

Technical Specifications (In-Cash Procurement)

Technical Specifications - B55.4 shelter construction

This document is providing the Technical Specifications for B55.4 shelter construction

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1 Purpose

1.1 Background

ITER is a joint international research and development project aiming to demonstrate the scientific and technological feasibility of fusion power for peaceful purposes. The seven members of the ITER Organization are: The European Union (represented by EURATOM), Japan, the People's Republic of China, India, the Republic of Korea, the Russian Federation and the USA. Further information is available on the ITER website: <http://www.iter.org>. The ITER Organization is located in Saint Paul Lez Durance (13115) – France.

The ITER components have started to be delivered to the ITER Site. Some big components named HEL (Highly Exceptional Loads) need to be stored directly onsite protected against the main environmental condition to cope with risk of damage or loss. To address these storage demands, a contract is to be put in place with a qualified Contractor in order to construct a shelter on the ITER Site at short notice. The aim of this shelter is to house extra HEL.

1.2 Purpose

The purpose of this Technical Specification is:

- To provide the technical requirements for the supply and installation of the shelter to be erected at the ITER Site;
- To provide the Contractor background information that is necessary to commence, carry out and complete the projects on the ITER Site, e.g. the ITER Site conditions;
- To specify applicable norms and regulations that the Contractor shall have to respect in order to meet the project performance requirements of the ITER Organization.

2 Scope

The scope of this contract is to design, supply and build a covered shelter named B55.4 to be constructed on the east side of an existing storage building named B55.2 within the ITER. The shelter shall be designed to be usable for at least 5 years.

3 Time for completion

The exact Time for Completion of the Works is specified in the Contract.

Below, the tentative schedule expected:

- T0 (beginning of May),
- T0+2weeks: design validated and reinforcement ordered,
- T0+4weeks (beginning of June): start of foundation works on site,
- T0+12weeks (End of July): shelter construction and networks realization,
- T0+16weeks (End of August): end of the works
- T0+18weeks (Beginning September): finishing, T&C, taking over

4 Acronyms and Definitions

The following acronyms may be found in this document:

PPSPS:	Individual Health Protection and Safety Plan (from French : Plan Particular de Sécurité et de Protection de la Santé)
PRE:	Environmental Requirements
PTW:	Permit to Work
IPEG	ITER platform earthing gird
NC	Non-Conformance
NF DTU	French Norm – French Building Code
DN	French: <i>Diamètre nominal (intérieur)</i> / Nominal diameter (always interior)
PW	Potable Water
RW	Raw Water
TPC	Tube de protection des cables, / English: duct to protect cable,
RFI	Request for Information
PIC	Protection Important Class
PIA	Protection Important Activity
EIC	Environmental Important Component
Site	Places provided by the ITER Organization where the Works are to be executed, and any other places specified in the contract as forming part of the Site
LOTO	Lockout / Tag out permit
PF/EP	Permis de fouille / Excavation permit
Works	The work and design to be performed by the Contractor including temporary work and any variation
GNT	Grave non traitée/ Non treated gravelled
DICT	Déclaration d'Intention de Commencement de Travaux
TE	Température Electrique – electrical temperature
TF	Température Fuel – Diesel temperature

5 Reference documents

- [1] Basic views of the expected shelter works
- [2] Chemical product management procedure, (ITER_D_W6EREY)
- [3] CAD instructions for companies, (ITER_D_9PNNM4)
- [4] Permit to Work Procedure, (ITER_D_UBET39)
- [5] Access procedure, (ITER_D_6Z6SN9)
- [6] Internal Regulations, (ITER_D_27WDZW)
- [7] PGCSPS Volume 1 – Health and Safety General Coordination Plan for the construction of ITER Project,(ITER_D_T6V4RP)
- [8] Alert procedure, (ITER_D_7LB8NY)
- [9] Environmental Management Plan, (ITER_D_97W4PN)
- [10] Environmental requirements, (ITER_D_97WRFP)
- [11] COORDINATION DRAWING – Temporary Networks Approximate Layout
- [12] In-Cash Procurement Technical and Management Documentation Exchange and Storage Procedure, (ITER_D_G8UMB3)
- [13] ITER Policy on Safety, Security and Environment Protection Management, ref. (ITER_D_43UJN7)
- [14] Housekeeping instruction, (ITER_D_XJKR3R)
- [15] ICPE pre-screening memorandum, (ITER_D_XJ8K6C)
- [16] Environmental Respect Plan, English template, (ITER_D_9FUP5C)
- [17] Working instruction for intervention in case of Pollution or Overflow of the rainwater drainage network, (ITER_D_NEBB44)
- [18] Lifting Instruction (ITER_D_YJ9MBD)
- [19] Work at Height Instruction (ITER_D_Y5X8R7)
- [20] Asbuilt for B55.4 platform – asphalted area and concrete slab
- [21] Asbuilt of B55.2 building
- [22] ITER Procurement Quality Requirements (ITER_D_22MFG4)
- [23] Procedure for management of Nonconformity (ITER_D_22F53X)
- [24] Procedure for the management of Deviation request (ITER_D_2LZJHB)
- [25] Quality Classification Determination (ITER_D_24VQES)
- [26] Requirements for Producing Quality Plan (ITER_D_22MFMW)

6 Work Description

6.1 Location

The working area is located on the South side of the ITER site on existing heavy asphalted landing area.

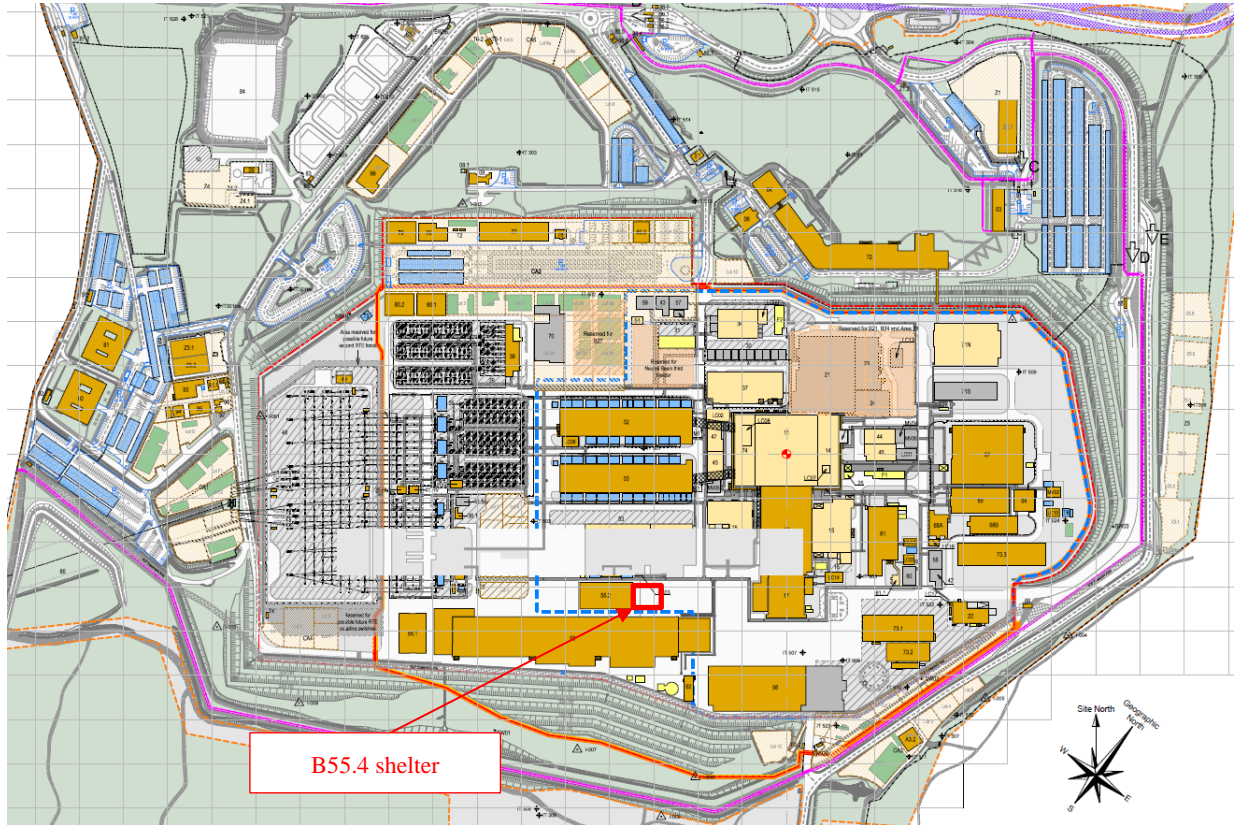


Figure 1 – Location of the works

6.2 Introduction

The Contractor shall install a shelter which shall meet the following minimum requirements:

- Weather tight roof and sides to protect the ITER components in storage against the main climatic risk;
- Compliant with the relevant safety and health regulations applicable in France and Europe;
- The building shall be designed for life of 5 years and to withstand the local climatic conditions e.g. snow and wind; and, according to the Eurocodes 0, 1, 3 and 8;
- The shelter shall be adjoined to the B55.2 East façade.

The Contractor shall take into account that the shelter need to be constructed at short notice. The warehouse dimension shall be: 30m wide, 60m long and 7m high (free clearance) – refer to the drawing in [1].

The Contractor shall design and built the appropriate foundation (reinforced concrete mandatory) associated to the anchoring solutions for the storage shelter, according to the ground conditions, in this case: platform composed of heavy asphalt on the majority and of reinforced concrete slab

on the west side. Appropriate sealing shall be installed between the walls and the ground; and, between the existing building 55.2 and the new shelter in order to avoid any water ingress.

The Contractor is fully responsible for the design, manufacturing, delivery, installation, commissioning and dismantling of the shelter, including but not limited to:

- Any necessary investigation of ground conditions;
- Assessment of the suitability of access to the location of the storage facility to be constructed;
- Any administrative formality to enter and work at the ITER Site as described in the reference documents;
- The supply of all shelter components and all necessary tools and equipment for the installation and commissioning.

6.3 Size of the building

The following size of shelter is expected to be constructed at the ITER Site:

Shelter	B55.4
Minimum usable height (m)	7m
Width (m)	30m
Length	60 m long
Surface	1800m ²

The warehouses shall have free spans, i.e. without intermediate columns inside the building. The main structure of the building shall be incombustible, fire class A1 and galvanized.

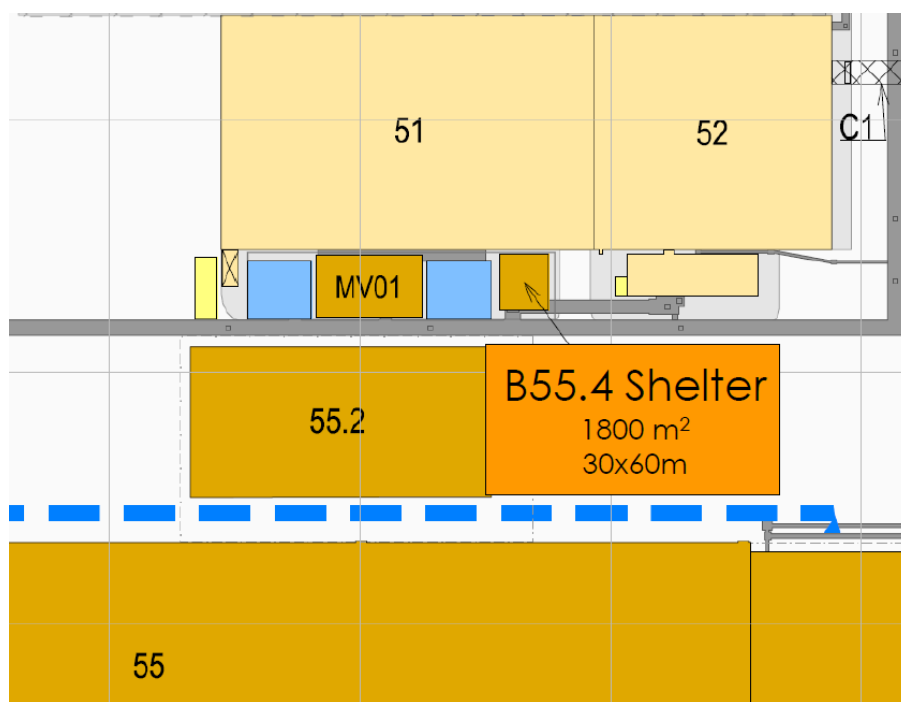


Figure 2 – Sketch of the building arrangement

6.4 Foundation and Anchoring

The contractor is responsible to design and built the foundation system for the shelter associated with the anchoring system by taking into account:

- Existing networks in the area – refer to [11],
- Existing B55.2 – refer to [21],
- Existing platform composed of asphalt and reinforced concrete slab – refer to [22],
- Existing singular points as concrete bumps to be removed,

The current asphalted platform is categorized as “Structure 1 – Heavy road” and is composed of :

- 6cm of BBSG
- 8cm of GB3
- 8cm of GB3
- PF2

The existing concrete slab is design to withstand 42 t/m^2 with a thickness of 40cm and a typical reinforcement composed of two layer of HA20 mesh $e=26\text{cm}$.

To address all the site constraints (mainly buried networks) and to fit with the different supports by preventing non controlled water ingress, the contractor shall create aerials reinforced concrete beams laid directly on the existing platform. In between, the concrete foundation and the existing ground, a continuous water-swellable joint shall be implemented. On the same principle, a waterproof junction shall be done between new foundation concrete beams and existing B55.2 concrete kerbs.

The foundations and anchoring of the steel structures shall be design and constructed following the applicable norms and standards.

The concrete edge shall be chamfered.

During the execution of the foundations, the Contractor shall be responsible for implementation of all the necessary measures to:

- a) Ensure the stability of the embankments.
- b) Prevent any settlement or collapse on the existing structures and utilities.
- c) Reinforce the existing structures if and where necessary (including during the temporary works stage).
- d) Manage the evacuation of rain water using a dedicated temporary network - it shall composed of a pump and settlement tank.
- e) Keep a safe access for pedestrian and vehicles at all times.
- f) Implement a proper fencing off for the working area / excavation zone in accordance to the progress and the risk related to the Works.

In case of any excavation and ground anchoring, the contractor shall performed a networks detection with a geo-referencement to grant the position of buried network in a precision class A. It is a prerequisite prior to ask for an excavation permit.

The contractor shall grant the access and the operability of the existing networks, in particular:

- Existing Fire Hydrant (south): turn of 180d could be necessary to grant its use with the associated refurbishment of the platform,

- Existing potable water valve (bouche à clef, north),

Any ground movement linked with the excavations and modelling of the existing platform shall remain within the Site boundaries. The surplus materials shall be evacuated by the Contractor from the ITER site to a dedicated deposit area.

The cleaning of roads around the Site shall be at the expense of the Contractor based on the weather conditions, the roads cleanliness and the frequency of their use. During dry periods, the Contractor shall implement the measures to limit the spreading of dust from the Site.

Nota: If the contractor is using the existing B55.4 structure, it shall be fully justified with detailed calculation note demonstrating the absence of impact on the existing and not creating weak point.

6.5 Roof

To improve the thermal insulation and avoid condensation, a double-roof structure must be used. If the Contractor chooses a fabric roof solution, then the following minimum specific requirements must be met:

- The external skin of the roof shall be made of PVC coated 100% anti-UV polyester fabric with the unit weight of minimum 620g/m², and the flame retardant should be M2 French standard;
- The internal skin of the roof shall be made of PVC coated 100% polyester fabric with the unit weight of minimum 400g/m², and the flame retardant should be M2 French standard.

The roof's air amplifiers shall connect to the existing B55.2 electrical network – refer to the as built documentation given in attachment [21]. The contractors is responsible for the design, build and commissioning of the entire power line from the B55.2 existing electrical cabinet including: new breaker, wires, routing (cable trays, penetration) and associated documents.

Another type of roof can be proposed, if the contractor can proof that its solution is suitable and avoid condensation with a minimal thermal insulation.

The Contractor shall managed the interface with the existing B55.2 east wall to create a proper waterproofing in between the B55.4 roof and the B55.2 wall – refer to the as built documentation given in attachment [21].

6.6 Shelter rain gutter

The warehouse is to be equipped with rain gutters with downpipes on the lateral sides to effectively evacuate the rain water from the warehouse roof. The dimension of the gutters should be designed taking into account the local weather conditions.

To evacuate the rainwater of the South lateral side, the downpipes will be directed to the south to release the water on the existing road.

To evacuate the rainwater of the North lateral side, the downpipes on the lateral sides will be collected by a main pipe and directed to the west end side of the storage facility. The aim is to avoid the releasing of rain water on the north façade in front buildings 51 & 52 by using the existing concrete gutter system – refer to [11].

In addition, the contractor shall install a continuous pluvial gutter all along the future North façade of the building, at the direct bottom of the foundation. This pluvial gutter shall be connected on the west side to the existing slot concrete gutter. The Contractor shall avoid to pollute the existing slot gutter when performing the connection.

Gutter system requirements:

- i. Proper removal of the asphalt on the footprint of the gutter;
- ii. Installation following supplier recommendation of approx. 52ml of gutter with iron cast/ galvanized steel or INOX gird with a B125 class. The internal width of the gutter shall be 100mm with a limited depth of 60mm. The grouting of the gutter shall be done using appropriate product validated by the IO prior its use,
- iii. Installation of D125 iron cast pipe to interconnect the new gutter and the existing slot concrete gutter.

6.7 Closure of the long sides

The south and north long side walls of the shelter shall be closed with simple skin steel cladding panel, galvanized steel type, to prevent water ingress by this side. The colour shall be similar the cladding panel of the B55.2: RAL PAPYRUS 9001.

The material chosen to close the wall shall be sufficiently resistant to withstand the climatic conditions of the ITER site.

6.8 Closure of the East side

The East side of the shelter shall be closed with a sliding flex strip curtains on the full width of the façade and granting a minimum free usable height of 7m. The upper part of the gable (pinion) shall be closed with the same cladding panel that for the long sides – refer to the above chapter 6.5. The purpose of these side closure is to protect the storage against the direct rain and the main wind.

The flex strip curtain shall meet the requirements listed below:

- PVC flex strip of 4mm minimum, width of the strip: 400mm, transparent, UV resistant and operation temperature range: -15°C to 40°C,
- The overlapping of strips shall be 100% (3/3),
- The strips shall be easy removable and replaceable (débrochable type),
- The opening shall be sliding type: 50% to the right and 50% to the left, category: industrial intensive use,
- All the frame and sliding system shall be in galvanized steel adapted to external use,
- The sliding movement shall be initiated with robust lines operable by pedestrian worker;
- Sliding curtain foot print on floor shall be marked with yellow & black strips of 50cm width minimum.

The contractor is allowed to propose a similar solution granting similar protection than above.

6.9 Electricity inside the building

The contractor shall installed the following electrical devices in the new shelter connected to the existing B55.2 electrical cabinet – refer to as built documentation of B55.2 [21]:

- Electrical protection level IP 65 for electric devices;
- Four electrical sockets 2P+T 16A: two on the North side, two on the south side, 1 breaker for two sockets, (exact position to be decided at design phase by the IO);
- Two electrical sockets 3P+N+E 32A shall be installed (1 on each long side walls) of the warehouse building;
- Terra Neutral Separate (TN-S) type of electrical earthing system shall be implemented on each structure of the warehouse. An equipotential bonding shall be done by the Contractor;

During the warehouse design phase, the Contractor shall provide the updated calculation note (in Caneco and pdf versions) of the electrical equipment in the warehouse.

The Contractor shall be responsible for the design and installation of the power distribution system outside and inside the warehouse.

The Contractor shall make sure the electrical installations are compliant with applicable norms (NF C15-100 in particular) in order to facilitate the statutory inspection, which is part of the Contractor's scope before commissioning of the warehouse (the report shall be free from comments from the third party).

The new shelter shall be connected to the existing earthing loop of the existing building 55.2. The contractor shall implement of bare copper cable in the periphery of the building.

For information, the existing B55.2 building is already interconnected with the ITER Site earthing grid (in reference [11]) in order to reduce potential difference between the structures to values to which equipment can withstand. IPEG is being sized according to IEEE80.

6.10 Lighting

The contractor shall install in the shelter, a lighting system supply by a new dedicated electrical lines connected to existing B55.2 electrical cabinet and the lights shall meet the listed requirements:

- There shall be 100 lux at one meter from the ground;
- LED Colour shall be of natural 4000;
- LED lifetime shall be minimum 50,000 hours;
- The protection level shall be IP 65;
- The installation shall be CE marked;
- The system shall be piloted by an astronomical clock installed in the existing electrical cabinet of B55.2.

6.11 Fire protection

The Contractor shall define the type, number and location of the fire extinguishers according to APSAD R4 regulations. Provision and installation of the fire extinguishers shall be the scope of the Contractor.

The signalization panel of each fire extinguisher shall be fluorescent. All fire extinguishers shall be equipped with the identification plates providing the key details (unique ID number, type, size and date of fabrication as a minimum).

6.12 Fire detection system

The contractor shall design, supply and install fire detection as follows:

- Open the existing fire detection loop to extend it into the B55.4 shelter,
- Pull necessary cables (CR1-C1 9/10e) to connect the new element,
- Install one manual trigger at the North East corner of the building, visible from outside and protected from direct rain with signalization panel to indicate its position. The manual trigger shall have a protective plastic window and shall be IP66.
- Perform necessary software programming update to integrate the new element in the IO fire detection loop, Visiodef supervision setting, and Fire detection drawing updated,

All devices shall be connected to IO Fire detection system (DEF system).

6.13 Finishing works

The contractor shall perform the following finishing around the new and the existing building:

1. Using appropriate floor painting, repaint on the full width of the existing megadoor (27ml) the safety mark with yellow & black strips.



2. Perform masonry finishing between concrete slot and reinforced concrete slab (30ml) with appropriate product as SIKAFIX 138 FTP (or equivalent)



3. Finishing on the North west corner of the existing B55.2:

- Cleaning and removal of the gravel,
- After compaction and preparation of the subgrade, realization of asphalt (or equivalent) with a slope to direct the rain water coming from the B55.2 downpipe to the existing grating,
- Reconnection of the ducts with sleeves and protection of them with light concrete. On the concrete, a panel indicating electrical hazard shall be fixed at the end,
- Rework of the D40 existing wall penetration by enlarging the hole to D100mm and replaced the existing ducts by a sealed PVC ducts closed on the both sides with screw-on taps.



6.14 Options

6.14.1 Option #01 – Security camera system extension

The Contractor is install additional new cameras connected in the existing IT cabinet of B55.2, PoE RJ45 slots are available – refer to the below figure 3.

The Contractor shall design and implement a security camera control system in the building & surrounding, as follows:

- i. Security cameras shall control the main building accesses and surrounding, as follow – refer to the below figure 4:
 - a. Two (2) AXIS P1465-LE camera, installed in the building 55.4, at 7m height, middle of the North long facade;
 - b. Three (3) AXIS P1465-LE camera, installed on the new building 55.4, at the north east corner, at 7m height minimum,
 - c. One (1) AXIS P1465-LE camera, installed in the existing B55.2 internal south façade, at 7m height minimum,;
 - d. One (1) AXIS P1465-LE camera, installed on the existing B55.2 south west corner, outside, at 7m height minimum;
 - e. Three (3) AXIS P1465-LE camera, installed on the existing B55.2 north west corner, outside, at 7m height minimum;
- ii. Design, procurement and installation of the necessary wires (shielded cable type) to interconnect all security camera control system.
- iii. Installation and connections of all the cameras with the necessary supports and memory cards,
- iv. Setting and configuration of all the cameras with the IO support,
- v. Furniture of the necessary Licences XProtect Corporate Device License (DL);
- vi. Furniture of the Contrat Cares Plus 3 years;
- vii. Test and commissioning of the global system with the support of the IO;
- viii. Provide of all the documentations related to this system.



Figure 3 – Pictures of the existing B55.2 IT cabinet to connect cameras

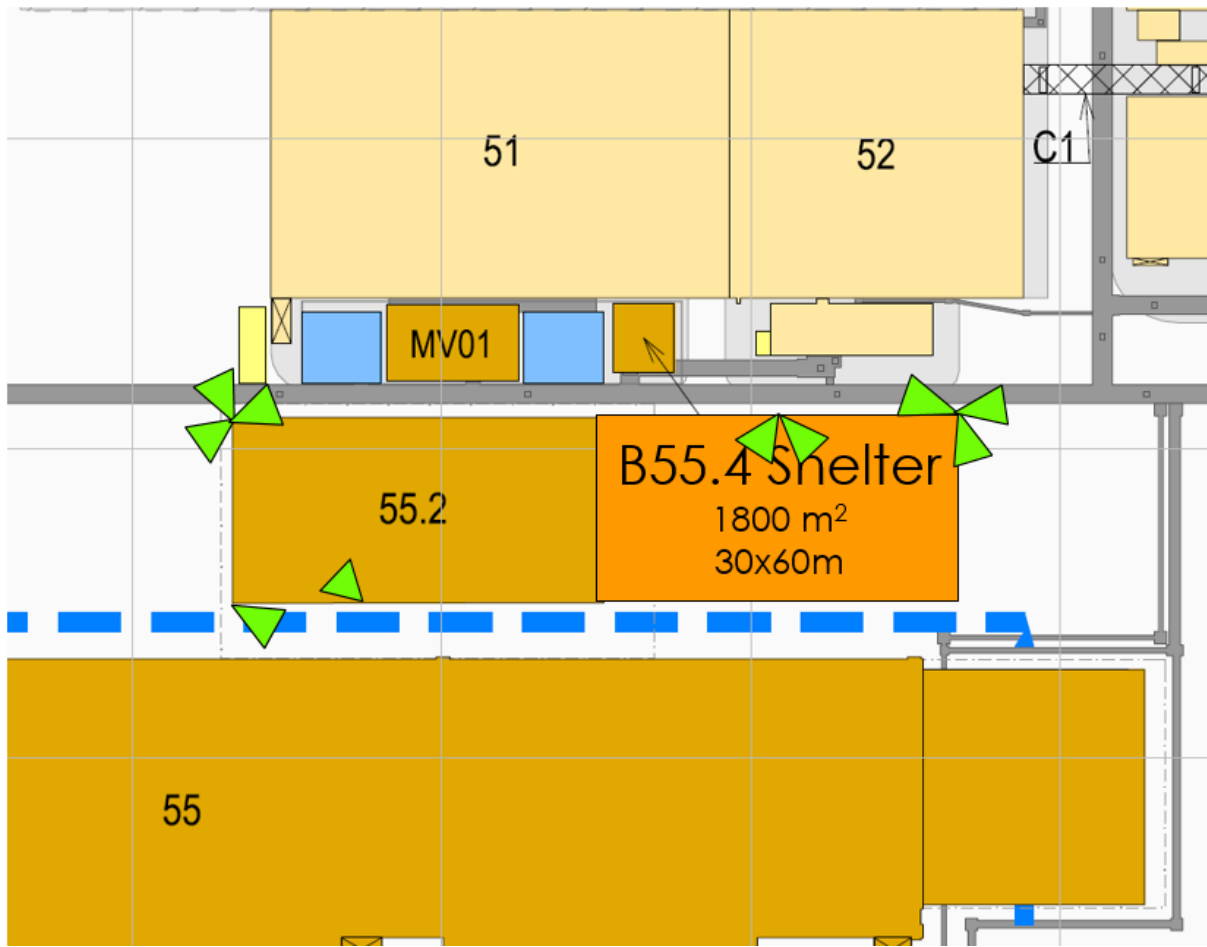


Figure 4 – Expected position of the cameras

6.14.2 Option #02 – Rain water management and Door reopening on South B55.2

The Contractor is expected to perform the following works all along the south B55.2 façade:

1. Cut on the width of the existing pedestrian door the concrete kerbs and mass concrete below – refer to figure 6 below. The concrete shall be evacuate from the site.
2. Refurbish the sides of the cut concrete with appropriate watertight mortar,
3. Clean the area in front the pedestrian door, redo all the mastics joints of the doors and put it back in service,
4. After cleaning the road, all along the south side of B55.2, 70ml in total, the contractor shall cut a trench in the reinforced concrete to install a continuous gutter – refer to figure 7 below. The size of this trench shall be in accordance with necessary space to install the gutter. The gutter shall be with iron cast gird with a D400 class. The internal width of the gutter shall be 100mm (100HD).
5. The above gutter shall be connected properly on three points to existing networks:
 - a. West slot concrete gutter at the end of concrete slab,
 - b. East slot concrete gutter at the end of concrete slab,
 - c. In the middle, in front the pedestrian door, the gutter shall be connected by a buried cast iron pipe DN100 connected to the existing pluvial drainage manhole number: 6355PD-RG-0044 – refer to the figure 5 below. This pipe shall be laid by enlarging the existing scarf of the construction joint of the concrete slab. The backfilling of the pipe shall be done using concrete to allow heavy circulation on the top.



Figure 5 – Picture of the existing manhole 6355PD-RG-0044, the joint and the B55.2 south facade



Figure 6 – Picture of the existing pedestrian door to be reopened



Figure 7 – Picture of the south façade of B55.2

6.14.3 Option #03 – Creation of truck door in existing B55.2 west gable

The contractor is expected to create a new motorized truck door on the south west gable façade of the existing building 55.2 – refer to the below figure 8. The power line to supply this door shall be created by the contractor by inserting a new breaker in the existing electrical panel of B55.2.

The contractor shall also design and build the new frame to withstand the door by using the as built information given in [21].

The new frame steel structure shall be designed to be perfectly integrated to the main existing building. This secondary steel structure shall be able to bear the loads coming from the motorised truck doors and shall be allow the fixation of the cladding complex.

The contractor shall provide a calculation note to demonstrate the design of the secondary steel structure and its fixation with a justification note granting that we are not damaging the existing structures: slab and main structures.

The Contractor has to integrate in its calculation note the input data coming from the selected supplier for the large motorized door.

The contractor shall then provide several drawings:

- Secondary steel structure drawings with details on the singular points and interfaces with existing structures. This set of drawings shall represent the modification of the bottom concrete wall,

- Cladding drawing with details views,
- Motorized door drawing,

Using the attachment [21], the contractor shall design the power line to supply the motorized doors including: CANECO calculation note, Electrical drawings and synoptic with the update of all the operational B55.2 documentation, which will be provided by the owner of the building. The contractor shall forecast the installation of a breaker dedicated to the motorized door in the existing electrical cabinet located on the North west corner of the building 55.2. Using the existing cable tray, the length of the cable should be approximately 30ml.

The Contractor is responsible for deliver and install the secondary steel structure to create the frame inside the building using appropriate methodology and means to mitigate as much as possible impact on building users.

The external face of the new steel structure shall be perfectly aligned with the existing to grant the homogeneity of the façade once the cladding will be reinstalled.

The Contractor is responsible for its fixation on the existing structures (concrete slab, concrete column and main steel structure) as per the approved design justifying the absence of damages or weak point on the existing. The bolted fixation shall be privileged.

Nota: The steel structures shall be galvanized without particular fire resistance is requested.

The door shall meet the following requirements listed below:

- The dimensions shall be: 3.5 m wide and 4 m high free clearance;
- Thermal insulation shall be U-value < 2,5 W/m2K;
- Tubular motorization shall be 400V, 50Hz and 3 phases;
- Protection level shall be IP 55;
- The structure shall be CE marked;
- Fabric door leaf;
- The flame retardant shall be B-S2-d0;
- Doors shall have a strip seal to prevent the ingress of water;
- No floor rail type shall be acceptable;
- The door frames shall not extend into the internal building space;
- Operating mode selected shall be the operation by one pressure button (semi-automatic mode).
- The large door shall be designed on the assumption that the operator will be a trained user;
- Safety equipment shall include an infrared sensor switch to detect presence of any staff or vehicles within the opening of the door as well as safety edge on the bottom of the door (one touch on anyone or anything and the door stops and re-open);
- A red alert light (+ 50 lux light) shall be installed on both sides of the doorframe of the door when the door is in operation;
- Door foot print on floor shall be marked with yellow & black strips.

The Contractor shall make sure the doors are conformed with applicable norms in order to facilitate the statutory inspection, which is part of the Contractor's scope before taking over of the warehouse (the report shall be free from comments from the third party) and according to all regulatory applicable standards (in particular NF EN 13241-1 and ART R4224-13 of the Arrête 21/12/1993).

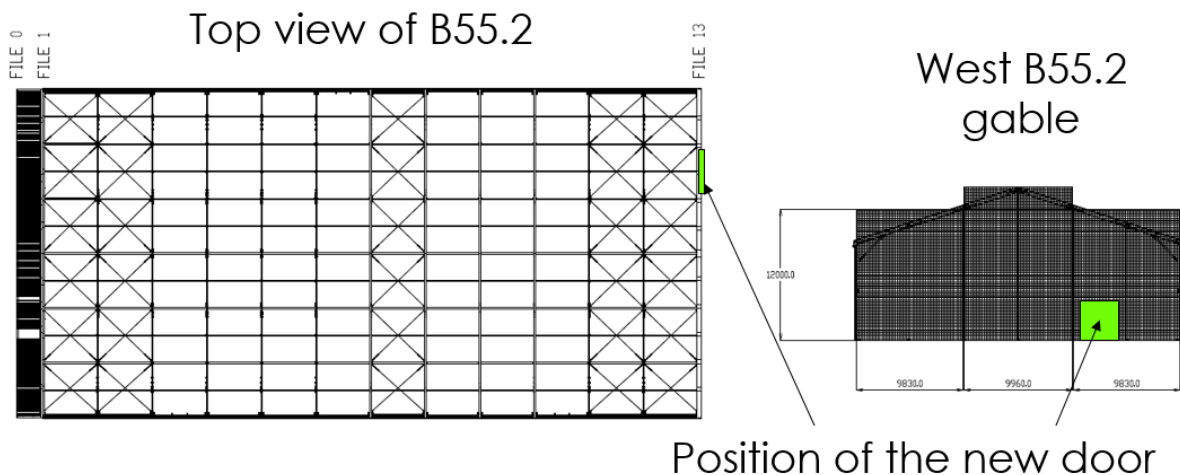


Figure 8 – Position of the new truck door

7 Site constraints

7.1 Site data

7.1.1 Geotechnical data

The soil characteristics of the area can be found in the as-built documentation, in reference document [22].

If another geotechnical mission is necessary, the Contractor shall implement this during the design phase at its expense to justify its hypothesis and to ensure the stability of the storage facility structure.

7.1.2 Existing buried networks

Existing buried networks in the area of the works are shown on reference document [11].

The Contractor shall ensure that the existing buried networks are not altered or damaged by the Works.

7.1.3 Necessary information

The Contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the works. To the same extent, the Contractor shall be deemed to have inspected and examined the site, its surroundings, the above data and other available information, and to have been satisfied as to all relevant matters including (without limitation):

- The form and nature of the Site, including sub-surface conditions;
- The hydrological and climatic conditions;
- The extent and nature of the work and goods necessary for the execution and completion of the Works and the remedying of any defects;
- The laws, procedures and labour practices in France.

7.2 Electricity provision

The Contractor will be authorised to utilise the low voltage electrical network for the installation and commissioning of the warehouse at ITER's expense. However, in the case it is not feasible for the IO to provide the power supply; the Contractor will be required to provide its own power generator. In the case the IO can provide an electrical connection to a nearby transformer, the temporary electrical worksite installation shall be foreseen in the scope of the Contractor. The IO will notify the Contractor about the electricity provision at the design phase. Same goes for the supply of raw water.

7.3 Interfaces

The worksite of the storage area is surrounded by different areas with important constraints:

- The west side of area is directly the east façade of the B55.2 used for the storage of all the main big equipment related to the ITER Tokamak complex construction. A particular coordination will be necessary to manage the coactivity in this area and the works should be phased to allow the works of both contractors. Particular safety and coordination constraints could be asked of the Contractor;
- The South and East sides of the shelter area is the main worksite road, so, the impact to this area shall be reduced as much as possible. The closure of this road can only be envisaged in exceptional cases and for very short durations. In case of necessity, the circulation could be done by half way and controlled with the following safety requirements such as traffic lights and strong signalization,
- The North side is a secondary road to access to Buildings 50's, so, the impact to this area shall be reduced as much as possible. The closure of this road can only be envisaged in exceptional cases and for very short durations. In case of necessity, the circulation could be done by half way and controlled with the following safety requirements such as traffic lights and strong signalization.

A coordination meeting is to be held on a weekly basis to adapt the contractor's works to the site constraints.

Nonetheless, due to the constraints listed above, the Contractor shall forecast as much as possible to erect the storage area within the storage facility footprint with a methodology minimizing the impacts on surrounding areas. All these points shall be considered in the proposal of the Contractor.

During the works, the storage/working area shall be on the future warehouse footprint only.

Any impact on a surrounding area shall be addressed as soon as possible and shall be validated by the Health & Safety Coordinator and the coordinator responsible of the area.

Particular conditions could be requested, such as working outside of normal working hours or during the weekend.

7.4 Installation

The Contractor is fully responsible for the design, manufacturing, delivery, installation and commissioning of the warehouse, including but not limited to:

- Any necessary investigation of ground conditions (Geographical survey for the altimetry and network measures, Altimetry correction of the warehouse depending on the slope, tensile stretch test is asked at minimum);
- Assessment of the suitability of access to the location of the warehouse to be constructed and preparation of the works area (mobile worksite fence and mobile traffic light to ensure the safety and security of the worksite are in the scope of the Contractor);
- Any administrative formality to enter and work on the ITER Site,

- The supply of all the warehouse components and all necessary tools and equipment for the installation and taking over.
- Any container or temporary office to allow the workers to gather, drink and study the layouts of the structure, as well as chemical toilets. Potable water provision is also in the scope of the Contractor. The IO will provide access to sanitary block with shower and toilets but no lockers and the access to the worksite canteen which is at 10 minutes walking from the warehouse worksite.

8 General conditions and requirements

8.1 Applicable codes and standards

The Contractor shall comply with French design and construction standards or with European design and construction standards if such European standards exist and they are broadly equivalent to the French standards.

Unified Technical Documents (DTUs) and NF DTU specifications and calculation rules shall be considered as industry practice and are applicable to the Contract.

In case the Contractor's manufacturing process is not compliant with the DTU specifications, it shall provide a European (or French) technical assessment from EOTA (or CSTB).

The Contractor shall comply with the machinery directive 2006/42/CE. The equipment, when required, shall be CE marked.

For all products and materials subject to quality standards, the Contractor must only use products and materials that comply with said standards and be able to present evidence of compliance on ITER Organization request.

8.2 Coordination of the works

Coordination meetings shall be held at the ITER Site on a weekly basis, at which the Contractor, the ITER Organization and the Health & Safety Coordinator shall be represented.

At the meeting, the Contractor shall present a report showing its current and foreseen activities (with 2-week look-ahead) versus the current Schedule of Works. The Contractor shall record the minutes of the meeting and distribute them to all Parties who attended the meeting within 2 working days following the meeting.

8.3 Site facilities, cleaning and maintenance of the site

The Contractor shall provide its own temporary site facilities in conformity with the decree of January 8th, 1965, modified by the decree n°95608 of May 6th, 1995.

The Contractor shall secure the Site with a perimeter fence.

The Contractor shall establish a point of contact within his organisation that shall be available 24/7 (including weekends, bank holidays and site closure days) to deal with any incidents concerning the Contractor's Site in a fast and effective manner. The Contractor shall provide the ITER Organization with the direct contact details of this person and/or an on-call duty telephone number.

The temporary site facilities shall be located in the area close to the working area. In the case where the Contractor plans to connect its facilities to the existing networks, it shall be responsible for all necessary studies and works to implement these connections. The Contractor shall install relevant meters to ensure accurate monitoring of the consumptions. The ITER Organization shall

not provide waste and wastewater connections to the Site. The Contractor shall be able to present the regulatory control reports of its premises without observation.

The roads and the areas around the worksite footprint shall be maintained in a constant state of cleanliness. The Contractor will take all necessary measures (scrubber, scraper, sweeper, karcher...). Should any said cleaning fail to be performed, it shall be done by a third party at the expense of the Contractor.

The Contractor shall be in charge to ensure:

- The permanent site clean and tidiness sustainability pavement used and rehabilitation of the site after work and dismantling of facilities;
- Removal, as and when they are produced, of the improper cuttings, rubble, demolition products, packaging, etc., produced by itself or by its subContractors;
- The cleaning of its Works and existing structures damaged by its work (cleaning or restoration with appropriate products) during the works period;
- Thorough general cleaning prior to Taking-Over.

The Contractor shall, prior to Taking-Over by the ITER Organization, ensure that all the Contractor's temporary facilities and plant are removed from the Site.

8.4 Protection of existing facilities

The Contractor shall ensure that existing facilities are not damaged by the Contractor while executing the Works and that suitable protection is put in place when working in the vicinity of existing facilities.

In case of any damages to the existing facilities and/or third party assets caused by the Works execution, the Contractor shall cover the cost of the remedial works.

8.5 Health and safety requirements

The Contractor shall respect the French Labour Code and apply the nine general safety principles listed in article L4121-2 thereof.

The Contractor shall also comply with the following documents and all proceedings arising therefrom:

- Internal Regulations [6];
- General health and safety coordination plan (PGC SPS) Vol. 1 - IO&F4E [7];
- Housekeeping Instruction [14];
- Lifting Instruction [18];
- Work at Height Instruction [19];

The ITER Organization has placed a contract to provide the services of a Health and Safety Protection Coordinator (HSPC) during the construction works. This contract is under the authority of the ITER Safety Department. The HSPC is mandatory for construction projects performed under the French Decree 94-1159. The HSPC defines the health & safety rules applicable on the site, reviews the specific health and safety plans (PPSPS) and co-ordinates activities from a health & safety perspective.

The Contractor's work will be subject to regular inspections by the HSPC and/or the ITER Safety Representative to ensure compliance with the health & safety practices, including but not limited to working at heights, housekeeping and storage of hazardous materials.

The Contractor and its subContractors shall establish a specific health and safety plan (PPSPS) using the ITER template (in French) and transmit it to the HSPC at least 15 working days (8 working days for subContractors) prior to the start of the Works.

Prior to the start of the on-site works, the HSPC performs a Common Inspection with the Contractor and its subContractors, in accordance with R4532-13 and R4532-14 of the French Labour Code.

All the Contractor and subContractor staff must follow a newcomer's safety training within 6 working days after the issuance of a permanent access badge. It does not relieve the Contractor of its responsibilities with regards to the training of its staff for their work stations and the general safety rules in accordance with articles L4141-1 and following of the French Labour Code.

The Contractor shall pay specific attention to the safe and respectful behaviour of its on-site personnel. This includes supplying and wearing of appropriate personal protective equipment. In case the works involve the use of chemical products, the Contractor shall comply with the Chemical product management procedure [2] and fill in a chemical product acceptance form.

8.6 Nuclear Safety - Environmental protection

ITER is a basic nuclear facility (in French: "Installation Nucléaire de Base") identified in France by the number INB-174 and subject to the French Order of 7 February 2012 relating to the general technical regulations applicable to basic nuclear facilities.

For these activities, the Contractor shall comply with environmental protection requirements and procedures applicable at the ITER Site, as described in [9] and [10].

The Contractor shall ensure that these activities are carried out by Suitably Qualified and Experienced Persons. For this purpose, the Contractor makes the necessary provisions for training in order to maintain the required skills and qualifications for its staff and, whenever necessary, to develop them, and – in case these activities are carried out by sub-Contractors – ensures that its sub-Contractors make analogue provisions for their own staff.

Furthermore, the ITER Policy on Safety, Security and Environment Protection Management – refer to [13], presenting the strategical objectives of the ITER Organization for protecting the interests mentioned under Article L593-1 of the French Environmental Code, must be circulated, known, understood and applied by all staff of the Contractor and cascaded down in the managerial lines of the Contractor and its sub-Contractors.

An Environmental Respect Plan (PRE) shall be produced using the ITER template [16] and provided by the Contractor at a minimum of ten (10) working days prior to the start of the on-site Work.

The Contractor shall submit a monthly environmental report, at the latest, on the 5th day of each month forming part of the monthly report, containing the information for the previous month.

8.7 Access to the site

Access to the ITER Site is subject to entrance and exit control measures as defined in the ITER Site access Procedure [5]. The Contractor shall manage his accesses using HELIOS system in a timely manner.

Regular access hours for the ITER construction site are from 5:30 to 22:30 (Monday to Saturday).

Access to the ITER Site outside regular access hours shall be possible for specific activities.

Specific controls are applied to personnel entering the site. For security purposes, access may be refused or withdrawn for any worker without justification.

8.8 Permit To Work

Prior to the start of any Works on the ITER Site, a Permit To Work must be obtained in accordance with the Permit To Work Procedure [4].

8.9 Language

All communication with the ITER Organization shall be in the English language.

The Contractor shall ensure that there is at least one person present on the construction site at all times capable of communicating in English.

8.10 Quality Assurance

The Contractor shall have an ITER approved Quality Assurance (QA) Program or an ISO 9001 accredited quality system.

The general requirements are detailed in ITER Procurement Quality Requirements - refer to [20].

The Contractor shall obtain written agreement from the IO to any modifications to the design, scope and/or the requirements described in this specification. Deviations and non-conformities shall be processed in accordance with Procedure for management of Nonconformities – refer to [22] and Procedure for the management of Deviation Request – refer to [23]. The Contractor shall commit to process non-conformities reports (NCR) and associated remedial and corrective actions expeditiously. The list of the NCRs and the deviation requests (DRs) shall be included in the monthly report issued by the Contractor – refer to Section 9.5.3.

The project will be realised under Quality Class 4 as described in Quality_Classification_Determination_ - refer to [24].

9 Contractor Deliverables

9.1 List of planned document deliverables

At the start of the contract, a list of planned document deliverables shall be established between the ITER Organization and the Contractor. For this purpose, at the latest 2 weeks after the signature of the contract, the Contractor shall submit a draft list of deliverables and their planned issue date using the ITER template.

9.2 Document and data exchange

All deliverables (except drawings and diagrams in PDF format) shall be transmitted through the ITER Document Exchange Area in IDM.

Drawings and diagrams in PDF and native format shall be exchanged too.

9.3 Document format

All deliverables shall be provided in electronic format (PDF and native file) through IDM or SMDD.

The as-built file shall also be provided on CD-ROM or USB key and in paper format (3 copies). Drawings shall comply with reference document [\[15\]](#).

PDF documents shall have text recognition and include bookmarks.

All drawings produced by the Contractor shall comply with the CAD instructions for companies [\[3\]](#).

All documents shall be provided in English, unless stated otherwise in this document. The ITER Organization shall provide the Contractor with the AutoCAD files of the up to date version of [\[12\]](#) which on completion of the Works shall be updated by the Contractor accordingly.

9.4 Document review and approval

The Contractor shall allow for a review period by the ITER Organization of 20 working days. The review period shall start after the upload and the Contractor's signature of the document in IDM.

In case the ITER Organization disapproves the document or requests a revision, the Contractor shall update and resubmit the deliverable within 10 working days, taking into account the comments issued by the ITER Organization.

9.5 Preliminary list of deliverables

9.5.1 *Pre-design stage*

The Contractor shall provide the following documents prior to the start of the design works:

- Operational flow chart;
- Environmental Respect Plan (refer to [\[10\]](#));
- The documentation schedule;
- Detailed Schedule of Works;
- Quality plan;
- List of subcontractor(s), if any;
- Independent checkers for the regulatory check,

9.5.2 *Preliminary design stage*

The Contractor shall provide the following documents prior to the start of the Works (design phase):

- Safety Plan (PPSPS) for the Contractor and each sub-contractor(s) - submitted to the ITER Organization no later than 8 working days prior to the Works commencement;
- Access requests for personnel – submitted to the ITER Organization minimum 8 working days prior to the Works commencement;
- Permit to Work Request including all the construction documentation - submitted to the ITER Organization no later than eight (8) working days prior to the Works commencement;
- Test study reports;
- Control plan;
- Design report / technical specification for all Works;
- Preliminary design drawing for the civil works and structural works;

The construction work shall not start before the above documents have been approved by the ITER Organization.

9.5.3 *Construction design and works*

The Contractor shall provide the following documents during the execution of the construction works:

- Detailed Schedule of Works – updated accordingly to the Works progress on a monthly basis;
- Approved construction design drawings;
- Documentation defining the materials used and origin and justification of their characteristics;
- Results of control tests performed by the Contractor during the execution of the work;
- Reports of tests (external body) and approvals;
- Statements relating to the hold points for control by the ITER Organization;
- Non-Conformance Reports (NCR) register and status - to be updated and issued on a monthly basis;
- Request for Information (RFI) reports register and status - to be updated and issued on a monthly basis;
- Monthly progress reports;
- All required documents concerned with the Contractor Quality Plan and Safety Plan or the environmental specifications of the ITER Organization or necessary to the traceability of the work.

Works construction without ITER Organization approval or in the absence of approved documents and samples shall be sanctioned by a stop work order until the situation has been rectified. All consequences of the work stoppage shall be borne by the Contractor.

A Monthly Report shall be submitted by the Contractor for acceptance by the ITER Organization five (5) working days after the end of each calendar month.

The Monthly Report shall contain:

- A narrative description of activities that have taken place over the period including photographic evidence of the progress of the Works;
- An update of the Schedule of Works (refer to Section 7.11.3 below) showing actual progress against planned progress;
- In the case where the Works are not progressing in accordance with the Schedule of Work, the report shall contain a detailed explanation of how the Contractor intends to recover the Schedule;
- A list and status of all RFI's submitted by the Contractor;
- A list and status of all Deviation Requests submitted by the Contractor;
- A list and status of all NCRs affecting the Works;
- A list and status of all ITER Organization requested Variations to the Works;
- A list of health and safety statistics;
- A number of worked hours on the Site;
- All accidents (including environmental issues / observation sheets) occurring on the Site (or elsewhere if connected to the Project);
- The number of accidents with lost working days;
- The number of lost working days per accident;
- A brief report of the causes of accidents or incidents as well as the corrective measures implemented following the accidents or incidents;
- An assessment of the training and safety awareness courses carried out during the month;
- Total number of workers curves as well as the number of hours worked per week;
- A list of environmental statistics including:

- electricity consumption,
- potable water consumption,
- raw water consumption,
- fuel consumption,
- quantities of waste generated, distinguishing between hazardous waste, non-hazardous waste, inert waste, concrete laitance and the overall percentage of recycled waste.

9.5.4 *As-built file*

After the execution of the Works, and prior to Taking-Over, a complete as-built file shall be provided by the Contractor, including:

- Detailed as-built drawings taking into account any change implemented during construction. The plans shall be revised as a final "as-built" version;
- Final design calculations;
- Register of all NCRs and RFIs reports raised during the execution of the contract (including the reports);
- Results and statements of the tests on site;
- Final topographic surveys, with DWG versions and statements of the Works carried out;
- Auto control tests showing the results of the control tests performed by the Contractor during the execution of the Works;
- Commissioning report showing the results of the control tests performed by the Contractor during the execution of the work;
- Worksite pictures folder documenting the as-built status of the Contractor deliverables.

The documents listed above shall be formally submitted to and approved by the ITER Organization. The Contractor shall allow for a review period by the ITER Organization of 10 working days.

9.5.5 *Number and format*

All deliverables shall be provided in electronic format (PDF and native file) through IDM.

Drawings shall comply with reference document.

All documents shall be provided in English, unless stated otherwise in this document.

10 Taking-over

The Works shall be taken over by the ITER Organization when they have been completed in accordance with the contract, except for any minor outstanding work and defects which will not substantially affect the use of the Works for their intended purpose.

The Works shall not be considered as to be completed for the purposes of taking-over until the as-built documents have been provided by the Contractor.