

Newsletter 60

Confidential Reporting on Structural Safety (CROSS)

This month we highlight a report raising safety concerns around changes to weld specifications without the designer's knowledge.

845: Weld de-specification Report

A reporter's firm was engaged as subcontract fabricators to complete 90t of steelwork for a main contractor. In the commercial negotiations at the onset of the project, the main contractor agreed that to hit their target prices the subcontractors should de-specify all full and partial-penetration butt welds from all steels and replace with 6–8mm fillet welds.

The subcontractor had several conversations with the main contractor, who refused to change the drawings to match the changed description of the welds. The main contractor assured the subcontractor both in writing and in person that it was okay to proceed with de-specification of the welds, but they would not re-issue the drawings.

Eventually the subcontractor declined to participate further due to this and other issues. The reporter's firm sought advice from the original designers and were told that for structural reasons the proposed changes to some of the welds should not be made. When the subcontractor raised this with the main contractor as a health and safety issue, they were told it was none of their business. The reporter is concerned that such practices exist.

CROSS Panel comments

Health and safety is everyone's business and there should be no criticism of those who raise these issues. There are numerous examples of concerns being ignored which have resulted in subsequent failures and lessons have to be learned. Designers are aware of the time, cost and difficulty of producing butt welds and will specify fillet welds wherever suitable. They also know that fillet welds will generally be cheaper than butt welds. Therefore, if butt welds have been specified, it will have been for good reason and they should not be changed without formal approval from the design authority.

Proposals to change butt welds to fillet welds should always be treated with caution. They have very different characteristics, particularly in fatigue. Contractors may not be well versed in the longer-term implications of the changes they make, or wish to make, when reducing cost or accelerating the build process, but their emphasis on this aspect of the product lifecycle can cloud a wider perspective and be dangerous.

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WHILE NOT NECESSARILY APPLICABLE HERE, IT IS NOT GOOD FOR A MAIN CONTRACTOR TO COERCE A SUBCONTRACTOR OR HAVE DECISIONS MADE BY PERSONS WHO ARE NOT COMPETENT/QUALIFIED TO MAKE THEM

While not necessarily applicable here, it is not good for a main contractor to coerce a subcontractor or have decisions made by persons who are not competent/qualified to make them. There are legal and ethical issues to be considered and if there had been a failure the consequences could have been severe for the firms and individuals concerned. Indeed, HSE could be interested in such behaviour.

To avoid such situations the following steps should be taken:

- | Ensure that the frame designer always has opportunity to review and comment on connection designs and ensure that those detail designs meet with the specified requirements.
- | Ensure that execution of works is in accordance with checked drawings only. If the drawings need to change, they should be changed through a design change process to ensure adequate re-design and re-checking.

Reader feedback

The problem here is commercial in my view rather than structural. A fillet weld sized correctly can be equally strong as a butt weld or even stronger if space allows. I often come across general structural engineers specifying full-strength butt welds simply because it saves them from doing a weld strength calculation

rather than because it is strictly necessary. They are oblivious to the increased cost. They would then have refused to convert to fillet welds simply because it would have involved them doing additional work. Had the main contractor offered to pay them extra, they probably would have made the change but only if time allowed them to. In my view the main engineer is morally at fault here, but probably not legally at fault. (Andrew Dawber)

Full newsletter

Newsletter 60 also contains the following reports:

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- | 940 Fire in multi-storey car parks
- | 946 Swimming pool ceiling collapses
- | 950 Inadequate punching shear reinforcement
- | 968 Execution not matching design assumptions
- | 971 Workmanship in domestic buildings

 **Read the newsletter in full at**
bit.ly/CROSS_NL_60

WHAT IS CROSS?

Confidential Reporting on Structural Safety (CROSS) is a confidential reporting scheme established to capture and share lessons learned from structural safety issues which might not otherwise have had public recognition, with the aim of preventing future failures.

Analysis of the reported safety issues can provide insight into how the safety concerns or events occurred and spur the development of measures to improve safety.

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