

DEP SPECIFICATION

STRUCTURAL STEEL FABRICATION OF SMALL DEEPWATER OFFSHORE SKIDS, FACILITY PACKAGES, AND SUBSEA SLEDS AND MANIFOLDS (BASED ON AISC STEEL CONSTRUCTION MANUAL ASD, API RP 2A-WSD AND AWS D1.1)

DEP 37.81.10.32-Gen.

February 2019

ECCN EAR99

DESIGN AND ENGINEERING PRACTICE



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All administrative queries should be directed to the DEP Administrator in Shell GSI.

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1. INTRODUCTION

1.1 SCOPE

This DEP specifies requirements and gives recommendations for the fabrication of structural steel skids, facility packages, subsea sleds, subsea manifolds, and other miscellaneous structural steel structures. It is applicable for designs performed using DEP 37.81.10.31 Gen.

This DEP applies to small statically designed steel structures, less than 907 metric tons (1000 short tons), that are not subject to significant global cyclic stress that could lead to fatigue failure over the structural life.

Steel structures covered in this DEP are categorized as either a Type-A or Type-B structure. The category is dependent on weight and function and is defined by the Principal.

This DEP is based on the following industry standards and the supplemental requirements in this DEP that exceed the minimum requirements of the following industry standards:

- AISC-ASD, 9th edition
- API RP 2A-WSD, 22nd Edition, November 2014
- API 2MOP, First Edition, July 2010, Reaffirmed, April 2015
- AWS D1.1/D1.1M:2015

This is a revision of the DEP of the same number dated September 2017; see (1.5) regarding the changes.

1.2 DISTRIBUTION, INTENDED USE AND REGULATORY CONSIDERATIONS

Unless otherwise authorised by Shell GSI, the distribution of this DEP is confined to Shell companies and, where necessary, to Contractors and Manufacturers/Suppliers nominated by them. Any authorised access to DEPs does not for that reason constitute an authorisation to any documents, data or information to which the DEPs may refer.

This DEP is intended for use in facilities related to offshore oil and gas exploration and production facilities. This DEP may also be applied in other similar facilities.

When DEPs are applied, a Management of Change (MOC) process shall be implemented; this is of particular importance when existing facilities are to be modified.

If national and/or local regulations exist in which some of the requirements could be more stringent than in this DEP, the Contractor shall determine by careful scrutiny which of the requirements are the more stringent and which combination of requirements will be acceptable with regards to the safety, environmental, economic and legal aspects. In all cases, the Contractor shall inform the Principal of any deviation from the requirements of this DEP which is considered to be necessary in order to comply with national and/or local regulations. The Principal may then negotiate with the Authorities concerned, the objective being to obtain agreement to follow this DEP as closely as possible.

1.3 DEFINITIONS

1.3.1 General definitions

The **Contractor** is the party that carries out all or part of the design, engineering, procurement, construction, commissioning or management of a project or operation of a facility. The Principal may undertake all or part of the duties of the Contractor.

The **Manufacturer/Supplier** is the party that manufactures or supplies equipment and services to perform the duties specified by the Contractor.

The **Principal** is the party that initiates the project and ultimately pays for it. The Principal may also include an agent or consultant authorised to act for, and on behalf of, the Principal.

The word **shall** indicates a requirement.

The word **should** indicates a recommendation.

The word **may** indicates a permitted option.

1.3.2 Specific definitions

Term	Definition
Approve/Approved or Approval	The Principal's written approval of the submitted document which is completed prior to ordering materials and/or beginning the Work.
Auditable (requirement)	Requirement that is observable, measurable, is neither vague nor ambiguous, and has finite acceptance/rejection criteria.
Contract Drawings	Detailed drawings approved for construction (AFC) signed and sealed by a licensed engineer including any drawing revisions.
Review	Principal's right, but not obligation, to comment on the submitted item. Contractor can begin construction of the item following submittal
Standard Drawing	Standard drawings with standard details and general notes that can be used on different projects and meet industry standards.
Subcontractor	Any person or company having a subcontract with any Contractor to perform work covered under this DEP.
Type-A	Structure types defined in Section 2.2 of this DEP.
Type-B	Structure types defined in Section 2.2 of this DEP.

1.3.3 Abbreviations

Term	Definition
AISC	American Institute of Steel Construction
API	American Petroleum Institute
ASME	American Society of Mechanical Engineers
AWS	American Welding Society
BOP	Bead on Plate
BS	British Standard
FCAW	Flux Core Arc Welding
FY	Specified Minimum Yield Stress
GMAW	Gas Metal Arc Welding
ID	Internal Diameter
ISO	International Standards Organization

Term	Definition
NDT	Non-destructive Testing (also known as NDE)
PLEM	Pipe Line End Manifold
PLET	Pipeline End Termination
PQR	Procedure Qualification Record
PQT	Procedure Qualification Testing
QA/QC	Quality Assurance / Quality Control
SAW	Submerged Arc Welding
SMAW	Shielded Metal Arc Welding
SWL	Safe Working Load
WPS	Welding Procedure Specification(s)

1.4 CROSS-REFERENCES

Where cross-references to other parts of this DEP are made, the referenced section or clause number is shown in brackets (). Other documents referenced by this DEP are listed in (9).

1.5 SUMMARY OF MAIN CHANGES

This is a revision of the DEP of the same number dated February 2017. This is an administrative update only to correct references to DEPs that have been involved in either a merge or a split.

1.6 COMMENTS ON THIS DEP

Comments on this DEP may be submitted to the Administrator using one of the following options:

Shell DEPs Online (Users with access to Shell DEPs Online)	Enter the Shell DEPs Online system at https://www.shelldeps.com Select a DEP and then go to the details screen for that DEP. Click on the "Give feedback" link, fill in the online form and submit.
DEP Feedback System (Users with access to Shell Wide Web)	Enter comments directly in the DEP Feedback System which is accessible from the Technical Standards Portal http://www.shell.com/standards . Select "Submit DEP Feedback", fill in the online form and submit.
DEP Standard Form (other users)	Use DEP Standard Form 00.00.05.80-Gen. to record feedback and email the form to the Administrator at standards@shell.com .

Feedback that has been registered in the DEP Feedback System by using one of the above options will be reviewed by the DEP Custodian for potential improvements to the DEP.

1.7 DUAL UNITS

This DEP contains both the International System (SI) units, as well as the corresponding US Customary (USC) units, which are given following the SI units in brackets. When agreed by the Principal, the indicated USC values/units may be used.

1.8 NON NORMATIVE TEXT (COMMENTARY)

Text shown in italic style in this DEP indicates text that is non-normative and is provided as explanation or background information only.

Non-normative text is normally indented slightly to the right of the relevant DEP clause.

1.9 SPECIFICATION VERSIONS

Care should be taken with application of external standards in North America because BOEM and USCG government regulations make reference to specific editions of some specifications, and do not allow substitution of more recent editions of specifications than those specifically referenced in the CFRs.

2. GENERAL**2.1 GENERAL**

1. The following specifications, regulations, and industry standards, where applicable, shall cover design, material, and construction of the steel structures in order of precedence:
 - a. Contract Drawings.
 - b. The Contract Scope of Work.
 - c. DEP 37.81.10.32-Gen.
 - d. Industry Standards.
2. Alternative codes for the fabrication, welding, and inspection of the structure may be proposed by Contractor for approval by the Principal, prior to the start of fabrication.

2.2 STRUCTURE CATEGORY

1. Structures shall be categorised as either Type-A or Type-B as follows:
 - a. Type-A structures shall include skids and packages weighing less than 455 metric tons (500 short tons), except for subsea structures and components.
 - b. Type-B structures shall include skids and packages weighing more than 455 metric tons (500 short tons) but less than 907 metric tons (1000 short tons), and subsea structures and components (sleds and manifolds) regardless of weight.

The requirements in this DEP are applicable to both Type-A and Type-B structures unless indicated otherwise by Contract documents.

2.3 SPECIFIED STANDARD DRAWINGS

Specified standard drawings shown in (Appendix C) of this DEP define steel designations and properties, welding and inspection requirements, and typical structural details and tolerances.

1. The specified standard drawings shall be in conjunction with the Contract Drawings.

2.4 SUBMITTALS

The documents requiring submittal are listed in Table 2.1. This table can be amended by the project to reflect contractual timing.

Additional submittals might be required for documentation purposes as stated within this DEP.

Table 2.1 Submittal requirements

Document	Typical Submittal Timing	Principal Action	Ref. Section
Alternative Codes	Prior to Award	Approve	2.1
Fabrication Procedures	4 weeks after award of contract	Review	3.1
Proposed Changes	Prior to Ordering Material or Starting Fabrication	Approve	3.1
Dimensional Control Procedure	4 weeks prior to the start of fabrication	Approve	3.3
Weld Traceability Procedure	4 weeks prior to the start of fabrication	Approve	3.6
As-Built Data Books	2 weeks after completion of fabrication	Approve	3.7