



Exploration & Production

GENERAL SPECIFICATION

PIPING VALVES VESSELS

GS EP PVV 171

Steel piping fabrication

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1. Scope

This Specification applies to above ground process and utility piping lines, and those lines extending below ground in the same service using the same materials.

Requirements herein shall govern shop and field fabrication. Additional requirements, such as coating and wrapping, are not covered in this document.

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.

Unless otherwise specifically indicated in writing, the Contractor shall work in accordance with the requirements of this specification and those of the latest editions at the time of call for tender of the documents listed hereafter.

Any divergence between any of the Contractual Reference Documents or between this specification and any other Contractual Reference Document, should be reported to the Company for decision. In such a case, and unless otherwise agreed or decided by the Company, it is understood that the more stringent requirement shall apply.

Standards

Reference	Title
Not applicable	

Professional Documents

Reference	Title
Not applicable	

Regulations

Reference	Title
Not applicable	

Codes

In addition to the mentioned codes and their sub-references, other codes, such as National Codes, may govern some part of the piping. Drawings will indicate the applicable codes in such cases.

Construction Codes or Government regulations which may be listed in the Project Specifications, in the Requisition or in the Purchase Order, if any, shall have precedence except where this Specification is more stringent.



Reference	Title
ASME B1.20.1	Pipe Threads, General Purpose (Inch)
ASME B16.25	Butt welding Ends
ASME B31.3	Process Piping
ASME Section I	Power Boilers (For parts of piping systems associated with boilers and steam generating equipment, where that code applies: such parts will be indicated on drawings as boiler code piping)
ASME Section V	Non-Destructive Examination
ASME Section VIII	Pressure Vessels (where applicable)
ASME Section IX	Welding and Brazing Qualifications

Other documents

Reference	Title
Not applicable	

Total General Specifications

Reference	Title
GS EP COR 350	External protection of offshore and coastal structures and equipment by painting
GS EP COR 354	External protection of onshore structures and equipment by painting
GS EP COR 356	Corrosion Protection of Fasteners for Subsea and Topsides applications
GS EP PVV 111	Piping design specification
GS EP PVV 112	Piping material classes
GS EP PVV 173	Pneumatic testing of above ground piping systems
GS EP PVV 175	Cleaning of piping and vessels
GS EP PVV 611	Welding of pressure containing piping and equipment
GS EP PVV 612	Piping and Equipment subject to severe sour service. Metallurgical
GS EP PVV 614	Welding of duplex and superduplex stainless steel
GS EP PVV 615	Welding of UNS 31254 alloy
GS EP PVV 616	Welding of titanium pipe and fittings
GS EP PVV 617	Welding of 3 ½% nickel steel
GS EP PVV 618	Fabrication of alloy UNS 06625 grade 1 materials



Reference	Title
GS EP PVV 620	Specification for fabrication and welding of piping systems in cupronickel and associated materials
GS EP PVV 622	Piping and Equipment subject to intermediate sour service. Metallurgical

3. Information sources

3.1 Piping material classes

The Piping material classes Specification **GS EP PVV 112** shows the pipes, valves, flanges, fittings, branch connection, design details for vents, drains and instrument connections, and other specific material requirements for piping services. The specification includes the individual piping material classes and branch reinforcement requirements.

3.2 Drawings

3.2.1 Design drawings

3.2.1.1 General arrangement drawings

Complete design of the piping systems including description, sizes, dimensions, relative location of the various parts or components is generally shown on Piping General Arrangement drawings.

3.2.1.2 Isometric drawings

Complete and detailed information such as description, sizes, exact location, dimensions, joint details, are given in the isometric drawings. They shall clearly indicate the parts and/or components scheduled for assembly on the field. Welds and connections to be performed in the field shall be positioned in a manner requiring the least amount of field work and/or in order to facilitate field installation. A material take-off attached to the isometric drawing shall show details of all components of the isometric (list of materials, thickness, ratings, quantities, etc.).

3.2.2 Fabrication drawings

Shop drawings or sketches shall be prepared by the Contractor to facilitate the fabrication of parts or components of the Piping Systems. These drawings are intended to provide full information and instructions including typical shop details, weld preparation and procedures, etc., needed for that purpose. They must show the spool number, materials, dimensions, fabrication details, and the applicable code and procedures. Drawings must identify all equipment, lines or spools connecting to that spool. The General Arrangement or isometric drawing used as a reference shall be indicated. Spool pieces shall be identified by numbers indicating the isometric line number followed by suffix letters: A, B, C, etc.

Approval or review of shop drawings by the Company does not relieve the Contractor of his responsibility to complete the work in accordance with the Contract, the approved fabrication drawings and the Contractual Reference Documents.



3.3 Lines list

Mechanical data section of the lines list shows lines design pressures and temperatures as well as testing and insulation requirements. Additional information such as wall thickness is available in the relevant piping material classes.

3.4 Isometric index

This document is a list of all isometric drawings with their issue dates.

4. Extent of shop fabricated pipework

4.1 Carbon steel

Carbon steel of sizes 2 inches and larger shall be shop fabricated except for straight runs in pipe racks which are normally field run. 1 ½ inch sizes and smaller are normally field run, except if heat treatment is required.

4.2 Alloy

All alloy piping using butt-welded fittings shall be shop fabricated except for long straight runs in pipe racks which shall be field fabricated.

4.3 Branches

Branch connections on shop fabricated piping shall include appropriate couplings, fittings, or group of fittings (i.e. flanges thermowell connections), or stubs for small field-fabricated branch connections. 1 ½ in. and smaller stubs shall not extend more than 300 mm from the outside of the header. Two inches and larger stubs and branches shall extend to the first flange or field weld point as indicated on the drawings or as required for reasonable piece size.

Reinforcement pads for field welded branches shall be fabricated and tack welded to the stub-in pipe by fabricator, and shall include vent and tell-tale hole.

4.4 Attachments

Attachments, such as supports, braces, lugs, and T-bars may normally be installed in the field. They shall be attached to the matching piece of pipe or fitting by means of an intermediate pad in order to avoid direct welding of the piping component to its support. Fabricated pipe requiring preheat or post weld heat treatment shall have shop welded pads or stubs, to which field welds can be made where attachments are required. In such a case, the pads or stubs welds to the pipe shall receive the required heat treatment in the shop.

4.5 Field runs

Field runs are designated on piping drawings.

5. Materials

5.1 Supply

All piping materials (pipes, fittings, valves, accessories, supports) shall conform to the relevant piping material class and to all the other related documents. Materials for non pressure parts



which are directly welded to pressure parts shall be of the same type and quality as the pressure parts.

5.1.1 Materials furnished by the Company "free issue"

Materials possibly furnished by the Company shall be as listed in the Contract documents. The Contractor shall be provided with a copy of Mill Certificates including chemical and physical properties for the materials furnished by the Company.

The Contractor shall inspect all the materials (pipes, fittings, etc.) internally and externally. He shall agree or disagree with their condition at the time of delivery on site. A confirmatory inspection shall also be made by the Inspection Agency.

The Contractor shall declare all unacceptable defects and damages which are found on materials furnished by the Company. Damaged material or materials found to have injurious defects shall not be used in the fabrication. The Inspection Agency shall decide if such materials may be repaired or must be replaced. Repairable defects or damages may be repaired by the Contractor on a cost plus basis to the Company. Before a repair is made, it must be submitted to the Company for approval. Non-repairable materials shall be replaced by the Company.

The Contractor shall be considered responsible for defects or damages which will be detected after delivery on site. Repair or replacement of such defective materials shall be at the Contractor's expense.

The Contractor, on accepting the responsibility of the materials, shall keep a record on all related activities including date of inspection, designation and number of materials accepted or to be repaired or replaced, and any other pertinent information detailing material defects or damages. This record shall be signed by the Contractor and the Inspection Agency.

5.1.2 Materials supplied by the Contractor

The Contractor shall furnish all other materials necessary to perform the work. Materials furnished by the Contractor shall be new and shall be subject to prior approval by the Company and the Inspection Agency. The Contractor shall not substitute any material specified in the Contract documents without the prior written approval of the Company and the Inspection Agency.

5.2 Identification

The Contractor shall ensure that the mill markings and identification on all materials shall be maintained throughout. The markings and identification, as proposed by the Contractor, shall be visibly clear and recognised as being correct by the Inspection Agency. An identification system for class of material shall be used by the Contractor.

5.3 Positive Material Identification (PMI)

PMI shall be done on 100% of low alloy carbon steel and corrosion resistant alloy (3xx series, duplex, 625...) components.

5.4 Storage

All materials for the work, being the sole responsibility of the Contractor while in his custody, shall be stored in accordance with good practice, on pallets or timber blocking, off the ground and above the level of standing water. Materials shall be covered whenever possible. Materials