

Reply of EOTA to the Position Paper of SBS "Inconsistencies between Eurocodes and EOTA Technical Reports"

Background

EOTA received the above-mentioned Position Paper together with further enclosures providing examples for what is referred to in this Position Paper as inconsistencies. These enclosures included a document which seems to be addressed to CEN on behalf of SBS (CEN SFC N 836) and the document CEN/TC 250 N 2922. Two further documents have been enclosed (N 859 SBS activities and SBS intro on doc 836 and ppt MG1&3) with the same content.

General formal aspects

Based on the further enclosures, there seem to be some misunderstandings with regard to the concept of EADs:

- EOTA never has claimed that an EAD "is the official guideline for static design", here "in accordance to Eurocode 2, part 2 (1992-1-1)". EADs provide harmonised assessment methods allowing for the indication of product performances which can be used for design.
- Thus, as EADs do not refer to design information such information cannot be in "conflict with Eurocodes".
- However, EOTA can, of course, provide outside of EADs useful information, e.g., related to how the information about product performances can further be used.

EOTA Technical Reports (EOTA TR) are developed as supporting reference documents to other EOTA publications, especially European Assessment Documents (EAD). They are often developed alongside and together with these EADs, to cover aspects that go beyond the pure product assessment or beyond a single EAD. As such, EOTA TRs detail relevant aspects such as design, execution, or on-site testing. They may also contain horizontal assessment methods relevant for multiple EADs. They reflect the common understanding of the Technical Assessment Bodies in EOTA of the state of the art at a particular point in time. Technical Reports can be revised or updated. Amended TR versions supersede the previous ones.

In case Technical Reports are related to design they are, of course, not conflicting with Eurocodes and provided as an offer to all stakeholders to be used on a voluntary basis.

EAD 330087, TR069 and Eurocodes

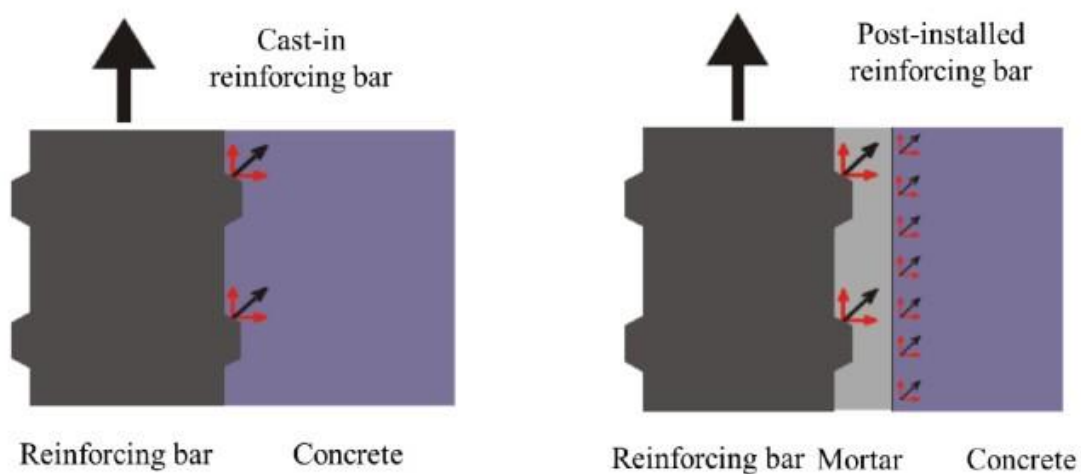
Historic background

Assessment of post-installed rebars started in the early 2000 years with the EOTA TR 023 which was then superseded by EAD 330087-00-0601 in 2018. In this document, assessment is devoted to establishing an equivalency between cast-in rebars and post-installed rebars in order to apply the principles of design according to EN 1992-1-1:2004 (which only applies to cast-in rebars). Principles for design of post-installed rebars were already included in fib model code 2010 which, however, is not a legal building code. Manufacturers wanted to bridge the gap between fib model code and EN 1992-1-1 with a relevant EAD (EAD 332402-00-0601) for assessment and determination of the

essential characteristics to be used as input parameters of the new developed TR 069 for design of the post- installed rebar connection to ensure a more realistic design of post-installed rebars.

Difference between cast-in and post-installed reinforcing bars

The main difference between cast-in and post-installed rebars is related to the layer of mortar between the steel bar and the concrete, which significantly influences the load-displacement behaviour (see Figure below). In particular, the behaviour of the mortar needs to be checked under different loading conditions, e.g., sustained load, elevated temperature, and seismic loading. The influence of these factors can be “standardised” for cast-in bars fulfilling specific requirements (e.g., EN 1992-1-1, Annex C) and is taken into account by specific design provisions (e.g., EN 1992-1-1 for static loading, EN 1998-1 for seismic loading). For post-installed rebars, the product-dependent characteristics required for their design need to be assessed through a specific assessment and are not reflected in the current Eurocodes (e.g., fbd,seis).



Design of post-installed reinforcing bars

Currently, neither EN 1992-1-1:2004 nor other Eurocodes, nor other CEN standards cover the design of post-installed rebars, even though their performance can be significantly different than that of cast-in bars. To this end, the inclusion of provisions for post-installed rebars in prEN 1992-1-1:2021 is a very positive development. This standard, however, will not be available for publication (or adoption) soon. It would be definitely beneficial, if post-installed rebars would be considered also in prEN 1998-1-2 (seismic design).

An assessment of post-installed rebars following the provisions of the EAD 332402-00-0601 allows the determination of product characteristics to be used for a design method valid only for specific connections in accordance with TR 069. This design method does not contradict any provisions of EN 1992-1-1:2004 (post-installed rebars are out of the scope of EN 1992-1-1:2004). Therefore, the TR069 provides, for the time being, an alternative design method which might be superseded in case of relevant developments in prEN 1992-1-1:2021. Its acceptance will be ruled by local adoption (e.g., National Annexes) or under the responsibility of the designer.

Conclusion

Thus, EAD 332402 and TR069 are not in contradiction with the Eurocode (which covers cast-in rebars only). With revision of EC 1992-1-1 it is planned that the design of post-installed rebar will be included and perhaps TR 069 will be possibly superseded in the future by the new version of EN 1992-1-1.