FUSION FOR ENERGY

Fusion for Energy

Buildings' meeting 5th March, 2009

« F4E 1st meeting on ITER buildings »
Château de Cadarache, France
4-5 March 2009

FUSION FOR ENERGY

ITER SITE

Agenda

5th March 09:00

08:00 - 08:30	Welcome
08:30 - 09:00	Overview of ITER project and main procurement rules F4E – Ph. Corréa, Head of Contracts and Procurement Department
09:00 - 09:30	Overview of F4E contribution to ITER project F4E – M. Gasparotto, Head of the ITER Department
09:30 - 09:50	Overview of Buildings procurement strategy F4E - L. Schmieder Head of Site, Buildings and Power Supplies Division
09:50 - 10:00	Questions
10:00 - 10:20	Coffee Break
10:20 - 10:40	Overview of PF coils Building contract E. Rodriguez
10:40 - 11:00	Overview of Excavation and Seismic Pads contracts B. Slee
11:00 - 11:20	G. Strickleton Expert building Contracts and Procurement department
11:20 - 11:40	Questions
12:30 - 14:00	Lunch (option)

Construction site tour in bus two departures 12:00 and 12:30

Scope Definition

ITER Buildings form an integrated complex extending over an area of about 50 hectares including 39 buildings and 17 areas

Buildings

- 'Reinforced Concrete Buildings and selected Infrastructure',

Key figures :

  - 250 000 m^3 of concrete,
  - Building volume 750 000 m^3
  - foot print 21 000 m^2

- 'Steel Frame Buildings'

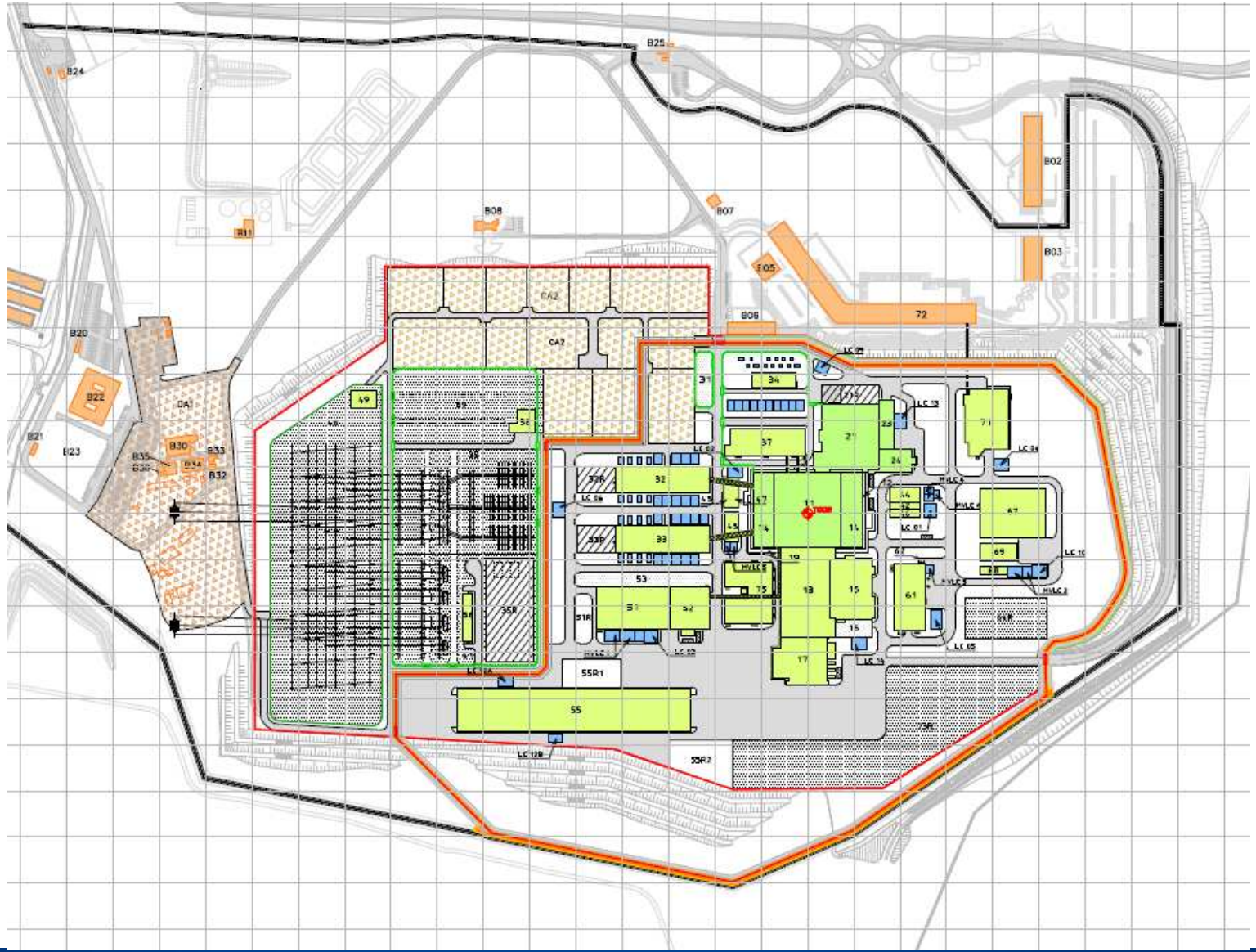
Key figures :

  - foot print 29 000 m^2

Power supplies (HV, MV and LV electrical distribution)

- Detailed Design (from Power Grid to the final users)
- Installation and commissioning for the whole plant
- 50 % of the equipment are provided in kind by other Domestic Agency (China and US)
- Procurement of the emergency system is fully European responsibility

Site layout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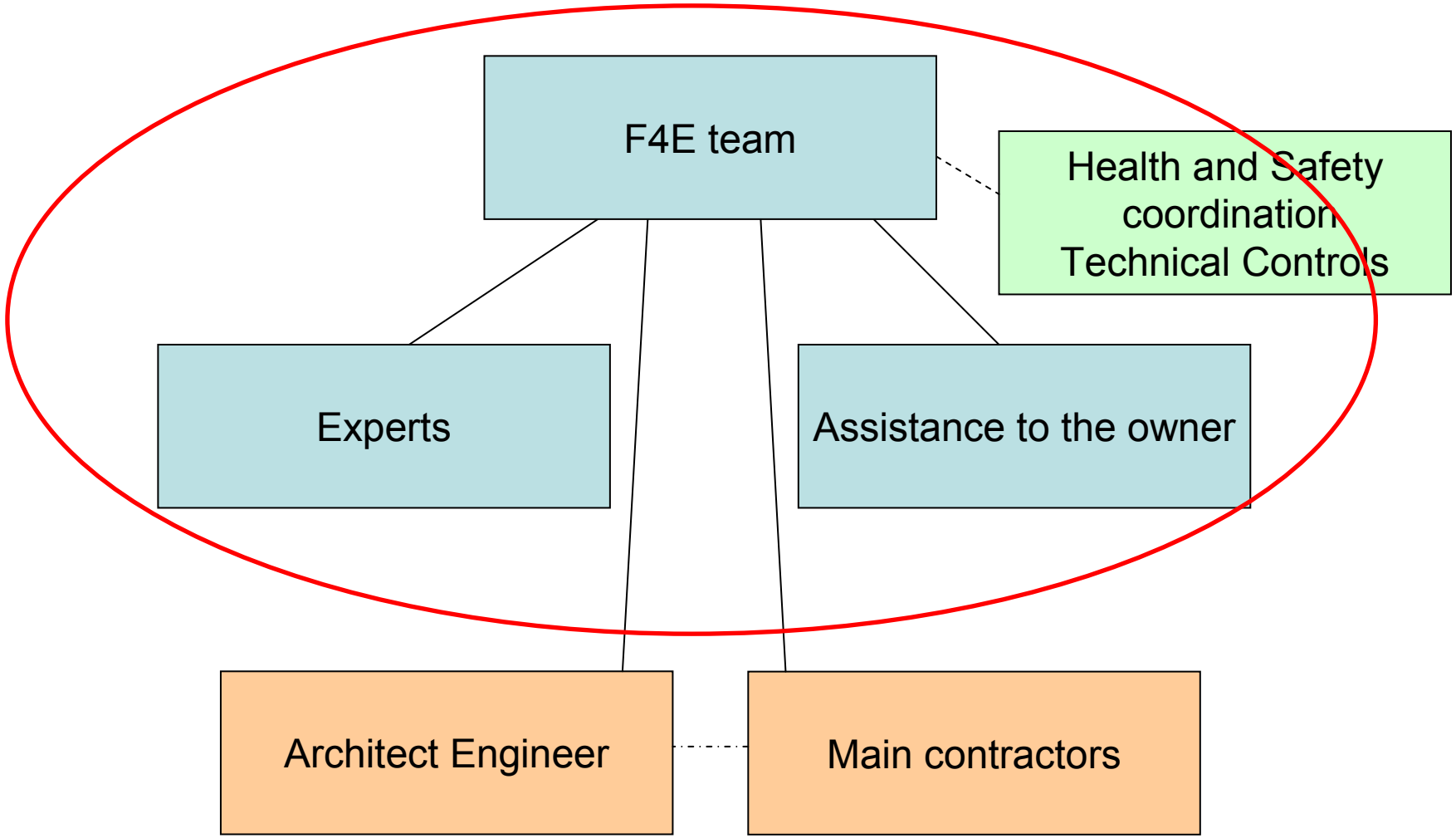
Responsibility

- F4E is responsible for
  - Providing the detail design
  - Launching the procurements
  - Following up the execution studies
  - Following up the work and safety in F4E perimeter
  - Keep under control budget and schedule

Organization chart



Main Contracts under F4E responsibility

- Three support contracts
  - Assistance to the owner
  - Architect Engineer
  - Health and safety protection coordination and Technical Controls legally requested by French law
- Four construction contracts
  - PF coils building
  - Pre excavation
  - Excavation
  - Seismic isolators fabrication

These seven contracts will be launched in 2009

Three main support contracts

- Assistance to the owner to follow up the call for tender of main contracts, the Architect Engineer contract and the execution of main contracts (budget, modification and claim)
- Architect Engineer to provide the detail studies, to follow up the executive studies of the main contractors and to follow up the construction
- Health and safety protection coordination and Technical Controls legally requested by French law to provide rules, follow-up the safety on site and carry out technical control

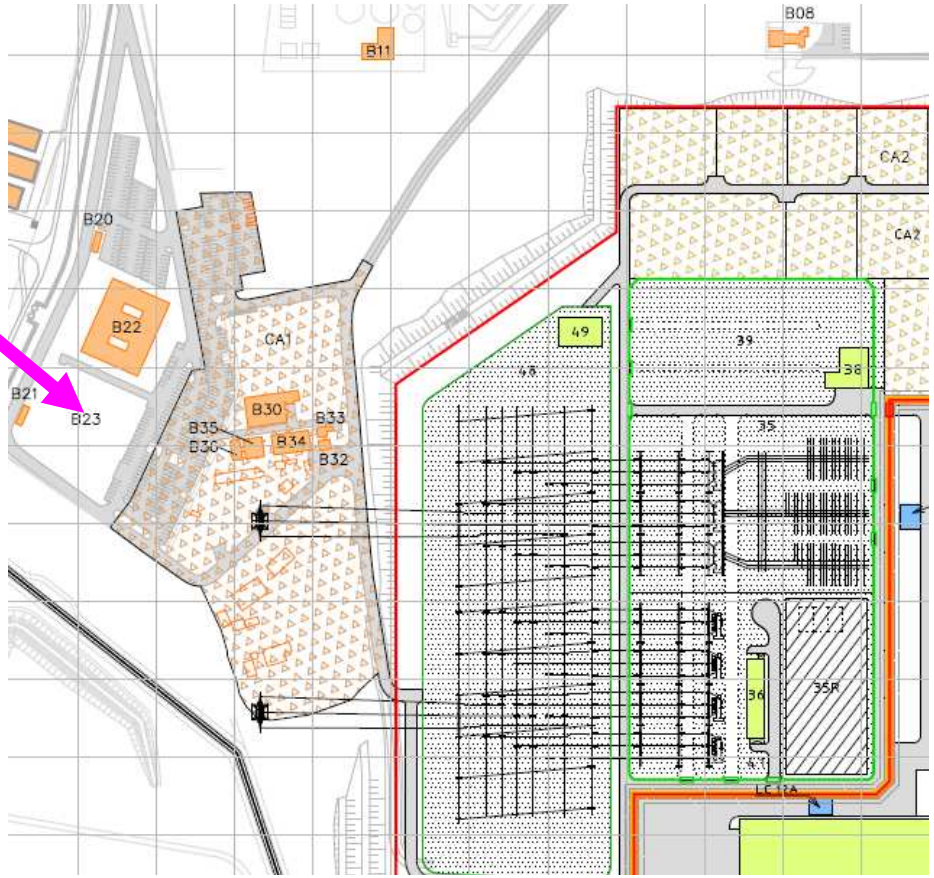
These three contracts will be launched in 2009

Work will be done on site in Cadarache in F4E premises

Support organization

F4E Antenna at Cadarache

- A temporary building (JWS3) close to IO team will be build by the end of 2009 to host all the F4E and assistance staff to follow the building works

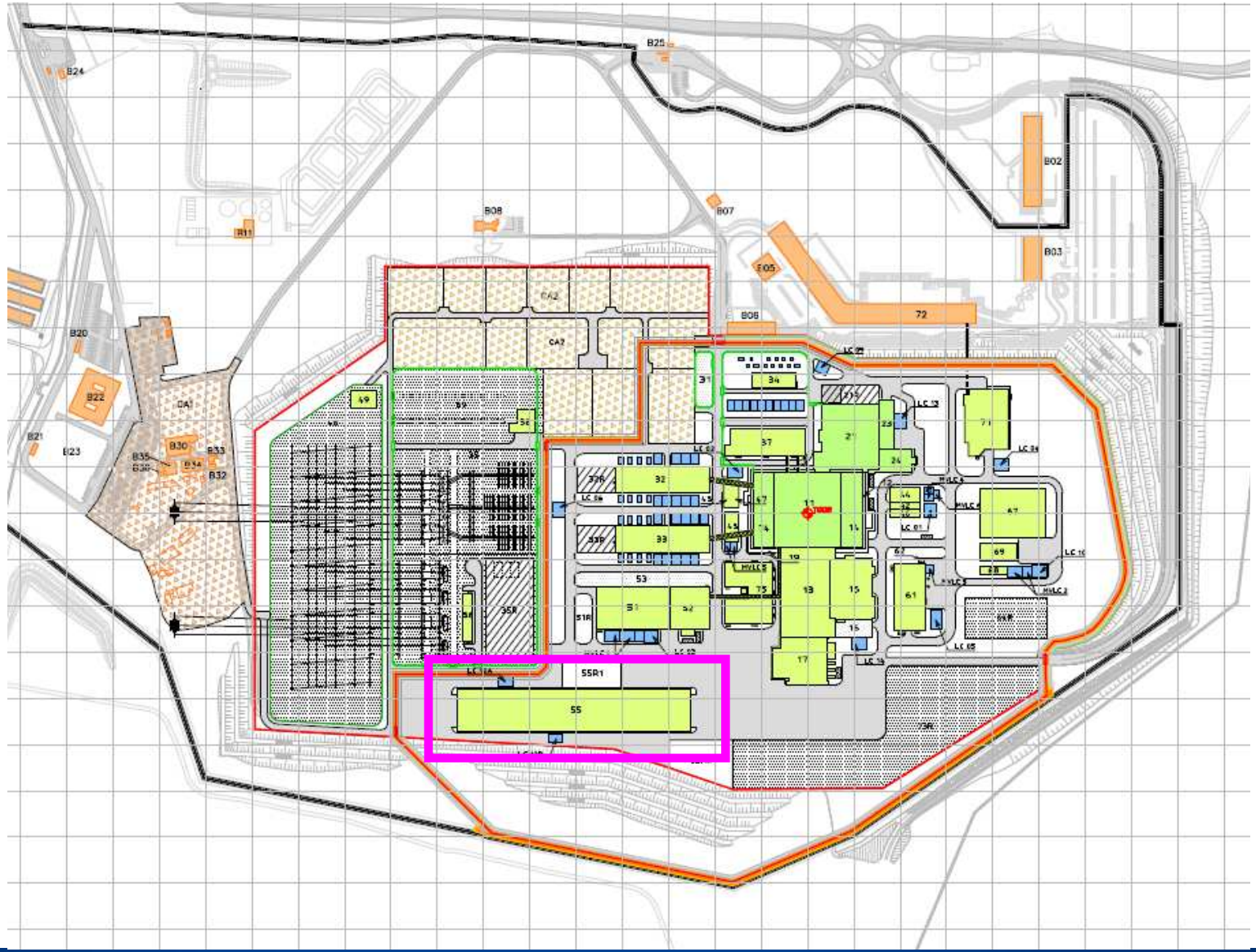


First contracts

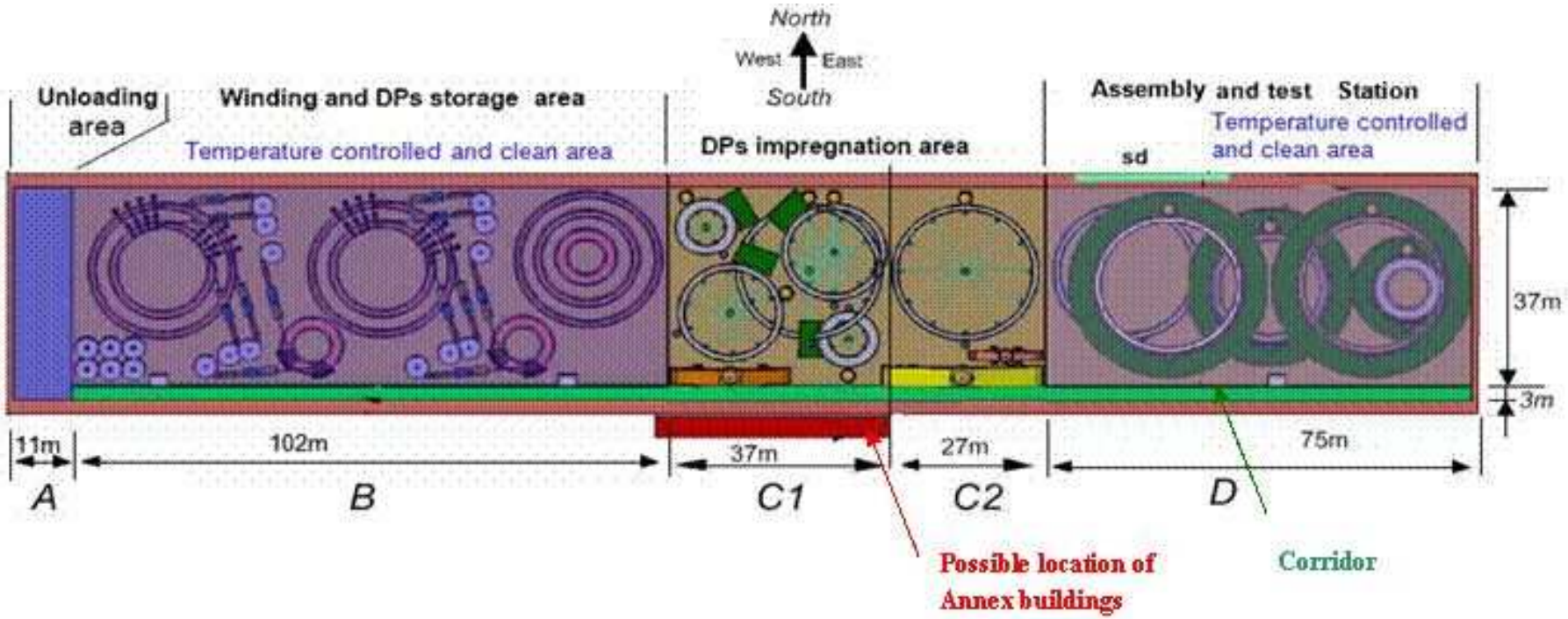
These four main contracts will started in 2009 - 2010

- PF coils building
  - Detail design and construction
- Foundation works
  - Pre excavation
  - Excavation
  - Seismic isolators fabrication

Poloidal Field Coil Building location



Poloidal Field Coil Building general top view



Poloidal Field Coil building contract

General Background on Poloidal Field Coil Building:

- Non-nuclear type of building divided in four inner zones
- Main function is to house the construction of the PF coils
- PF coils are a key element for the Fusion reactor
- Five Coils will be built on site and a sixth, upper one, delivered by Russia to site
- Area of the building 250m x 37m
  - 2 cranes (bridge or Gantry) located inside the building to help manufacturing
  - Special temperature and dust control HVAC
- The PF coil building design package will include a parking and lay down area as well

- Studies have been done in former years in order to cerate a preliminary set of requirements for the building.

Poloidal Field Coil building contract

General Background on Poloidal Field Coil Building:

- **Mitigation against dust contamination is a relevant issue:**

- ✓ **HVAC equipped for dust control**
- ✓ **Large entrance doors will be provided with flexible curtains to prevent dust contamination**

- **The CCAs or climate controlled areas are mandatory (dimensions of such may vary depending on the PF coil manufacturer):**
- **20Cº +- 5Cº in winter**
- **25Cº +-5Cº in summer**
- **70% humidity maximum**
- **Class 8 according to ISO 14644-1**

- ✓ **Zone B:102x37x6m**
- ✓ **Zone D:75mx37x6m**
- ✓ **Roof on these areas shall be retractable to allow installation and removal of pieces**

Poloidal Field Coil building contract

General Background on Poloidal Field Coil Building:

- **External areas:**

- ✓ A 70mx30m will be a external concrete pad
- ✓ An 800m2 lay down area must left at the west side of the building
- ✓ Building with slight overhead pressure with respect the external environment
- ✓ A second 40 x 40m lay down area must be provided with a capacity of 25 t / m^2
- ✓ The access road will go around the building and will allow for 2 40 t 5 axle trucks to cross.

- **A perimeter fence will be built around the site. This fence will provide accesses at four different points.**

Poloidal Field Coil building contract

General Background on Poloidal Field Coil Building:

- **Internal areas and zoning:**

- ✓ **Zone A unloading area: A 40tn truck must be able to unload. 10tn/m2 floor loading**
- ✓ **Zone B conductor winding area: CCA of 102m long. 10tn/m2 floor loading**
- ✓ **Zone c1 and c2: impregnation and impregnation and storage area 37m and 27 m long respectively . 10tn/m2 and 20tn/m2 respectively**
- ✓ **Zone D: Assembly station 75 m long.**

Poloidal Field Coil building contract

General Background on Poloidal Field Coil Building:

- **Cranes:**

- ✓ Two cranes must be provided, same rails, no crossing
- ✓ A conventional crane for tools and materials. This will be located to the west of the second crane
- ✓ A second “special” crane to lift double pancakes
- ✓ Both cranes will serve full building width
- ✓ Interfaces between cranes and coils will be managed by F4E

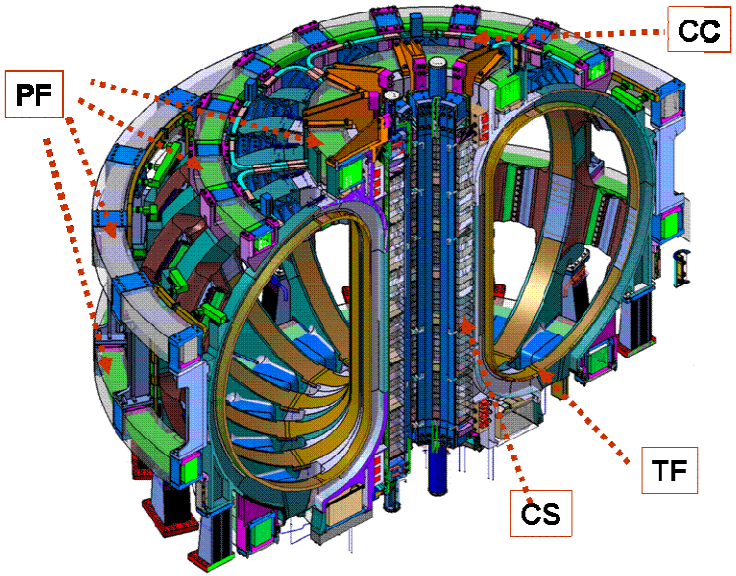
Poloidal Field Coil building contract

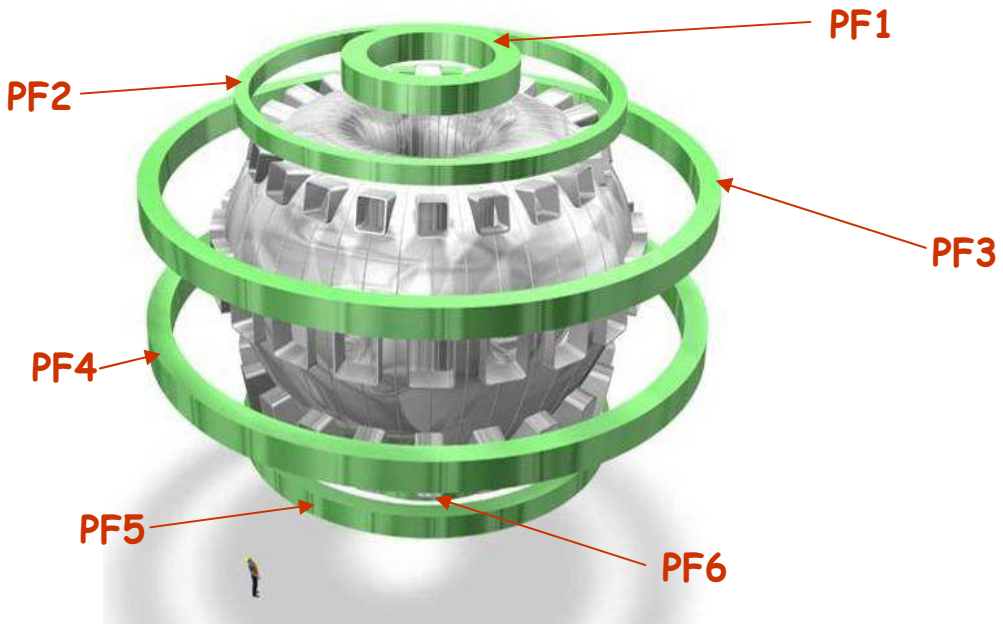
General Background on Poloidal Field Coil Building:

- **Ancillary -buildings:**

- ✓ Compressed air and chilled water facilities
- ✓ Ancillary office building: meeting rooms, sanitary rooms and offices for a limited number of people
- ✓ Electrical building including MV switchgear
- **Storage and distribution of special gases will also be required. In particular:**
- ✓ Helium
- ✓ Argon
- ✓ Nitrogen

Poloidal Field Coil general information





Poloidal Field Coils:

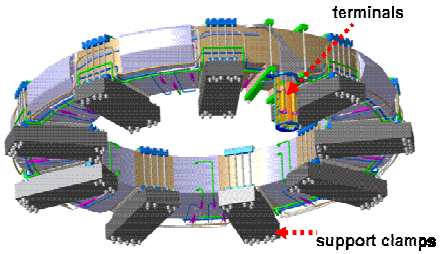
6 PF coils independently powered, wound in double pancakes to:

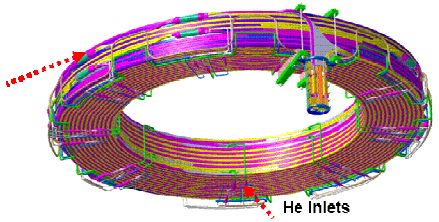
→ Confine and shape the plasma

→ PF1 & PF6 control plasma vertical displacement

Conductor field limited to 6 T: NbTi sufficient

Coils are large (24 m diameter) but use of NbTi simplifies construction





Poloidal Field Coil building contract scope 1/3

"PF coil building Design and Build contract":

- ➢ Tasks relating the engineering design from Basic design to detailed building hand-over:
- ✓ The collection of data necessary to start up the Works:
- ❑ Sub-surface conditions
- ❑ Hydrological conditions
- ❑ Geotechnical studies
- ❑ The laws and labour practices applicable
- ❑ Requirement for access and personnel accommodations
- ❑ Management of the different required permits

Poloidal Field Coil building contract scope 2/3

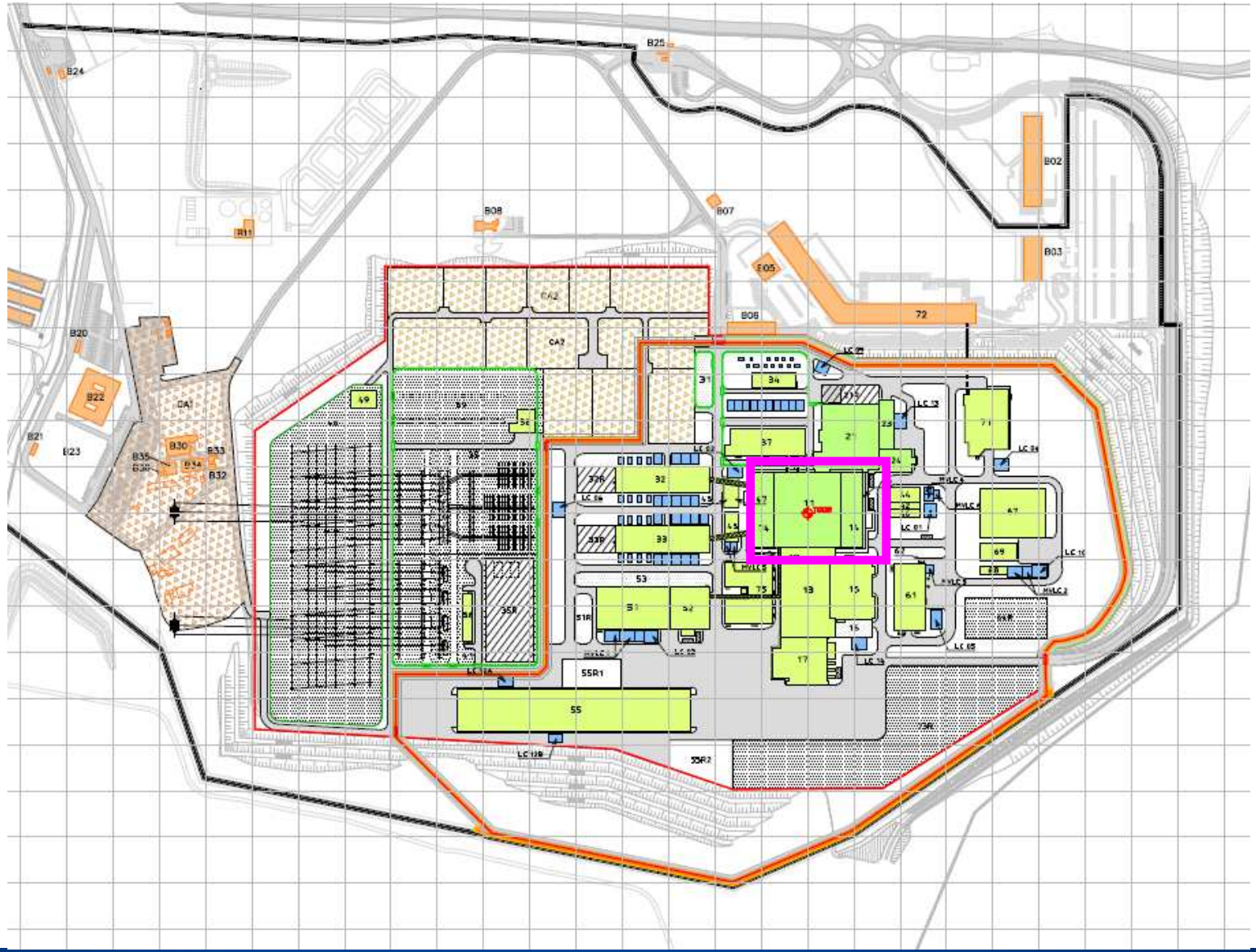
- ✓ The Preliminary and detailed design, ready for construction:
- ❑ PIP (project implementation plan)
- ❑ Technical specification preparation
- ❑ Quality assurance program preparation for site control
- ❑ Estimated construction cost and bill of quantities
- ❑ Construction schedule
- ❑ Drawings
- ❑ Calculations
- ❑ Health and safety program implementation
- ❑ Environmental control program implementation

Poloidal Field Coil building contract scope 3/3

- ✓ The Construction of the Works:
- ❑ Construction of the PF Coil Winding Building
- ❑ Furnishing and installing the foreseen two cranes
- ❑ Coils equipment areas
- ❑ Parking areas external to the building
- ❑ Building services to the external connection points
- ❑ Testing of equipment
- ❑ As built documentation
- ❑ Implementation of QA program to execution

Excavation and Anti-Seismic Bearings

Site layout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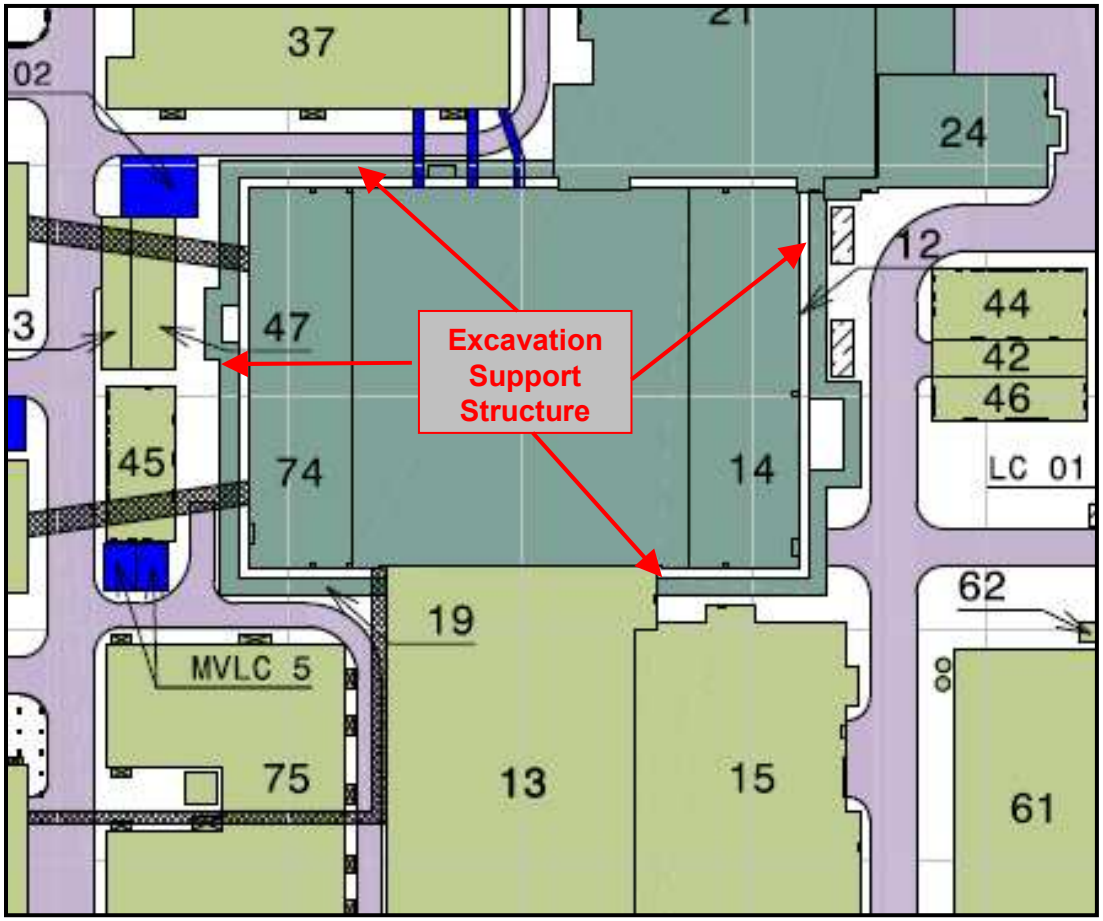
Location

Location of Tokamak Excavation & Support Structure and anti-seismic bearings



Excavation and Ground support structure

© CEA/AIF

SCOPE of the Works

- The Tokamak excavation and associated support structure forms a perimeter wall around the Tokamak Complex with a void of 2.5m between the inside face of the Tokamak excavation support structure and the external face of the Tokamak complex.
- The Assembly Hall and Lay down building as well as the Hot Cell building will be located on top of the Tokamak support structure as indicated in the drawing on the previous slide.

Excavation and Ground support structure

The excavation and ground support structure is intended to be carried out in 2 phases

- Phase 1 Pre-excavation
  - 100.000 to 150.000 m^3 of soil
  - Procurement scheduled for mid 2009, start of works end 2009, duration ± 3 months
- Phase 2 Excavation and Ground Support Structure
  - Total excavation 120 x 80 x 22 = 210.000 (- pre-excavation)
  - Support Structure total 50.000 m^3 of concrete
  - Procurement scheduled for mid 2009, start of works begin 2010, duration ±1 year

Site leveling work November 2008

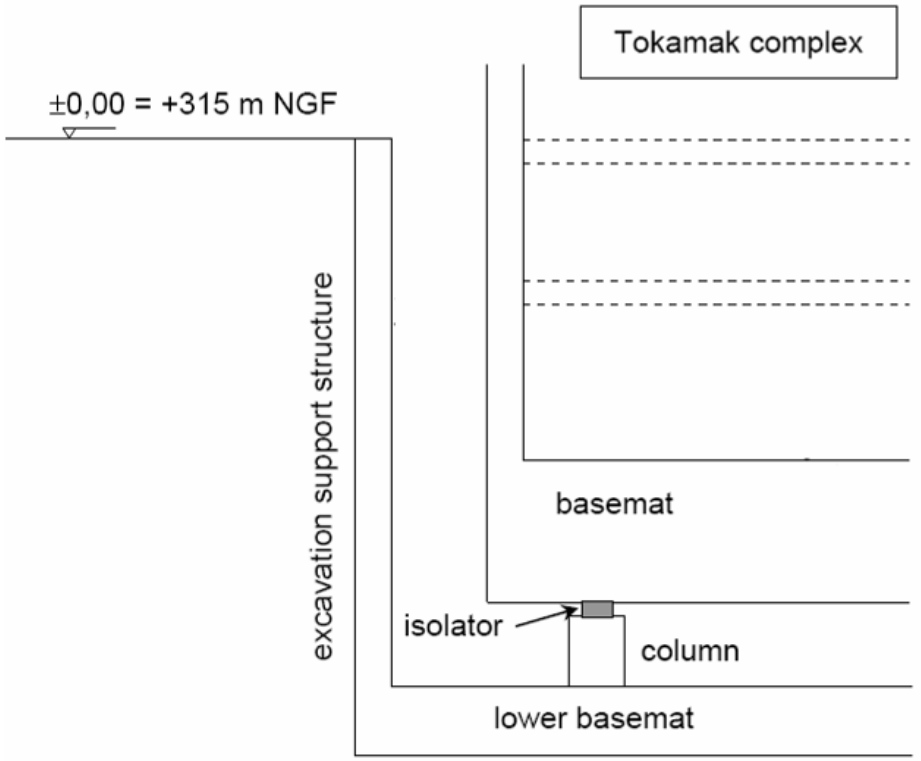
Anti-Seismic bearings

Scope of works

The ASBs of the Tokamak Complex are roughly 1m x 1m x 20 cm square laminated low damping electrometric Isolators. They aim at reducing the earthquake lateral forces in the structure of the Tokamak Complex by moving its fundamental period away from the predominant frequency contents of the earthquake.

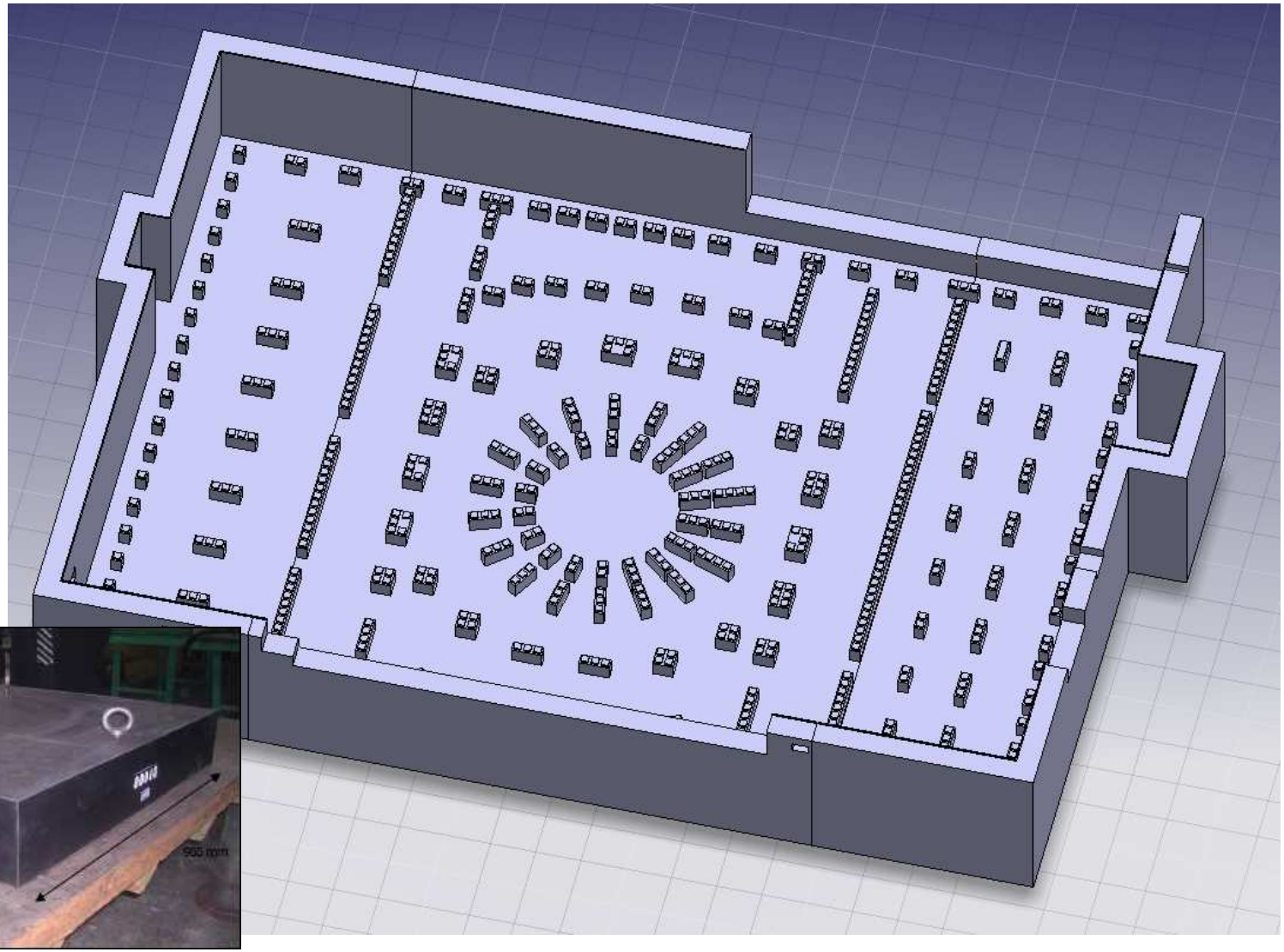
The ASBs are supported by short concrete columns in the gap between the base mat of the Tokamak Complex and the lower base mat, as illustrated in the figure.

Procurement Arrangement under preparation by IO, approx 550 ASBs needed.



Typical Location of the Anti-seismic Bearings

Anti-seismic bearings layout



The procedures: the restricted procedure 1/2

Phase I- Call for expression of interest:

- Publication of the contract notice including:
  - Main elements of the contract
  - List of exclusion
  - Minimal capacity level required
  - Selection criteria

- Selection and short list of companies having the financial and technical capabilities required.

The procedures: the restricted procedure 2/2

Phase II- Invitation to tender:

- Tender specifications
- Technical specifications
- Contract + General Conditions

➢ Opening & Evaluation of the tenders:

- Technical envelope
- Financial envelope

➢ Award:

- Best value for money (*ratio* quality/price)
- Lowest conforming bid

The procedures: the open procedure

Publication of the contract notice:

- Invitation(s) to tender:
  - Tender specifications
  - Technical specifications
  - Contract + General Conditions

- Opening & Evaluation of the tenders:
  - Technical envelope
  - Financial envelope

- Award
  - Best value for money (*ratio* quality/price)
  - Lowest conforming bid

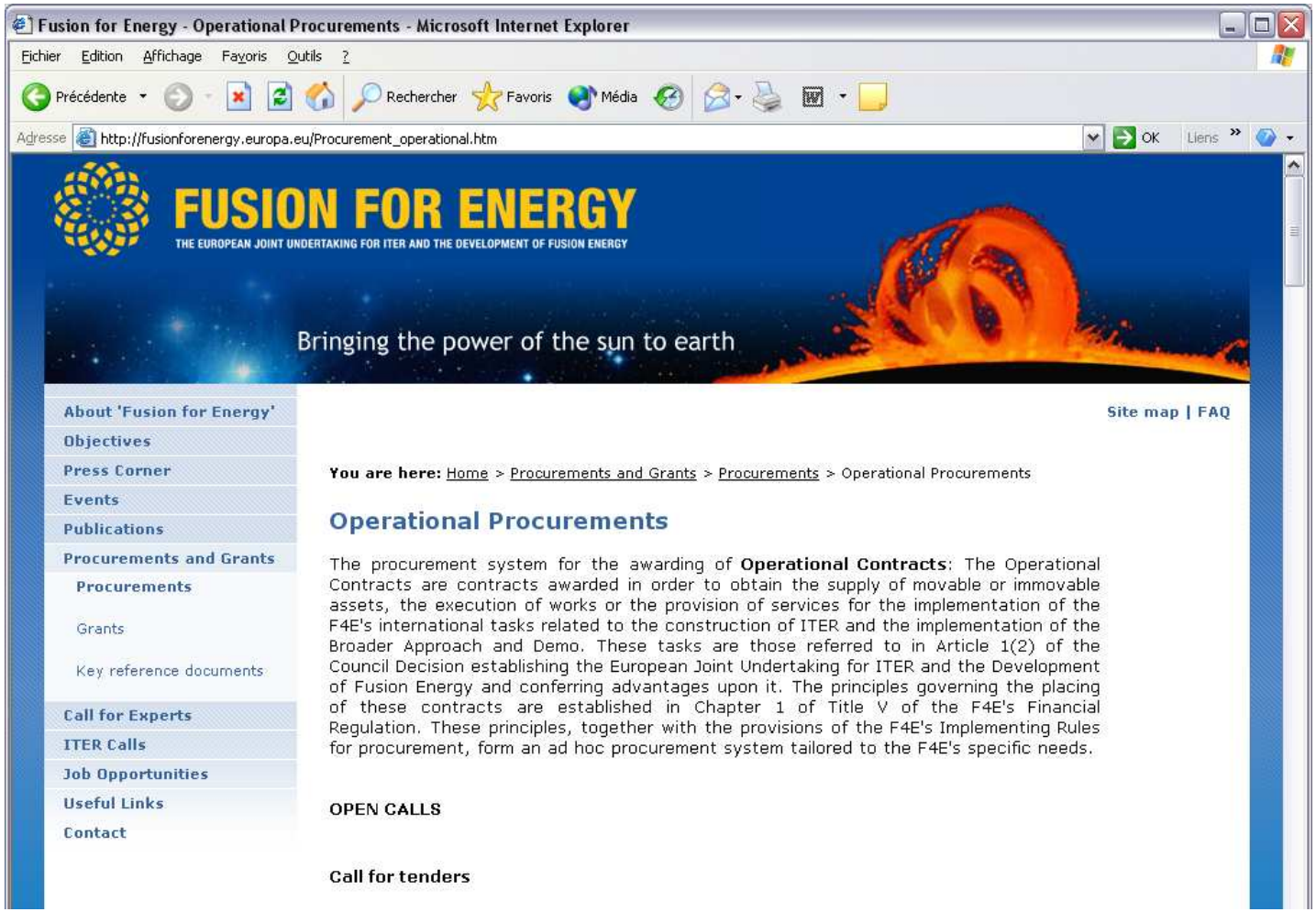
Checking the contract notices

Where can the information be found?

2 web sites to remember:

www.fusionforenergy.europa.eu

www.simap.europa.eu


Fusion for Energy - Operational Procurements - Microsoft Internet Explorer
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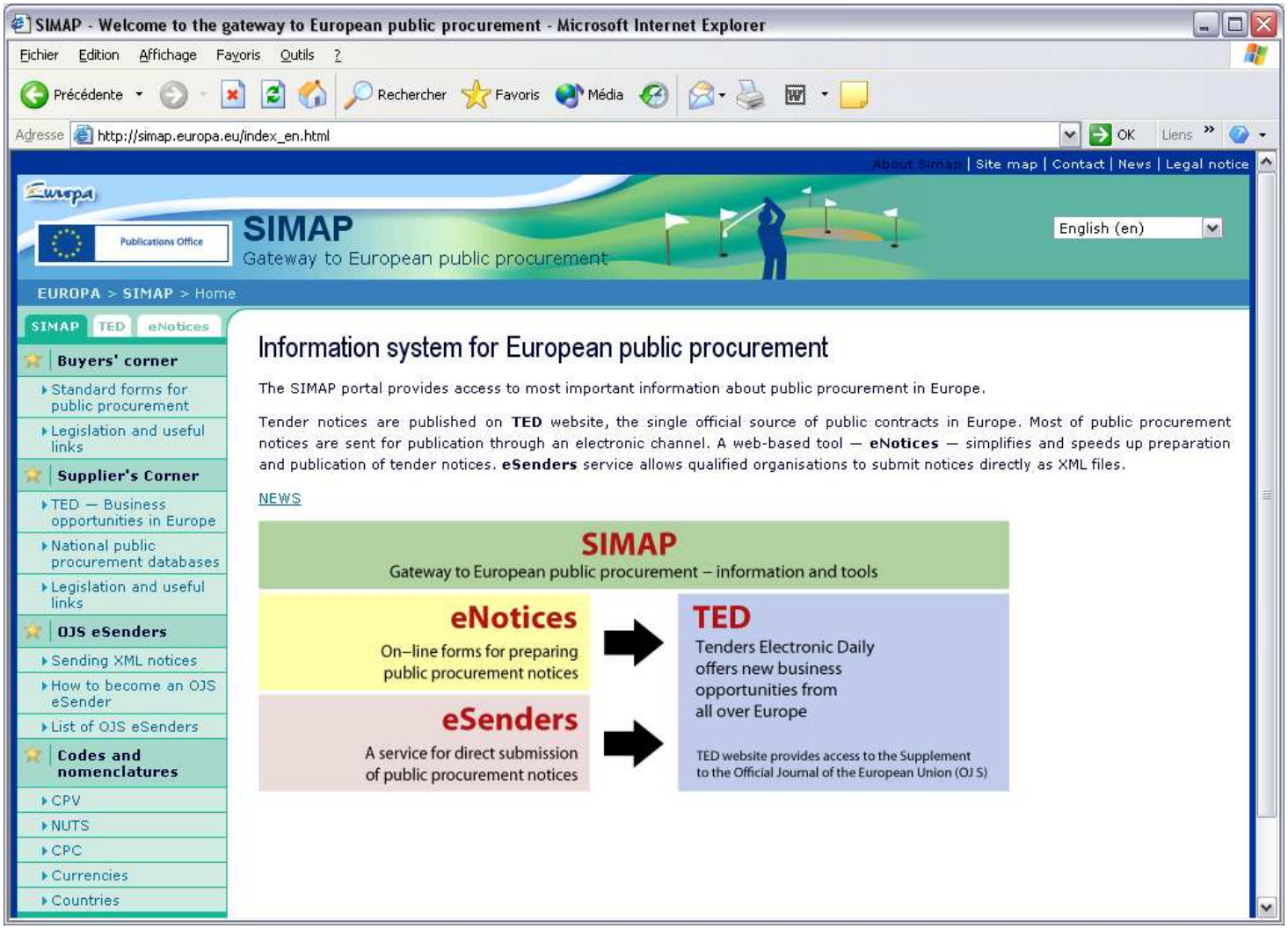
You are here: Home > Procurements and Grants > Procurements > Operational Procurements
Operational Procurements
The procurement system for the awarding of Operational Contracts: The Operational Contracts are contracts awarded in order to obtain the supply of movable or immovable assets, the execution of works or the provision of services for the implementation of the F4E's international tasks related to the construction of ITER and the implementation of the Broader Approach and Demo. These tasks are those referred to in Article 1(2) of the Council Decision establishing the European Joint Undertaking for ITER and the Development of Fusion Energy and conferring advantages upon it. The principles governing the placing of these contracts are established in Chapter 1 of Title V of the F4E's Financial Regulation. These principles, together with the provisions of the F4E's Implementing Rules for procurement, form an ad hoc procurement system tailored to the F4E's specific needs.
OPEN CALLS
Call for tenders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Sending XML notices
How to become an OJS eSender
List of OJS eSenders
Codes and nomenclatures
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Information system for European public procurement
The SIMAP portal provides access to most important information about public procurement in Europe.
Tender notices are published on TED website, the single official source of public contracts in Europe. Most of public procurement notices are sent for publication through an electronic channel. A web-based tool – eNotices – simplifies and speeds up preparation and publication of tender notices. eSenders service allows qualified organisations to submit notices directly as XML files.
NEWS
SIMAP
Gateway to European public procurement – information and tools
eNotices
On–line forms for preparing public procurement notices
eSenders
A service for direct submission of public procurement notices
TED
Tenders Electronic Daily offers new business opportunities from all over Europe
TED website provides access to the Supplement to the Official Journal of the European Union (OJ S)

Procurement rules

F4E procurement rules:

- Title V, Chapter 1, of the F4E's Financial Regulation
- F4E's Implementing Rules for Procurement

Estimated date for procurement procedure:

Type of procedure	Date of call for tender	Receipt of tenders	Start of the contract
Open	Jul-09	Sep-09	Jan-10

PRO: Graham STRICKLETON

TRO: Ben SLEE

Design & Build
PF coils building

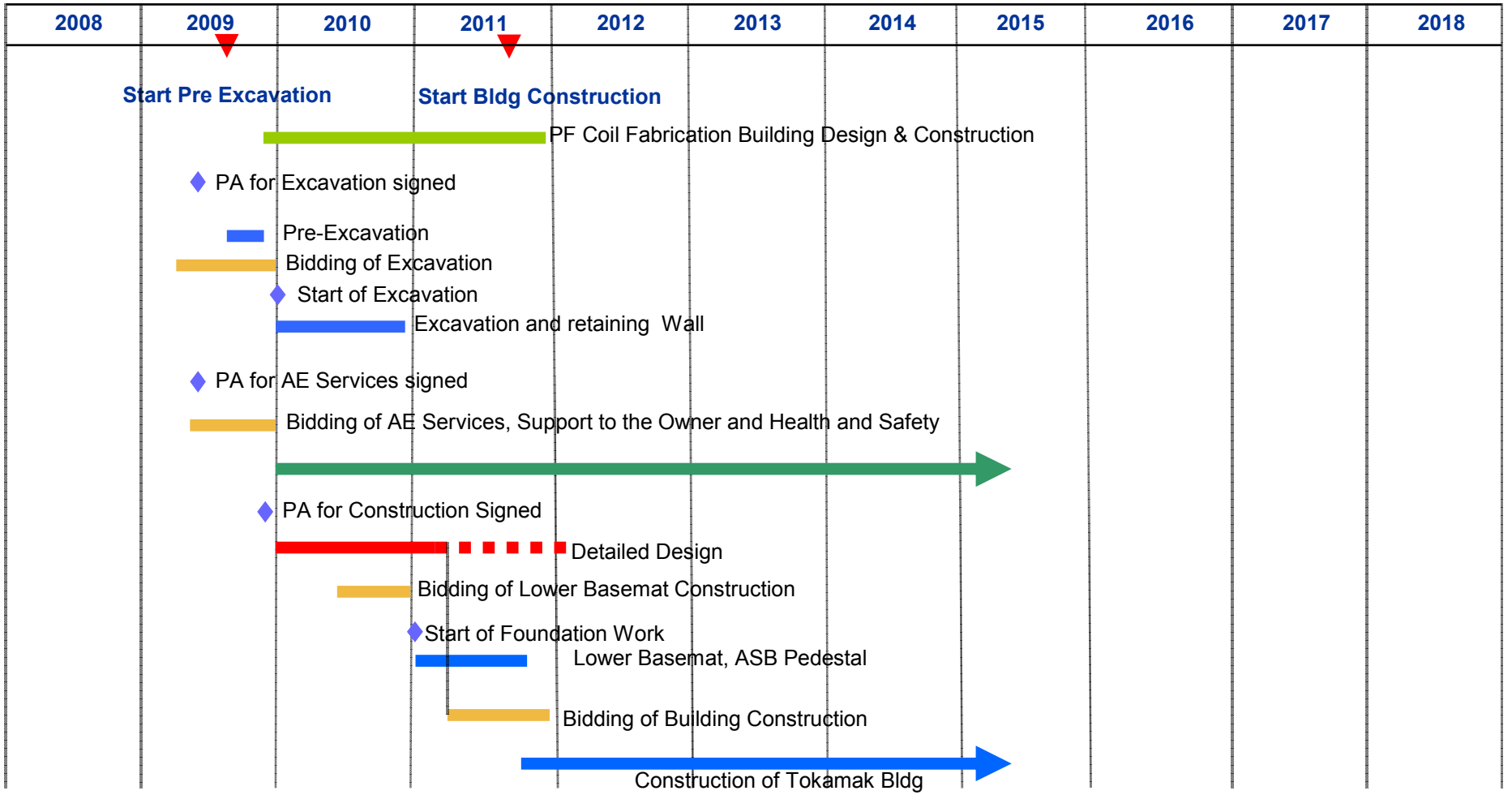
Estimated date for procurement procedure:

Type of procedure	Call for expression of interest	Date of receipt of candidacies	Date of call for tender	Receipt of tenders	Start of the contract
Restricted	Apr-09	May-09	Jul-09	Sep-09	Dec-09

PRO: Graham STRICKLETON

TRO: Enrique RODRIGUEZ

2009 – 2011 Schedule



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Thank you for your attention

Buildings' meeting 5th March, 2009

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