1) document is specified accordingly dependent on the form of procurement used.

1.3 These notes offer general guidance on incorporating IRRRS (Revision 1) requirements into the various model contracts contained in the Manual of Contract Documents for Highway Works (MCHW) together with the 'Works Framework', 'Design Build Finance and Operate' (DBFO), 'Managing Agent' (MA), 'Term Maintenance Contractor' (TMC) and 'Managing Agent Contractor' (MAC) contract types. They apply to the preparation of new contracts and for the work referred to in Section 3.1 of IAN 44/05 (Revision 4)

1.4 The May 2004 cycle of amendments to the MCHW introduced the necessary amendments for the provision of Road Restraint Systems in accordance with the appropriate parts BS EN 1317.

2 General Information - Contents of IRRRS (Revision 1)

2.1 The IRRRS (Revision 1) document contains the following information:

- (i) Chapter 1 - Introduction;
- (ii) Chapter 2 - Containment Performance Class Requirements for Safety Barriers and Vehicle Parapets;
- (iii) Chapter 3 - Criteria for the Provision of Permanent Safety Barriers;
- (iv) Chapter 4 - Design Guidance for the Provision and Layout of Permanent Safety Barriers;
- (v) Chapter 5 - Criteria for the Provision of Vehicle Parapets;
- (vi) Chapter 6 - Design Guidance for the Provision and Layout of Vehicle Parapets;
- (vii) Chapter 7 - Criteria and Guidance for the Provision of Temporary Safety Barriers at Road Works;
- (viii) Chapter 8 - Containment Performance Class Requirements and Guidance on Terminals and Transitions between different types of Safety Barriers and Vehicle Parapets;
- (ix) Chapter 9 - Crash Cushions;
- (x) Chapter 10 - Pedestrian Restraint Systems;
- (xi) Chapter 11 - Vehicle Arrester Beds;
- (xii) Chapter 12 - Anti-Glare Screens;
- (xiii) Chapter 13 - References;
- (xiv) Chapter 14 - Enquiries.

2.2 The information given in IRRRS (Revision 1) must, where appropriate, be used in new contracts and in most cases will replace existing criteria specified. General guidance on how this is to be achieved is provided as follows:

3 Incorporating IRRRS (Revision 1) into Model Contract Documents

3.1 Model Contract Document for Engineering and Construction Contract (ECC)

- (i) The contract must be compiled in accordance with the requirements of the Model Contract Document for Engineering and Construction Contract (MCHW 0.1.7) and the comments made in Table 1.

3.2 Model Contract Document for Design and Build (D&B) - England

- (i) This model contract is no longer a preferred means of procurement and written approval must be sought from Traffic Operations (TO) or Major Projects (MP) as appropriate prior to using it (MCHW 0.1.6).

3.3 Model Works Framework Contract

- (i) New contracts must be compiled in accordance with the Model Works Framework contract document and the comments made in Table 1.
- (ii) For existing contracts, the vehicle restraint system work must be procured in accordance with this IAN 44/05 (Revision 4) and the requirements of the MCHW for road restraint systems. Where applicable, the Framework Contractor must be instructed to comply with the specific requirements of Appendices 4/1 and 4/2 of MCHW.2. Performance criteria and any specific constraints must be stated in Appendix 4/1. Compliance requirements must be in accordance with Appendix 4/2.

3.4 Design Build Finance and Operate (DBFO) Contract

- (i) New contracts must be compiled in accordance with the model DBFO contract document and the comments made in Table 1.
- (ii) For existing contracts a copy of this IAN 44/05 (Revision 4) must be submitted to DBFO Co's for their information requesting them to consider the IAN and to confirm whether or not they wish to introduce such arrangements into the Contract.

3.5 Maintenance Contracts

3.5.1 Managing Agent (MA) Contract

- (i) New contracts must be compiled in accordance with the model MA contract document and the comments made in Table 1.
- (ii) For existing contracts, the MA will be instructed to comply with this IAN 44/05 (Revision 4) and the latest requirements of the MCHW.

3.5.2 Term Maintenance Contract (TMC)

- (i) New contracts must be compiled in accordance with the model TMC contract document and the comments made in Table 1.
- (ii) For existing contracts, the MA must procure the vehicle restraint system work through the TMC in accordance with this IAN 44/05 (Revision 4) and the latest requirements of the MCHW for road restraint systems by means of 'Works Orders'. Where applicable, the TMC Contractor must be instructed to comply with the specific

requirements of Appendices 4/1 and 4/2 of MCHW 2. Performance criteria and any specific constraints must be stated in Appendix 4/1. Compliance requirements must be in accordance with Appendix 4/2.

3.5.3 Managing Agent Contractor (MAC) Contract

- (i) New contracts must be compiled in accordance with the model MAC contract document and the comments made in Table 1.
- (ii) For existing contracts, the MAC Provider will need to be instructed to comply with IAN 44/05 (Revision 4) and the latest requirements of the MCHW for road restraint systems.

Where applicable, the MAC must be instructed to comply with the specific requirements of Appendices 4/1 and 4/2 of MCHW.2.

Performance criteria and any specific constraints must be stated in Appendix 4/1. Compliance requirements must be in accordance with Appendix 4/2.

- (iii) Under this form of contract, the instruction will be a compensation event if as a result of the change in the Employer's Standards the Provider's cost is either increased or decreased by more than 5%.

3.6 Design only Contracts

- (i) The contract between the Employer and the Design Organisation / Agent must state the Design Standards and Specification the Designer is to use. Future contracts must be prepared to incorporate, as appropriate, the requirements of this IAN 44/05 (Revision 4) and the latest requirements of the MCHW for road restraint systems.
- (ii) For existing contracts, the Design Agent must be instructed to comply with this IAN 44/05 (Revision 4) and the latest requirements of the MCHW for road restraint systems and the contract must be amended accordingly.

4 Aesthetics

4.1 Chapter 6, Paragraph 6.2 of the IRRRS (Revision 1) confirms that the aesthetic effects of vehicle parapet construction is to be considered at the initial design stage of the structure. It is most important that this is undertaken to ensure any aesthetic requirements considered necessary are included in the contract. (Appendix 4/1 of MCHW.2 shall be used for this purpose). The Technical Approval Authority (TAA) must be consulted at this stage and their approval gained on the proposed vehicle parapet aesthetic requirements to be included. Care must be taken to ensure that such specifications do not impose any 'barriers to trade'.

4.2 For aesthetic reasons, doubling up of any combination on vehicle parapets across structures is to be avoided. Where it is considered necessary, however, then approval must be sought from the TAA. In seeking approval, full justification on technical and whole life costing grounds must be given.

5 Use of IRRRS (Revision 1) and Procedure for Acceptance of Road Vehicle Restraint Systems

5.1 In accordance with this IAN 44/05 (Revision 4), Design Organisations / Agents must ensure that a formal request is made to use IRRRS (Revision 1) on a scheme specific basis.

5.2 Any departure from the requirements of IRRRS (Revision 1) itself must also be treated as a Departure from Standard for 'aspects not covered by Standards' and must be entered into the Departure Approval System (DAS) by either TO or MP as appropriate.

5.3 Design Organisations / Agents must also ensure that those road restraint systems submitted for acceptance / review by the Contractor are forwarded to TO or MP as appropriate for consideration. TO or MP must treat the submission as a Departure from Standard for 'aspects not covered by Standards' and must enter the Departure onto the Departure Approval System (DAS). For proposals adjacent to, on or under a structure TO or MP, as appropriate, must submit to TAA via DAS for approval. Once a decision has been made the Contractor must be advised in accordance with the timescales allowed under the Contract.

5.4 Any proposed change to the road restraint system manufacturer's standards must be treated as a Departure from Standard and forwarded to the TO or MP, as appropriate, for consideration. The TO or MP must enter the proposed Departure onto the Departure Approval System (DAS) and seek TAA approval as necessary for proposals adjacent to, on or under a structure. Once a decision has been made the Contractor must be informed accordingly in accordance with the timescales allowed under the Contract.

6 Road Restraint Systems Procurement Methodology

6.1 Contract documents must not specify the use of any specific type of safety barrier or vehicle parapet. Instead requirements must be expressed in terms of specific performance criteria which must be specified in Appendix 4/1 (MCHW 2) of the Contract.

6.2 Contractors will be allowed to put forward for acceptance any Road Vehicle Restraint System (safety barrier, vehicle parapet [except concrete vehicle parapets], or crash cushions) that complies with BS EN 1317-1 to 3 and for transitions / terminals DD ENV 1317-4:2002, that meet the requirements of the contract in terms of "Containment Performance Class", "Performance Class", Performance Level, "Working Width Class", "Velocity Class" and "Lateral Displacement Zone" criteria, aesthetics and TAA requirements.

6.3 The systems put forward by Contractors post contract award must be subject to acceptance by the TO or MP Project Sponsor as appropriate in accordance with Section 5 and the TAA.

7 Design Manual for Road and Bridges (DMRB)

7.1 The DMRB contains HA's Design Standards and Advice Notes which are either used:

- (i) Directly by Design Organisations / Agents in designing work to incorporate details into Contracts or
- (ii) By calling up in the Contract the defined Standards and Advice Notes to be used in the Work that is to be designed by the Contractor.

Design Organisations / Agents or Contractors are therefore directed to follow the Design Standards and Advice Notes referred to in the DMRB. To ensure that for all relevant contracts those safety fence, safety barrier and vehicle parapet Standards and Advice Notes

etc. listed in Appendix 1 of this IAN 44/05 (Revision 4) are withdrawn and the requirements of the IRRRS (Revision 1) are followed, an amendment to the Contract documentation must be made as follows: -

- a). Modify the list of Design Standards and Advice Notes that have been withdrawn to include those Standards and Advice Notes listed in Appendix 1 to IAN 44/05 (Revision 4). *[If such a list is not included within the Contract documentation then incorporate one as appropriate].*
- b). Add IRRRS (Revision 1) to the list of design documents to be used in the Contract. *[NB: The NPSBS (Revision 1) document or any aspect of it should not be incorporated or indeed referred to in any Contract (See Section 1, Paragraphs 1.5 to 1.10 inclusive of this IAN 44/05 Revision 4).*
- c). In addition, provide suitable cross-referencing to the IRRRS (Revision 1) document as appropriate.

8 Manual of Contract Documents for Highway Works (MCHW)

8.1 Specification for Highway Works (MCHW 1) and the Notes for Guidance on the Specification for Highway Works (MCHW 2)

8.1.1 Contract-specific requirements for the Numbered Appendices must be drawn up for the Contract by the compiler and included in the Contract documents. Further advice on how to prepare these documents is found in Series NG 000 (MCHW.2.000). It should be noted that some of the Numbered Appendices are to be completed by the Tenderer or the Contractor.

8.1.2 The Contract must also require the incorporation of a Schedule of Pages and relevant Publication Dates listing the publication date of each page of the Specification for Highway Works applicable to the Contract.

8.2 Highway Construction Details (HCD) – MCHW, Volume 3

8.2.1 The safety fence and safety barrier drawings contained in MCHW 3, Section 2 of the HCD were withdrawn from use in June 2002. (Please note however that for works referred to as exceptions in Paragraph 3.2 under 'Implementation' in IAN 44/05 (Revision 4) then the withdrawn HCD drawings may still be utilised as necessary)

8.2.2 Instead, Contractors must put forward for review / acceptance proposals for safety barrier and vehicle parapet systems in accordance with the Contract requirements. They must provide all necessary supporting information including general arrangement and component part drawings and must advise on the recommended testing requirements of the manufacturer.

8.2.3 Once the system put forward has been accepted the associated general arrangement, component part drawings and testing requirements must become part of the Contract.

8.3 Bills of Quantities (BOQ) - MCHW, Volume 4

8.3.1 For those contracts that require a BOQ then the Series 400 details contained in MCHW 4 must be included as appropriate in accordance with the Notes for Guidance on the Method of Measurement for Highway Works (MCHW 4)

9 Schedule of Amendments to MCHW

- 9.1** In addition to the above, Table 1 below provides general guidance on incorporating IRRRS (Revision 1) requirements into the Highways Agency's Model Contract Documents.

10 Contacts for Queries

- 10.1** If you have any queries regarding the above then please seek guidance either from your TO or MP Sponsor contact as appropriate or email Keith Austin in the Contracts and Specification Team - Safety Standards and Research (SSR) at the following address:

Keith.Austin@highways.gsi.gov.uk

- 10.2** Technical queries on IRRRS (Revision 1) should be directed by email to Daniel Ruth or Alan J Smith in Risk Management and Vehicle Restraint (RMVR) Team of Safety, Standards and Research (SSR) at the following address:

daniel.ruth@highways.gsi.gov.uk or alan.smith@highways.gsi.gov.uk

- 10.2** Non-technical queries regarding Departures from Standard submissions onto DAS can be made to the following email address:

james.iles1@highways.gsi.gov.uk

TABLE 1

NB: This Table is not a definitive list of amendments but offers general guidance to compilers on incorporating IRRRS (Revision 1) requirements into the Highways Agency's various model contract documents.

Contract Model	Reference in Model	General Guidance / Comments
ECC		
Model Contract Document		(i) Refer to Section 7 where road work layouts, incorporating Road Restraint Systems, are to be designed by the Contractor. Include in the Works Information in accordance with ECC Guidance Notes. (ii) Refer to Section 8.1 and 8.2 and include as appropriate in the Works Information. (iii) Refer to Section 8.3 where BOQ's are used.
D&B - England		
Instructions for Tendering	Annex U in Chapter 5	Annex U Mini Bill of Quantities. Ensure the heading and item descriptions in the mini bill are in accordance with the latest MoM requirements contained in MCHW.4.
Model Contract Document	Annex 0/1 in Chapter 9 Annex 0/2 in Chapter 9 Annex 0/3 in Chapter 9	(i) Refer to Section 7 where roadwork layouts, incorporating Road Restraint Systems, are to be designed by the Contractor. Include in the Works Information in accordance with the model Guidance Notes. (ii) Include in Annex 0/1 of the Employers Requirements Amendments to Notes for Guidance to the Specification as contained in the latest published MCHW documents. (iii) Include in Annex 0/2 of the Employers Requirements the list of Design Standards and Advice Notes etc. that have been withdrawn in accordance with those listed in Appendix 1 of IAN 44/05 (Revision 4). Include IRRRS (Revision 1) in Annex 0/2 as a 'Stand Alone Publication', which the Contractor will need to comply with. (iv) Include IAN 44/05 (Revision 4) in Annex 0/3 of the Employers Requirements.

Contract Model	Reference in Model	General Guidance / Comments
D&B - England Model Contract Document (continued)	Annex 0/5 in Chapter 9 Annex 0/6 in Chapter 9	(v) Include in Annex 0/5 of the Employers Requirements a statement to confirm that the safety fence and safety barrier drawings contained in Section 2 of the HCD are withdrawn from use. (vi) Refer to Section 8.1 and include as appropriate in Annex 0/6 of the Employers Requirements. (vii) Ensure the Title of Series 400 and Appendix 4/1 in Annex 0/6 and Annex 0/7 of the Employers Requirements are amended in accordance with the latest revised titles and Appendices contained in MCHW.1 and MCHW.2. (viii) Include the latest revised published Series 400 of the MCHW.1 in Annex 0/6 in accordance with Section 8.1. (ix) The Contractor is to prepare a BOQ in accordance with the latest revised requirements contained in MCHW.4.
Works Framework Contract		
Model Contract Document		(i) Refer to Section 8.1 and 8.2 and include in the Works Information as appropriate. (ii) Refer to Section 8.3 above where BOQ's are used.
DBFO		
Model Contract Document	Schedule 4 Part 2 Annex 1 Schedule 4 Part 2 Annex 2	(i) Include those Standards and Advice Notes that have been withdrawn, in accordance with those listed in Appendix 1 of IAN 44/05 (Revision 4), in Schedule 4, Part 2, Annex 1, Paragraph 1.2. (ii) Include details of those Standards that have been amended / partially withdrawn etc., in accordance with those listed in Appendix 1 of IAN 44/05 (Revision 4), in Schedule 4, Part 2, Annex 2. (iii) Insert IAN 44/05 (Revision 4) into Schedule 4, Part 2, Annex 1 under Paragraph 2.

Contract Model	Reference in Model	General Guidance / Comments
DBFO Model Contract Document (continued)	Schedule 4 Part 2 Annex 1 Schedule 4 Part 2 Schedule 4 Part 2 Annex 5 Schedule 6 Part 4 Paragraph 7 Schedule 6 Part 4 Paragraph 26 Schedule 6 Part 4	(iv) Insert the IRRRS (Revision 1) document into Schedule 4 Part 2 Annex 3 under Stand-alone Publications. (v) Amend Table 1.22 of Schedule 4 Part 2 to include revised header title and Appendix 4/1 and 4/2 titles in accordance with the latest revised requirements contained in MCHW.2 and delete Appendix 4/2 and title accordingly. (vi) Include Specification and Notes for Guidance amendments, as contained in the latest published version of MCHW – 1 and - 2, to Schedule 4 Part 2 Annex 5–Amendments to the Specification for Highway Works. (vii) Include IAN 44/05 (Revision 4) in Schedule 6 Part 4 Paragraph 7. (viii) Include IRRRS (Revision 1) in Schedule 6 Part 4 Paragraph 26 Stand-alone Publications. (ix) Amend the list of Standards and Advice Notes etc. in Schedule 6 Part 4 O&M Standards to exclude those Standards that have been withdrawn as contained in Appendix 1 of IAN 44/05 (Revision 4) (x) Include Specification and Notes for Guidance amendments, as per the latest published version of the MCHW to Schedule 6 Part 4.
Model Contract Document	Table 6.1 of Annex 6 Table 6.3 of Annex 6 Table 6.3 of Annex 6	(i) Include the IAN 44/05 (Revision 4) and IRRRS (Revision 1) document into Table 6.1 of Annex 6. (ii) Include details of those Standards and Advice Notes that have been amended / partially withdrawn etc., in accordance with those listed in Appendix 1 of IAN 44/05 (Revision 4), in Table 6.3 of Annex 6. (iii) Include the amendments to SHW and Notes for Guidance to SHW and Bill of Quantities for Highway Works as contained in the latest published version of the MCHW.1, MCHW.2 and MCHW.4 in Table 6.3 of Annex 6.

Contract Model	Reference in Model	General Guidance / Comments
TMC		
Model Contract Document	Schedule of Rates	(i) Amend the Schedule of Rates for Series 400 in accordance with the latest published version of Volume 4 of the MCHW as considered appropriate. Include additional items in the Schedule for alternative options of Road Restraint Systems as appropriate.
	Works Information 2	(ii) Incorporate those amendments to SHW included in the latest published version of the MCHW - 1 within Works Information 2 as appropriate in line with the terminology and requirements of IRRRS (Revision 1).
	Works Information 3	(iii) Incorporate those amendments to the Notes for Guidance included in the latest published version of the MCHW within Works Information 3 in line with the terminology and requirements of IRRRS (Revision 1).
	Method of Measurement	(iv) Amend the Method of Measurement for Highway Works - Term Maintenance in line with the terminology and requirements of the latest published version of the MCHW as considered appropriate.
MAC		
Model Contract Document	Table 15.1 of Annex 15	(i) Include the IAN 44/05 (Revision 4) and IRRRS (Revision 1) documents into Table 15.1 of Annex 15.
	Table 15.3 of Annex 15	(ii) Include details of those Standards and Advice Notes that have been amended / partially withdrawn etc., in accordance with those listed in Appendix 1 of IAN 44/05 (Revision 4), in Table 15.3 of Annex 15.
	Table 15.3 of Annex 15	(iii) Also, include the amendments to SHW and Notes for Guidance to SHW and Bill of Quantities for Highway Works as contained in the latest published version of the MCHW in Table 15.3 of Annex 15.