

Conventional Facilities

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1. Introduction

The year 1997 saw the completion of a number of facilities under construction following the opening of a large-scale Synchrotron Radiation (SR) facility. The main facilities that were completed are as follows.

Main Building (June)

Experimental Facility for Biomedical Imaging (June)

Biomedical Imaging R & D Facility (June)

Guest Houses "B", "C", and "D" (September)

Guest House Reception (September)

Machine Laboratory (September)

Accelerator and Beamline R & D Facility (September)

In addition, the main sidewalks, roads, and parking areas have been made into pavement within the compound, and greenery is being maintained around each of the facilities, bringing to completion the first phase of the large-scale SR facility.

2. Facilities Summary

2-1. Main Building

The Main Building has research rooms, and the functions of SR collaborative use support and business administration, and is the core facility for Spring-8 management. In addition, it is a symbolic building within the site located where the central entrance of central administration can be reached from the main road.

The total floor area of the ferroconcrete - prestressed concrete five-story Main Building is about 6,400 m², and the site is situated a level lower from the level of the storage ring. The structure considers access from the first floor at site level, second floor at the storage ring level, and third floor at the equivalent central control room level. In addition, the outer construction holds central administration at the center, with the other facilities spread out in a parabolic pattern. An open space is located in front, two parking spaces are located at both wings, and a monument has been

erected at the front entrance.

Plans were made to have a total number of 300 people use the rooms, about 150 for the business, technology, and support divisions and about 150 for the accelerator and research divisions.

The first floor houses the main hall, assembly hall, business offices, and meeting rooms.

The second floor houses large rooms for the divisions providing support and technological support. The level of the second floor is the same as the experimental hall of the storage ring, and therefore a rear entrance has even been constructed on the storage ring side, considering the convenience of researchers using the SR facility.

The third and fourth floors house the research rooms, basically about 70. Each room is approximately 22 m² to accommodate two persons. Attached are research-related business offices, seminar rooms, and printer rooms.

The fifth floor houses the observatory, "break-time" corners, a shower room, and construction machinery equipment rooms. The observatory and roof give the best view of the entire Spring-8 site.

As construction equipment, we have adopted individually-adjustable wall-through air-conditioning methods to make it possible to optionally operate, stop, or adjust the air-conditioning temperatures of non-stop power sources, for the purpose of preventing power-outage damage of electron devices from such things as lightning.

2-2. Machine Laboratory - Accelerator and Beamline R & D Facility

Among the 3rd generation large-scale SR facilities, only Spring-8 has injectors arranged on the outside of the storage ring. At the time these injector-related facilities were being planned, by establishing an electron beam removal port at the three locations of the electron/positron converter, linear accelerator beam dump, and synchrotron beam dump, having the electron beam shelter tunnel be at the level of a one-story structure made expanded use easy. As a result, this made possible the realization of the Machine Laboratory, Accelerator and Beamline R & D Facility, and New Subaru (in Hyogo Prefecture).

The Machine Laboratory and Accelerator and Beamline R & D Facility, for the purpose of contributing to a higher degree of accelerator science and research and development, are maintained as physics-related experimental locations of extensive use, and are research facilities studying such things as how to increase the efficiency of electron guns and converters, the developmental testing of energy compression systems and beam monitors, control devices, how to increase the power and repair of high frequency cavities, the development of new-type insertion light sources, and the trial manufacture and trial adjustment of beamlines, etc., in other words, even the introduction of electron beams.

2-2-1. Machine Laboratory

The Machine Laboratory is a facility used for testing and preparation work for constructing and setting up the accelerator. However, it is being prepared as a laboratory for extensive use from the viewpoints of its scale and the period of construction involved; it even has the added character of a linear accelerator facility. The total floor area for the steel-frame one-story structure is about 720 m², and is connected to the linear accelerator facility by a ferroconcrete tunnel with a shelter thickness of 1.4 m and an inner effective cross-section of 3.8 m X 3.5 m. Here, both structures are separated by a shelter wall until an electron beam is introduced, and when an electron beam is introduced, they are connected by removal of the shelter plug applied to the shelter wall.

The laboratory consists of a central accelerator laboratory and a data processing facility. The former (15m X 40m = 600 m²), along with creating a floor construction that considers the piling up of shelter blocks at the time an electron beam is introduced, sets aisles as detours to make experiments possible (i.e., by division into five zones), with zoning of the floor trenches and utilities.

2-2-2. Accelerator and Beamline R & D Facility

The Accelerator and Beamline R & D Facility supplies laboratories capable of securing space for a shortage of space in the Machine Laboratory as well as stable air-conditioning temperatures. The total floor area of the one-floor facility with a steel-frame

is about 3,300 m², giving a research facility of about 4,000 m² when combined with the Machine Laboratory.

The laboratories consist of an Accelerator laboratory and Beamline R & D laboratories. The former (34m X 50m = 1,700 m²) is a large-area laboratory with two ceiling-type travelling cranes (10t/3t X 15.8 m Lift). This laboratory has pillars in the center of the room (17 m X 50 m X 2 span) for the travelling cranes. In addition, the outer wall on the south side of the central accelerator laboratory of the Machine Laboratory is a 3-m-thick ferroconcrete wall which acts as an important barrier when an electron beam is introduced to the Accelerator and Beamline R & D Facility.

The Beamline R & D laboratories (10 m X 15 m = 150 m² X 4 rooms) are laboratories not easily affected by such things as vibration and changes in the air-conditioning temperature. In particular, along with the fact that one crane is equipped in each of the laboratories for exclusive use, vibration sent to the floor through the pillar while the crane is in operation is suppressed by the structural disconnection of the slab and pillar (inc. foundation). In addition, laboratory rooms (12.5 m X 10 m) numbering three and a meeting room have been established.

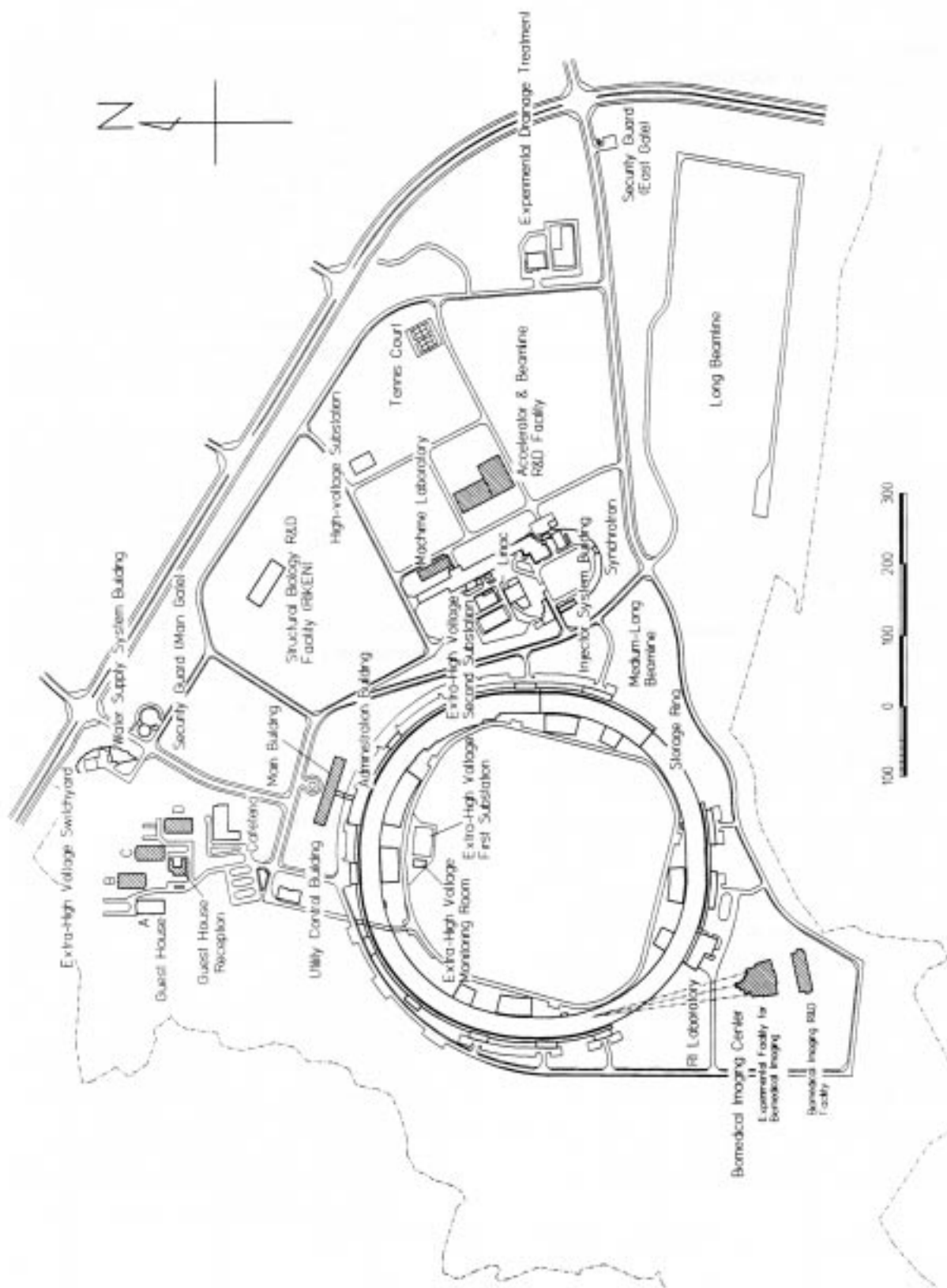
2-3. Guest House Reception

The Guest Houses were outlined in the 1995 Annual Report, but the Guest House, a one-floor wall-type concrete (one part steel frame) structure with a total floor area of 400 m² to handle guests of the Guest Houses and to act as a facility for collaborative use, has a counter for visitors, a security facility, a locker room for employees, and a mail room, three conversation rooms (two Japanese style rooms), and a cooking facility for guests of the Guest Houses.

In particular, the Japanese style rooms have a teahouse "kitchen" enabling the rooms to be used for tea ceremonies, together with a Japanese garden.

2-4. Others

Other facilities have been omitted since they are outlined in the Annual Reports from 1994 to 1996.



█ Completion

Spring-8 Facility Site



Main Building (outside view)



Main Building (inside view)



Guest House "B" "C" "D" (side view)



Guest House "C" (front view)



Guest House Reception (outside view)



Guest House Reception (inside of the Japanese style rooms)



Biomedical Imaging Center



Machine Laboratory



Accelerator and Beamline R&D Facility