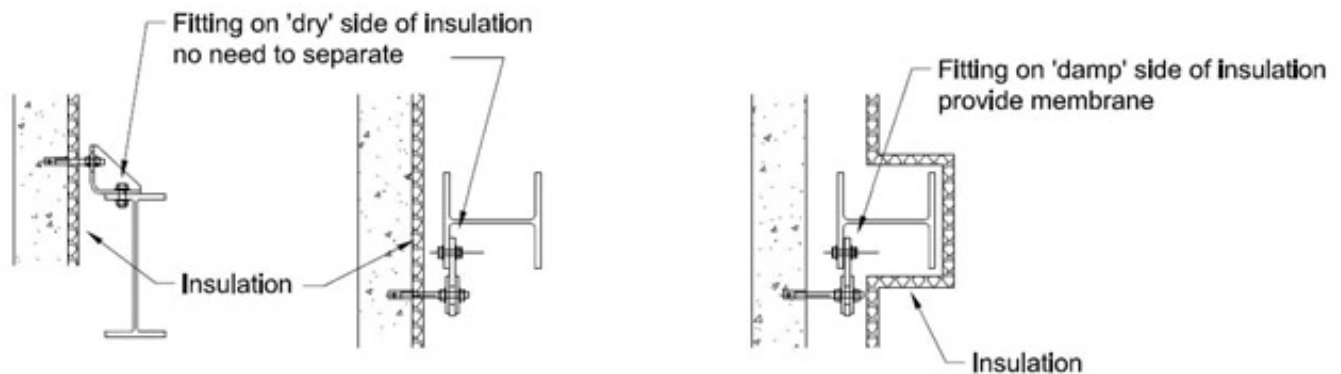


Separating membranes

Published Date: 17/08/2009

This is a very controversial subject, with no exact rules. To some extent, it is a matter of judgement, but the following may assist.

The common method of attaching precast concrete to a steel structure is by means of cast-in sockets or channels. These, and the associated bolts, brackets etc are often stainless steel, and eventually a connection is made to the steel frame, which is non-stainless. When stainless steel is in contact with non-stainless steel, there is a theoretical risk of the non-stainless material corroding as a result of the difference of material properties. The name for this is 'interstitial corrosion', and it takes place within an electrolytic cell consisting of the two metals and an electrolyte, usually rainwater or condensation. To what degree this may occur is dependent on dampness more than any other factor. In most situations, inside a building, it will not take place in practical terms but as a 'just in case' precaution it is common practice to detail a separating membrane between the two metals where this is on the outside of the cavity/insulation. Inside the cavity, on the warm side of the insulation, the building should be sufficiently dry as not to promote corrosion.



The membrane consists of a 'washer' of material of sufficient width/length to completely prevent any contact between (say) a stainless steel angle and a normal column or beam section. The material used must be able to accommodate stresses due to torquing bolted connections. One of the most commonly used materials is Nylon 6,6 (Nylon 66). This is a dense, extruded, nylon material which is also resistant to heat, friction and abrasion. Thickness is typically 1.5 – 2mm.

If there is a requirement to separate threaded components, then PTFE tape is wrapped around the thread.

It is not uncommon to see stainless steel sockets apparently rusting and staining units whilst still in storage. This is not the socket corroding, but is caused by the minute amount of residual swarf left by a non stainless bolt used to fix it in the mould. This rusting can be reduced by putting a cap over the socket to keep rain out. As stated above, there are no rules as such. A view must be taken within the design team as to the likelihood of corrosion, and then suitable measures taken if deemed necessary.