NG Sample Appendix 18/1: Requirements for Structural Steelwork

*[The compiler should include here the:]*

**Contract Title:………………………………………………………………………**

**Structure Reference:........................................................…………..........................**

**Component Specification Reference:** CS1800-mm/yyyy:\*\*\*\*-\*\* *[See NG 1800.6.3]*

Note: The component specification comprises Series 1800 (issue as dated in the component specification reference) and this Appendix 18/1, which includes the drawings and documents referred to in the table below.

*[The compiler should complete the following table providing an appropriate entry(s) for every Series 1800 Clause Reference given in the left column]*

|  | | | **Drawings and Documents that give related structural steelwork requirements** | |
| --- | --- | --- | --- | --- |
| **Series 1800 Clause Reference:** | **Additional Information Required** | **Not Applicable** (Ticked if not applicable) | **See Drawings Listed in Appendix 0/4**  *[The compiler should provide drawing reference(s)]* | **See Appended Documents**  *[The compiler should provide document reference(s)]* |
| **1804 – Specifications and Documentation** | | | | |
| 1804.1.1 | **Execution Specification, General –** drawing numbers of all drawings in Appendix 0/4, and document references of all appended documents that give all the necessary requirements for the execution of the steelwork. |  |  |  |
| **1805 – Constituent Products** | | | | |
| 1805.1 | **Constituent Products, General -** properties of products not covered by listed standards. |  |  |  |
| 1805.3.1 | **Structural Steel Products, General -** grades, qualities and, if appropriate, coating weights and finishes for steel products. |  |  |  |
| 1805.3.3 | **Surface conditions -** additional requirements related to special restrictions on either surface imperfections or repair of surface defects by grinding in accordance with IS EN 10163, or with IS EN 10088 for stainless steel. |  |  |  |
| 1805.3.3 | **Surface conditions -** surface finish requirements for other products. |  |  |  |
| 1805.3.3 | **Surface conditions -** where decorative or specialist surface finishes are required. |  |  |  |
| 1805.3.4 | **Special properties -** Additional requirements for special properties if relevant. |  |  |  |
| 1805.4 | **Steel castings -** Grades, grade suffixes’, finishes and options for steel castings. |  |  |  |
| 1805.6.3 | **Structural bolting assemblies for non‑preloaded applications -** property classes of bolts and nuts, and surface finishes for structural bolting assemblies for non-preloaded applications. |  |  |  |
| 1805.6.3 | **Structural bolting assemblies for non‑preloaded applications -** mechanical properties for large diameter bolting assemblies. |  |  |  |
| 1805.6.3 | **Structural bolting assemblies for non-preloaded applications -** full details for the use of insulation kits. |  |  |  |
| 1805.6.4 | **Structural bolting assemblies for preloading -** property classes of bolts and nuts and surface finishes for structural bolting assemblies for preloading. |  |  |  |
| 1805.6.4 | **Structural bolting assemblies for preloading** - where stainless steel bolts can be used in preloaded applications. |  |  |  |
| 1805.6.7 | **Foundation bolts** - where reinforcing steels may be used for foundation bolts together with the steel grade. |  |  |  |
| 1805.6.8 | **Locking devices -** where locking devices are required. |  |  |  |
| 1805.6.8 | **Locking devices -** if products other than those in the referred standards are to be used. |  |  |  |
| 1805.6.11 | **Fasteners for thin gauge components -** mechanical fastener type for use in stressed skin applications. |  |  |  |
| 1805.6.12 | **Special fasteners -** special fastener not standardised in CEN or ISO standards, as well as any tests necessary. |  |  |  |
| 1805.8 | **Grouting materials -** grouting materials to be used. |  |  |  |
| 1805.9 | **Expansion joints for bridges -** requirements for type and characteristics of expansion joints. |  |  |  |
| 1805.10 | **High strength cables, rods and terminations -** tensile strength grade and coating of wires. |  |  |  |
| 1805.10 | **High strength cables, rods and terminations -** designation and class of strands. |  |  |  |
| 1805.10 | **High strength cables, rods and terminations -** minimum breaking load and diameter of steel wire ropes and requirements related to corrosion protection. |  |  |  |
| 1805.11 | **Structural bearings** - Schedule of design requirements and acceptance tests. |  |  |  |
| **1806 – Preparation and Assembly** | | | | |
| 1806.2 | **Identification** - where soft or low stress stamps may not be used for stainless steel |  |  |  |
| 1806.2 | **Identification -** zones where identification marks are not permitted or shall not be visible after completion. |  |  |  |
| 1806.4.4 (2) | **Hardness of free edge surfaces -** edge surfaces where the relaxation for machine plasma cutting described in 1806.4.4 (2), is not permitted. |  |  |  |
| 1806.5.4 c) | **Cold forming -** minimum bending radii for stainless steels other than those to grades listed in 1806.5.4 b). |  |  |  |
| 1806.5.4 d) | **Cold forming -** protective membranes for cold formed thin gauge components. |  |  |  |
| 1806.6.1 | **Dimensions of holes -** special dimensions for movement joints. |  |  |  |
| 1806.6.1 | **Dimensions of holes -** nominal hole diameter for hot rivets. |  |  |  |
| 1806.6.1 | **Dimensions of holes -** dimensions of countersinking. |  |  |  |
| 1806.7 (1) | **Cut outs -** re-entrant corners where a smaller radius than that described in 1806.7 is permitted. |  |  |  |
| 1806.8 | **Full contact bearing surfaces** - where full contact bearing surfaces are required. |  |  |  |
| 1806.9 (2) | **Connections for temporary components –** special requirements applying to connections for temporary components, including those related to fatigue. |  |  |  |
| 1806.9 (3) | **Connections for temporary components –** where the removal or addition of permanent material or the introduction of permanent notches is permitted. |  |  |  |
| 1806.10 | **Assembly check –** if, and to what extent, trial assembly is to be used. |  |  |  |
| **1807 – Welding** | | | | |
| 1807.5.6 (1) | **Temporary attachments –**areas where welding of temporary attachments is not permitted. |  |  |  |
| 1807.5.9.1 | **Butt welds, general -** the location of butt welds used as splices. |  |  |  |
| 1807.5.9.1 | **Butt welds, general -** where a flush surface is required. |  |  |  |
| 1807.5.9.2 (1) | **Single sided welds** – wherethe use of permanent steel backing is permitted. |  |  |  |
| 1807.5.13 | **Slot and plug welds** – thedimensions of holes for slot and plug welds. |  |  |  |
| 1807.5.14.1 | **Arc spot welds -** if weld washers are accepted for stainless steels. |  |  |  |
| 1807.5.14.1 | **Arc spot welds** – theminimum visible width of arc spot welds. |  |  |  |
| 1807.5.15 | **Other weld types -** requirements for other weld types. |  |  |  |
| 1807.5.17 | **Execution of welding -** requirements for grinding and dressing of the surface of completed welds |  |  |  |
| 1807.7.2 | **Amendments to EN 1011-3 requirements** – thesurface finish of the weld zones on stainless steels. |  |  |  |
| 1807.7.3 | **Welding dissimilar metals -** requirements for welding different stainless steels to each other or to other metallic materials. |  |  |  |
| **1808 – Mechanical Fastening** | | | | |
| 1808.2.1 | **Use of bolting assemblies, General -** where, in addition to tightening other measures or means are to be used to secure the nuts. |  |  |  |
| 1808.2.1 (1) | **Welding of mechanical fasteners –** where welding of property class 4.6 nuts, bolts and washers is permitted. |  |  |  |
| 1808.2.2 | **Bolts -** minimum diameter of fasteners for thin gauge components and sheeting. |  |  |  |
| 1808.2.2 | **Bolts -** dimensions of bolts in connection utilising the shear capacity of the unthreaded shank. |  |  |  |
| 1808.2.4 | **Washers -** dimensions and steel grade of plate washers to be used with slotted or oversized holes. |  |  |  |
| 1808.2.4 | **Washers -** dimensions and steel grade of taper washers. |  |  |  |
| 1808.3 | **Tightening of non-preloaded bolts -** where full contact bearing is required (see 1806.8). |  |  |  |
| 1808.4 | **Preparation of contact surfaces in slip resistant connections -** requirements related to contact surfaces in slip resistant connections for stainless steels. |  |  |  |
| 1808.5.1 (2) | **Cover Plates in Preloaded Joints** – measures permitted to limit the out-of-plane bending stiffness of cover plates. |  |  |  |
| 1808.5.1 (6) | **Tightening of preloaded bolts, General -** preloaded bolts that shall be tightened by the torque method. |  |  |  |
| 1808.7.2 | **Installation of rivets -** where a flush surface of countersunk rivets is required. |  |  |  |
| 1808.7.3 | **Acceptance criteria -** where outer faces of plies are required to be free of indentation by the riveting machine. |  |  |  |
| 1808.8.4 | **Fastening side laps -** requirements for the side lap fasteners as structural fasteners in stressed skin applications. |  |  |  |
| 1808.9 | **Use of special fasteners and fastening methods -** requirements for procedure tests. |  |  |  |
| 1808.9 | **Use of special fasteners and fastening methods -** requirements for use of hexagon injection bolts. |  |  |  |
| **1809 – Erection** | | | | |
| 1809.4.1(1) | **Survey, Reference system** – the reference temperature for setting out and measuring the steelwork if different from 15oC. |  |  |  |
| 1809.5.3 | **Maintaining suitability of supports -** if compensation for settlement of supports is required. |  |  |  |
| 1809.5.4 | **Temporary supports -** where levelling nuts on foundation bolts under the base plate are required to be removed. |  |  |  |
| 1809.5.4 | **Temporary supports -** where packings for bridges may be left in position. |  |  |  |
| 1809.5.5(1) | **Grouting and sealing** – requirements for thetreatment of steelwork, bearings and concrete surfaces before grouting. |  |  |  |
| 1809.5.5 | **Grouting and sealing** – the method of sealing the edges of a base plate if no grouting is needed. |  |  |  |
| **1810 – Surface Treatment** | | | | |
| 1810.1 (5) | **Surface treatment, General -** requirements for friction surfaces and class of treatment or tests required for surfaces in slip resistant connections |  |  |  |
| 1810.1(7) | **Surface treatment general** – the extent of surfaces that are affected by pre-loaded bolts in non-slip resistant connections. |  |  |  |
| 1810.1 (8) | **Preparation of fasteners -** if the lower embedded part of foundation bolts is required to be untreated. |  |  |  |
| 1810.1 (9) | **Galvanizing -** Requirements for procedure qualification of the dipping process if hot dip galvanizing of components after manufacture is required. |  |  |  |
| 1810.1 (10) | **Galvanizing -** Requirements for the inspection, checking or qualification of the preparation to be carried out before subsequent overcoating, for galvanized components. |  |  |  |
| 1810.2 | **Preparation of steel substrates -** Requirements for surface cleanliness of stainless steels. |  |  |  |
| 1810.2 (1) | **Preparation of steel substrates for paints and related products -** requirements for the preparation of surfaces to receive corrosion protection if they are to be different from those described in Series 1900 and/or IS EN ISO 8501-3:2007 preparation grade P3. |  |  |  |
| 1810.3 | **Weather resistant steels -** requirements for the surface treatment of non-weather resistant steels in contact with uncoated weather resistant steels. |  |  |  |
| 1810.5 | **Galvanizing -** where enclosed spaces shall be sealed after galvanizing and, if so, with what sealant. |  |  |  |
| 1810.6 | **Sealing of spaces -** where weld imperfections permitted by the welding procedure specification require sealing by application of suitable filler material. |  |  |  |
| 1810.6 | **Sealing of spaces** – themethod to be used for sealing the interface if mechanical fasteners penetrate the wall of sealed enclosed spaces. |  |  |  |
| 1810.6 (1) | **Sealing of spaces -** internal spaces that are to be hermetically sealed. |  |  |  |
| 1810.7 | **Surfaces in contact with concrete** - specific requirements for coating surfaces in contact with concrete. |  |  |  |
| 1810.9 (2) | **Repairs of coatings to precoated constituent products –** method and extent of repair after welding. |  |  |  |
| 1810.10.2 | **Cleaning of stainless steel components -** themethod, level and extent of cleaning of stainless steels. |  |  |  |
| **1811 – Geometrical Tolerances** | | | | |
| 1811.1 | **Tolerance types -** additional information related to special tolerances if these tolerances are specified. |  |  |  |
| 1811.3.3 | **Alternative criteria** - where the specified alternative criteria for functional tolerances may be applied. |  |  |  |
| **1812 – Inspection, Testing and Correction** | | | | |
| 1812.2.1 (1) | **Constituent products -** specific testing requirements for proprietary products. |  |  |  |
| 1812.5.1 | **Inspection of non-preloaded bolted connections -** requirements for checking the installation of an insulation system. |  |  |  |
| 1812.5.2.1 | **Inspection of friction surfaces -** requirements for the inspection and testing of preloaded bolts used for stainless steels connections. |  |  |  |
| 1812.5.5.1 | **Special fasteners and fastening methods, General -** requirements for the inspection of connections using special fasteners or special fastening methods. |  |  |  |
| 1812.7.1 (1) | **Inspection of trial erection -** additional requirements for the inspection of a trial erection |  |  |  |
| 1812.7.3.4 | **Location and frequency -** additional measurements, other than the position of components adjacent to site interconnection nodes. |  |  |  |
| 1812.7.3.4 | **Location and frequency -** conditions other than under the self-weight of steelwork, under which positional measurements should be made. |  |  |  |
| 1812.7.3.6 | **Definition of nonconformity -** envelope of permissible positions where significant movement of a structure is anticipated. |  |  |  |
| 1812.7.4 | **Other acceptance tests -** specific requirements including tolerance range on the load, if components of a structure are to be erected to a specific load. |  |  |  |

Appendix 18/1 Appended Documents

*[The compiler should provide a complete list of the appended documents referred to from the table above. The list should include as a minimum the full title, date of issue, revision and reference number for each document. The documents should be attached to the Appendix 18/1.]*