Construction Division Technology Unit Minute

Marking of Class 'A1' Anchor Devices (EN 795 and BS 5845) For Attachment of PPE

1. Considerable confusion currently exists about eyebolts used as anchor devices for PPE and how they should be marked. This Minute describes the current CDTU position on the marking of anchor devices for PPE and what should be done if incorrect marking is found in service.

2. EN 795: 1997, *"Protection against falls from a height – Anchor devices – requirements and testing"* is the current product standard that applies to all such products. This classifies anchors into 5 main types (i.e. Types A to E). It is supplemented by BS 7883: 2005, *"Code of practice for the design installation, use and maintenance of anchor devices conforming to BS EN 795"*.

3. For eyebolts (Class A1), BS EN 795 incorporates a static test and a dynamic drop test of 100 kg mass dropping through 2.5 metres. For expanding socket or chemically bonded anchors, BS 7883: 2005 (Clause 11.1) requires, after installation, an axial pull test of 6kN[1] for 15 seconds[2]. Anchor devices for fall protection[3] should be periodically examined every 12 months (see Clause 12.1.2).

4. Previously, BS 5845, *"Specification for permanent anchors for industrial safety belts and harnesses"* applied, but this was withdrawn when EN 795: 1996 was published. However, products (in particular eyebolts) are still found in use in the work place that might have been manufactured to this Standard.

5. BS 5845 required a dynamic drop test of 136 kg falling through 1.5 metres applied to design samples installed into the type of construction (brickwork, block work, steel beams etc.) it is intended for (This was designed to ensure that a peak force in excess of 10 kN was replicated and safely sustained).

6. Comparing the *energy* of the drop tests it will be seen that EN 795 is a more onerous Standard.

7. **Eyebolts used for the attachment of Personal Fall Protection Systems constitute anchor devices and as such are deemed to be PPE. Therefore, these products are required to be CE-marked by the PPE Regulations 2002 (These Regulations superseded the PPE (EC Directive) Regulations 1992 (SI 3139) which implemented the 89/686/EEC Directive. The latter require EC type examination and CE-marking). CE marking to the PPE Directive requires that the number of the notified body responsible for on-going compliance is**

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1 5 kN in BS 7883: 1997

2 For through type anchor devices installed in cavity construction see BS 7883: 2005, Clause 11.3.

3 If eye bolts are used under the provisions of LOLER, e.g. for industrial rope access, they are subject to a 6-monthly 'thorough examination'.

marked adjacent to the characters "CE". If an eyebolt is CE-marked without the notified body number, it should be assumed that the CE approval is to a Directive other than Directive 89/686/EEC, and the eyebolt should not be *presumed* to be an anchor device suitable for fall protection purposes.

8. Internally (within HSE), Appendix 9 of OM2003/120, *"European Standards and marking for fall arrest"* has caused confusion as it contained a note that, *"... Only types B and E (of EN 795) are now considered by CEN to be PPE. The rest are work equipment ..."*. This statement reflected an EU Mandate, which itself has resulted in some manufacturers no longer obtaining third-party certification by notified bodies for Class A, C and D anchors and as such are no longer complying with the PPE Regs.).

9. However, the interpretation being made was always incorrect. The DTI confirmed some time ago that in the UK, "… *The presumption of conformity has been withdrawn from Class A, C and D anchorages within the EN 795 standard, however these products are still within the scope of the PPE Directive and as such these anchorages remain PPE until such time as the PPE Directive and ultimately the PPE Regulations 2002 are amended to provide their exclusion …".*

10. **Such an exclusion does not exist currently.** Additionally, currently in Europe, the Expert Group on Personal Protective Equipment (PPE) dealing with Directive 89/686/EEC is reconsidering the fundamental classification of anchors.

11. Therefore, this means that all anchors for PPE installed since 1992 should have been CE-marked, either by using an acceptable Standards route, e.g. to EN 795 (if they were Class B or E) or, if that didn't apply (i.e. either they were Class A, C or D; or any anchor before 1997 when BS EN 795 was published), via a technical file route, and appropriate Category III PPE conformity obtained through independent third party certification by a notified body.

12. Any incorrectly or unmarked anchors found therefore constitute non-compliance with the PPE Regulations 2002, which impose duties on the responsible person (manufacturer or his authorised representative or the person who places the PPE on the market). These Regulations are, however, enforced by the DTI through the local trading standards offices; and **not** by HSE.

13. HSE is the enforcing body for the *use* of PPE in the workplace and, therefore, become involved when they are found being used in service.

14. The CDTU position when such products (marked or unmarked) are found in use is as follows:

    a) Anchor devices need to be demonstrably 'fit for purpose'.

    b) Any new anchor devices being installed must be CE-marked and be marked in accordance with EN 795: 1997.

c) Existing anchor devices found marked to BS EN 795 and/or BS 7883 should be deemed to be compliant (They will have been tested to BS EN 795).

d) Existing anchor devices found marked with an appropriate CE-mark[4] but not marked to EN 795 should be deemed to be compliant (They will have been verified by a technical file route).

e) Existing anchor devices marked to BS 5845 should be deemed to be compliant. This Standard was acceptable prior to 1992 and there was no retrospective requirement to upgrade to EN 795. However, the building owner should be advised that the requirements of the current standard are more onerous and they should reassess how they are being used and whether the current installations are sufficient for their intended use (e.g. dynamic loads during rope access are likely to be substantially less than dynamic loads for fall arrest). Additionally, if they were installed after 1992 then it should be referred to the Local Trading Standards Authority for their consideration because the product supply requirements were not met.

f) Anchor devices with none of the above markings are not compliant. These should be taken out of service (and, if installed after 1992, referred to the local Trading standards Authority), until they are replaced with CE-marked products or are demonstrated to be 'fit for purpose' (see below).

15. If the building owner chooses to demonstrate that any unmarked anchors are 'fit for purpose', it is suggested that the following procedure is a way forward:

a) A competent person should check the position of anchor devices to confirm that they would provide the expected protection. The competent person must have a comprehensive understanding of the principles of fall protection, and the ability to apply the recommendations contained in BS7883: 2005.

b) 1% of all the anchor devices in question (subject to a minimum of 5) should be subject to insitu load testing to confirm the factor of safety (FoS) applicable to the installation type. Currently, the factor should be *at least* 2 with respect to the proof load of 6 kN required by BS 7883, Clause 11. This means a tensile load of 12 kN.

c) If any one test carried out in b) produces a FoS of less than 2, a further sample of 5 should be tested. However, if *any* of that subsequent sample produces a FoS of less than 2 then *all* the anchors should be replaced with CE-marked products.

d) Subject to the testing in Paragraphs b) and c) being successful, sample anchor device(s)[5] should be removed from the structure and type tested, by a Notified Body, to the requirements of EN 795: 1997, Clause 4.3.1.1. The test(s) should

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4 See Paragraph 7 (above).

5 Testing will have to be undertaken with the force applied in the direction(s) in which the loading will be applied in service, which may include shear.

be undertaken in the same type of substrate and construction as that in which the unmarked anchor devices are installed[6].

e) If any anchor fails the test in e) then *all* the anchors should be replaced with CE-marked products.

f) Subject to the testing in Paragraphs b) and c) being successful, **all** the installed unmarked anchors in any given location (i.e. building/structure) should be tested insitu by subjecting these anchors to the installation test detailed in BS 7883, Clause 11, i.e. 6 kN.

g) All anchor devices that have been subjected to a 12 kN static test (see 15b) or c), above) should be removed from the structure (e.g. the eyebolts removed and the holes filled or, in the case of non-demountable anchor devices, simply cut off, to prevent subsequent use). This applies irrespective of the result of the test. Where such anchor devices have been removed they should be replaced, at a suitable distance from the original installation, by anchor devices carrying the correct CE-mark and other marking(s).

h) If any anchor fails the test in f) then that anchor should be replaced with CE-marked products.

i) All anchors should be marked in accordance with BS 7883: 2005, Clause 13.

16. The building owner should maintain a file giving the details of all the tests carried out so that a "fit for purpose" assessment by the ***user*** can be verified before their intended use. This should be available on demand.

17. Satisfactory marking of an anchor device does not imply that other aspects of the installation are correct. All installations of anchor devices should be checked at the periodic inspection to see that they comply with the requirements of the Work at Height Regulations 2005, as well as the recommendations of BS 7883.

Postscript
Revised following discussions with the Work at Height Association (WAHSA), www.wahsa.org – primarily resulting in the inclusion of Para. 15d).

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6 Tests undertaken on behalf of the BSI Technical Committee that prepared BS 5845 (in the 1970s) demonstrated clearly that 'lifting' eyebolts passed the static tests, but failed catastrophically under a dynamic shear load. This led to the requirement in BS 5845 that there should be at least 50mm of unthreaded shank within the structure, when the eyebolts were to be installed into any material other than steelwork.