

Approval & Reception Procedure

DEE- Departamento de Estruturas e Edifícios		
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1 Reference standard/document

The reference standards/documents are the following:

BS 8539:2012	Code of practice for the selection and installation of post-installed anchors in concrete and masonry
EAD 330232-00-0601:2016-10	Mechanical Fasteners for use in concrete
JG/T 160-2017	Mechanical anchors for use in concrete
CFA Guidance note	Procedure for Site Testing Construction Fixings - 2012
BS 5080 : Part 1 : 1993	Structural fixings in concrete and masonry - Part 1. Method of test for tensile loading
GB 50367 Annex N.4 & N.5.1 Part 1	Design code for strengthening concrete structure Annex N.4 & N.5.1 Part 1

2 Approval procedures

The following document should be submitted for approval:

Document		Details
a)	Design information	<ul style="list-style-type: none"> Designation of anchor including size and type Material type of anchor (e.g. stainless steel, carbon steel) The status of the concrete(cracked/non-cracked)
b)	Material manufacturing reference standard / information	<ul style="list-style-type: none"> Standard (European assessment document-EAD, JG/T 160 or equivalent standard) Specification of anchor dimension, material type and properties Performance data for anchor installed in cracked/non-cracked concrete, including characteristic resistance, design resistance and recommended resistance Edge and spacing criteria Minimum thickness of base material Setting details, including effective embedment depth, maximum hole diameter, temperature limits and curing times where relevant

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		<ul style="list-style-type: none"> Installation equipment and instructions, such as torque wrench, installation torque and cleaning equipment.
c)	3 rd party assessment certificate	<ul style="list-style-type: none"> The certificate should clearly identify the 3rd independent certification body, validation and reference standard The certificate should cover all information provided by the manufacturer as stated in part (b)
d)	Method statement	<ul style="list-style-type: none"> Site work record form (including: date, worker information, work details) Installation method Setting tools required with manufacture's instruction Cleaning method, Curing time and temperature where applicable

Remark :

(a) Factory visit(s) may be required depends on the actual situation.

(b) For the case that the status of base concrete is not specified in the design, the contractor should assume that the concrete to be cracked unless an exercise has been carried out to determine whether it is cracked or non-cracked.

(c) Cracked concrete means that concrete likely to be subjected to tension at any point in its lifetime

3 Reception procedure

3.1 Delivery Notes

When materials arrived on site, delivery notes should be submitted for verification. At least, the following information should be included in the delivery notes.

- A) Manufacturer
- B) Project
- C) Product Specification
- D) Quantity
- E) Production lot identification (size, length, type, material, etc)
- F) Compliance Declaration

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3.2 Reception Testing

Tensile proof load test should be carried out on each lot of installed anchors to show that they have been installed correctly. The lot should be the anchor bolt of same brand, model and installed in the same type of base material. Before the reception testing, the contractor should submit the request of reception with the lot information; including lot size, location and related filled site work record form stated in item 2 d). Reception tests should be performed to verify the properties of anchor bolt as stated in Table 1. The proof test load should be 1.5 x characteristic action (unfactored load) specified by the designer or should be the design resistance of anchor bolt.

Table 1 - Reception Test Items

Testing Item	Standards
Tensile proof load test	GB 50367 Annex N.4 & N.5.1 Part 1 or BS 5080 : Part 1 : 1993 or CFA Guidance note

Remark:

- (a) In case of more strict specification required in a project, the stricter specification should be followed.
- (b) Other testing items (e.g. torque test) may be required by designer or others and the related details should be submitted for approval.

3.3 Sample number

In each lot, the minimum sample number should be 2.5% of the total number of anchors installed, with a minimum of three anchor bolts.

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4 Acceptance criteria

For proof load test

- In case of all specimens pass, the lot can be considered as acceptable.
- In case of more than one specimen fails, the lot should be considered as unacceptable.
- In case of one specimen fails, additional specimen in that lot should be 2.5% and at least 3. If any specimen fails in the additional test, the lot should be considered as unacceptable.
- For each unacceptable lot, the contractor should investigate the reason of failure and propose the remedial action. Reasons for failure should be communicated to those responsible for the installation, to avoid further failures on future installations.