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MODEL CLAUSES FOR SPECIFYING CIVIL ENGINEERING WORKS

SECTION 93
Structural Steelwork Repairs

ISSUE NO. 1 REVISION A

R/CE/C/008/093N
Page 1 of 18

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Compiled by: CEDG York Ltd
Hudson House
Toft Green
York YO1 1HP

Edited by: Keith Ross
Structures Standards Engineer
Civil Engineering Directorate
King's Cross

Approved by: Model Clauses (Civil Engineering) Committee on 23 April 1997

Signature: .....
for Director, Civil Engineering

John Horsler
Civil Engineer, Structures Compliance
Chairman Model Clauses (Civil Engineering) Committee

Amendments

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

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SECTION 93 **STRUCTURAL METALWORK REPAIRS**

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SECTION 93 STRUCTURAL METALWORK REPAIRS

NOTES TO SPECIFIER

These notes do not form part of the Specification.

Use of the Section and interface with other Sections 93.1

This Section specifies the testing requirements to determine the cause, extent and degree of deterioration in steel, and wrought and cast iron structures and the methods of repairing these structures.

This Section should be read in conjunction with

(i) Section 23: Structural Repair Survey,

(ii) Section 90: Steelwork (BS 5400),

(iii) Section 100: Bearings,

(iv) Sections 140 & 141: Steelwork (BS 5950),

(v) Sections 170-176: Protective Treatment.

The Specifier should ensure that known specific risks such as lead paint and cadmium plated bolts, environmental considerations etc. are detailed in the Specification.

Advice on the surveying, sampling and testing of existing protective treatments and selection of the protective treatment to be applied on the new and existing steelwork forming a repair are provided in Section 173: Maintenance Painting of Iron and Steel Structures.

Diagnostic investigations 93.2

Before any repairs, other than emergency Works, are carried out, it is essential that the root cause of the deterioration is identified. In commissioning diagnostic investigations it is important that the Specifier does not jump to conclusions regarding the cause of deterioration and thereby unduly limit the type of diagnostic testing which is commissioned. It is far better to keep an "open mind" and use the diagnostic investigation to eliminate unlikely causes of deterioration. By adopting this approach, causes of deterioration not readily apparent are less likely to be overlooked.

Limitations on application of this Section 93.3

Because of the large number of different types of structures and components of structures which may require attention, the Clauses are drafted in a very general manner. The Specifier should include any further requirements for the particular structure under consideration.

Similarly, where the Contractor is required to propose repair solutions, the Clauses are very general and the Specifier should include any specific requirements.

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Use of Standard Drawings **93.4**

Some of the Clauses in this Section are based on the notes and details shown on Railtrack set of Standard Drawings for repair details (RT/CED/436 series). These are referred to either within the Clause or in a Note to Specifier.

The Standard Drawings show suggested methods and repairs only. If Standard Drawings are to be used, the Specifier should ensure that the material, type and condition of the structure considered is suitable and that any amendments are compatible with the Standard Drawings.

These Standard Drawings are available from Zone document controllers or:

Structures Standards Engineer
Railtrack Civil Engineering Directorate
Floor 2, East Side Offices
Kings Cross Station
London N1 9AP

Tel: 0170 465 9223 (BRT: 00 59223)
Fax: 0170 465 9210 (BRT: 00 59210)

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SECTION 93 STRUCTURAL METALWORK REPAIRS

Materials and workmanship generally **93.001**

!C! !C! !C! Materials and workmanship for structural metalwork repairs shall be in accordance with the requirements of Section 90: Steelwork (BS 5400),!CHECK! Sections 140 and 141: Steelwork (BS 5950),!CHECK! and Sections 170 - 176: Protective Treatment!CHECK! as applicable unless modified by this Section.

NOTE TO SPECIFIER

The Specifier should check that the requirements of Section 90: Steelwork (BS 5400) and/or Sections 140 and 141: Steelwork (BS 5950) are applicable. If there is a mixture of new and repaired metalwork, or if the number of Clauses required from Section 90: Steelwork (BS 5400), and/or Sections 140 and 141: Steelwork (BS 5959) is small, the Specifier may consider importing the required Clauses into this Section.

Repairs of defects by welding only shall not be permitted. (93.001)

Design and methods of repairs to structural metalwork generally **93.002**

!C! Unless detailed on the Contract Drawings,!CHECK! the design of structural metalwork repairs shall be carried out by the Contractor.

Repairs to structural metalwork shall be designed in accordance with BS 5400: Parts 3, 5, 9.1 and 10 or BS 5950: Part 1 as applicable, and shall satisfy the load capacity, serviceability limits, durability and life expectancy and other design requirements for the structure

!C! specified in Section 23: Structural Repair Survey.!CHECK!

Where the design is carried out by the Contractor, proposals for the repair shall be submitted in accordance with

!C! Section 23: Structural Repair Survey.!CHECK!

The detailed method statement for the Contractor's proposed method of carrying out the repair shall be provided with details of any dynamic load restrictions.

Repairs to structural metalwork and the method of carrying out such repairs shall not:

(i) adversely affect the structure by the introduction of local stiffening,

(ii) adversely affecting the load path through the structure,

(iii) introduce details which either reduce the existing fatigue life or have a fatigue life less than that specified in

!C! Section 23: Structural Repair Survey.!CHECK!

Existing members, supports and restraints of the structure to be repaired shall not be subject subjected to any additional or changed loading unless the Contractor can demonstrate by calculation that the structural capacity of the affected member and adjoining members can accommodate such additional or changed loading.

NOTE TO SPECIFIER

E.g. replacing simply supported members with continuous members may induce additional loads, or, consideration should be given to the "U-frame" action provided by cross girders.

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