

**AMENDMENT NO. 1 to
INTERIM ADVICE NOTE 44/05
(IAN 44/05)
(Revision 3 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 and
- Introduces IRRRS Revision 1, which contains changes to technical and safety advice.

INSTRUCTIONS FOR USE

This Amended edition of IAN 44/05 supersedes IAN 44/05 issued 20th Jan 2005. Replace IAN 44/05 entirely with this amendment.

Summary of Amendment No. 1 changes:

1. Page A2.2, 2.2 'Systems Acceptable for Use until January 1 2005' this should read '**Systems for Use until April 5 2005**'
2. Appendix 4.1, A4.1 - Acceptance of a Particular Road Restraint System (RRS) - (ROADS & STRUCTURES)
[IAN 44/05 Paragraphs 5.1.(i)(a), 5.1.(ii)(a), 5.1.(ii)(b) and 5.1.(ii)(d)]. There is no **5.1 (ii)(d)** and this should be deleted. It should read "**IAN 44/05 Paragraphs 5.1.(i)(a)(b) and 5.1.(ii)(a)(b)**"
3. Appendix 4.1, A4.1 Amendment to the Flow Chart text - 'Is Proposed System listed in SA1?' this should read '**Is Proposed System listed in SA1 or list of Approved Systems?**'

**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, DD ENV 1317-4:2002 and 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'.

1.2 The 'Interim Requirements for Road Restraint Systems (Vehicle and Pedestrian)' (IRRRS) has been produced to ensure compliance with BS EN 1317 and DD ENV 1317-4:2002. It includes permanent and temporary safety barriers, vehicle parapets, terminals and transitions 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 has also been reviewed and updated and is contained within the IRRRS document;

The main updates to IRRRS Revision 1 are:

- 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 MCHW Appendix 4/1, 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 now specify the use of any specific type/design of safety barrier or vehicle parapet etc. but instead requirements shall 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 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 of the Contract.

1.4 One option available to Contractors will be to choose from the existing safety barrier systems that have been developed and used extensively in the UK for many years; details of which are contained in a document entitled 'Non-Proprietary Safety Barrier Systems' (NPSBS Revision 1). Vehicle Restraint Systems proposed by Contractors, including the systems contained in NPSBS

(Revision 1), shall be subject to acceptance prior to use on a scheme specific basis. The acceptance process is outlined in Section 5.

2 Withdrawal / Amendment of Standards

2.1 For those works defined in Section 3, existing vehicle and pedestrian restraint DMRB Standards, Advice Notes, and IAN's etc. as listed in Appendix 1, are either, subject to paragraph 2.2, amended or withdrawn from use immediately, either totally, or in part, as indicated. For withdrawn documents the corresponding replacement document is listed 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 shall still apply.

3 Implementation

3.1 The IRRRS (Revision 1) document is to be used on new contracts as follows

- (i) All new highway work (including TPI Schemes);
- (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 500m, 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) will be required from Design Organisations / Agents on a scheme specific basis. Such application shall 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) shall 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.

5 Formal Application to Use Proprietary Road Vehicle Restraint Systems and NPSBS (Revision 1)

5.1 Contractors will now be allowed to formally propose, in accordance with Series 400 of the Contract, 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 terminals/transitions 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 of the Contract. Once the proposals are received by Design Organisations / Agents they shall be submitted to TO or MP as applicable for review / acceptance. TO or MP shall process the submission as follows:

(i) For those Vehicle Restraint Systems Contained in SA1 - List of Approved / Registered Products (MCHW 0.3.1).

The Vehicle Restraint Systems listed in the SA1 will be replaced completely by a PDF list. This will enable the list to be amended and updated at a greater frequency than that for the SA1. At present this list contains all those in the SA1 plus recently approved systems that are not currently shown. An updated list of approved Systems can be obtained by <mailto: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) will however need to be submitted for acceptance.

(b) For those Vehicle Restraint Systems NOT contained in list of Approved/Registered Products

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 of the Contract;
- Documentation showing compliance with and operation of the Quality Assurance requirements of Clause 104 and the associated quality management schemes detailed in Appendix A (MCHW - 1, Appendices).

The Contractor shall be promptly notified of the decision taken in accordance with the timescales allowed under the Contract. Approved systems will be included in the list of Approved/Registered products.

(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 Systems Contained in Appendix 2

These systems replace those listed in Annex F of BS 6779-1: 1992 which has been withdrawn by BSI and replaced by BS 6779-1: 1998 (Amd. No. 14290, 21 March 2003).

(b) Safety Barrier Systems and associated Terminals and Transitions contained in Non-Proprietary Safety Barrier Systems (NPSBS Revision 1) in Appendix 3

(c) Vehicle Restraint Systems that depart from the Manufacturers' Specifications

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 A flowchart of the above procedure is provided for guidance in Appendix 4.

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 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 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 Copies of IRRRS (Revision 1) and NPSBS (Revision 1) are available on CD only upon request (by email only) to:

ha.irrs@mouchelparkman.com

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

7.3 IRRRS (Revision 1) and NPSBS (Revision 1) will be controlled documents 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 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 address:

daniel.ruth@highways.gsi.gov.uk

alan.smith@highways.gsi.gov.uk

SUPERSEDED

Appendix 1.
List of Documents to be Withdrawn / Amended

Standard / Advice Note etc.	Title	Source	Aspect	Replacement Document
TD 19/85 (Plus Amendments)	Safety Fences and Barriers	DMRB 2.2.	Totally withdrawn	IRRRS
TD 32	Wire Rope Safety Fence	DMRB 2.2.3	Totally withdrawn	IRRRS
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 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 Chapter 10 IRRRS Chapter 12 IRRRS Chapter 11
BA 48	Pedestrian Protection at Headwalls, Wingwalls and Retaining Walls	DMRB 2.2.2	Totally withdrawn	IRRRS 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 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 (Date)*".	
BD 52	The Design of Highway Bridge Parapets	DMRB 2.3.3	Totally withdrawn	IRRRS Chapters 2, 5 and 6

Standard / Advice Note etc.	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 Figure 11.”</p> <p>Replace para. 4.21 with “The horizontal dimensional clearances of the structures and safety barriers shall be in accordance with IRRRS & 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)</p> <p>Delete Figures 2(b) to 2(e) inclusive.</p>	<p>This Appendix and IRRRS</p> <p>IRRRS (Figure 11)</p>
IAN 14/98	Use of Crash Cushions	CHE Memo 48/98	Totally withdrawn	IRRRS Chapter 9

INTERIM ADVICE NOTE 44/05 AMENDMENT NO. 1
APPENDIX 1

Standard / Advice Note etc.	Title	Source	Aspect	Replacement Document
Interim Amendment 1/99	Various amendments to MCHW, Volumes 1 & 2	CHE Memo 81/99	Totally withdrawn	New Series 400 and Series 400 Notes for Guidance contained in the MCHW (Volumes 1 & 2)
IAN 24	Use of Temporary Barriers at Roadworks	CHE Memo 63/98	Totally withdrawn	IRRRS Chapter 7
IAN 26	TD19/85 Safety Fences and Barriers	CHE Memo 68/99	Totally withdrawn	IRRRS
IAN 34	Use of "Varioguard" Temporary Safety Barriers at Roadworks	CHE Memo 68/99	Document totally withdrawn in IAN 44/02(Rev 2)	SA 1, Annex B (MCHW 0.3.1)
CHE Memo 24/95	Motorway Widening Cross-Section and Layout	CHE Memo 24/95	The following aspects are affected by IRRRS: Paragraph 2.5, 2.22, Table 1, and Figures 1, 2 and 3.	Amend as per IRRRS
CHE Memo 136/04	Introducing Interim Advice Note 44/02 Revision 2- Interim Requirements for Road Restraint Systems (Vehicle and Pedestrian)	CHE Memo 136/04	Totally withdrawn	CHE 145/05

NOTES:

1. All references made within DMRB and MCHW to the withdrawn documents listed above shall refer instead to the appropriate replacement document shown.
2. The documents listed above are only withdrawn / amended for the works defined in Section 3
3. Whilst every care has been taken in compiling the above list it should 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

Following the withdrawal of Annex F of BS 6779-1:1998 by the issue of BS 6779-1:1998 (Amd. No. 14290, 21 March 2003), the designs listed in Section 2.2 of this Appendix are acceptable to the Highways Agency for use on its trunk road network for the performance criteria shown.

Systems listed in 2.2 are acceptable for use for a limited period, on the basis of a Declaration of Performance Compliance from the respective manufacturers that states that a system was tested and met the test criteria for containment in BS EN 1317 and that the system contained and redirected the relevant test vehicle in a controlled and stable manner. Declarations have been received for all systems listed in 2.2.

The acceptance of Section 2.2 systems is an interim solution and will remain in place until April 5 2005, after which time all systems shall comply with BS EN 1317-1 and 2.

It is expected that systems currently listed in Section 2.2 will achieve BS EN 1317 compliance as a result of testing and development, and further clarification of the acceptance criteria for BS EN 1317. Enquiries regarding the latest status of any systems listed in Section 2.2 should be made to the Promoter.

Acceptance of systems listed in this Appendix shall 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.

NOTES:

1. Systems satisfying the Containment Performance Class requirements for N2 are also expected to meet the Containment Performance Class requirements for N1.
2. Enquiries regarding Working Width Class and other performance criteria for the systems listed in this Appendix should be made to the individual Promoters.
3. Enquiries regarding reference copies of drawings listed in this Appendix should be made to the individual Promoters.

2.2 Systems Acceptable For Use until April 5th 2005

2.2.1 Normal Containment Aluminium Parapets

Promoter

Balmer Lindley Group Ltd.
Dragonby Vale
Enterprise Park
Manaberg Way
Scunthorpe
North Licolnshire
DN15 8XF
Tel. (01724) 289119
E-mail: barrier@balmer-group.co.uk

Product	Containment Performance Class	BS 6779-1 Annex F Designation*	Drawing References		
Lindley Parapet	N2	N/1.00/O	LG2001 Rev 3 LG2060		
		N/1.00/M	LG2002 Sheets 1& 2 LG2060		
		N/1.00/W	LG2002 LG2060 LG2070		
		N/1.25/M	LG2003 LG2060		
		N/1.5/M	LG2004 LG2060		
		N/1.5/B	LG5002 LG2060 LG5050		
		N/1.8/mw	ABH13950C		
		N/1.5/X	ABH13672A Rev 2		
		Phoenix Parapet	N2	N/1.00/O	PHO/A/010 Rev B PHO/A/016 Rev A PHO/A/019 Rev B
				N/1.00/M	PHO/A/011 Rev B PHO/A/016 Rev A PHO/A/017 Rev A
N/1.25/B	PHO/A/019 Rev B PHO/A/014 Rev B PHO/A/015 Rev B				
N/1.50/B	PHO/A/015 Rev B PHO/A/016 Rev A PHO/A/018 Rev B				

* BS 6779-1: 1998 Annex F Designations are given for reference purposes only.

2.2.1 Normal Containment Aluminium Parapets (continued)

Product	Containment Performance Class	BS 6779-1 Annex F Designation*	Drawing References
Phoenix Parapet	N1	L/1.00/O	PHO/A/025
		L/1.00/M	PHO/A/012
		L/1.50/O	PHO/A/013
		L/1.5/M	PHO/A/013
		L/1.5/mw	PHO/A/013

* BS 6779-1: 1998 Annex F Designations are given for reference purposes only.

Promoter

Varley and Gulliver Ltd
Alfred Street
Sparkbrook
Birmingham
B12 8JR
Tel.(0121) 773 2441
E-mail: darren@v-and-g.co.uk

Product	Containment Performance Class	BS 6779-1 Annex F Designation*	Drawing References
Aluminium Parapets	N2	N/1.00/O or N/1.00/M	LWK/ALU/01 Rev 03
			LWK/ALU/02 Rev 02
		N/1.00/M	LWK/ALU/03 Rev 01
			LWK/ALU/04 Rev 01
			LWK/ALU/05 Rev 01
			LWK/ALU/06 Rev 02
		N/1.5/M	LWK/ALU/08 Rev 00
		N/1.50/W or N/1.50/B	LWK/ALU/09 Rev 00
			LWK/ALU/10 Rev 00
		N/1.80/mw	LWK/ALU/11 Rev 00
		N/1.25/O or N/1.25/M	LWK/ALU/12 Rev 00
		N/1.40/O or N/1.40/M	LWK/ALU/13 Rev 00

* BS 6779-1:1998 Annex F Designations are given for reference purposes only.

2.2.1 Normal Containment Aluminium Parapets (continued)

Promoter

Varley and Gulliver Ltd
Alfred Street
Sparkbrook
Birmingham
B12 8JR
Tel.(0121) 773 2441
E-mail: darren@v-and-g.co.uk

Product	Containment Performance Class	BS 6779-1 Annex F Designation*	Drawing References
BACO 3000 Series	N2	N/1.00/O	RF 160/001 Rev D RF 160/003 Rev B RF 160/004 Rev C
		N/1.00/M	RF 160/001 Rev D RF 160/003 Rev B RF 160/004 Rev C
		N/1.25/b	RF 160/005 Rev B RF 160/001 Rev D
		N/1.25/B	RF 160/003 Rev B
		N/1.50/B	RF 160/004 Rev C RF 160/005 Rev B RF 160/006 Rev B

* BS 6779-1:1998 Annex F Designations are given for reference purposes only.

2.2.2 Normal Containment Steel Parapets

Promoter

Corus Tubes
PO Box 101
Weldon Road
Corby
Northants
NN17 5UA
United Kingdom
Tel.(01536) 402121
E-mail: trevor.mustard@corusgroup.com

Product	Containment Performance Class	BS 6779-1 Annex F Designation*	Drawing References
Celsius HBP N1 Parapet	N1	L/1.00/O & L/1.00/M L/1.50/M	HBP/200/2
			HBP/200/4
			HBP/200/6
			HBP/200/7
			HBP/200/8
Celsius HBP N2 Parapet	N2	N/1.00/O & N/1.00/M N/1.50/B & N/1.50/W	HBP/200/1 HBP/200/5 HBP/200/6 HBP/200/7 HBP/200/8 HBP/200/12 HBP/200/13
Corus L/1.00/V Vertical infill Parapet	N1	L/1.00/V	HBP/100/3 HBP/100/11 HBP/100/12 HBP/100/13

* BS 6779-1:1998 Annex F Designations are given for reference purposes only.

2.2.3 Very High Containment Combined Concrete/Aluminium Parapets

Promoter

Varley and Gulliver
Alfred Street
Sparkbrook
Birmingham
B12 8JR
Tel. (0121) 773 2441
E-mail: darren@v-and-g.co.uk

Product

Combined
Concrete/Aluminium
Parapet

**Containment
Performance Class**

H4a

**BS 6779-1 Annex
F Designation***

H/1.50/O, B

Drawing References

P6P 69/3
P6P 69/1/9
P6P 71/1
P6P 71/1/1
P6P 71/1/2
P6P 71/1/3
P6P 71/1/10
P6P 71/1/11
P6P 71/1/12
P6P 71/1/13
P6P 71/1/14
P6P 71/1/15
P6P 71/1/22

* BS 6779-1:1998 Annex F Designations are given for reference purposes only.

2.2.4 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	BS 6779-1 Annex F Designation*	Drawing References
P6 Parapet	H4a	H/1.50/O H/1.50/W	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

* BS 6779-1:1998 Annex F Designations are given for reference purposes only.

Appendix 3 Safety Barriers

3.1 General

All those designs referred to in 3.2 in this Appendix are acceptable to the Highways Agency for use on its trunk road network for the containment criteria shown. This acceptance shall not exclude a system offered by a manufacturer that complies with BS EN 1317-1 and 2 and meets the requirements of particular contract specifications.

3.2 Non-Proprietary Safety Barrier Systems (NPSBS Revision 1)

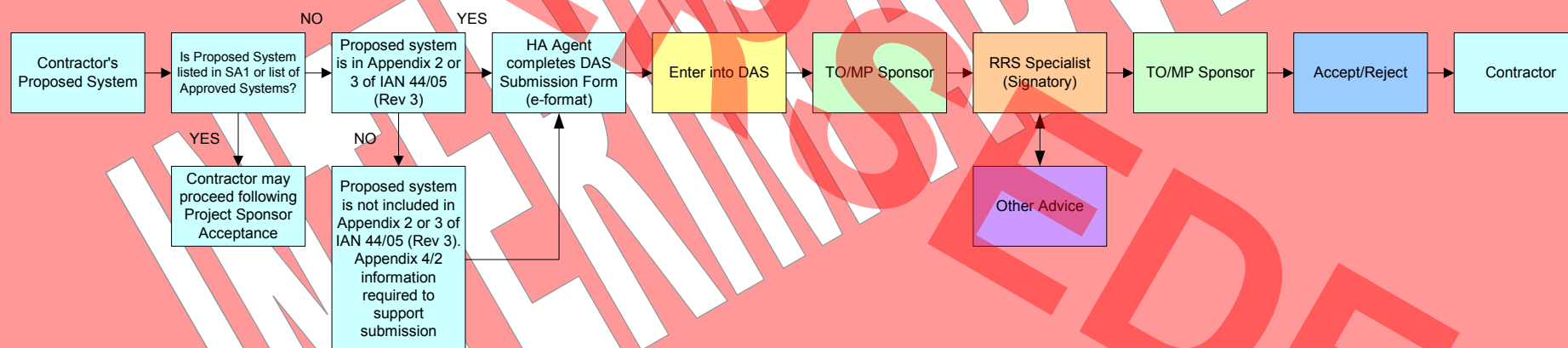
All the safety barrier systems in this category are contained in the document entitled Non-Proprietary Safety Barrier Systems (NPSBS Revision 1). Terminals detailed in the NPSBS (Revision 1) have been accepted by the Highways Agency as having a Performance Class of P1. Please refer to Chapter 8 of the IRRRS Revision 1 for containment performance class requirements for terminals.

To receive a copy of the NPSBS CD email:

ha.irrs@mouchelparkman.com

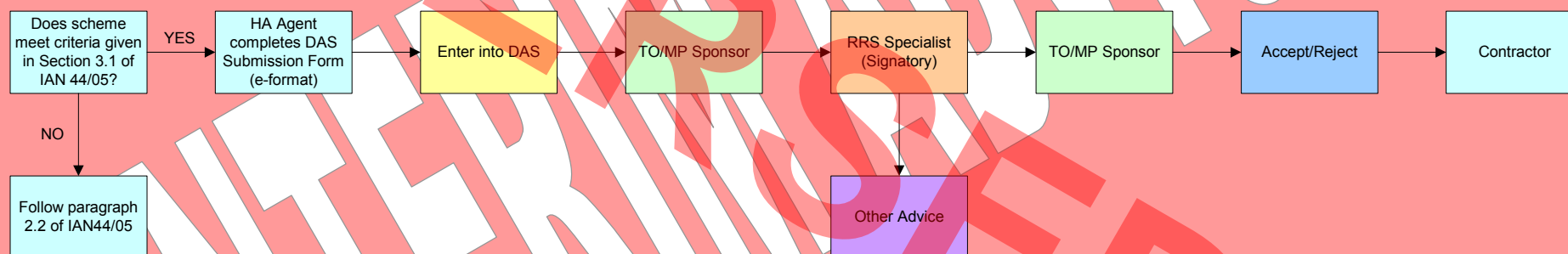
Appendix 4.1. Road Restraint System Acceptance Procedure - Flowchart

Acceptance of a Particular Road Restraint System (RRS) - (ROADS & STRUCTURES)
[IAN 44/05 Paragraphs 5.1.(i)(a)(b), 5.1.(ii)(a)(b)]



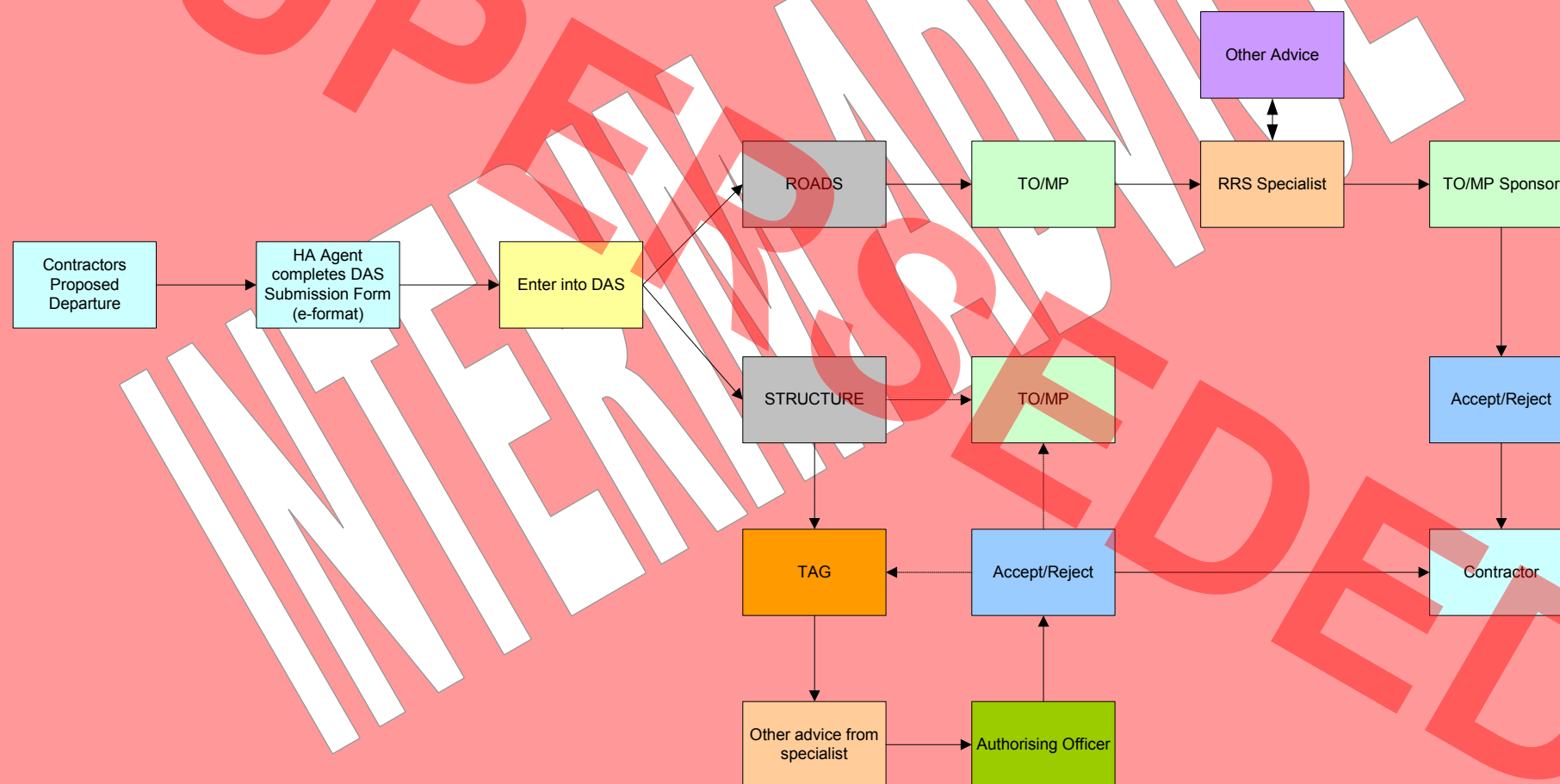
Appendix 4.2. Road Restraint System Acceptance Procedure - Flowchart

**Implementation of Interim Requirements for Road Restraint Systems (IRRRS) -
(ROADS & STRUCTURES)
[IAN 44/05 Paragraph 3.1]**



Appendix 4.3. Road Restraint System Acceptance Procedure - Flowchart

Departure from a Particular Road Restraint System (RRS) - (ROADS & STRUCTURES) [IAN 44/05 Paragraph 5.1.(ii)(c)]



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 BS EN 1317, an interim document entitled - 'Interim Requirements for Road Restraint Systems (Vehicle and Pedestrian)' (IRRRS) has been produced to replace those safety fence, parapet and pedestrian guardrail Standards, Advice Notes and associated documents listed in IAN 44/05.

1.2 HA Design Organisations / Agents shall comply with IRRRS (Revision 1) where appropriate. In so doing they shall ensure, when preparing contract documentation to procure work in accordance with IAN 44/05, 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.

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 BS EN 1317. It should be noted that Annex A of IRRRS is therefore superseded by the newly published May 2004 amendments to MCHW, in particular Series 400 - Road Restraint Systems (Vehicle and Pedestrian) of the Specification for Highway Works (SHW), associated Notes for Guidance to Series 400 of SHW and Series 400 of the Bills of Quantities for Highway Works.

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 Roadworks;
- (viii) Chapter 8 - Containment Performance Class Requirements and Guidance on Terminals and Transitions between different types of Safety Barriers & 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 This information shall, 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 shall 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 should 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 shall 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 shall be procured in accordance with IAN 44/05 and the requirements of the MCHW for road restraint systems. Where applicable, the Framework Contractor shall be instructed to comply with the specific requirements of Appendices 4/1 and 4/2 of SHW. Performance criteria and any specific constraints shall be stated in Appendix 4/1. Compliance requirements shall be in accordance with Appendix 4/2.

3.4 Design Build Finance and Operate (DBFO) Contract

- (i) New contracts shall be compiled in accordance with the model DBFO contract document and the comments made in Table 1.
- (ii) For existing contracts a copy of IAN 44/05 shall 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 shall 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 IAN 44/05 and the latest requirements of the MCHW.

3.5.2 Term Maintenance Contract (TMC)

- (i) New contracts shall be compiled in accordance with the model TMC contract document and the comments made in Table 1.
- (ii) For existing contracts, the MA shall procure the vehicle restraint system work through the TMC in accordance with IAN 44/05 and the latest requirements of the MCHW for road restraint systems by means of 'Works Orders'. Where applicable, the TMC Contractor shall be instructed to comply with the specific requirements of Appendices 4/1 and 4/2 of SHW. Performance criteria and any specific constraints shall be stated in Appendix 4/1. Compliance requirements shall be in accordance with Appendix 4/2.

3.5.3 Managing Agent Contractor (MAC) Contract

- (i) New contracts shall 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 and the latest requirements of the MCHW for road restraint systems.

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

Performance criteria and any specific constraints shall be stated in Appendix 4/1. Compliance requirements shall 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 shall state the Design Standards and Specification the Designer is to use. Future contracts shall be prepared to incorporate, as appropriate, the requirements of IAN 44/05 and the latest requirements of the MCHW for road restraint systems.
- (ii) For existing contracts, the Design Agent shall be instructed to comply with IAN 44/05 and the latest requirements of the MCHW for road restraint systems and the contract shall be amended accordingly.

4 Aesthetics

4.1 Chapter 6, paragraph 6.2 of the IRRRS confirms that aesthetic effects of 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 SHW shall be used for this purpose). The Technical Approval Authority (TAA) shall be consulted at this stage and their approval gained on the proposed 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 parapets across structures is to be avoided. Where it is considered necessary, however, then approval will need to be sought from the TAA. In seeking approval, full justification on technical and whole life costing grounds will need to be given.

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

5.1 In accordance with IAN 44/05, Design Organisation / Agents shall 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 shall also be treated as a Departure from Standard for 'aspects not covered by Standards' and shall be entered into the Departure Approval System (DAS) by either TO or MP as appropriate.

5.3 Design Organisations / Agents shall 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 shall treat the submission as a Departure from Standard for 'aspects not covered by Standards' and shall enter the Departure onto the Departure Approval System (DAS). For proposals adjacent to, on or under a structure TO or MP as appropriate shall submit to TAA via DAS for approval. Once a decision has been made the Contractor shall be advised in accordance with the timescales allowed under the Contract.

5.4 Any proposed change to the road restraint system manufacturer's standards shall be treated as a Departure from Standard and forwarded to TO or MP as appropriate for consideration. TO or MP shall 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 shall be informed accordingly in accordance with the timescales allowed under the Contract.

6 Road Restraint Systems Procurement Methodology

6.1 Contract documents must not now specify the use of any specific type of safety barrier or vehicle parapet. Instead requirements shall be expressed in terms of specific performance criteria which shall be specified in MCHW Appendix 4/1 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 One option available to Contractors will be to choose from the existing safety barrier systems (deformable and rigid) that have been developed and used extensively in the UK for many years; details of which are contained in the document entitled 'Non-Proprietary Safety Barrier Systems' (NPSBS) (Revision 1).

6.4 The systems put forward by Contractors post contract award shall 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 parapet Standards and Advice Notes etc. listed in Appendix 1 to IAN 44/05 are withdrawn and the requirements of the IRRRS (Revision 1) are followed, an amendment to the Contract documentation shall 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. *[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 without obtaining prior written consent from the HA. Its purpose is to provide Contractors with other options to choose from, e.g. those systems used extensively in the UK for many years in addition to the other systems available. Once chosen the Contractor must present the system for review / acceptance and inclusion in the Works.]*
- 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 (SHW) (MCHW - 1) and the Notes for Guidance on the Specification for Highway Works (NGSHW) (MCHW - 2)

8.1.1 Contract-specific requirements for the Numbered Appendices shall 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 shall 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 are withdrawn from use. (Please note however that for works referred to as exceptions in paragraph 3.2 under 'Implementation' in IAN 44/05 then the withdrawn HCD drawings may still be utilised as necessary)

8.2.2 Instead, Contractors shall put forward for review / acceptance proposals for safety barrier and vehicle parapet systems in accordance with the contract requirements. They shall provide all necessary supporting information including general arrangement and component part drawings and shall advise on the recommended testing requirements of the manufacturer. In so doing, one option available to Contractors is to propose the systems contained within the document entitled 'Non-Proprietary Safety Barrier Systems' (NPSBS) (Revision 1). This document contains information on Safety Barriers and reproduces layout and amends as appropriate component detail drawings previously contained in MCHW - 3, Section 2 of the HCD.

8.2.3 Once the system put forward has been accepted the associated general arrangement, component part drawings and testing requirements shall 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 shall be included as appropriate in accordance with the Notes for Guidance on the Method of Measurement for Highway Works.

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 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 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

alan.smith@highways.gsi.gov.uk

10.3 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		<p>(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.</p> <p>(ii) Refer to Section 8.1 and 8.2 and include as appropriate in the Works Information.</p> <p>(iii) Refer to Section 8.3 where BOQ's are used.</p>
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	<p>Annex 0/1 in Chapter 9</p> <p>Annex 0/2 in Chapter 9</p> <p>Annex 0/3 in Chapter 9</p>	<p>(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.</p> <p>(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.</p> <p>(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 to IAN 44/05. Include IRRRS (Revision 1) in Annex 0/2 as a 'Stand Alone Publication', which the Contractor will need to comply with.</p> <p>(iv) Include IAN 44/05 in Annex 0/3 of the Employers Requirements.</p>

Contract Model	Reference in Model	General Guidance / Comments
D&B - England Model Contract Document (continued)	Annex 0/5 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.
	Annex 0/6 in Chapter 9	(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 - 2. (viii) Include the latest revised published Series 400 of the SHW 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	(i) Include those Standards and Advice Notes that have been withdrawn, in accordance with those listed in Appendix 1 to IAN 44/05, in Schedule 4 Part 2 Annex 1 paragraph 1.2.
	Schedule 4 Part 2 Annex 2	(ii) Include details of those Standards that have been amended / partially withdrawn etc., in accordance with those listed in Appendix 1 to IAN 44/05, in Schedule 4 Part 2 Annex 2. (iii) Insert IAN 44/05 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 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. (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 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 to IAN 44/05, 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, - 2 and 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 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 to IAN 44/05, 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.