

SCOPES OF COMPETENCE

In terms of processing whether companies are competent steelwork contractors, the BCSA's assessment is based on the following guidance for the management of organisations undertaking steel construction.

Normal Scope of Competence

NORMAL scope of competence defines normal steel construction activities that steelwork contractors should ***generally be competent to undertake with their own personnel***.

1. Slinging, handling, lifting and positioning steelwork.
 - Steelwork includes fabricated hot rolled and cold-formed steel sections.
2. Aligning, levelling and plumbing steel frames.
3. Securing and bolting up steelwork.
4. Operating the necessary mobile elevating work platforms (MEWPs).
5. Setting out.
6. Acting as a banksman.
7. Caring for and use of lifting tackle.
 - Purpose-made lifting tackle, such as lifting beams and bracings to stabilise frameworks during rearing and lifting, may need to have their capacity proof tested.
8. Use of jacks.
9. Welding and cutting.
 - The use of burning equipment and welding equipment (with or without 'hot work') and particular fire precautions are needed.
 - The Commentary on the National Structural Steelwork Specification for Building Construction lists factors to be considered when undertaking site welding, of which the six listed below relate to safe practice:
 - Floor by floor completion to give good working areas
 - Use of light easily erected working platforms
 - Protection from inclement weather
 - Careful detailing to ensure downhand welding
 - Use of details and techniques to avoid the necessity for excessive pre-heating
 - Provision of temporary means of support and stability until welding is complete
10. Drilling or reaming using power tools.
 - The use of power tools operated by electricity should follow the advice given in the HSE's PM series of guidance notes.
11. Installing HSFG bolts.
 - If preloaded bolts – previously termed HSFG bolts – are used, there is a possibility for the bolt to break during tightening, and for part of the bolt to shoot off (eg when the threads are in poor condition). Personnel should be careful not to stand in line with the bolts or in areas where the parts could fall.
12. Painting.
 - Site treatment can include site blasting as well as site painting. Additional precautions, such as the regular examination of air receivers, may be needed when using equipment powered by compressed air.
 - Additional precautions may be needed where paint coatings are heated by burning or welding operations.
13. Erection of metalwork items such as catwalks or metal flooring.
 - The erection of metalwork items – including railings, balustrades, stairs, walkways, ladders, catwalks, steel flooring of open-mesh or plate – may involve the need to manhandle items.
14. Placing precast flooring.
 - Whilst it is a normal steel construction activity to install precast planks on steel frameworks, the erection of precast concrete frameworks generally is not.

- The placing of precast planks may result in large point loads, and precautions are needed to ensure that the local and general stability of the part-erected framework is not jeopardised.
 - The sequence of placing the planks needs to be carefully planned to preserve access for lifting and positioning subsequent items.
15. Drilling concrete.
16. Installing expanding/chemical anchors.
17. Guiding site visitors.
18. Refurbishment work.
- The retention of elements of the existing building usually interferes with the provision of craneage for lifting and positioning operations. Hence there is a greater likelihood of manual handling for positioning.
 - Construction hoists are commonly provided for vertical lifts, and it can be hazardous if long components need to be moved in hoists.
 - The route selected for lateral movement needs to take account of the strength of the existing structure and its stability under surge induced by braking the movement of heavy components.
19. Work on a contoured site.
- Dangers associated with operating cranes over contoured ground – especially for crawler cranes travelling under load – are described in CIRIA's *Crane stability on site*.
 - The same precautions apply to the operation of MEWPs over contoured ground.
20. Work on city centre sites.
- Erection in city centres usually takes place on sites that are of a very restricted size, and public access is usually very close – sometimes being through part of the site plan zone. The customary designation of a 'sterile zone' – accessible only to the steelwork contractor's personnel during erection – is often impossible, and site workers can be working underneath other workers. Hence risk, being the potential harm from hazards, increases.
 - It is more common for nets and fan scaffolds to be used on such sites. See BS 8093 *Code of practice for the use of safety nets, containment nets and sheets on constructional works*, BS EN 1263-2 *Safety Nets: Safety requirements for the erection of safety nets*.
 - The proximity of the public and adjacent buildings can also affect choice of craneage, limitations on noise, and permitted hours of working.
21. Connecting to an existing structure.
- There are stability considerations for the designer if connections are needed between a new structure and an existing one, and these determine the safe sequence of work.
 - The site may be traversed by members of the 'public' – in the form of the client's personnel working on the site or in the adjacent building. This affects the potential for hazards to cause harm.

Special Scope of Competence

SPECIAL scope of competence defines special activities that steelwork contractors should generally be able to **manage using suitable specialist sub-contractors** as necessary. The steelwork contractor should establish that the specialist sub-contractor is competent to undertake the subcontracted work with their own personnel. The specialist sub-contractor would decide the methods to be used and assess the risks involved.

1. Grouting bases.
2. Placing bearings that allow movement.
3. Installing a scaffold platform.
4. Assisting second or third party inspection.
 - Personnel working for second or third parties may need to undertake inspections or witness tests. Additional precautions may be needed to ensure that their presence in the area designated for erection does not cause added risks.
 - Whilst ultrasonic inspections would be considered special, steel constructors would not normally undertake radiographic inspection at all.
5. Use of special fasteners and fixing proprietary items.
 - Special fasteners are proprietary products for which no British Standard exists – Lindapters and crane rail fixings are examples. The manufacturer’s recommendations for installation should be reviewed against the requirements for safe erection – checking back directly with the manufacturer’s technical staff if the written instructions are not sufficient.
 - Similar precautions apply to installation of proprietary items such as Halfen channels.
6. Work on decking for composite steel and concrete structures.
 - For metal profiled steel decking, the SCI’s *Good practice in composite floor construction* should be followed. Arrangements for edge protection and safety precautions along the leading edge of the work front need to be agreed.
 - Particular care is needed during the stage when the steel frame and decking are loaded with wet concrete.
 - Stud welding and shot firing are operations for which the equipment manufacturers issue guidance on suitable safety precautions. The use of cartridge operated tools should follow the advice given in the HSE’s PM series of guidance notes. These operations can also require additional noise protection.
7. Work in artificial light.
 - Shift work can also involve additional precautions.
8. Extensive temporary works.

Whilst many temporary bracing and restraint requirements are relatively simply executed (eg wire rope guys, Acrow props or added strut-tie braces), extensive temporary works will require consideration of the guidance in BS 5975 *Code of practice for falsework*.
9. Large scale site assembly ‘on the ground’.
 - Assembly on site before lifting of the sub-assembly into its final erected position can be chosen as the most appropriate safe method of construction. However, the large scale of some sub-assemblies will require provision for safe access during assembly ‘on the ground’ if working positions are at heights or more than 2 metres off the ground.
 - Any jigs or stillages used to support or stabilise the sub-assemblies need to be treated in the same way as temporary works supporting the structure in its final erected position.
10. Lateral movement of heavy loads.
 - CIRIA’s *Lateral movement of heavy loads* provides guidance on sliding, winching and braking operations.
11. Work in a confined space.
 - HSE’s GS 5 (rev) *Entry into confined spaces*, and *Confined spaces* (CIS no 15) provide suitable guidance.

12. Work over water, over a railway or airside at an airport.
 - Clients and Principal Contractors should determine the appropriate additional precautions to be followed in these and other especially hazardous environments – such as mines, quarries and oil or chemical refineries. This would normally include permit-to-work procedures.
13. Work in tall structures over 45 metres high.
 - Methods of achieving all three safety objectives are different on structures over 45 metres high, compared to those used on the most common types of steel structure – single storey sheds. For example, the influence of wind is much more significant.

OTHER activities related to steel construction that steelwork contractors **would not necessarily undertake** and about which specific prior negotiations should take place to establish the competences necessary, the methods to be used and the consequent risks involved.

1. Radiography or assisting radiographic inspection by third parties.
2. Site blasting and use of compressed air equipment.
3. Fixing pre-glazed frameworks.
4. Erecting precast concrete frames.
5. Using bonding adhesives.
6. Fixing roof or wall cladding.
7. Proof testing to commission runway beams etc.
 - Commissioning of runway beams involves proof loading which should be done under the direct instruction of a suitably qualified engineer.