Market Survey

Technical Description
Pre-Manufactured Modular Building for CMS Engineering Centre at Point 5

Abstract
This Technical Description concerns the supply and installation of a new modular building (pre-manufactured modular structures) for the New CMS Engineering Centre at Point 5, Cessy (France). This Market Survey will be followed by an Invitation to Tender that is planned to be issued in Q3 2020.
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1. INTRODUCTION

1.1 Introduction to CERN

CERN, the European Organization for Nuclear Research, is an intergovernmental organization with over 20 Member States\(^1\).

Its seat is in Geneva but its premises are located on both sides of the French-Swiss border (http://cern.ch/fplinks/map.html).

CERN’s mission is to enable international collaboration in the field of high-energy particle physics research and to this end it designs, builds and operates particle accelerators and the associated experimental areas. At present, more than 11 000 scientific users from research institutes all over the world are using CERN’s installations for their experiments.

The accelerator complex at CERN is a succession of machines with increasingly higher energies. Each machine injects the beam into the next one, which takes over to bring the beam to an even higher energy, and so on. The flagship of this complex is the Large Hadron Collider (LHC) as presented below:

![CERN Accelerator Complex](http://home.web.cern.ch/about/member-states)

**Figure 1:** CERN Accelerator Complex

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\(^1\) [http://home.web.cern.ch/about/member-states](http://home.web.cern.ch/about/member-states)
1.2 Introduction to the CMS Experiment
The Compact Muon Solenoid, or CMS (http://cms.cern.ch) is a particle physics experiment at the LHC at CERN. The CMS detector is designed to study particles produced in high-energy proton-proton and heavy ion collisions to seek answers to fundamental questions such as: “understanding why the world is the way it is, why some particles weigh more than others and what constitutes the dark matter in the Universe”. The CMS detector is located 100 m underground at the French village of Cessy near Geneva. The experiment is in operation and the data now being collected by CMS is distributed to institutes around the world to be analysed. The CMS collaboration (hereafter “CMS collaboration”) involves more than 4300 particle physicists, engineers, technicians, students and support staff from 179 universities and institutes in 41 countries.

1.3 Introduction to the Modular Building Project
A new modular building is to be constructed in CERN’s Point 5 site, in Cessy (France), to replace current ageing 35952 barracks, and to provide a solution for concentrating CMS engineering teams until the end of the Long Shut Down 3 (LS3) and for a total period of about 20 years. These teams are currently scattered between the CERN sites.

The building shall have a footprint of 300 m² and three levels including the ground floor, and shall consist of offices, an open space work area, meeting rooms, technical rooms, changing rooms/showers, fitted kitchen, sitting area and toilets.

2. SCOPE OF THE SUPPLY
CERN intends to place a contract for the supply, installation and commissioning of a three level pre-manufactured modular building (hereinafter referred to, in whole or in part, as the “Supply”), as defined in this Technical Description, including its annexes, and in accordance with the criteria defined in the Qualification Questionnaire.

2.1 Deliverables and Activities
The Supply shall include the following deliverables and activities:

- Design files, drawings and calculations of the pre-fabricated modular building;
- Manufacturing of the building unit;
- Technical documentation;
- Design, supply and installation of electrical and HVAC equipment (including study of the most environment-friendly options) as well as routing for IT cables, in accordance with applicable CERN standards;
- Packing and shipping to CERN, if so requested, including of all materials and tooling required for the proper unloading, installation, commissioning and maintenance on the CERN site;
- Unloading and installation of the Supply on the CERN site;
- Work site’s waste management;
- Commissioning;
- Maintenance during the warranty period.

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2 https://maps.web.cern.ch/
2.2 Equipment and Services Made Available by CERN

CERN will make available the following equipment and services:

- Electrical power supply;
- Hot water network, drinking water and waste water;
- IT Network;
- Special handling services, upon request and if deemed necessary by CERN;
- Access control system to the building;
- Access to existing toilets on worksite;
- Foundations as well as the corresponding technical details for the design of the Supply;
- Building permit.

3. REQUIREMENTS

3.1 Technical Requirements

The building shall have a footprint of approximately 12m x 25m per level and shall provide:

- Between 12 and 15 offices hosting 2-3 people each;
- Open work area for ~35 people and a small meeting room;
- One conference room for ~25 people;
- One kitchenette/breakroom;
- One technical room (for plotters, printers, racks, etc.);
- Separate Male/Female changing rooms and showers;
- Toilets (compliant with requirements for disabled people);
- Cleaners’ storage room;
- Disable access – compatible staircase.

The figures below will convey the setup of each floor:

![Figure 2: Ground floor](image)

On ground floor, male changing room (left hand side) must accommodate 10 to 20 people at once. The changing rooms (shower, washbasins, doors ...) shall all be compliant with standards for people with reduced mobility.
The first floor shall include:
- A technical room with plotters, printers and electronics/network racks;
- A conference room for 25 people;
- A kitchenette and breakroom.

The second floor shall include:
- Open space office for 30 people (30 workstations);
- Soundproofing and sound dampening for each workstation and office in general;
- A small glass meeting room;
- Possibility of a higher ceiling (3-3.5m).
3.2 Norms and Standards

The Supply shall comply with the following regulations, norms and standards:

- CERN Safety Rules [https://hse.cern/content/safety-rules];
- Harmonized standards with the Directive 2006/42/EC (EN 13445, EN 13480);
- Construction Eurocodes 0, 1, 2, 3 and 8.

A comprehensive list of applicable regulations, norms and standards will be detailed in the forthcoming Invitation to Tender.

4. PERFORMANCE OF THE CONTRACT

4.1 Delivery Schedule

The contract is scheduled to be awarded during the summer 2020 following the Invitation to Tender to be issued in Q3 2020.

The Supply shall be delivered to CERN, installed and commissioned before the end of Q1 2021.

4.2 Working on the CERN Site

The contractor shall perform the contract in Cessy, on the French part only of the CERN site.

Particular features of the CERN site include Safety requirements including safety, occupational health, working conditions and environmental protection;

4.3 Acceptance Tests

Acceptance of the Supply will be given by CERN only after the Supply is deemed to be in conformity with the contract including documentation referred to in the forthcoming Invitation to Tender documents, all tests specified have been successfully completed and all tests or other certificates have been submitted to CERN.

5. CONTACT PERSONS AT CERN

<table>
<thead>
<tr>
<th>For Technical Matters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name/Department/Group</td>
</tr>
<tr>
<td>Mr. Martin Gastal</td>
</tr>
<tr>
<td>In case of absence:</td>
</tr>
<tr>
<td>Mr. Lars Tore Roedne</td>
</tr>
</tbody>
</table>
6. LIST OF ANNEXES

6.1 Location and Indicative Drawings

Location of the Supply:

<table>
<thead>
<tr>
<th>Name/Department/Group</th>
<th>Tel</th>
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</table>
Model of the building:

Ground Floor: