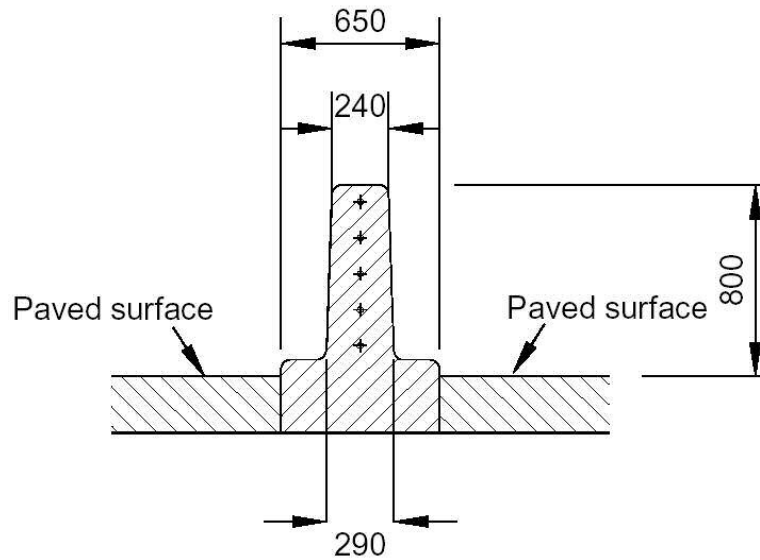


Appendices

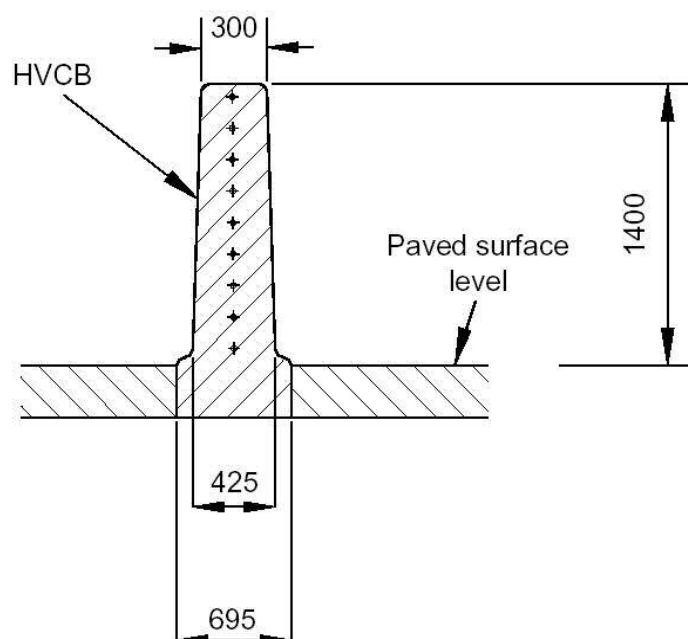
Appendix 1: Typical Cross-Sections of UK Concrete Barriers

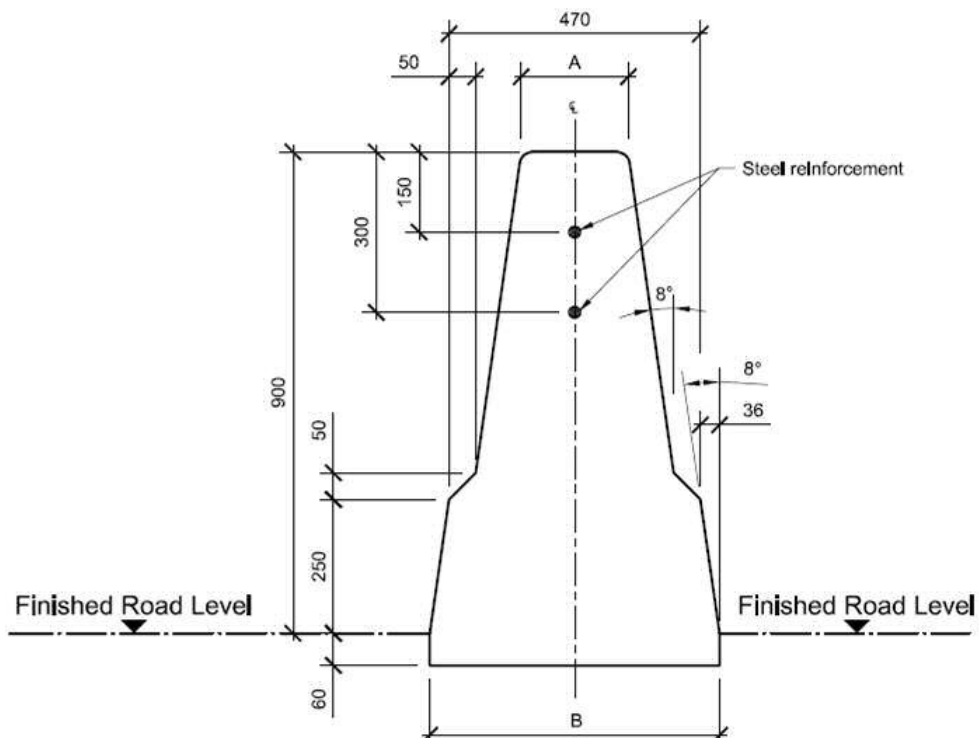
Note: Dimensions shown are approximate

Vertical Concrete Barrier (VCB)



Higher Vertical Concrete Barrier (HVCB)



Concrete 'Step' Barrier (courtesy of Britpave)

Appendix 2: Questions to the TMCA, sign manufacturers and the Highways Agency

Questions to the Traffic Management Contractors' Association (TMCA)

1. What types of sign (by shape and size) do you use in the central reserve?
2. What means do you currently use to locate temporary and permanent signs in the central reserve, which have the following types of safety barrier?
 - Concrete barriers,
 - Steel beams,
 - Wire rope safety fences.
3. Are the systems which are currently available for locating temporary and permanent signs to concrete barriers satisfactory? If not, what system would you propose for locating such signs in these circumstances?

Note that any systems proposed will need to satisfy the stability requirement of the new British Standard BS 8442.

4. What problems do you currently experience fixing signs to these barriers, beams and fences?
5. What do you currently do to counteract these problems?
6. When external lighting of signs is required, what lighting system(s) and power source(s) do you use?
7. How often do you experience problems with the stability of the signs and their frames?

Questions to sign frame manufacturers

This project deals specifically with locating temporary and permanent signs to permanent concrete barriers.

1. What sign frames do you currently manufacture to do this? What plans do you have for making such frames in the future? (Ask for suggested designs).

Note: Sign manufactures will need to be aware that any systems proposed will need to satisfy the stability requirement of the new British Standard BS 8442.

Questions to the Highways Agency

1. What signs (temporary and permanent) are typically used in the central reserve on the HA network?
2. Are you aware of any problems, if so, what have they been?
3. If so, what safety issues are you aware of?
4. Similarly, what operational issues are you aware of?
5. Are you aware of any possible solutions?
6. One possible solution could be the use of permanent fixtures in the central reserve e.g. sockets and the provision of power points. Do you have any views on this?

Questions to the Britpave (a body representing the concrete industry)

1. Are there any specific measures your members use at present regarding the design of concrete barriers for the central reserve to accommodate sign mounting frames for temporary signs or vertically mounted permanent signs?
2. Do you have any experience of what techniques are used in other countries, for example, France, where there is a common occurrence of concrete barriers in the central reserve?

Appendix 3: Questions to the Netherlands and other EU countries**SURVEY OF CURRENT PRACTICE OF INSTALLING TRAFFIC SIGNS TO CONCRETE SAFETY BARRIERS**

Would you please complete the following questionnaire:

Questions:

1. What type of traffic signs (road work and permanent) are typically used in the central reservation on the motorway network in your country?

2. What methods are used in your country to secure road work sign mounting frames to the concrete barriers?

(Please send us any drawings or diagrams as an attachment)

3. Are you aware of any problems with installing sign mounting frames for road work signs to concrete safety barriers in the central reservation?

If so, what have the problems been?

4. If there are any problems with installing the sign mounting frames to concrete barriers, what are the safety and / or operational issues?

5. What methods do you use to install any permanent traffic signs to concrete safety barriers in the central reservation?

(Please send us any drawings or diagrams as an attachment)

6. If permanent traffic signs, for example variable message signs, located in the central reservation require mains power, how is this achieved?

Please add any further comments or any additional information that you feel would be useful:

Thank you very much for your assistance in completing this questionnaire.

Please enter your personal details here:

Your name: _____

Address: _____

Country: _____

Email: _____

Tele: _____

Appendix 4: Traffic management and safety barriers: contact list

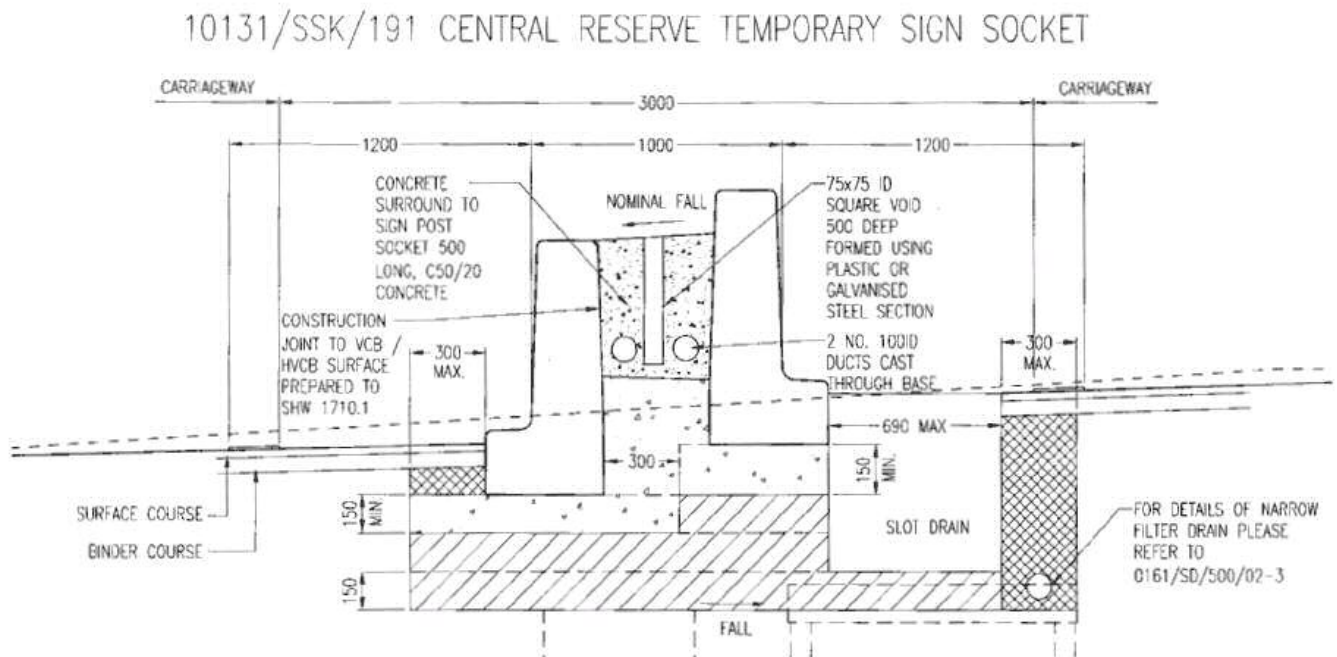
Name	Organisation	Additional information	Contact details			
			Phone	Email	Contacted Y/N?	Contacted by (initials)
Richard Pearson	Traffic Management Contractors' Association (TMCA)	Chairman of TMCA Richard's company is currently responsible for the temporary traffic management on the M25 J12-15 widening	01737 647966	Richard.Pearson@aggregate.com	Y – 12/09	JM
Grahame Beswick	TMCA	Deputy Chairman, TMCA	01773 813214	gbeswick@hwmartin.com		
Ian Spellacy	Carillion	Route Manager for the M25	07803 975645		Y-13/08	ST
Robin Hutchinson	Highways Agency		01306 878270	Robin.Hutchinson@Highways.gsi.gov.uk	Y-15/09	JM
David Jones	Britpave	This company represent the concrete industry and normally have informed views on related subjects.	01276 33160	info@britpave.co.uk	Y-20/09	JM
James Charlesworth	Extrudakerb		01709 862076		Y-20/09	JM
Matthew Charlesworth	Extrudakerb		01709 862076			
Steve Garrett	Morelock Signs Ltd	National Sales manager Morelocks are one of the major manufacturers of sign mounting frames in the UK	01902 637575		Y-21/09	JM
	William Smith Ltd	Sign frame manufacturers and suppliers	01833 690305		Y-20/09	JM
	Altaroute Ltd	Sign frame manufacturers	01454 311475		Y-20/09	JM

Name	Organisation	Additional information	Contact details			
			Phone	Email	Contacted Y/N? Y-20/09	Contacted by (initials) JM
	De Organ Ltd	Sign frame suppliers	01418 897000		Y-20/09	JM
	Ashfield Ltd	Sign frame suppliers	01215 578008		Y-20/09	JM
	Limelight Signs Ltd	Sign frame suppliers	01706 873866		Y-15/12	JM
	S&J Signs	Sign frame manufacturers	01215 264010		Y-20/09	JM
Barry Patcham	Ringway Signs Ltd	Sign frame manufacturers and suppliers	01934 421400		Y-20/09	JM
Barry Sullivan	Sullivan Holdings Ltd	Sign frame manufacturers Sullivans are one of the major manufacturers of sign mounting frames in the UK	01543 377280		Y-21/09 Y-14/12	JM JM
David Booth	Nationwide Signs	Sign frame manufacturers	01902 871116	Roadframesdirect@aol.com	Y-29/09	JM
Arthur Norton	Highways Agency	Area 5 manager	01306 87 8312	Arthur.Norton@Highways.gsi.gov.uk	Y-28/09	JM
Peter Rix	Highways Agency	Area 4 manager	01306 878115	Peter.Rix@Highways.gsi.gov.uk	Y-28/09	JM
John Rylett	Highways Agency	Area 3 manager	01306 878251	John.Rylett@Highways.gsi.gov.uk	Y-28/09	JM
Ralf Kloeckner	BAST		+49 2204 43 542	kloeckner@bast.de	Y-12/10 Y-08/12	AC GW

Name	Organisation	Additional information	Contact details			Contacted by (initials)
			Phone	Email	Contacted Y/N?	
Huib Kwint	Ministry of Transport, Netherlands		+31 (10) 282 5896	h.kwint@avv.rws.minvenw.nl	Y-12/10	AC
Christine Marcaillou	SETRA		33 + 146113636	christine.marcaillou@equipement.gouv.fr	Y-12/10	AC
Peter Johnsen	Private consultant			pj@johnsenconsult.dk	Y-08/12	GW
Vittorio Giavotto	Politecnico di Milano			giavotto@aero.polimi.it	Y-08/12	GW
Harry Taylor	US Federal Highways Authority			Harry.taylor@fhwa.dot.gov	Y-08/12	GW
Vincent Ledoux	LCPC			Vincent.ledoux@lepc.fr	Y-08/12	JM
Malcolm Wilkinson	Highways Agency	Area 2 manager	0117 3928085	Malcolm.Wilkinson@Highways.gsi.gov.uk	Y-28/09	JM
David Cropper	Highways Agency	Area 9 manager	0121 6788482	David.Cropper@Highways.gsi.gov.uk	Y-28/09	JM
Stephen Edwards	Highways Agency	Area 11 manager	0121 6788360	Stephen.Edwards@Highways.gsi.gov.uk	Y-28/09	JM
Graeme Freeman	Highways Agency	Area 10 manager	0161 9305673	Graham.Freeman@Highways.gsi.gov.uk	Y-29/09	JM
Bob Baldwin	Highways Agency	Area 13 manager	0161 9305680	Bob.Baldwin@Highways.gsi.gov.uk	Y-29/09	JM
Antony Firth	Highways Agency	Area 12 manager	01132 836436	Antony.Firth@Highways.gsi.gov.uk	Y-28/09	JM
Ivan Beavis	Highways	Area 7 manager	0121 6788130	Ivan.Beavis@Highways.gsi.gov.uk	Y-29/09	JM

Name	Organisation	Additional information	Contact details			Contacted by (initials)
			Phone	Email	Contacted Y/N?	
Iain Semple	Agency Highways Agency	Area 8 manager	01234 796045	Iain.Semple@Highways.gsi.gov.uk	Y-29/09	JM
Peter Smith	Highways Agency	Area 6 manager	01234 796094	Peter.Smith@Highways.gsi.gov.uk	Y-29/09	JM
Peter Moffatt	Highways Agency	Area 14 manager	01132 836503	Peter.Moffatt@Highways.gsi.gov.uk	Y-28/09	JM
Roger Wantling	Highways Agency	Area 12 project sponsor	0113 2836253	Roger.Wantling@Highways.gsi.gov.uk	Y – 04/10	JM
	The Association for Road Traffic Safety and Management. (ARTSM)	ARTSM is an influential body in the highways and transportation area.	020 89778339	02089776952 (Fax)	Y – 06/10	JM

Appendix 5: Profile and dimensions of slots used for vertically mounted signs on M25 (J12 – 15) road works scheme.



Two rows of Vertical Concrete Barrier (VCB)

Appendix 6: Frame securing bracket - type A design

For detailed Drawings of the frame securing brackets, type A and B, contact Steve Garrett of Morelock Signs on +44(0)1902 637575

Appendix 7: Smartlock straps – product specification (courtesy of Morelock Signs Ltd)

SmartLock Strap

SmartLock is a resilient, strong strap designed to be used to replace or reduce the number of sandbags used to secure your "A" frames. It can withstand extreme weights and weathers – lasting for years even in the harsh roadside environment. It is also cheaper than the normal method of weighting down road signs with several heavy and expensive sandbags. Each SmartLock strap can hold up to 300kg, the equivalent weight of 24 sandbags, though it is always advised to use at least two straps per frame.



If the webbing is torn or damaged in any way it is advised that you throw that particular strap away and use another one.

Characteristics

WEBBING STRAP

Material:	Polypropylene Webbing
Standard:	RTL R4691
Finish:	Yarn Pigmented
Length:	2m (2000mm)
Width:	38mm
Minimum Tensile Strength:	430kg
Available in many standard colours	



BUCKLE

Material:	PA 6.6 50% Glass Fibre
Length:	74mm
Width:	56mm
Breaking Strain:	165kg

SMARTLOCK ASSEMBLY

Maximum Design Load:	300kg (when correctly fitted)
Breaking Strain:	340kg (when correctly fitted)

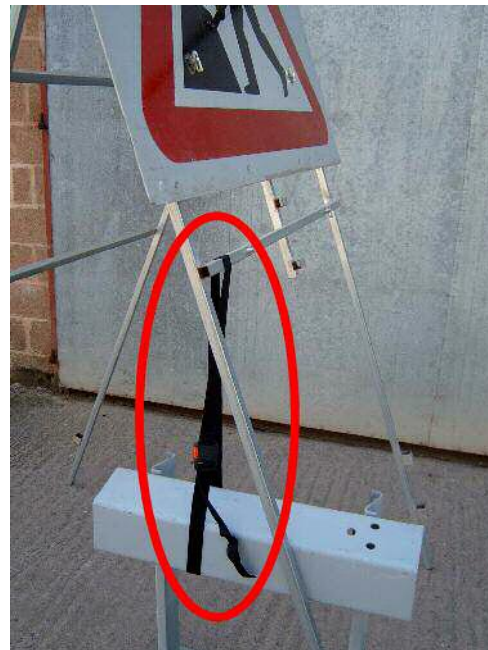
SAFE USAGE

- The strap must not be in contact with sharp edges.
- The strap must be pulled tight enough to take up any slack.
- The strap should always be doubled over to form a complete loop.
- Never use a damaged strap.

Recommended methods of using SmartLock to secure an “A” frame



Clamping leg to barrier



Standard configuration



Two SmartLocks joined together



Alternative configuration

Appendix 8 - Proposed cast-in sign post socket design

For detailed Drawings of the proposed cast-in sign post socket design, contact Steve Garrett of Morelock Signs on +44(0)1902 637575