



Exploration & Production

GENERAL SPECIFICATION

STRUCTURAL

GS EP STR 304

Fabrication of welded plate girders (W.P.G.)

04	10/08	§ 2 revised
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1. Scope

This General Specification for fabrication of Welded Plate Girders (WPG) may be used in lieu of specification **GS EP STR 301** (for simplification purposes) by any party in case where a separate or isolated order (or sub-order) is placed for those items. Otherwise, the specification **GS EP STR 301** and related PPS shall be used instead. When needed, any additional clarifications shall be found in specification **GS EP STR 301**.

This specification defines the COMPANY's general requirements for the manufacture and inspection of WPG.

Where required, this specification shall be used in conjunction with a Project Particular Specification (PPS) detailing the additional tests and requirements or the possible modifications to the present specification, based on the particular design conditions or the local legislation of the structural project.

No deviations from the requirements stated in the present specification shall be permitted unless prior approval has been obtained from the COMPANY. Refer to Section 5 of this specification.

2. Reference documents

The reference documents listed below form an integral part of this General Specification. Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the EFFECTIVE DATE of the CONTRACT.

Applicable specifications and documents are listed hereafter in the present section.

The order of precedence of the applicable documents shall be:

- The Purchase Order
- The Project Particular Specification (PPS)
- The Present General Specification
- The Codes and Standards in reference.

Unless otherwise specifically indicated in writing, the CONTRACTOR shall work in accordance with the requirements specified herein and the applicable requirements of the latest editions at date of Contract award of the referenced codes and standards, whenever requested in the present specification.

The requirements of this specification shall take precedence over the referenced codes and standards. Where this specification states no overriding requirements the referenced codes and standards shall apply in full.

The CONTRACTOR shall equip himself with copies of all the reference specifications referred to in this specification and shall make them readily available to all his inspection personnel involved on the work.

Standards

Reference	Title
EN 473	Qualification and certification of non-destructive personnel
EN 1435	Non-destructive examination of welds – Radiographic examination of welded joints
EN 10045-1	Metallic materials – Charpy impact test – Part 1: test method
ISO 148-1	Metallic materials – Charpy pendulum impact test – Part 1: Test method
ISO 6507-1	Metallic Materials – Vickers Hardness – Test Part 1: Test Method
ISO 9001	Quality management systems: Requirements
ISO 12096	Submerged Arc-Welded Steel Tubes for Pressure Purposes – Radiographic Testing of the Weld Seam for the Detection of Imperfections First Edition
ASTM A 370	Mechanical testing of steel products
ASTM A 578	Standard specification for straight-beam ultrasonic examination of plain and clad steel plates for special application
ASTM E 23	Standard Test Methods for Notched Bar Impact Testing of Metallic Materials
ASTM E 709	Wet Magnetic Particle Inspection
ASTM E 165	Liquid penetrant inspection

Professional Documents

Reference	Title
IIW/IIS doc. 62.60	Recommended practice concerning radiographic Image Quality Indicators (IQI)
CSWIP/PCN	Requirements for the certification of personnel engaged in NDT

Regulations

Reference	Title
Not applicable	

Codes

Reference	Title
AWS D 1.1	Structural welding code - Steel
ASME, Section V	Boiler and pressure vessel code: non-destructive examination

Other documents

Reference	Title
Not applicable	

Total General Specifications

Reference	Title
GS EP STR 201	Materials for offshore steel structures
GS EP STR 301	Fabrication of offshore steel structures

3. Definitions

a) Inspector

Either the COMPANY's Inspector or the CONTRACTOR's Inspector, or both, shall be referred to herein as the "Inspector". The COMPANY and CONTRACTOR may respectively elect an independent inspection agency to act on their behalf in that purpose.

b) Site

The yards, workshops, laboratories or other locations where the fabrication, inspection and testing are to be performed complete or in part, shall be referred to herein as the "Site".

c) Contract documents

The drawings, equipment lists, bills of material, material specifications, etc., latest editions, issued by the COMPANY and attached to the Contract or the Purchase Order shall be referred to herein as the "Contract Documents".

d) Approval

Authorisation in writing given by the COMPANY to the CONTRACTOR on a procedure or to proceed with the performance of a specific part of the work without releasing in any way the CONTRACTOR from any of his obligations to conform with the technical specifications, requisitions, etc. The words "Approve", "Approved" and "Approval" shall be construed accordingly.

e) PPS

Used to designate the Project Particular Specification as defined in Section 1.

4. Quality Assurance/Quality Control

1. The CONTRACTOR shall operate a Quality Assurance system in accordance with [ISO 9001](#) or equivalent, approved by a recognized authority. The Quality Assurance Manual shall be submitted to COMPANY and made available to the Inspector at all times.
2. Three weeks prior to commencement of any fabrication, the CONTRACTOR shall prepare and submit to COMPANY a written Quality Control Plan which describes the inspections to be performed during the said fabrication. The Quality Control Plan shall set forth "witness", "hold", "review" and "monitor" points.

5. Technical Queries/Non-Conformance Reports

1. Any CONTRACTOR's requests for clarifications or deviations to COMPANY specifications shall be submitted to COMPANY only through Technical Queries (TQ), the format of which shall have prior approval of the COMPANY.
2. A deviation to specifications shall not be considered as accepted if it has not been submitted to and accepted by COMPANY through a Technical Query.
3. Approval given by the COMPANY to any CONTRACTOR's work procedures, specifications, equipment, etc, shall not release in any way the CONTRACTOR from his obligation to meet the COMPANY's specifications.
4. Any work performance or test result which is found, at a later date, not in conformance with COMPANY specifications or agreed procedure shall be subject to a Non-Conformance Report (NCR) to be issued by the CONTRACTOR for submission to COMPANY. NCR report shall indicate the corrective action intended by the CONTRACTOR.

6. Approval of documents and procedures

The following shall be submitted to COMPANY for approval at least three weeks before fabrication is scheduled to start.

1. Fabrication or shop drawings showing weld arrangement, location of welding at prefabrication and fabrication stages, and weld details.
2. List of proposed welding consumables with their data sheets.
3. Consumables handling, drying, storing, flux recycling and traceability procedure.
4. Sequence of fabrication, assembly and welding. Fit-up of flanges to web, including equipment used and precautions to avoid distortion and warpage.
5. Weld Register together with all Welding Procedure Specifications (WPS) and Welding Procedure Qualification Records (WPQR), including for repair welding.
6. List of welders and welding operators, with certificates.
7. Mill certificates of CONTRACTOR's supplied materials.
8. Identification, control and traceability procedures for materials.
9. Key plans showing member identification and weld marking schemes.
10. Inspection and Non-Destructive Testing procedures.
11. Procedures to monitor dimensions and control the tolerances during fabrication.
12. List of Non-Destructive Testing personnel, with certificates.

7. Drawings

1. Fabrication Drawings, Shop Drawings and As-built Drawings shall be in accordance with provisions of [API RP 2A](#).
2. Designation of steels on drawings shall fully comply with para. 5.3 and 5.4 of specification [GS EP STR 201](#).
3. The web to flange connections of WPG subject to cyclic load or high localized static loads (e.g. at nodes) shall be made with full penetration welds.