

EK 33. ÇELİK KONSTRÜKSİYON UYGULAMA PLANI (STEEL STRUCTURE METHOD STATEMENT) ÖRNEĞİ

STEEL STRUCTURE METHOD STATEMENT

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1.0 SCOPE

This procedure defines the method and requirements for the prefabrication and erection of steel structures.

Prefabrication of steel supports (piping, electrical and instrumentation) is also covered by this procedure.

2.0 PREFABRICATION

General requirements

Although not preferred, sometimes the prefabrication of steel structures is performed at Site. In this case, these works shall be closely monitored and audited by the Site Quality Control department in accordance with the related Inspection and Test Plan. The works should also be undertaken in accordance with the approved Health, Safety and Environment Plan.

The prefabrication works at site are mainly for steel supports. The same rules mentioned above will apply to these works. Works will be implemented and controlled in accordance with the related Inspection and Test Plan. If it is found necessary by the auditors, personnel training shall be arranged prior to prefabrication works.

Therefore, what is meant by prefabrication works is generally prefabrication of supports.

Preparation

To avoid any damage that may be occurred during handling of painted materials, lifting shall be done by slings.

All fabrication drawings, issued as " AFC – Approved for Construction" shall be carefully reviewed and Cutting Plans / Lists shall be prepared for each type and size of material, to minimize wastage of materials and to minimize the amount of welding.

Marking and cutting

Plates, generally shall be prepared by flame cutting followed by grinding.

Profiles and or tubulars shall be cut by various types of profile cutters or chainsaws.

Surfaces to be welded shall be visually examined to ensure that they are free from laminations, cracks, slag inclusions and cutting notches. Any such defects shall be modified by grinding.

The weld area shall be dry, clean and free from loose scale or paint.

Flame cut edges which are not subsequently welded shall be ground smooth to remove nicks and burrs. The use of flame gouging or "washing" is not permitted.

Alignment, fit up and welding

Prior to commencement of welding of steel structures, Welding Procedure Specifications (WPS) for each type of weld, shall be prepared and submitted for approval.

All welders shall be qualified in accordance with Welding Specification and qualified welder list shall be submitted to the Client prior to commencement of the welding activity and updated periodically.

Parts to be welded will be cut as shown in drawings and after fit up by tack weld, the weld will be done as per WPS (Welding Procedure Specification). Tack welds shall be at least 40 mm.

Parts to be joined by fillet welds shall be brought into as close contact as practicable.

Welds, including tack welds, will be performed by the qualified welders.

Welds shall generally be in fabrication shops. Outdoor welding, if necessary shall be protected from adverse weather effects by means of protective measures.

Temporary attachments or similar devices required for prefabrication shall be removed by flame cutting or grinding. Hammering is not permitted.

When temporary attachments are removed, the surface of the base metal shall be ground smooth and visually examined. Any defects discovered in the base metal such as cracks or undercuts shall be removed and if necessary rewelded, and the area shall be examined.

Concrete reinforcing bars shall not be used as temporary attachment material.

If the drawing shows holes for bolting, holes shall be 2 mm larger in diameter than the specified bolts, unless otherwise noted on the fabrication drawings. Bolt holes shall be drilled to size, or drilled and reamed if necessary. Enlarging by thermal means is not permitted. Holes shall be clean-cut without burrs and torn or ragged edges. All holes shall be finished prior to application of any protective coating.

Surface preparation and painting

After all fabrication of the components are completed, the components will be released for painting.

Surface preparation and painting shall be done in accordance with the approved Surface Preparation and Painting Procedure.

Components to be galvanized shall be protected from embrittlement and warpage during galvanizing. If galvanized, nut threads shall be re-tapped after hot dip galvanizing, for proper fit.

3.0 INSTALLATION of STEEL STRUCTURES

Adequate scaffolding material, temporary supports or tension rope cables shall be provided and used during installation of steel structures.

By using temporary braces, partially completed structural assemblies to be ensured safe and stable conditions.

The structure shall be plumbed, leveled and braced before final bolted or welded connections are made.

Column base plates shall be set and shimmed to correct positions, elevations, and locations as shown on the erection drawings.

After grouting, anchor bolts shall be tightened.

Temporary attachments shall be removed after the installation is completed.

Welded and bolted connections

Field welding shall only be used if so required on the related drawings.

Marking, cutting, alignment, fit-up and welding which may be required during the installation of the structures shall be performed in accordance with related specifications/procedures.

High strength bolt assemblies shall be installed in accordance with specification and standards. Steel structure elements are generally connected by high strength bolts and handrail and grating connections are done by standard bolts and nuts. The type of bolts/nuts will be in accordance with drawings.

Bolt lengths shall be sufficient to extend approximately 5 mm through the nut. Fitted bolts shall clear the hole before the thread starts. Bolts and nuts shall rest squarely against the metal.

Bolts shall be tightened in accordance with tensioning requirements (snug tight or fully tensioned) given in the related drawings and specifications. Bolt heads shall be carefully tapped with a hammer

while the nut is being tightened. All nuts for high strength bolts shall be wax-dipped to reduce torque during installation.

When assembled, all joint surfaces, including those adjacent to the bolt heads, nuts or washers shall be free from burrs, dirt and other foreign materials that would prevent solid seating of parts. All bolt assemblies shall be fully tightened.

Bolts and nuts shall not be welded under any circumstances.

Direct tension indicator washers, if used, shall be installed according to the manufacturer's instructions.

When impact wrenches are used, wrenches of adequate capacity and sufficient air supply shall be used to perform the required tightening of each bolt.

Mechanically galvanized bolts shall not be mixed with hot dip galvanized nuts and bolts.

Used bolts shall not be used again and also they shall not be used as fit-up bolts.

Ends of the torqued bolts shall be marked by permanent marking paint to indicate that the bolts have been properly tensioned and are ready for inspection.

Correction of errors

Bolts shall not be improperly used. Drift pin can be used to help for bolting process but it shall not be driven with such force as to damage the adjacent metal areas.

Holes may be carefully enlarged in accordance with the standards, when the connection cannot be done due to minor misfit. Enlargement of holes shall be by reaming or drilling only. Flame cutting, burning, gouging, chipping or drift punching shall not be permitted.

Holes in connections that misfit by more than 1.5 mm can only be corrected if allowed as per specifications and as directed by the Client's representative.

All damages done during the erection works to hot dip galvanized coatings and to shop applied paintings, shall be repaired in accordance with the approved Surface Preparation and Painting Procedure.

4.0 INSPECTIONS

Structural Steel Installation shall be inspected in accordance with the approved Inspection and Test Plans (ITP).

Related tables of the ITP covers all inspection activities for Structural Steel Installation, in chronological order. Main segments of ITP will be; definition of the work, referenced documents for the work, examination/inspection method, evaluation of the result, involving parties (contractor, client, etc.) and report forms for recording.

Personnel executing the inspections should have sufficient experience in the similar work.