

KNOWLEDGE SHARE: 008

TITLE: STRUCTURAL STEELWORK INTERFACES
BUILDING TYPE: ALL BUILDINGS

OVERVIEW OF THE PROBLEM

Interfaces between structural steelwork, MEP services, and fire resisting internal partitions are common occurrences on fire compartment lines. Examples include but are not limited to; steel beams with MEP services located directly below them and/or beams with web openings with MEP services located within them.

Although the fire resistance of individual elements (structural steelwork, fire resisting internal partitions, and MEP services penetrations) may be evidenced with the application of tested or certified solutions, it may not be possible to evidence the performance of the interface as a system, in accordance with fire strategy compartmentation requirements.



Figure 1: Structural steel interfaces with internal partitions and MEP services penetrations.

WHY IS THIS A PROBLEM?

Whilst there are fire resistance test standards for individual elements, there is no recognised test standard that considers the fire resistance of elements discussed above when combined as a system. This means that it is not possible to demonstrate the fire resistance performance of the system in accordance with a recognised test standard.

It may be possible to evidence the performance of a system as discussed above through “ad-hoc” furnace testing, but this would need to be agreed with project stakeholders and may have limited field of application unless subject to further third-party assessment.

Any fire protection system selected for beams above compartment walls must also be capable of maintaining the full compartmentation performance requirements e.g. Integrity (E) & Insulation (I). Note, where beam fire testing does not permit the recording of Insulation (I) for compartmentation, this performance will be estimated by the system owner.

RECOMMENDATIONS

To mitigate risks and ensure compliance with project fire strategy requirements, it is recommended that:

- Early planning is essential to avoid such interfaces between structural steelwork, internal fire resisting partitions, and MEP services penetrations.
- Structural steelwork forming part of compartment walls should be encased within a board system following the guidance in ASFP Advisory Note 18. This ensures it continues to meet integrity and insulation requirements as part of the compartment wall's fire resistance performance.
- MEP services penetrations should ideally be placed wholly within fire resisting internal partitions and not clash with structural steelwork or other related interfaces.
- **Note:** Where it is unavoidable for services to pass through the openings in the beams, there may be fire protection systems that are capable of accommodating simple pipe and cable penetrations within a fire protected beam. Always check with the fire protection system owner regarding this.