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RAILTRACK PLC

**MODEL CLAUSES FOR SPECIFYING
CIVIL ENGINEERING WORKS**

**SECTIONS 140 AND 141
Steelwork (BS 5950)**

ISSUE NO. 1 REVISION B

**RT/CE/C/008/140N
Page 1 of 15**

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Committee on 16 April 1996

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Amendments

Amendments and additions since the previous issue are marked by a vertical line in the right hand margin.

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SECTIONS 140 AND 141 STEELWORK (BS 5950)

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SECTIONS 140 AND 141

STEELWORK (BS 5950)

NOTES TO SPECIFIER:

These notes do not form part of the Specification.

General

- 140.1.** *These Model Clauses apply to steelwork for structures other than bridges, and which are not subject to significant fatigue loading.*

These Model Clauses are intended for relatively simple, straightforward structures, and may not be suitable for large or complex buildings. The Model Clauses are however, appropriate for most railway non-bridge structures, for example platform canopies, straightforward low rise buildings, signal and a.c. electrification overhead line equipment gantries.

With very little modification these Model Clauses should also be suitable for footbridges and for steelwork for bridge substructure remedial works such as props, shores, patches, strapping etc, and ancillary steelwork such as ballast plates.

For structures or parts of structures subject to fatigue loading, such as crane runway beams, supports for rotating machinery, etc. the relevant parts of Section 90: Steelwork (BS 5400) should be included in the Contract Specification.

It is recommended that copies of BS 5950: Parts 2 and/or 7 as applicable, and BS 5135 should be available when a particular Contract Specification is being drafted.

**Internal
imperfections**

- 140.2** *BS 5950: Part 2, clause. 2.1.6 provides for ultrasonic testing to be carried out. However this requirement should not be necessary for simple structures. If testing is required, areas of steel where the BS 5996 quality grade(s) are required should be shown on the Contract Drawings.*

Bolts

- 140.3.** *HSFG bolts are normally only required:*

- (i) where loads are fluctuating or reversing, (see 140.1)*
- (ii) where movement due to initial joint slip is unacceptable*

General grade HSFG bolts and nuts may be galvanized to BS 729. Nut threads should be tapped after galvanizing. Bolts, nuts and washers which are to be overpainted should not be passivated unless the passivation system used can be overpainted.

Welding

- 140.4.** *BS 5135, clause 3.1 requires all of paragraphs (a) to (j) to be covered in the Contract Specification.*

Charpy values need be specified only for highly stressed welds in thick members (see BS 5950: Part 1). The required value and temperature and hence steel grade should be specified for each particular joint. (For guidance on suitable values, see BS 5400: Part 6, clause 5.4.1.2.)

Clause 3.2 - a limit of imperfection class C should be adequate for the majority of steelwork. However, for critical or highly-stressed or high-fatigue joints, class B may be appropriate, and for minor steelwork Class D may be adequate.

Clause 7 - "full-strength" welding is not the same as "full-penetration". The former develops full strength of the parent plate. The latter, more expensive, requires in addition full root fusion, and is appropriate for fatigue joints.

Clause 8 - although intermittent fillet welds may be satisfactory structurally for static loading, such welds are not good for corrosion resistance, and therefore should be avoided unless the Specifier is satisfied corrosion pockets will not occur.

Clause 16 - temporary welds are generally acceptable for statically loaded members, provided notch ductility criteria can still be met.