



STEEL INDUSTRY
GUIDANCE NOTES

National Structural Steelwork Specification

The National Structural Steelwork Specification for Building Construction 5th edition (NSSS) provides documentation that can be included in a steelwork contract to help ensure that steelwork is accurately and economically fabricated and constructed safely. It also lists the information that is needed such that a steelwork contract can be completed on time without recourse to contractual disputes. This SIGNS describes some of the information presented in each Chapter of the NSSS.

Section 1 – Information required by the Steelwork Contractor

It is intended that the NSSS should be invoked as part of the individual Project Specification and that it should be part of the total building contract. It is essential that the Steelwork Contractor receives accurate and timely information to carry out the contract. With this in mind Section 1 gives guidance on the items and information that should be included in the Project Specification and is arranged in a tabular format to make this more apparent.

Section 2 - Materials

The essence of this section is that all materials must conform to the appropriate British Standard or as is increasingly becoming the case, must accord with the European standards which are replacing the British Standards.

The standards for the commonly used steel sections, welding consumables, structural fasteners, protective treatments and propriety items are included in this section.

Section 3 – Information provided by the Steelwork Contractor

Drawings, whether in paper or electronic format, have a critical role to play in the execution of the contract because they are the principal way of transferring information. Section 3 specifies the information that should be included on each drawing type together with the process of information review and acceptance by the engineer.

Section 4 – Workmanship – General

This section specifies a standard of workmanship for the principal operations on the modern fabrication process. They include a specification for the traceability of steel

products, material identification, marking and handling together with a standard of workmanship for material preparation which includes cutting, machining, drilling, bending, punching and cropping. Assembly is also included which can include both welding and bolting. Inspection of the components is a continuous process throughout fabrication but it is essential to have a final inspection of the complete components and this Section includes a specification for checking the dimensional accuracy to prove that the manufacturing process is working satisfactorily.

Section 5 – Workmanship – Welding

This section sets out the scope of inspection and acceptance criteria for welds for building structures. The scope of inspection will ensure that the Steelwork Contractor maintains his welding processes at an accepted standard that is generally suitable for structural steelwork. Any addition to the scope of inspection needed on a project-specific basis must be clearly specified by the Engineer. Annex A of BS 5950-2 provides a basis for identifying critical welds that may require addition inspection.

Section 6 – Workmanship - Bolting

Bolting should be kept as simple as possible. Ordinary bolted assemblies should therefore be considered as the preferred system for building structures. The use of 8.8 grade, fully threaded bolts are recommended

Section 7 – Accuracy of fabrication

The tolerances for the shape of the erected structure are set with structural criterion in mind and the accuracy that can be achieved when using properly maintained equipment in a well-ordered workshop.

Section 8 – Workmanship – Erection

Erection must be carried out in a logical, expeditious manner with due regard for safety. A safe method of working is an essential requirement for erection. Another important factor in safety is that each person's responsibilities must be clear to all others involved whether they are designing the structure, planning its erection, managing the erection or actually working on site.

Section 9 – Workmanship – Accuracy of erected steelwork

The tolerances given in the NSSS represent the accuracy which is generally appropriate for normal structures. Whilst more onerous tolerances may be specified, this should only be undertaken with caution. Compliance with tighter tolerances will be more expensive and in some circumstances practically impossible to measure or achieve.

Section 10 – Protective Treatment

This section provides the ground rules for good practice in the surface preparation of structural steelwork for protective coatings and the application of protective coatings. The actual treatment to be used should be stated in the Project Specification.

Although outside the scope of the NSSS designers and detailers should endeavour to minimise the possibility of corrosion by avoiding traps for moisture and ensuring easy access to surfaces to be painted. Detailed notes on design to prevent corrosion can be found in BS EN ISO 12944.

Many steel buildings, where internal steelwork is situated in a dry environment do not require protective treatment.

Section 11 – Quality management

The NSSS requires the Steelwork Contractor to maintain and operate a management system that complies with BS EN ISO 9001. It also requires them to have a welding quality management system that aligns with BS EN ISO 3834-3.

Key Points

1. It is essential that the Steelwork Contractor receives on time, all information necessary to carry out the contract
2. All material must comply with the appropriate British Standard or European standard.
3. Any addition to the scope of inspection needed on a project-specific basis must be clearly specified by the Engineer. Annex A of BS 5950-2 provides a basis for identifying critical welds that may require addition inspection.
4. The use of 8.8 grade, fully threaded bolts are recommended.
5. A safe method of working is an essential requirement for erection.
6. The tolerances given in the NSSS represent the accuracy which is generally appropriate for normal structures.
7. The surface treatment to be used for protective treatments should be stated in the Project Specification.
8. The NSSS requires the Steelwork Contractor to maintain and operate a management system that complies with BS EN ISO 9001.

Further sources of Information

1. **National Structural Steelwork Specification for Building Construction, 5th Edition, BCSA & SCI publication No. 203/07**
2. **Commentary on the National Structural Steelwork Specification for Building Construction, 4th Edition, BCSA & SCI publication No. 209/03**