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Technical Specifications (In-Cash Procurement)

**Technical Summary for Framework Contract for
manufacturing and installation of Common Supports in
Building 11 of ITER Tokamak Complex**

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2. Purpose

ITER is an international research and development Project that aims to demonstrate the scientific and technical feasibility of fusion power: it is being constructed in Europe, at Cadarache in the Southeast of France.

This technical summary provides the technical requirements for the manufacturing and installation of the common supports to be installed in Buildings 11 of the Tokamak Complex for the ITER Organisation (IO). This technical summary includes the requirements for material, fabrication, machining, welding, delivery schedule, transportation, quality control, etc.

These supports are composed of steel tubes, plates, pins, bolts and pad eyes and are fixed to the building civil structure either by direct welding to embedded plates, bolting to studs welded to embedded plates, through post drill support plates or bolted to Halfen rails.

A Framework Contract will be used by IO to place the Task Order (TO) for the need of the manufacturing and installation of Common Supports. Each request will be contractualized through a Task Order (TO) to be placed by IO.

3. Scope of Work

This Framework Contract includes the Manufacturing, Delivery and Installation of the Common Supports per Batch/Area listed in Table 1 below. The weights per Batch given in the Table 1 are just for cost estimation. Since the design is not yet finalized, the weight of each batch and the schedule is subject to change.

As design is not yet complete, the material in port cells may be PIC100 painted Carbon Steel or Stainless Steel. This choice will be defined in the Task Requests.

Table 1 - Common support batches and dates

Batch	Area	Estimated Mass (kg)	Material	Manufacturing End Date	Installation End Date
Batch 5	11 L4 Bridge (1 support)	30,000	Painted Carbon Steel	July 2023	September 2023
Batch 6	11 L3 UPC (2 supports)	1,650	Painted Carbon Steel	August 2023	October 2023
Batch 7	11 L3 Gallery (1 support)	6000	Painted Carbon Steel	October 2023	December 2023
Batch 8	11 B1 Port Cell (11 supports)	8000	Painted Carbon Steel or Stainless	December 2024	March 2024

One Framework Contract holder will be selected for this Framework Contract.

The contractor will receive Task Requests, each of which will include the detailed information, drawings and additional requirements (if any) of related supports. The contractor

shall review the input information provided by Task Request and the specification for the completeness and consistency.

Then the contractor shall submit IO a Quotation for this Task Order in accordance with the Conditions and unit prices of the Framework Contract, and the detail of the estimate that shall breakdown into the Material Costs, Labour Costs, Machine costs, Engineering costs, Quality costs, Tooling and Consumable Costs, outside service costs, and Overhead Costs, etc.

Finally, the contractor will perform the work specified by the Task Order, which includes preparation of the shop drawings, procurement of requisite materials, workshop fabrication, inspection, testing, quality control, documentation, packaging, delivery to IO and installation along with all necessary certification and reports.

4. Definitions

Term / acronym	Definition
Contractor	Responsible for execution of manufacture, testing, cleaning, packaging and delivery of components
IO	ITER Organization
MIP	Manufacturing & Inspection Plan
ITP	Inspection and Test Plan
PIC	Protection Important Component
PIA	Protection Important Activity

For a complete list of ITER abbreviations see: [ITER_D_2MU6W5 - ITER Abbreviations](#)

5. Technical Requirements

5.1. Material requirements

- Common supports shall be made from Carbon Steel (S355JR) or an austenitic stainless steel (304L).
- Stainless steel supports shall be pickled and passivated, Carbon Steel supports shall be painted with a PIC100 decontaminable painting system.
- Material used shall comply with the Technical Delivery Requirements of the European Codes: NF EN 10025-2 for hot rolled steel structures, NF EN 10162 for cold rolled sections and NF EN 10210 or NF EN 10219 for hot finished or cold formed welded structural hollow sections.
- All material shall be supplied with EN 10204 3.1 Inspection Certificate.
- All materials to be used shall be supplied with the testing and inspection according to their manufacturing method. Steel structures, made of materials that have not undergone minimum tension resistance testing, are not allowed.
- All material shall be halogen free.

5.2. Manufacturing and installation requirements

All the metal fabrication and installation processes (cutting, shaping, drilling, folding, welding, etc.) shall conform to the requirements of EN 1090-2. The Execution Class of each component and its parts is EXC 3.

NDT shall be performed according to requirements from EN13480 and EN1090, but may be increase for some specific welds. This will be clarified in each Task Request.

Final location of the anchor settled points, fastening systems (embedded plates, post drill plates, etc.) may be modified, during construction, with to respect the locations defined in the execution drawings. To avoid misalignments and to consider any discrepancy that may occur due to the real location of the anchor settled points, the Contractor shall comply with the following requirements and consider them previously to the final manufacturing:

- Embedded Plates survey is to be done by the Contractor to avoid misalignments based on the real position of the embedded plates;
- Post drilled plates require a ferrosan of the area to be drilled to verify the position proposed in the execution drawings. Post drilled plates are to be installed following requirements from the code NF EN 1090-2;
- Site inspection is to be done by the Contractor to consider possible erection restrictions that may prevent the common support to be installed in just one piece or base on the field welds recommended in the execution drawings.

6. Safety requirements

In order to satisfy the requirements of the INB Order 7th February, the Contractor and its suppliers must implement safety requirements that will be defined in depth in the Technical Specification and Task Order Requests.

Some of the supports under the scope of this specification are classified Protection Important Components (PIC). Their defined requirements are identified in Nuclear Safety Control Plans. Activities related to the manufacture, testing, cleaning, packaging, delivery and installation that can affect the final performance of the support is identified as a Protection Important Activity (PIA). Non-PIC supports also have some PIA as failure in their structural integrity could affect a PIC component. PIA require additional follow up compared to non-PIA.

PIA in manufacture and installation includes the following (this list may not be exhaustive depending on manufacturing/installation methods chosen, more details given in the Nuclear Safety Control Plans):

- Raw material procurement and associated certificates;
- Welding of supports (PIC and non PIC);
- Non Destructive Examination;

- Surface treatment (cleaning/painting);
- Handling and Packing;
- Shipping, delivery to site;
- Welding to Embedded Plates (PIC and non PIC);
- Bolting;
- Drilling of concrete;
- Installation of anchor bolts;
- Painting touch up.

The contractor shall prepare a Quality Compliance Record (QCR) based on the Nuclear Safety Control Plan.

Under the INB Order, contractors and subcontractors must be informed that:

- The INB Order applies to all protection important components and the protection important activities,
- Compliance with the INB Order must be demonstrated in the chain of external Contractors. This shall be shown in the quality Plan, including supervision of subcontractors.

In application of article II.2.5.4 of the INB Order, the Nuclear Operator (IO) shall undertake surveillance of activities undertaken by external interveners (the Contractor and its subcontractors). The Contractor shall perform supervision on activities of their subcontractors.

The above requirements shall be implemented via the MIP, ITP, Quality Compliance Record and Quality Plan. Contractor shall show compliance to [ITER_D_SBSTBM - Provisions for Implementation of the Generic Safety Requirements by the External Actors/Interveners](#) in their Quality Plan.

For the PIA, the Contractor shall ensure that a specific management system is implemented by any subcontractor. This system will be included in the MIP, ITP or Quality Plan.

The MIP and ITP shall contain a dedicated column PIA to be identified by tag yes/no for each task. Each PIA must also have a step dedicated to Technical Control.

These documents shall be submitted for review and approval to the IO prior to the start of fabrication/installation.

7. Surveillance Requirements

The ITER Organization, as the Nuclear Operator, has the ultimate responsibility for the application of the INB Order within the IO and throughout its chain of suppliers. In

compliance with the Order, IO performs surveillance on Protection Important Activities (PIAs) related to the construction of PIC components. The surveillance is applied to the complete supply chain involved in the construction of the PIC components.

In the context of this specification, a PIA means any activity related to the manufacture, testing, cleaning, packaging and delivery that can affect the ability of the components under the scope of this specification to comply with their Defined Requirements.

For the purposes of performing surveillance, the Contractor shall grant the IO and ASN representatives' access to its facilities, records and to those of its subcontractors at all stages of the contract. The surveillance shall include follow-up and verification of any corrective actions that are to be implemented.

8. Quality Assurance

- The Contractor's Quality Assurance Program (QAP) is subject to approval by the IO in accordance with the ITER QA Program, and shall be applied to all work carried out under the scope of this specification.
- The general requirements are detailed the ITER Procurement Quality Requirements [ITER_D_22MFG4 - ITER Procurement Quality Requirements](#)
- The Contractor shall ensure that a specific management system is implemented for work on Protection Important Activities (PIA) carried out by the Contractor and by any Subcontractors. The specific requirements for the supervision of subcontractors for Protection Important Components are detailed in [ITER_D_SBSTBM - Provisions for Implementation of the Generic Safety Requirements by the External Actors/Interveners](#).
- Documentation developed as the result of this task shall be retained by the performer of the task or the DA organization for a minimum of 5 years and then may be discarded at the direction of the IO.

8.1. Quality Plan

Prior to beginning the work of the Framework Contract, the Contractor shall produce a Quality Plan in accordance with [ITER_D_22MFMW - Requirements for Producing a Quality Plan](#). The plan shall be submitted to the IO for approval.

9. Schedule

The individual Task Order(s) will be launched, depending on the completeness of the design of each batch (Table 1), after the framework contract is signed. The final duration of each Task Order will be defined in the corresponding Task Order.

10. Deliverables

The schedule of deliverables will be specified in each specific Task Order and divided in the followings stages:

- a) Procurement and Manufacturing Phase;
- b) Installation Phase.

Table 3 - Procurement and Manufacturing Phase

Step #	Description
1	Start of Manufacturing
2	Delivery at ITER Site: First delivery at ITER
3	Delivery at ITER Site: Last delivery at ITER
4	End of Manufacturing Report Approved

Table 4 - Installation Phase

Step #	Description
1	IWP validated
2	Physical Progress as reported in the relevant progress Report
3	Walk-through successful
4	ITP closed and End of Erection Support Approved

The main deliverables are listed below:

1. Quality Plan;
2. Manufacturing and Installation Schedule;
3. List of applicable documents;
4. Environmental Plan (PRE)/Health and Safety Plan (PPSPS);
5. List of subcontractors;
6. Subcontractor Acceptance Form (SAF);
7. List of services and utilities to be provided by IO for Contractor works;
8. Quality Compliance Record;
9. Manufacturing and Inspection Plan (MIP);
10. Inspection and Test Plan (ITP);
11. Installation Method Statement;
12. Lifting/Handling Plan;
13. Welding book that should include the following:
14. List of required code and specification;
15. Welding map and welding list;
16. Management control plan before, during and after welding;
17. WPS, PQR, WQTR;
18. NDT procedures to be accepted by IO;
19. Any other applicable procedures (painting, handling, storage etc.);
20. Monthly Progress Report;
21. 3 weeks look-ahead schedule;
22. Health and Safety monthly report;
23. Reports and Certificates as requested;
24. Risks register;
25. Final Documentation Package, including as-built records (At End of Manufacturing and at End of Erection);
26. Material certificates (base and filler material);
27. Material test reports;

28. Certificates of Conformity;
29. Calibration report of the welding equipment;
30. Report of the visual inspection and further NDT;
31. Report of the repairs (as applicable);
32. Actual dimensions of cuts;
33. Etc.

11. Appendix – Example of Supports

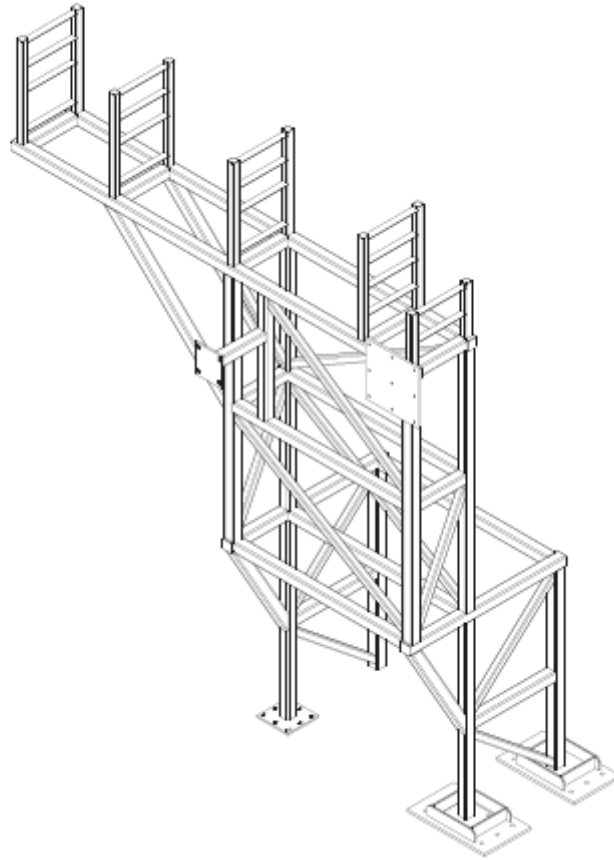
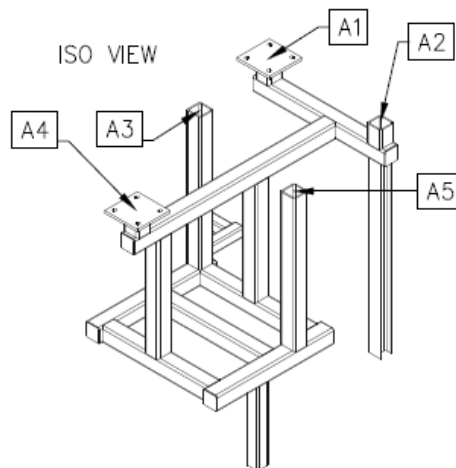


Figure 1 - B11 L3 Batch 7



DTR-CS-0004

Figure 2 - Drain Tank Room Part of Batch 4

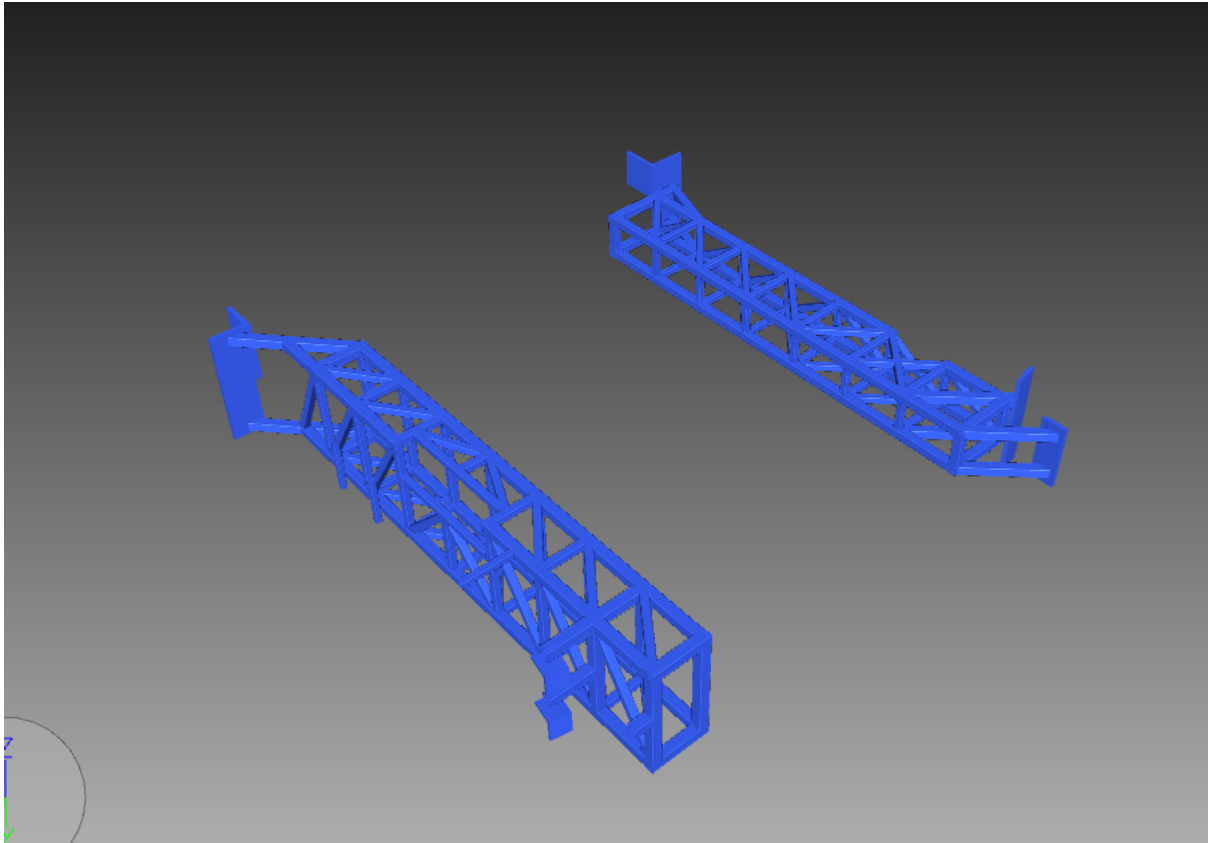


Figure 3 - B11 B1 Port Cells Part of Batch 8

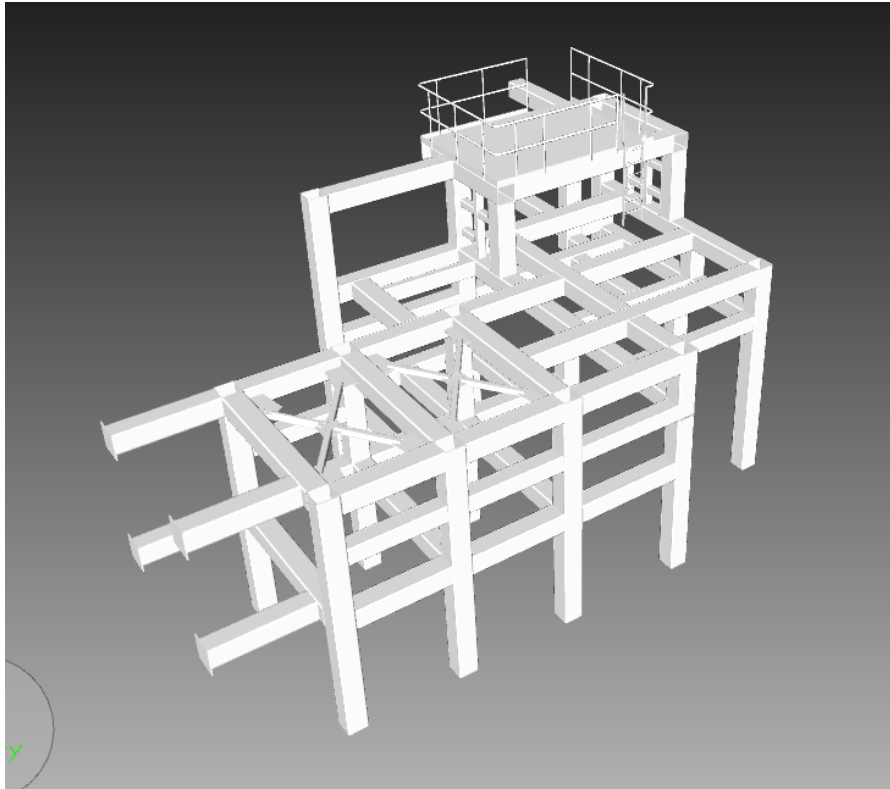


Figure 4 - L4 Bridge Part of Batch 5