2.15 Structures and Servicing Systems

The information in this section of the reference ABWR DCD, including all subsections, tables, and figures, as modified by the STP Nuclear Operating Company Application to Amend the Design Certification rule for the U.S. Advanced Boiling Water Reactor (ABWR), "ABWR STP Aircraft Impact Assessment (AIA) Amendment Revision 3," dated September 23, 2010 is incorporated by reference with the following departures.

STD DEP T1 2.14-1 (Figure 2.15.10a, Figure 2.15.10j, Figure 2.15.5e, Table 2.15.5c)

STD DEP T1 2.15-1

STD DEP T1 2.15-2

STD DEP T1 3.4-1 (Figure 2.15.12a, Figure 2.15.12b, Figure 2.15.12g)

2.15.5 Heating, Ventilating and Air Conditioning Systems

STD DEP T1 2.14-1

STD DEP T1 2.15-2

Design Description

R/B Safety-Related Equipment HVAC System

The R/B Safety-Related Equipment HVAC System provides cooling of safety-related equipment areas, and consists of independent fan coil units. Figure 2.15.5e shows the basic system configuration and scope.

The R/B Safety-Related Equipment HVAC System is classified as safety-related.

The Residual Heat Removal (RHR) System, High Pressure Core Flooder (HPCF) System and Reactor Core Isolation Cooling (RCIC) System pump room FCUs are automatically initiated upon startup of their respective room process pump. The Containment Atmospheric Monitoring System (CAMS) and Standby Gas Treatment System (SGTS) room FCUs are automatically initiated upon isolation of the Reactor Building Secondary Containment HVAC System. ~~The Flammability Control System (FCS) room FCUs are also initiated upon a manual FCS start signal.~~

R/B Safety-Related Diesel Generator HVAC System

On receipt of a DG start signal, both DG supply fans start. When the DG is operating, the R/B Safety-Related DG HVAC System and the R/B Safety-Related Electrical Equipment HVAC System maintain the temperature below ~~50~~60°C.

2.15.11 Turbine Building

STD DEP T1 2.4-2

The Turbine Building (T/B) includes the electrical building and houses the main turbine generator and other power conversion cycle equipment and auxiliaries. The T/B is located adjacent to the safety-related Seismic Category 1 Control Building. With the exception of instrumentation associated with monitoring of condenser pressure, turbine first stage pressure, turbine control valve oil pressure and stop valve position, and electrical switchgear and trip breakers for the condensate pumps, *there is no safety-related equipment in the T/B. The electrical building houses various plant support systems and equipment such as nondivisional switchgear and chillers.*

2.15.12 Control Building

STD DEP T1 3.4-1

2.15.13 Radwaste Building

STD DEP T1 2.15-1

~~*The external walls of the RW/B below grade and the basemat are classified as Seismic Category I. The exterior walls above grade, the floor slabs, the interior columns, and the roof are classified as non seismic.*~~

The external walls of the RW/B below grade and the basemat are designed and constructed to accommodate the dynamic and static loading conditions associated with the various loads and load combinations as described in Regulatory Guide 1.143.~~*which form the structural design basis.*~~*The loads are those associated with:*

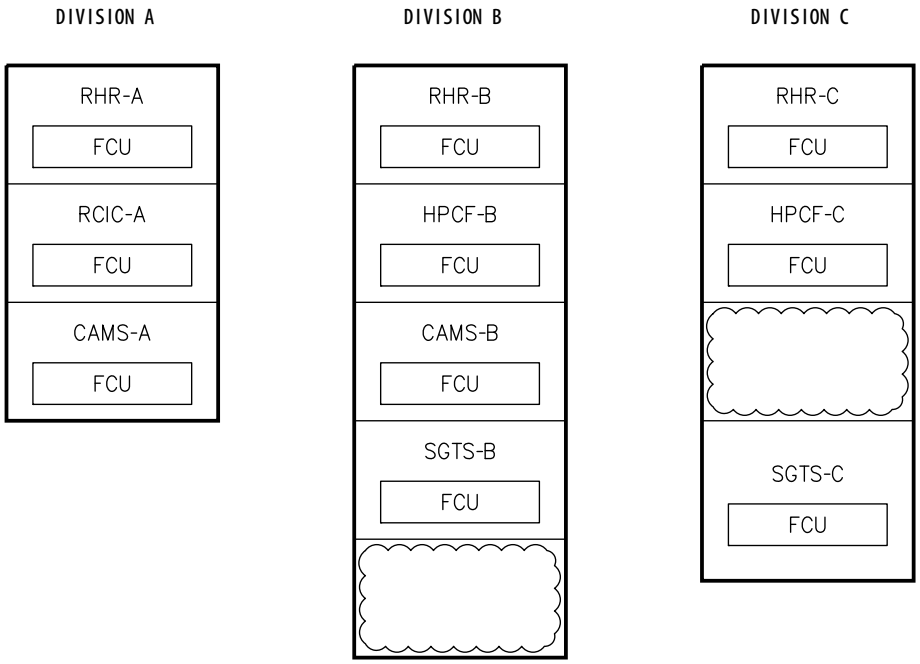
(1) Natural phenomena—wind, floods, tornados, earthquakes, rain and snow.

(2) Internal event—floods.

(3) Normal plant operations—live loads, dead loads and temperature effects.

Table 2.15.5c Reactor Building Safety-Related Equipment HVAC System

Inspections, Tests, Analyses and Acceptance Criteria		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
4. ~~The FCS room FCUs are initiated upon a manual FCS start signal.~~Not used.	4. ~~Tests will be conducted on each as built FCS room FCU using a simulated intitiation signal.~~Not used.	4. ~~The FCS room FCU starts upon receipt of a signal indicating FCS start.~~Not used.



NOTES:

1. FCU COOLING WATER IS SUPPLIED BY THE RCW SYSTEM.
2. NORMAL VENTILATION AND SMOKE REMOVAL IS PROVIDED BY THE R/B SECONDARY CONTAINMENT HVAC SYSTEM.
3. ELECTRICAL POWER LOADS FROM DIVISIONS A,B, AND C ARE POWERED FROM CLASS 1E DIVISIONS I, II, AND III, RESPECTIVELY.

Figure 2.15.5e Reactor Building Saftey-Related Equipment HVAC System

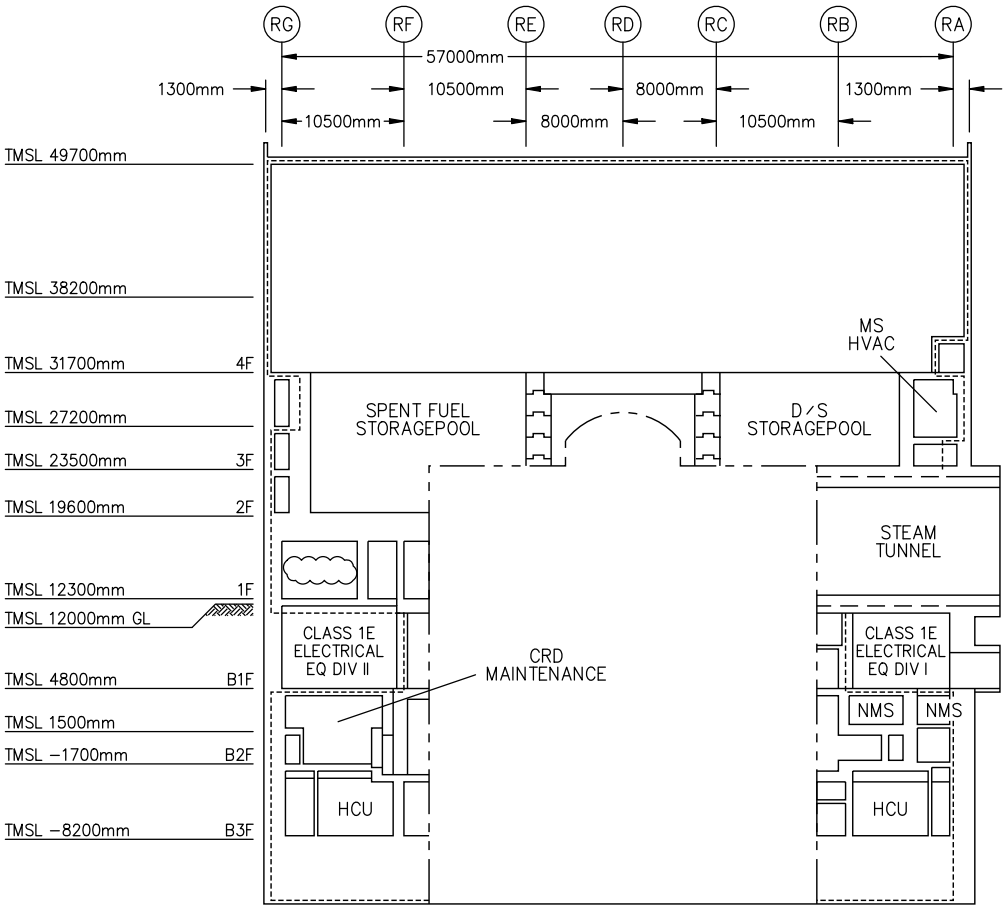


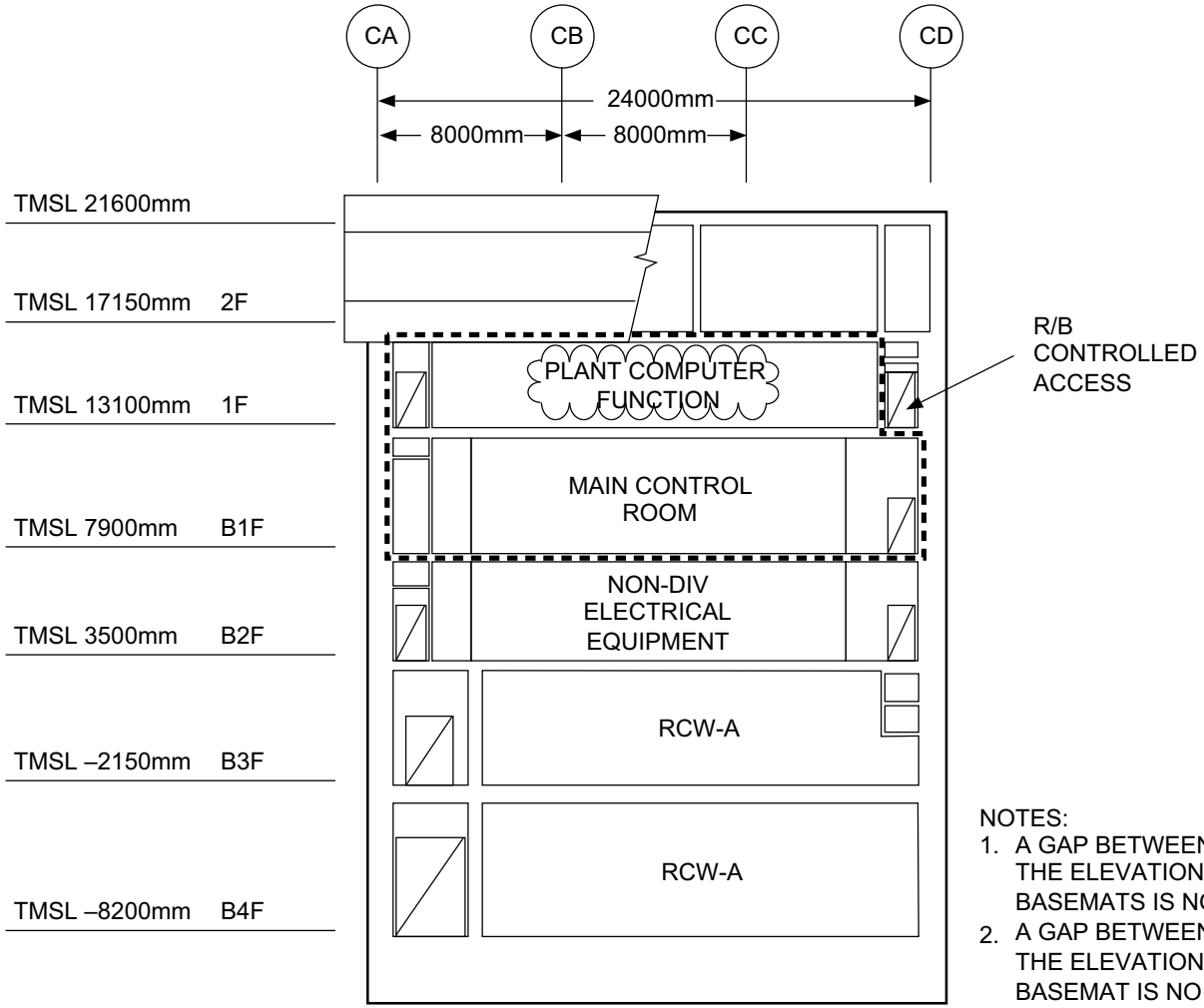
Figure 2.15.10a Reactor Building Arrangement - Section A-A

[s1]

SECURITY SENSITIVE

Figure 2.15.10j Reactor Building Arrangement, Floor 1F - Elevation 12300 mm

[e1]



NOTES:
1. A GAP BETWEEN C/B AND R/B AT THE ELEVATION OF THE TOP OF BASEMATS IS NO LESS THAN 2m.
2. A GAP BETWEEN C/B AND T/B AT THE ELEVATION OF THE TOP OF T/B BASEMAT IS NO LESS THAN 6m.

Figure 2.15.12a Control Building Arrangement, Section A-A

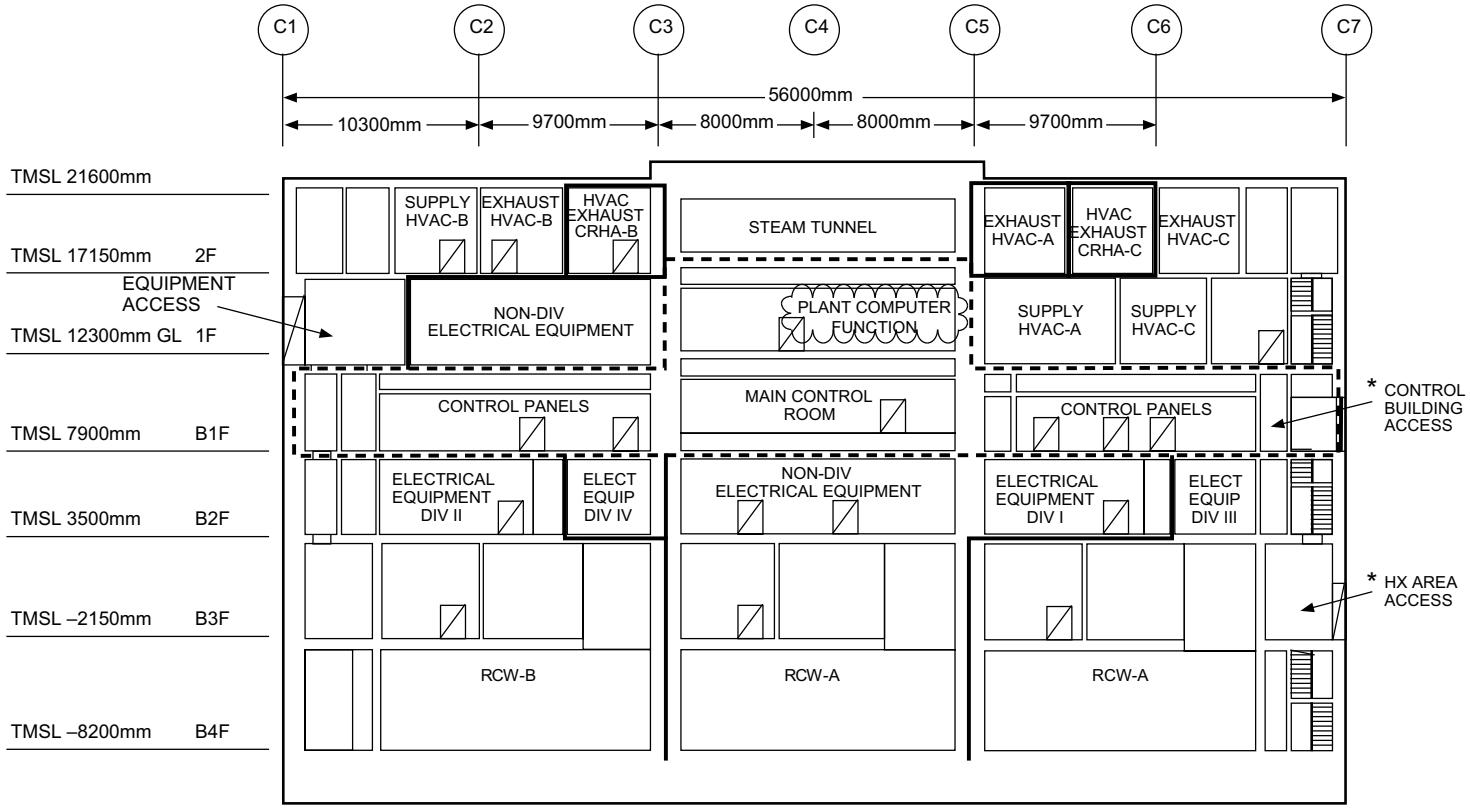


Figure 2.15.12b Control Building Arrangement, Section B-B

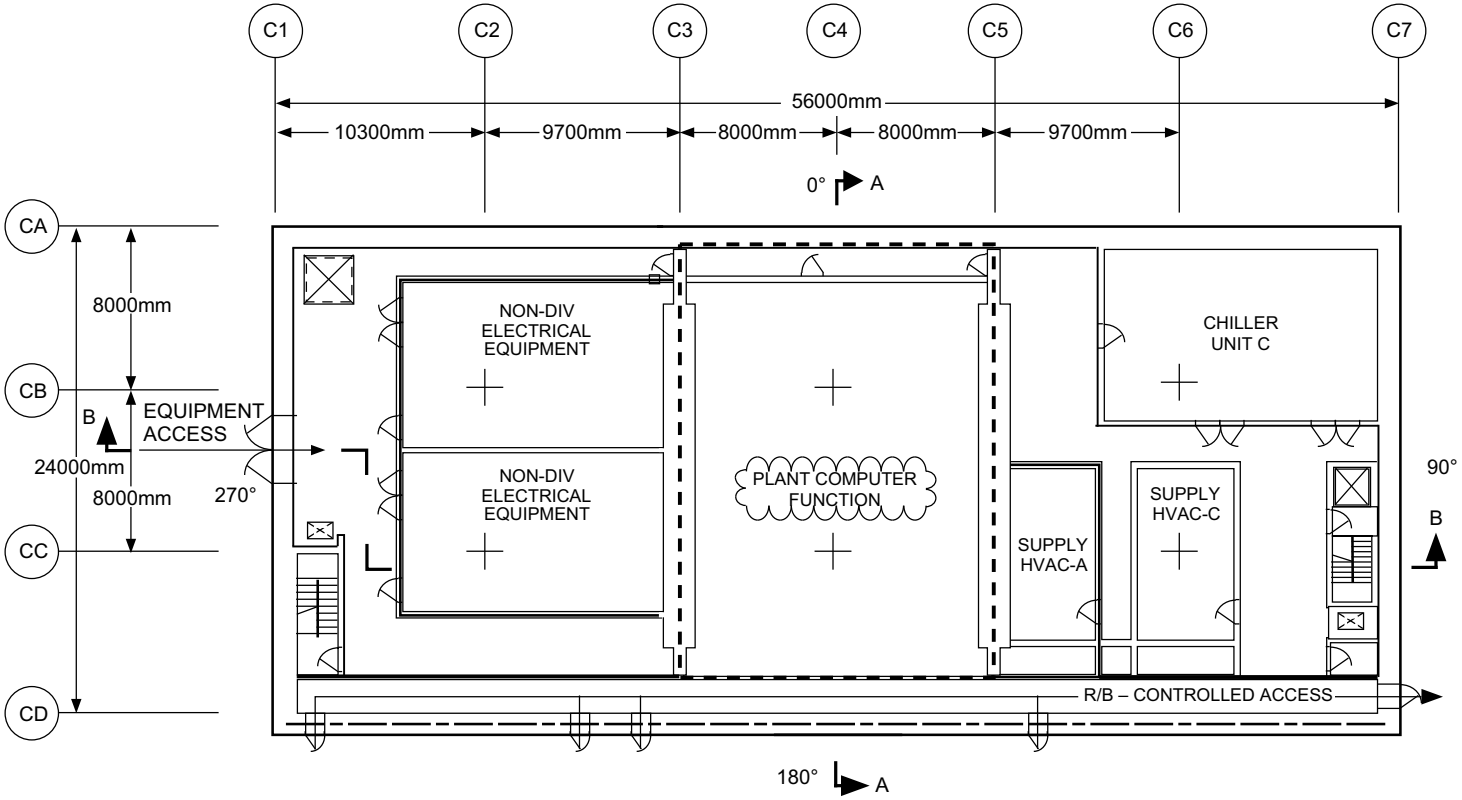


Figure 2.15.12g Control Building Arrangement, Floor 1F–Elevation 12300 mm