

## Appendix 3G DESIGN DETAILS AND EVALUATION RESULTS OF SEISMIC CATEGORY I STRUCTURES

*This appendix presents the structural design and analysis for the Reactor Building (RB), Control Building (CB), Fuel Building (FB) and Firewater Service Complex (FWSC) of the ESBWR Standard Plant. It addresses all applicable items included in Appendix C to United States Nuclear Regulatory Commission (NRC) Standard Review Plan, NUREG-0800, Subsection 3.8.4. Drawings depicted in the Design Control Document (DCD) are not used for construction. Construction drawings meet the technical licensing commitments made in the DCD but are issued under different contractual/industrial rules than the DCD drawings and reflect detailed design configuration. The final design details will meet the structural acceptance criteria presented in Section 3.8 and in Tier 1 ITAACs in Tables 2.16.5-2, 2.16.6-2, and 2.16.7-2. The critical dimensions and acceptable tolerances are presented in Section 3G.6.*

### 3G.1 REACTOR BUILDING

*The RB encloses the concrete containment and its internal systems, structures, and components. Located above the concrete containment in the RB are the Isolation Condenser/Passive Containment Cooling System (IC/PCCS) pools (including expansion pools), the buffer pool, which is also used to store the dryer, and the equipment storage pool, which is also used to store the chimney partitions and the separator.*

#### 3G.1.1 Objective and Scope

*The objective of this subsection is to document the structural design details, inputs and analytical results from the analysis of the ESBWR main building structures encased in the RB. The scope includes the design and analysis of the structure for normal, severe environmental, extreme environmental, and abnormal loads.*

#### 3G.1.2 Conclusions

*The following are the major summary conclusions on the design and analysis of the RB, the concrete containment and the containment internal structures.*

- Based on the results of finite element analyses performed in accordance with the design conditions identified in Subsections 3G.1.3 and 3G.1.5, stresses and/or strains in concrete, reinforcement, liner and containment internal structures are less than the allowable stresses and/or strains per the applicable regulations, codes or standards listed in Section 3.8.*
- The factors of safety against floatation, sliding, and overturning of the structure under various loading combinations are higher than the required minimum.*
- The thickness of the roof slabs and exterior walls are more than the minimum required to preclude penetration, perforation or spalling resulting from impact of design basis tornado missiles.*

### 3G.1.3 Structural Description

#### 3G.1.3.1 Description of the Reactor Building

##### 3G.1.3.1.1 Reactor Building Structure

The RB structure and the containment structure share the same wall structure which encloses the Gravity-Driven Cooling System (GDCS) pools and the Suppression pool. The RB structure consists of the following areas that are not part of the containment structure.

- RB super structure at and above the refueling floor, up to the support for the bridge crane, including the roof, is made of reinforced concrete floors and walls. Roof trusses and their supporting columns are made of structural steel.
- IC/PCCS pools (including expansion pools), the equipment storage pool, the reactor well and the buffer pool.
- Rooms at several elevation levels outside the containment but attaching to the containment structure.
- The main steam tunnel that consists of reinforced concrete walls and floor.

The key dimensions of the RB are summarized in [Table 3.8-8](#). [Figures 3G.1-1 through 3G.1-7](#) show the configurations of the RB.

The FB is integrated with the RB in the ESBWR standard plant. The RB and FB share a common wall between them and a large common basemat. The summary of the FB design is described in [Section 3G.3](#).

##### 3G.1.3.1.2 Containment and Containment Structure

The containment is a reinforced concrete containment vessel (RCCV), which encloses the reactor pressure vessel (RPV) and its related systems and components. The containment is divided into a drywell region and a wetwell region with an interconnecting vent system.

The key dimensions of the RCCV are summarized in [Table 3.8-1](#). [Figure 3.8-1](#) shows the configuration of the RCCV.

The containment structure boundary consists of the containment top slab with removable drywell head, the containment cylindrical wall that is also the outer wall of the suppression pool, the suppression pool floor slab, the RPV pedestal that encloses the volume under the RPV, and the basemat. The concrete containment is lined with a steel liner for leak-tightness. The containment cylindrical outer wall extends below the suppression pool floor slab to the basemat. This extension is not part of the containment pressure boundary, however, it supports the upper containment cylinder. The reinforced concrete basemat foundation supports the entire containment system, which includes the RPV pedestal, and extends to support the RB surrounding the containment. The outline drawings are shown in [Figures 3G.1-1 through 3G.1-7](#).

#### *3G.1.3.1.3 Reactor Building Structure/Containment Structure Connections*

*The RCCV and the RB structure are integrated by the IC/PCCS pool girders at the top of the containment and by floor slabs at elevations that are defined as part of the RB structure and the basemat. The IC/PCCS pool girders are deep reinforced concrete girders, and they are integrated with the containment top slab and with RB walls.*

#### *3G.1.3.1.4 Containment Internal Structures*

*The containment internal structures consist of the diaphragm floor slab, vent wall, GDCS pool walls, reactor shield wall (RSW), and the RPV support bracket. These structures are shown in the general arrangement drawings in this appendix.*

*The diaphragm floor slab acts as a barrier between the drywell and the wetwell. The diaphragm floor slab is supported on the reinforced concrete containment wall at its outer periphery and on the vent wall at its inner periphery. The diaphragm floor slab is a concrete-filled steel structure. The space between the floor slab top and bottom plates is filled with concrete. The slab is supported by a system of radial beams spaced evenly all around and spanning between the vent wall structure and the reinforced concrete containment wall.*

*The vent wall structure is also a concrete-filled steel design consisting of two concentric carbon steel cylinders connected together by vertical web plates evenly spaced all around. The vent wall structure is anchored at the bottom into the RPV pedestal and is restrained at the top by the diaphragm floor slab. The cylindrical annulus carries 12 vent pipes and 12 safety relief valve (SRV) downcomer pipes with sleeves, from the drywell into the suppression pool. The space in the cylindrical annulus is filled with concrete.*

*There are three GDCS pools supported on top of the diaphragm floor slab. The pools on one side are contained by the reinforced concrete containment wall and on the other side by structural steel walls.*

*The RSW is a thick steel cylindrical structure that surrounds the RPV. It is supported by the RPV support brackets and the reactor pedestal. The function of the RSW is to attenuate radiation emanating from the RPV. In addition, the RSW provides structural support for the RPV stabilizer, the RPV insulation and miscellaneous equipment, piping and commodities. Openings are provided in the RSW to permit the routing of necessary piping to the RPV and to permit in-service inspection of the RPV and piping.*

#### *3G.1.4 Analytical Models*

##### *3G.1.4.1 Structural Models*

*The RB and the RCCV including its internal structures are analyzed as one integrated structure utilizing the finite element computer program NASTRAN. The finite element model consists of quadrilateral, triangular, and beam elements. The quadrilateral and triangular elements are used to*

represent the slabs and walls. Beam elements are used to represent columns and beams. The model is shown in Figures 3G.1-8 to 3G.1-18. The buffer pool gate wall modeled in Figure 3G.1-8 is wider than the current configuration. It is updated in a separate analysis for the most critical loadings of accident pressure and accident temperature. The resulting stresses are taken into account in the design of the RCCV top slab and the pool gate walls.

As shown in Figure 3G.1-8, the FB is also included in the model, because the FB is integrated with the RB. The model includes the whole (360°) portion of the RB including the RCCV and FB taking the application of nonaxisymmetrical loads and the asymmetric layout of the FB structure into consideration.

Liner plates of various thicknesses as shown in Figure 3G.1-48 are included in the model at locations of the pressure boundary of the containment. The liner plate nodal points are connected to the containment nodal points by rigid beams. The liner plate elements are shown in Figure 3G.1-18. Pressure loads in the containment are applied on the liner plate.

The vent wall and the diaphragm floor are concrete-filled structures consisting of steel plates and concrete. The infill concrete is neglected in analysis model conservatively. Steel plates including connecting rib plates and girders are modeled by shell elements. The GDCS pool, the RSW and the RPV support brackets are also included in the analysis model. These structures are modeled by shell elements, except the GDCS pool beams which are modeled by beam elements. The analysis model of these structures is shown in Figure 3G.1-17.. For the GDCS pool, the detail stress evaluation is performed using a local model.

The following major penetrations in the concrete containment are included in the model in order to take local reduction of the wall stiffness into consideration. The penetrations in the model are shown in Figures 3G.1-10 and 3G.1-11.

- upper drywell equipment and personnel hatches
- lower drywell equipment and personnel hatches
- wetwell access hatch
- main steam and feedwater pipe penetrations

Small penetrations in the containment are not modeled because their effects on the wall stiffness are negligible.

The containment around an opening is analyzed utilizing a local finite element model. Figure 3G.1-66. shows the detail of the local finite element model of the RCCV wall around the upper drywell personnel airlock opening. The model is composed of the concrete wall, the steel liner plate and the steel opening sleeve. The concrete wall and steel liner plate are modeled by shell elements, and the opening sleeve is modeled by rod elements. Because the analysis model is a local finite element model of the RCCV, the enforced displacements calculated from the RB/FB

*global finite element model analysis results are applied at the periphery of the model and at the connections with the surrounding slab and wall.*

*The nodal points are defined by a right hand Cartesian coordinate system X, Y, Z. This system, called the global coordinate system, has its origin located at the center of the containment at the bottom of the RPV, i.e., EL 0. The positive X axis is parallel with the IC/PCCS pool girder in the 180° direction of the containment; the Y axis is perpendicular to the IC/PCCS pool girder in the 90° direction of the containment; the Z axis is vertical upward. This coordinate system is shown in Figure 3G.1-8.*

#### 3G.1.4.2 Foundation Models

*The foundation soil is represented by soil springs. The spring constants for rocking and translations are determined based on the following soil parameters which correspond to the Soft Site conditions described in Appendix 3A.*

- *Shear wave velocity: 300 m/s (1000 ft/s)*
- *Unit weight: 0.0196 MN/m<sup>3</sup> (125 lbf/ft<sup>3</sup>)*
- *Shear modulus: 180 MN/m<sup>2</sup> (26110 psi)*
- *Poisson's Ratio: 0.478*

*Soil springs are attached to the bottom of the foundation mat, and the constraints by side soil are not included in the model. The values of the soil springs used in the analysis are shown in Table 3G.1-1. The springs have perfectly elastic stiffness.*

*These spring values are multiplied by the foundation mat nodal point tributary areas to compute the spring constants assigned to the base slab nodal points.*

### 3G.1.5 Structural Analysis and Design

#### 3G.1.5.1 Site Design Parameters

*The key site design parameters are located in Table 3G.1-2.*

#### 3G.1.5.2 Design Loads, Load Combinations, and Material Properties

##### 3G.1.5.2.1 Design Loads

##### 3G.1.5.2.1.1 Dead Load (D) and Live Load (L and L<sub>o</sub>)

*The weights of structures are evaluated using the following unit weights.*

- *reinforced concrete: 23.5 kN/m<sup>3</sup> (150 lbf/ft<sup>3</sup>)*
- *plain concrete: 22.5 kN/m<sup>3</sup> (143 lbf/ft<sup>3</sup>)*
- *steel: 77.0 kN/m<sup>3</sup> (490 lbf/ft<sup>3</sup>)*

Weights of major equipment, miscellaneous structures, piping, and commodities are summarized in Tables 3G.1-3 through 3G.1-5.

Live loads on the RB floor and roof slabs are described in Subsection 3.8.4.3.1.1.

For the computation of global seismic loads, the value of floor live load is limited to the expected live load,  $L_o$ , during normal plant operation. The values of  $L_o$  are 25% of the above full floor live loads,  $L$ , when used in combination with seismic and dead loads as described in Subsection 3.8.4.3.1.1.

#### 3G.1.5.2.1.2 Snow and Rain Load

The snow load and rain load applied to the roof slabs is taken from Table 3G.1-2.

#### 3G.1.5.2.1.3 Lateral Soil Pressure at Rest

The lateral soil pressure at rest is applied to external walls below grade and is based on soil properties given in Table 3G.1-2. Pressures to be applied to the walls are provided in Figure 3G.1-19.

#### 3G.1.5.2.1.4 Wind Load ( $W$ )

The wind load is applied to the roof slabs and external walls above grade and is based on basic wind speed given in Table 3G.1-2.

#### 3G.1.5.2.1.5 Tornado Load ( $W_t$ )

The tornado load is applied to the roof slabs and external walls above grade and its characteristics are given in Table 3G.1-2. The tornado load,  $W_t$ , is further defined by the following combinations:

$$W_t = W_w$$

$$W_t = W_p$$

$$W_t = W_m$$

$$W_t = W_w + 0.5W_p$$

$$W_t = W_w + W_m$$

$$W_t = W_w + 0.5W_p + W_m$$

where,

$$W_t = \text{Total Tornado Load}$$

$$W_w = \text{Tornado Wind Load}$$

$$W_p = \text{Tornado Differential Pressure Load}$$

$$W_m = \text{Tornado Missile Load}$$

#### 3G.1.5.2.1.6 Thermal Loads

Thermal loads are evaluated for the normal operating conditions and abnormal (Loss-of-Coolant-Accident [LOCA]) conditions. Figure 3G.1-20. shows the section location for temperature distributions for various structural elements, and Table 3G.1-6 shows the magnitude of equivalent linear temperature distribution.

The evaluation method of temperature effect on the concrete design is based on ACI 349-01 Commentary Figure RA.1.

Two cases, winter and summer, are considered in the analysis.

Stress-free temperature is 15.5°C (60°F).

The structural evaluation for TRACG calculated LOCA temperatures is described in Section 3G.5.

#### 3G.1.5.2.1.7 Pressure Loads

Table 3G.1-7 shows the pressure loads applied to the RCCV during normal operation, structural integrity test, and the LOCA. Pressure loads in the IC/PCCS pools are provided in Table 3G.1-8.

#### 3G.1.5.2.1.8 Condensation Oscillation and Chugging Loads

The condensation oscillation (CO) and chugging pressure loads along with Dynamic Load Factors (DLF) are provided in Figures 3G.1-21 and 3G.1-22. The adequacy of DLF equal to 2.0 is confirmed by dynamic response analysis.

#### 3G.1.5.2.1.9 Safety Relief Valve Loads

The SRV loads along with DLF are provided in Figure 3G.1-23.. The adequacy of DLF equal to 2.0 is confirmed by dynamic response analysis.

#### 3G.1.5.2.1.10 Steam Tunnel Subcompartment Pressure

The design pressure in the RB main steam tunnel to account for a main steamline break is 76.0 kPaG (11.0 psig). A conservative pressurization analysis shows that the peak pressure is approximately one-third of this design pressure. Thermal loads need not be included due to short duration of the tunnel pressurization.

#### 3G.1.5.2.1.11 Subcompartment Pressure in Other Compartments

For ESBWR, the Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) system is considered high energy during normal operation. The maximum design pressure inside the affected subcompartments from the high energy line break of the system is 36 kPaG (5.22 psig). Thermal loads need not be included due to short duration of subcompartment pressurization.

#### 3G.1.5.2.1.12 Annulus Pressurization Loads

The annulus pressurization loads due to feedwater and reactor water cleanup breaks are considered. Annulus pressurization loads contain pressure load and associated jet forces and pipe whip restraint loads.

#### 3G.1.5.2.1.13 Design Seismic Loads

The design seismic loads are obtained by soil–structure interaction analyses, which are described in Appendix 3A. The seismic loads used for design are as follows:

- Figure 3G.1-24.: design seismic shears and moments for RB and FB walls
- Figure 3G.1-25.: design seismic shears and moments for RCCV
- Figure 3G.1-26.: design seismic shears and moments for RPV Pedestal and Vent Wall
- Table 3G.1-9: maximum vertical acceleration

These seismic loads are the same or very close to the Appendix 3A loads except for the vent wall and the RPV pedestal. The seismic loads for the vent wall in Table 3A.9-1c are higher than those in Figure 3G.1-26. considered in the stress analysis. Table 3A.9-1c seismic loads at the vent wall base are about 38%, 30%, and 71% higher for the shear, moment and torsion, respectively. The largest incremental shear, moment and torsion forces over the design forces are 11 MN, 118 MN-m and 42 MN-m, respectively. The resulting incremental stresses computed as a beam section are 12 MPa bending and 12 MPa shear. They are about 4% and 7% of the highest calculated design bending and shear stresses, respectively, for the governing abnormal/extreme load combination summarized in Table 3G.1-39. The ratio of the total stress (design plus incremental) to the code allowable is 0.7 for bending and 0.76 for shear. Therefore, the higher seismic loads have no impact on the vent wall design. With regard to the RPV pedestal, the seismic bending moments in Table 3A.9-1c are 12.5% higher at most along the height than those in Figure 3G.1-26. considered in the stress analysis. The RPV pedestal stresses summarized in Tables 3G.1-31 and 3G.1-32 for the governing load combinations have design margins more than 15%. Consequently, even if the combined stresses are conservatively increased by 12.5%, the same amount as the seismic load increase, the resulting stresses do not exceed the allowable stress. Therefore, the higher seismic loads have no impact on the RPV pedestal design.

The seismic loads are composed of one vertical and two perpendicular horizontal components. The effects of the three components are combined based on the square root of the sum of the squares (SRSS) method as described in Subsection 3.8.1.3.6.

Seismic lateral soil pressure for wall design is provided in Figure 3G.1-27. using the envelope pressure of the elastic procedure described in ASCE 4-98 Subsection 3.5.3.2 and SASSI results as described in Subsection 3A.8.8.

Seismic member forces for each section are obtained directly from the NASTRAN analysis using these seismic input loads.



### 3G.1.5.2.2 Load Combinations and Acceptance Criteria

Load combinations and acceptance criteria for the various elements of the RB complex are discussed on the following subsections.

#### 3G.1.5.2.2.1 Reinforced Concrete Containment Vessel

Table 3.8-2 gives a detailed list of various service and factored load combinations with acceptance criteria per ASME B&PV Code, Section III Division 2. Based on previous experience, critical load combinations are selected for the RCCV design. They are mainly combinations including LOCA loads and seismic loads as shown in Table 3G.1-10. The acceptance criteria for the selected combinations are also included in Table 3G.1-10.

#### 3G.1.5.2.2.2 Steel Containment Components

Table 3.8-4 gives a detailed list of various load combinations with acceptance criteria per ASME Section III Division 1, Subsection NE. For the drywell head, the loads of  $W$ ,  $W'$ ,  $R_o$ ,  $R_a$  and  $Y$  are not direct loads and their indirect effects through the supporting RCCV top slab are negligible.

#### 3G.1.5.2.2.3 Containment Internal Structures

Table 3.8-7 gives a detailed list of various load combinations with acceptance criteria per AISC N690-94.

#### 3G.1.5.2.2.4 Reactor Building Concrete Structures Including Pool Girders

Load combinations and acceptance criteria for the RB concrete structures are described in Subsections 3.8.4.3.1.2 and 3.8.4.5.1, respectively. Based on previous experience, critical load combinations are selected for the RB design. They are mainly combinations including LOCA loads and seismic loads as shown in Table 3G.1-11. The acceptance criteria for the selected combinations are also included in Table 3G.1-11.

### 3G.1.5.2.3 Material Properties

#### 3G.1.5.2.3.1 Concrete

Properties of concrete used for the design analyses are shown in Table 3G.1-12.

Concrete has a tendency to change properties when subjected to elevated temperatures. For the ESBWR design, reduction of concrete strength due to high temperature is determined based upon the average value of the following upper bound and lower bound equations excerpted from Reference 3G.1-1.

- Lower bound reduction factor

- $\phi = 1.0 - 0.0030 (T-21.1)$   $21.1^{\circ}\text{C} (70^{\circ}\text{F}) \leq T \leq 121.1^{\circ}\text{C} (250^{\circ}\text{F})$
- $\phi = 0.70 - 0.00083 (T-121.1)$   $121.1^{\circ}\text{C} (250^{\circ}\text{F}) \leq T$

- Upper bound reduction factor

- $\phi = 1.0$   $T \leq 260.0^{\circ}\text{C} (500^{\circ}\text{F})$
- $\phi = 1.0 - 0.00081 (T-260.0)$   $260.0^{\circ}\text{C} (500^{\circ}\text{F}) \leq T$

Young's modulus for concrete is also determined based upon the average value of the following upper bound and lower bound equations excerpted from [Reference 3G.1-1](#).

- Lower bound reduction factor

- $\phi = 1.0 - 0.0069 (T-21.1)$   $21.1^{\circ}\text{C} (70^{\circ}\text{F}) \leq T \leq 93.3^{\circ}\text{C} (200^{\circ}\text{F})$
- $\phi = 0.50 - 0.0009 (T-93.3)$   $93.3^{\circ}\text{C} (200^{\circ}\text{F}) \leq T$

- Upper bound reduction factor

- $\phi = 1.0 - 0.00056 (T-21.1)$   $21.1^{\circ}\text{C} (70^{\circ}\text{F}) \leq T \leq 204.4^{\circ}\text{C} (400^{\circ}\text{F})$
- $\phi = 0.90 - 0.0015 (T-204.4)$   $204.4^{\circ}\text{C} (400^{\circ}\text{F}) \leq T$

The design temperature of the drywell is  $171^{\circ}\text{C} (340^{\circ}\text{F})$  as shown in [Table 1.3-3](#), and it satisfies the concrete temperature limit,  $177^{\circ}\text{C} (350^{\circ}\text{F})$ , for accident or short term period specified in ASME Section III, Subsection CC-3440.

#### 3G.1.5.2.3.2 Reinforcing Steel

Reinforcing steel is deformed billet steel conforming to ASTM A-615 grade 60. Minimum yield strength,  $F_y$ , is 413.6 MPa (60 ksi).

Reinforcing steel also has tendency to decrease in strength at elevated temperatures. The reduction of reinforcing steel strength is based upon the following equation excerpted from [Reference 3G.1-1](#).

- Reduction Factor

- $\phi = 1.0 - 0.000873 (T-21.1)$   $21.1^{\circ}\text{C} (70^{\circ}\text{F}) \leq T \leq 204.4^{\circ}\text{C} (400^{\circ}\text{F})$

#### 3G.1.5.2.3.3 Structural Steel

Properties of structural steel used for the design analyses are included in [Table 3G.1-12](#).

#### 3G.1.5.3 Stability Requirements

The RB foundation has the following safety factors against overturning and sliding. Because the impact on the stability by seismic load is larger than wind and tornado, the load combinations for  $W$  and  $W_t$ , which are shown in [Table 3.8-14](#), are excluded.

Load Combination	Overturning	Sliding	Floatation
D + H + E'	1.1	1.1	
D + F'			1.1

Where

D = Dead Load, F' = Buoyant forces of design basis flood

H = Lateral soil pressure, E' = Safe Shutdown Earthquake

#### 3G.1.5.4 Structural Design Evaluation

The evaluation of the containment structure, the containment internal structures, and the RB structures is based on the results from the load combinations indicated in Subsection 3G.1.5.2.2.

Figure 3G.1-28. shows the location of the sections that are selected for evaluation of reinforced concrete structures. They are selected, in principle, from the center and both ends of walls and slabs, where it is reasonably expected that the critical stresses appear based on engineering experience and judgment. The computer program SSDP-2D is used for the evaluation of stresses in rebar and concrete. The input to SSDP-2D consists of rebar ratios, material properties, and element geometry at the section under consideration together with the forces and moments from the NASTRAN analysis, which are shown in Tables 3G.1-13 through 3G.1-21. Element forces and moments listed in the tables are defined with relation to the element coordinate system shown in Figure 3G.1-29.. Figures 3G.1-30 through 3G.1-38 indicate deformations of structures obtained by NASTRAN analyses for the loads corresponding to Tables 3G.1-13 through 3G.1-21.

Figure 3G.1-39. shows a flow chart for the structural analysis and design. Figures 3G.1-40 through 3G.1-47 and Figures 3G.1-67 through 3G.1-70 present the design drawings used for the evaluation of the containment and the RB structural design. Figures 3G.1-48 through 3G.1-50 show the design details of containment liner plate. Figures 3G.1-51 through 3G.1-54 show the design details of containment major penetrations. Figures 3G.1-55 through 3G.1-59 show the details of containment internal structures.

##### 3G.1.5.4.1 Containment Structure

Tables 3G.1-22 through 3G.1-26 show the resultant combined forces and moments in accordance with the selected load combinations listed in Table 3G.1-10. Table 3G.1-27 lists the sectional thicknesses and rebar ratios used in the evaluation. At each section, in general, three elements are analyzed at azimuth 0°, 90° and 135°.

Tables 3G.1-28 through 3G.1-32 show the rebar and concrete stresses at these sections for the representative elements. Tables 3G.1-33 and 3G.1-34 summarize evaluation results for transverse shear and tangential shear in accordance with ASME B&PV Code Section III, Division 2, Article CC-3520.

Table 3G.1-35 shows the maximum strains of containment liner plate. Table 3G.1-36 shows the stress summary of the drywell head.

Reference 3G.1-3 shows the stress summary of PCCS condenser and support.

##### 3G.1.5.4.1.1 Containment Wall Including RPV Pedestal

Sections 1 through 9 shown in Figure 3G.1-28. are considered critical sections for the containment wall including the RPV pedestal. Maximum stress in the meridional rebar is found to be 320.0 MPa (46.41 ksi) at Section 1 near the bottom of the RPV Pedestal due to load combination CV-11a, as shown in Table 3G.1-31. The maximum stress in the circumferential rebar is found to be 326.0 MPa

(47.28 ksi), which occurs at Section 6, the top of the RCCV Wetwell due to load combination CV-11a, as shown in Table 3G.1-31. The maximum concrete stress is found to be 21.7 MPa (3.15 ksi), which occurs at Section 3 due to load combination CV-11b.

The maximum transverse shear stress is found to be 4.44 MPa (0.64 ksi) at Section 1 for the load combination CV-11b. The amounts of shear ties provided satisfy the required values at all sections, as indicated in Table 3G.1-33.

As for tangential shear, the maximum stress of 3.58 MPa (0.52 ksi) is found at Section 4, the bottom of the wetwell, due to the combination CV-11a. The value is less than the allowable tangential shear stress provided by orthogonal reinforcement, which is described in Table 3.8-3. The amounts of reinforcement provided satisfy the required values at all sections, as indicated in Table 3G.1-34.

Table 3G.1-35 shows liner plate strains. The liner maximum strain is found to be 0.0041 at Section 6, which is within allowable limits given in Table CC-3720-1, ASME B&PV Code, Section III, Division 2. The liner stresses during construction are kept within the allowable values found in Table CC-3720-1 of ASME B&PV Code, Section III, Division 2 by limiting concrete placement pressure to a maximum of 167 kPa (24.22 psi) for the top slab, 48 kPa (6.96 psi) for the upper drywell/lower drywell wall and 32 kPa (4.64 psi) for the wetwell wall.

#### 3G.1.5.4.1.2 Containment Top Slab and Suppression Pool Slab

Sections 12 through 17 are examined for the Containment Top Slab and Suppression Pool Slab. The locations of these sections are shown in Figure 3G.1-28.. The maximum rebar stresses are found to be 339.3 MPa (49.21 ksi) at Section 15 due to the load combination CV-7b in the Top Slab, and 349.4 MPa (50.68 ksi) at Section 12 due to the combination CV-11a in the Suppression Pool Slab. The maximum concrete stresses are 30.7 MPa (4.45 ksi) and 25.6 MPa (3.71 ksi) in the Top Slab and the Suppression Pool Slab, respectively.

The maximum transverse shear stresses are found to be 1.96 MPa (0.28 ksi) at Section 15 for the load combination CV-7b in the Top Slab, and 4.33 MPa (0.63 ksi) at Section 14 for the combination CV-7a in the Suppression Pool Slab. The amounts of shear ties provided satisfy the required values at all sections, as indicated in Table 3G.1-33.

Maximum liner strain is found to be 0.0026 at Section 12 as shown in Table 3G.1-35 and is within ASME Code allowable.

#### 3G.1.5.4.1.3 Containment Foundation Mat

Sections 10 and 11 are evaluated for the part of the concrete containment in the foundation mat. The sections are shown in Figure 3G.1-28.. The maximum rebar stress is calculated as 172.5 MPa (25.02 ksi) at Section 11 just inside the RPV Pedestal and is shown in Table 3G.1-32. The maximum transverse shear stress of 1.21 MPa (0.18 ksi) is found also at the Section 11 for the load combination CV-11b.

The liner plate maximum strain is found to be 0.0004 at Section 11 as shown in Table 3G.1-35.

#### 3G.1.5.4.1.4 Drywell Head

Figure 3G.1-51 shows the design details. The highest stresses are summarized in Table 3G.1-36. The stresses except  $P_L + P_b + Q$  at service Level A and B are well within the allowable stress limits.  $P_L + P_b + Q$  at service Level A and B exceeds allowable; however, it meets all requirements for simplified elastic-plastic analysis stipulated in NE-3228.3 of ASME Boiler and Pressure Vessel (B&PV) Code, Sec. III.

#### Simplified Elastic-Plastic Analysis

The range of primary plus secondary stress intensity  $S_n$  is 797 MPa (116 ksi) and the allowable of  $3S_{m1}$  is 456 MPa (66.1 ksi) from Table 3G.1-36.  $S_n$  exceeds  $3S_{m1}$ , so simplified elastic-plastic analysis is required. The results of comparison against each requirement of NE-3228.3 are as follows.

(1) NE-3228.3 (a)

The range of primary plus secondary membrane plus bending stress intensity, excluding thermal bending stress is 392 MPa (56.9 ksi) from the result of finite element analysis (FEA).

(2) NE-3228.3 (b)

The values of  $S_a$  used for entering the design fatigue curve are multiplied by the factor  $K_e$ . The values of  $m$  and  $n$  are decided as 3 and 0.2 respectively from Table NE-3228.3(b) -1 of ASME B&PV Code, Sec. III. Because  $S_{m1}$  is 152 MPa (22.0 ksi) from Table 2A of ASME B&PV Code, Sec. II, Part D,  $3 \cdot m \cdot S_{m1}$  is calculated as 1368 MPa (198 ksi).  $S_n = 797$  MPa (116 ksi) is between  $3 \cdot S_{m1} = 456$  MPa (66.1 ksi) and  $3 \cdot m \cdot S_{m1} = 1368$  MPa (198 ksi), so  $K_e$  is calculated by the following Formula:

$$K_e = 1.0 + [(1-n)/n \cdot (m-1)] \cdot [(S_n/3 \cdot S_{m1}) - 1] = 2.5$$

(3) NE-3228.3 (c)

Fatigue evaluation is conducted as follows:

$$S_a = K_e \cdot S_n = 1993 \text{ MPa (289 ksi)}$$

$$E_1 = 207 \text{ GPa (30000 ksi)}$$

$$E_2 = 194 \text{ GPa (28100 ksi)}$$

Where

$E_1$ : Modulus of elasticity given on the design fatigue curve from Figure I-9.1 of Appendix I of Sec. III.

$E_2$ : Modulus of elasticity at 171°C (340°F) from Table TM-1 of Sec. II, Part D

$$S_a' = S_a \cdot (E_1/E_2) = 2131 \text{ MPa (309 ksi)}$$

$S_a$  for 10 cycles is 3999 MPa (580 ksi) from Table I-9.1 ( $UTS \leq 80$  ksi) and  $N$  for  $S_a' = 2131$  MPa (309 ksi) is obtained as 38 from Table I-9.1, General Note (b). So the requirement of NE-3228.3 (c) is satisfied.

(4) NE-3228.3 (d)

Because an accident temperature  $T_a$  is not a cyclic load, the thermal ratcheting can be neglected.

(5) NE-3228.3 (e)

From Table NE-3228.3(b)-1, the maximum temperature  $T_{max}$  is 370°C (700°F) for carbon steel.  $T_a$  is 171°C (340°F), so it satisfies this requirement.

(6) NE-3228.3 (f)

Specified minimum yield strength  $S_y$  and specified minimum tensile strength  $S_u$  of SA-516 Gr. 70 are 262 MPa (38 ksi) and 483 MPa (70 ksi) respectively. The ratio of  $S_y$  to  $S_u$  is calculated as 0.543. This value is below 0.80. So it satisfies this requirement.

### **Fatigue Evaluation**

Fatigue evaluation is performed in accordance with ASME B&PV Code Section III, Subsection NE-3221.5(d) in which the limits on peak stress intensities as governed by fatigue are considered and satisfied when the Service Loadings meet the stipulated condition.

#### **3G.1.5.4.1.5 PCCS Condenser**

A finite-element analysis model supplemented with hand calculation is used to determine the stresses in the different components of the PCCS condenser and supports. The finite-element analysis is performed using the ANSYS computer code. The 3D finite-element model presented in Reference 3G.1-3 is used. The 3D steel frame structure is modeled by beam-type elements. The rest of PCCS condenser components are modeled by shell-type elements. Static and dynamic analyses are performed to evaluate the different loads including detonation. The seismic contribution to the dynamic load cases is analyzed by the response spectrum method. The stress evaluation is performed for loads and load combinations in accordance with Table 3.8-4 and associated acceptance criteria for pressure retaining components of the condenser. The condenser supports are designed to the same loads and load combinations in accordance with the acceptance criteria of ASME B&PV Code, Section III, Subsection NF.

The calculated stresses in various elements of the PCCS condenser and supports are shown in Reference 3G.1-3.

#### **3G.1.5.4.2 Containment Internal Structures**

Tables 3G.1-37 through 3G.1-44 show the summary of stress analysis results for containment internal structures.

*The types of analysis for various loads considered for the containment internal structures, such as diaphragm floor, vent wall, RPV support bracket, RSW and GDCS pool are:*

*(1) Dead load*

*Static analysis is performed for the dead load to all containment internal structures.*

*Hydrostatic loads of pool water are also applied statically to vent wall and GDCS pool.*

*(2) Pressure load*

*Static analysis is performed for the pressure load ( $P_o$  and  $P_a$ ) applied to diaphragm floor and vent wall.*

*(3) Thermal load*

*Static analysis is performed for the thermal load ( $T_o$  and  $T_a$ ) to all internal structures. All steel temperatures are the same as atmospheric temperature. The temperature of the intermediate node of vent wall rib plate is the average value of outer and inner plate nodes.*

*(4) Seismic load*

*Static analyses are performed for the seismic load on the diaphragm floor, vent wall, RPV support bracket and RSW in the integral NASTRAN model, and on the GDCS pool in the GDCS pool local model.*

*In this response spectra analysis, it is assumed that all pool water mass is distributed uniformly on the GDCS pool wall and RCCV wall. This is considered as a conservative assumption, therefore sloshing is not considered in the GDCS pool local model. For the integral NASTRAN model, however, sloshing load is considered as the static pressure load on D/F upper surface and static reaction load from the GDCS pool wall. Results from the integral NASTRAN model due to these loads are used for the structural integrity evaluation of the structures other than GDCS pool, while results from the GDCS pool local model are used for evaluation of the GDCS pool itself.*

*(5) Hydrodynamic load*

*Static analysis is performed for the hydrodynamic load (CO, CH and SRV) on the vent wall taking DLF = 2 into account.*

*(6) Pipe Break loads consist of annulus pressurization load, jet impingement and pipe-whip restraint loads*

*These loads acting on the RSW are first analyzed for dynamic response using the NASTRAN beam model. The resulting maximum values of bending moment and shear force are then applied to the integral NASTRAN static analysis model.*

*The square root of the sum of the squares (SRSS) method is used to combine the stresses due to dynamic loads, such as seismic, hydrodynamic and annulus pressurization loads, for all steel structures.*

#### 3G.1.5.4.2.1 Diaphragm Floor

##### **Design of Structural Components**

The design of the diaphragm floor is based on the elastic analysis results obtained from the model described in Subsection 3G.1.4. Figure 3G.1-55 shows design details. Table 3G.1-37 summarizes the highest stresses in various structural elements of the diaphragm floor slab. All stresses are within allowable stress limits.

##### **Design of Anchorage**

Figure 3G.1-56. shows diaphragm floor anchorage into the RCCV wall. Rebars are used for anchoring the steel plates. Threaded couplers are used so that the anchor bars can be connected after installation of the reinforcing steel of the RCCV wall. The anchorage is designed so as to avoid interference with the RCCV reinforcing steel. Anchorage requirements for various loading combinations and the capacity of anchorage provided are shown in Table 3G.1-38.

#### 3G.1.5.4.2.2 Vent Wall Structure

##### **Design of Structural Components**

Figure 3G.1-57. shows the design details. Highest stresses in inner cylinder, outer cylinder and the web plates are summarized in Table 3G.1-39. The stresses are shown to be within allowable stress limits.

##### **Design of Anchorage**

Figure 3G.1-57. shows vent wall anchorage into the RCCV wall. Rebars are used for anchoring the steel plates. Threaded couplers are used so that the anchor bars can be connected after installation of the reinforcing steel of the RCCV wall. The anchorage is designed so as to avoid interference with the RCCV reinforcing steel. Anchorage requirements for various loading combinations and the capacity of anchorage provided is shown in Table 3G.1-42.

#### 3G.1.5.4.2.3 Reactor Shield Wall

The RSW is designed to resist the loads and loading combinations discussed in Subsection 3G.1.5.2. Annulus pressurization loads are also considered.

Figure 3G.1-58. shows the design details. The highest stresses are summarized in Table 3G.1-40. The stresses are well within the allowable stress limits.

#### 3G.1.5.4.2.4 RPV Support Bracket

##### **Design of Structural Components**

Figure 3G.1-57. shows the design details. The calculated stresses in various elements of the support bracket are shown in Table 3G.1-41 and are within allowable stress limits.



### **Design of Anchorage**

Figure 3G.1-57. shows RPV support bracket anchorage into the RCCV wall. Rebars are used for anchoring the steel plates. Threaded couplers are used so that the anchor bars can be connected after installation of the reinforcing steel of the RCCV wall. The anchorage is designed so as to avoid interference with the RCCV reinforcing steel. Anchorage requirements for various loading combinations and the capacity of anchorage provided are shown in Table 3G.1-42.

#### **3G.1.5.4.2.5 Gravity-Driven Cooling System Pool**

### **Design of Structural Components**

Figure 3G.1-59 shows the design details. Highest stresses are summarized in Table 3G.1-43. The stresses are within allowable stress limits.

### **Design of Anchorage**

Threaded mechanical couplers with anchor bars are used as shown in Figure 3G.1-59. Table 3G.1-44 shows the anchorage requirements and capacity of anchorage provided.

#### **3G.1.5.4.3 Reactor Building**

Tables 3G.1-45 through 3G.1-49 show the resultant combined forces and moments in accordance with the selected load combinations listed in Table 3G.1-11. Table 3G.1-50 lists the sectional thicknesses and rebar ratios used in the evaluation. At each section, in general, three elements are analyzed at azimuth 0°, 90° and 135° (or 45°).

Tables 3G.1-51 through 3G.1-55 show the rebar and concrete stresses at these sections for the representative elements. Table 3G.1-56 summarizes evaluation results for transverse shear in accordance with ACI 349-01, Chapter 11.

Sections 18 through 31 shown in Figure 3G.1-28. are analyzed for the RB outside the containment. Sections 18 to 23 are selected for the RB shear walls, Section 24 for the basemat outside the containment, Sections 25 to 27 for the RB slabs, Sections 28 to 30 for the IC/PCCS pool girders and Section 31 for the Main Steam tunnel wall and slab.

##### **3G.1.5.4.3.1 RB Shear Walls**

The maximum rebar stress of 356.7 MPa (51.74 ksi) is found in the vertical rebar at Section 22 due to the load combination RB-9b as shown in Table 3G.1-55. The maximum horizontal rebar stress is found to be 352.0 MPa (51.05 ksi) at Section 22 due to the load combination RB-9b as shown in Table 3G.1-55. The maximum transverse shear force is found to be 4.69 MN/m (26.80 kips/in) against the shear strength of 6.59 MN/m (37.60 kips/in) at Section 20, the top of the cylindrical wall below the RCCV wall.

#### 3G.1.5.4.3.2 RB Foundation Mat Outside Containment

Section 24 is selected for the foundation mat outside the containment at the junction with the cylindrical wall below the RCCV wall. The maximum rebar stress of 327.4 MPa (47.49 ksi) is found in the top rebar as shown in Table 3G.1-54. The maximum bottom rebar stress is found to be 133.6 MPa (19.38 ksi) also as shown in Table 3G.1-54. The maximum transverse shear force is found to be 10.74 MN/m (61.30 kips/in) against the shear strength of 16.03 MN/m (91.50 kips/in).

#### 3G.1.5.4.3.3 RB Floor Slabs

Sections 25 to 27 are selected for the floor slabs at elevations EL 4650, EL 17500 and EL 27000 (see Figure 3G.1-28.) at their junction with the RCCV.

The maximum rebar stress of 344.0 MPa (49.89 ksi) is found at Section 27 as shown in Table 3G.1-55. The maximum transverse shear force is found to be 10.27 MN/m (58.59 kips/in) against the shear strength of 13.01 MN/m (74.22 kips/in).

#### 3G.1.5.4.3.4 Pool Girders

The maximum rebar stress of 231.7 MPa (33.60 ksi) is found in the horizontal rebar at Section 30 as shown in Table 3G.1-55, whereas the maximum vertical rebar stress is found to be 249.1 MPa (36.13 ksi) at Section 28 as shown in Table 3G.1-55. The maximum transverse shear force is found to be 1.20 MN/m (6.85 kips/in) against the shear strength of 3.32 MN/m (18.94 kips/in).

#### 3G.1.5.4.3.5 Main Steam Tunnel Floors and Walls

Section 31 is selected for the MS tunnel wall and slabs. The MS tunnel is composed of the reinforced concrete structures as described in Subsection 3G.1.5.4.3.3.

The maximum rebar stress is found to be 220.5 MPa (31.98 ksi) in Table 3G.1-51, and the maximum transverse shear force is found to be 0.47 MN/m (2.68 kips/in) against the shear strength of 3.70 MN/m (21.1 kips/in).

#### 3G.1.5.5 Foundation Stability

The RB, the concrete containment and the FB share a common foundation. The stabilities of the foundation against overturning, sliding and floatation are evaluated. The energy approach is used in calculating the factor of safety against overturning.

The factors of safety against overturning, sliding and floatation are given in Table 3G.1-57. All of these meet the acceptance criteria given in Table 3.8-14. The factor of safety against sliding is obtained according to the procedure shown in Subsection 3.8.5.5. The stress check is performed for the exterior walls against the wall capacity passive pressure. The results are shown in Tables 3G.1-57a through 3G.1-57e. Shear keys under the basemat shown in Figures 3G.1-1, 3G.1-6 and 3G.1-7 are used to resist sliding.

Maximum soil bearing stress is found to be 699 kPa (14600 psf) due to dead plus live loads.

The maximum bearing stresses shown in [Table 3G.1-58](#) are evaluated using the Energy Balance Method ([Reference 3G.1-2](#)). In order to verify the results, toe pressures obtained by the finite element analyses using the RB/FB global model are compared with the values in [Table 3G.1-58](#). As a result, the bearing pressures calculated by the Energy Balance Method envelop the pressures of finite element analyses.

A series of parametric analyses are performed to verify the assumptions and results of the global finite element analysis is used as the baseline for the basemat design.

- Lateral variations of soil stiffness are evaluated using the global finite element model. Analyses are performed assuming “Hard spot” and “Soft spot” under the RPV Pedestal area.
- Construction loads are evaluated in the design of the basemat. The analyses focus on the response of the basemat during the early stage of construction when it could be susceptible to differential loading and deformations.
- The analyses are performed to confirm acceptability of allowable total and differential settlement that are specified over the length of the foundation.

Details are provided in [Subsections 3G.1.5.5.2 through 3G.1.5.5.4](#).

#### **3G.1.5.5.1 Effect of Basemat Uplift**

As described in [Appendix 3G.1.4.2](#), the foundation soil is represented by elastic soil springs which resist both compression and tension. However, actual foundation soil cannot bear tensile force. This difference has an influence on the stresses in the basemat, if the basemat is uplifted due to design loads. Therefore, analyses to evaluate the effect of potential uplift of the basemat are performed using the RB/FB global finite element model shown in [Figure 3G.1-8](#).

An iterative approach is used. Based on the result from the initial analysis, the tension capability is removed in the next iteration for those springs that are in tension. This iterative process is continued until there are no more springs in tension.

Analyses are performed for the horizontal Safe Shutdown Earthquake (SSE) loads. [Figures 3G.1-60 through 3G.1-64](#) show the comparison of the sectional deformations of the basemat and the bending moments generated in the basemat respectively at the final step of iteration. In the area close to the RCCV wall, bending moments are higher than that of the linear analysis results; however the resulting stresses in the concrete and reinforcement for the design “SSE + LOCA” load combination are still below the code allowables with large margins as shown in [Table 3G.1-59](#). Therefore, it can be concluded that the effect of uplift is negligible to the linear analysis using the global finite element model.

#### **3G.1.5.5.2 Effect of Horizontal Variation of Soil Spring**

To account for potential horizontal variation of foundation soil stiffness over the basemat width, stiff soil springs are considered under the RPV Pedestal area assuming linear variation to the edge of

the mat. The RPV Pedestal is selected because it produces the largest clear span for the mat and is likely to be the first structure constructed on the mat. This is used as the “Hard Spot”. In addition, the inverted variation, i.e. softer soil springs assumed under the RPV Pedestal area, is also considered and called the “Soft Spot”. Based on the analysis results for these soil conditions, some of the “Soft Spot” case results predict larger mat bending moments than the uniform soil condition. However, the DCD design envelopes the results of horizontal variation of soil spring as long as the ratio of spring stiffness at the basemat center to that at the basemat edge does not exceed three. This spring stiffness ratio converts to  $\sqrt{3}$  (1.7) for the corresponding shear wave velocity ratio.

#### 3G.1.5.5.3 Effect of Construction Sequence

The basemat design is checked against the loads expected during construction of the basemat. The RB/FB basemat is divided into seven zones for concrete pour and these zones are investigated for three possible construction sequences. The moment differences between sequences considered are negligibly small in comparison with the moments used in the basemat design. In addition to basemat construction sequence, the impact of the building structures construction sequence, i.e., RPV Pedestal, RCCV and walls, on the basemat design is also investigated. The evaluation results confirm that the building structures construction sequence has negligible effect on the basemat design. These studies include horizontal soil spring variations, “Hard Spot” and “Soft Spot” as described in [Subsection 3G.1.5.5.2](#).

The actual construction sequence will be consistent with the sequences evaluated above and will be reflected in the construction specification.

#### 3G.1.5.5.4 Foundation Settlement

The basemat design is checked against the normal and differential settlement of the RB/FB. It is found that the basemat can resist the maximum mat foundation corner settlement of 103 mm (4.0 in) and the settlement averaged at four corners of 65 mm (2.6 in). The relative displacement between two corners along the longest dimension of the building basemat calculated under linearly varying soil stiffness is 77 mm (3.0 in). The estimated differential settlement between buildings (RB/FB and CB) is 85 mm (3.3 in). These values are specified as maximum settlements in [Table 2.0-1](#).

#### 3G.1.5.6 Tornado Missile Evaluation

The minimum thickness required to prevent penetration, concrete spalling and scabbing is evaluated. The methods and procedures are shown in [Subsection 3.5.3.1.1](#). The minimum thickness required is less than the minimum 1000 mm (39.4 in) and 700 mm (27.6 in) thickness provided for the RB external walls and roof, respectively.

3G.1.6 *References*

- 3G.1-1 *Burns & Roe, "State-of-the-Art Report on High Temperature Concrete Design," prepared for US. Department of Energy, Document No. DOE/CH/94000-1, November 1985.*
- 3G.1-2 *Tseng, W.S. and Liou, D.D., "Simplified Methods for Predicting Seismic Basemat Uplift of Nuclear Power Plant Structures, Transactions of the 6<sup>th</sup> International Conference on SmiRT", Paris, France, August 1981.*
- 3G.1-3 *GE Hitachi Nuclear Energy, "ESBWR ICS and PCCS Condenser Combustible Gas Mitigation Structural Evaluation," NEDE-33572P, Class II (Proprietary), Revision 3, September 2010; NEDO-33572, Revision 3, Class I (Non-proprietary), September 2010.*

**Table 3G.1-1      Soil Spring Constants for the RB Analysis Model**

Direction of Spring		Loads	Stiffness (MN/m/m <sup>2</sup> )
Horizontal	X-direction	All	9.107
	Y-direction	All	9.654
Vertical		Horizontal Seismic Loads	38.35
		Other Loads	13.66

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):  
1 MN/m/m<sup>2</sup> = 6.366x10<sup>3</sup> lbf/ft/ft<sup>2</sup>

**Table 3G.1-2      Site Design Parameters**

Parameter		Value(s)
Soil		
	Minimum Shear Wave Velocity, m/s (ft/s)	300 (1000)
	Maximum Ground Water Level, m (ft)	0.61 (2.0) below plant grade
	Maximum Flood (or Tsunami) Level, m (ft)	0.30 (1.0) below plant grade
	Maximum Roof Snow Load, Pa (lb/ft <sup>2</sup> )**	
	Normal Winter Precipitation Event	1843 (38.5)
	Extreme Winter Precipitation Event	5985 (125)
Design Exterior Temperatures		
	Summer, °C (°F)***	46.1 (115)
	Winter, °C (°F)	-40.0 (-40)
Seismology: For seismic design parameters, refer to Subsection 3.7.1.		
Extreme Wind		
	Basic Wind Speed (100-year recurrence interval (3-sec gust)), m/s (mph)*	67.1 (150)
	Exposure Category	Exposure D
Tornado		
	Maximum Tornado Wind Speed, m/s (mph)	147.5 (330)
	Maximum Rotational Speed, m/s (mph)	116.2 (260)
	Translational Speed, m/s (mph)	31.3 (70)
	Radius, m (ft)	45.7 (150)
	Pressure Drop, kPa (psi)	16.6 (2.4)
	Rate of Pressure Drop, kPa/s (psi/s)	11.7 (1.7)
	Missile Spectrum	Spectrum I of SRP 3.5.1.4, Rev. 2 applied to full building height.

**Table 3G.1-2            Site Design Parameters**

Parameter		Value(s)
Maximum Rainfall**		
	Design Rainfall, cm/hr (in/hr)	49.3 (19.4)
	(Deleted)	
<p>Notes</p> <p>*        <i>Equivalent to 62.6 m/s (140 mi/hr) 50-year recurrence interval wind speed (3-sec gust) with importance factor of 1.15 per ASCE 7-02.</i></p> <p>**        Based on probable maximum precipitation (PMP) for one hour over 2.6 km<sup>2</sup> (one square mile) with a ratio of 5 minutes to one hour PMP of 0.32 as found in National Weather Service Publication Hydrometeorology Report No. 52 (HMR-52). 49.3 cm/hr (19.4 in/hr) for maximum rainfall rate is selected for design. The maximum short term rate selected is 15.7 cm (6.2 in) in 5 minutes. The roof scuppers and drains are designed independently to handle the PMP. The roof snow load for the normal winter precipitation event is less than the design live load of 2873 Pa (60 lbf/ft<sup>2</sup>) for all load combinations. The roof snow load of 5985 kPa (125 lbf/ft<sup>2</sup>) for the extreme winter precipitation event is based on the 0.61 m (2.0 ft) height of the parapet and the specific weight of water. Water will not accumulate above the height of the parapet during the extreme winter precipitation event when the roof scuppers and drains are assumed to be clogged. The roof is also capable of withstanding extreme live load for the extreme winter precipitation event because it is less than the SSE vertical load considered in the roof design. ASCE 7-02 requirements for snow are used to analyze the various roof geometries and heights. The conversion between the ground snow load and roof snow load is based on ASCE 7-02 Equation 7-1 using 1.1 exposure factor for sheltered roof in Terrain Category C, 1.0 thermal factor and 1.0 importance factor.</p> <p>***        Steady state; 47.2°C (117°F) allowed for short term.</p>		



**Table 3G.1-3 Equipment and Hydrostatic Loads inside RCCV**

Description	Weight
Reactor Pressure Vessel (normal operating condition)	21600 kN
Drywell Top Head (including refueling facilities bulkhead plate)	1100 kN
Top Slab	
a. Liner below slab	2.5 kN/m <sup>2</sup>
b. Miscellaneous attachments below slab	2.4 kN/m <sup>2</sup>
Upper Drywell	
a. Wall Liner	2.7 kN/m <sup>2</sup>
b. Personnel Airlock (EL17500)	200 kN
c. Equipment Hatch (EL17500)	110 kN
d. Miscellaneous attachments to wall	2.4 kN/m <sup>2</sup>
GDCS Pool	
a. Water (H=6.8 m)	67 kN/m <sup>2</sup>
Wetwell	
a. Water (H=5.5 m) HWL	54 kN/m <sup>2</sup>
b. Wall Liner	1.6 kN/m <sup>2</sup>
c. Floor Liner	2.4 kN/m <sup>2</sup>
d. Access Hatch (EL13570)	90 kN
e. Quenchers (10 units)	510 kN
f. Miscellaneous attachments to wall	2.4 kN/m <sup>2</sup>
Lower Drywell	
a. Wall Liner	3.1 kN/m <sup>2</sup>
b. Floor Liner	0.6 kN/m <sup>2</sup>
c. Sacrificial (BiMAC) concrete (H=1.6 m)	36 kN/m <sup>2</sup>
d. Personnel Airlock (EL-6400)	200 kN
e. Equipment Hatch (EL-6400)	110 kN
f. Miscellaneous attachments to wall	2.4 kN/m <sup>2</sup>
RCCV Internal Structures except Diaphragm Floor	
a. Equipment and piping on the slab	2.4 kN/m <sup>2</sup>
Diaphragm Floor (excluding GDCS pool areas)	
a. Equipment and piping on the slab	9.8 kN/m <sup>2</sup>

*SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):*  
1 kN = 224.809 lbf  
1 kN/m<sup>2</sup> = 20.885 psf  
1 m = 3.28 ft

**Table 3G.1-4      Equipment and Hydrostatic Loads in RB Pools**

Description	Weight	Remarks
Reactor Well		
a. Water (H=6.85m)	66 kN/m <sup>2</sup>	
b. Wall Liner	1.0 kN/m <sup>2</sup>	
c. Floor Liner	1.6 kN/m <sup>2</sup>	
Equipment Storage Pool		
a. Water (H=6.85m)	66 kN/m <sup>2</sup>	
b. Wall Liner	1.0 kN/m <sup>2</sup>	
c. Floor Liner	1.6 kN/m <sup>2</sup>	
d. Steam Dryer, Steam Separator	66 kN/m <sup>2</sup>	During refueling
Fuel Buffer Pool		
a. Water (H=6.85m)	66 kN/m <sup>2</sup>	
b. Wall Liner	1.0 kN/m <sup>2</sup>	
c. Floor Liner	1.6 kN/m <sup>2</sup>	
d. Fuel Storage Racks	153 kN/m <sup>2</sup>	During refueling
IC/PCCS Pools		
a. Water (H=4.8m)	47 kN/m <sup>2</sup>	
b. Wall Liner	1.0 kN/m <sup>2</sup>	
c. Floor Liner	1.6 kN/m <sup>2</sup>	
d. IC heat exchanger	333 kN/unit	
e. PCCS heat exchanger	233 kN/unit	
Inclined Fuel Transfer Tube Pool		
a. Water (H=11.64m)	114 kN/m <sup>2</sup>	
b. Wall Liner	1.0 kN/m <sup>2</sup>	
c. Floor Liner	1.6 kN/m <sup>2</sup>	
IC/PCCS Expansion Pools		
a. Water (H=4.8m)	47 kN/m <sup>2</sup>	
b. Wall Liner	1.0 kN/m <sup>2</sup>	
c. Floor Liner	1.6 kN/m <sup>2</sup>	
Equipment Storage Pool Gate	300 kN	

**Table 3G.1-4                      Equipment and Hydrostatic Loads in RB Pools**

Description	Weight	Remarks
Buffer Pool Gate	300 kN	The actual value considered in the building stress analysis is 50 kN. The increased pool gate weight is negligibly small as compared to the weight of the RCCV top slab which supports the pool gates. <sup>(1)</sup>
Inclined Fuel Transfer Tube Pool Gate	50 kN	

<sup>(1)</sup> *RCCV top slab weight ( $w$ ) =  $\pi[(R_o)^2 - (R_i)^2](t)(\rho)$ ; where  $R_o=18$  m,  $R_i=5.25$  m,  $t=2.4$  m,  $\rho=0.0235$  MN/m<sup>2</sup>. Then,  $w=52500$  kN or 175 times the 300 kN pool gate weight.*

*SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):*

*1 kN = 224.809 lbf*

*1 kN/m<sup>2</sup> = 20.885 psf*

*1 m = 3.28 ft*

**Table 3G.1-5      Miscellaneous Structures, Piping, and Commodity Loads on RB Floor**

Elevation (mm)	Weights	Remarks
52,400	2.4 kN/m <sup>2</sup> (50psf)	
34,000	2.4 kN/m <sup>2</sup> (50psf)	
27,000	2.4 kN/m <sup>2</sup> (50psf)	
17,500	2.4 kN/m <sup>2</sup> (50psf) 20.0 kN/m <sup>2</sup> (415psf)	Main Steam Tunnel
13,570	2.4 kN/m <sup>2</sup> (50psf)	
9,060	2.4 kN/m <sup>2</sup> (50psf)	
4,650	2.4 kN/m <sup>2</sup> (50psf)	
-1,000	2.4 kN/m <sup>2</sup> (50psf)	
-6,400	2.4 kN/m <sup>2</sup> (50psf)	
-11,500	2.4 kN/m <sup>2</sup> (50psf)	

*SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):  
1 mm = 0.00328 ft*

**Table 3G.1-6 Equivalent Linear Temperature Distributions at Various Sections**

Section <sup>(1)</sup>	Side <sup>(2)</sup>		Equivalent Linear Temperature <sup>(3)</sup> (°C)					
			Normal Operation Winter		DBA (6 min) Winter		DBA (72 hr) Winter	
	1	2	Td	Tg	Td	Tg	Td	Tg
C1	DW	RM	33.5	38.1	34.7	45.2	58.2	127.3
C2	WW	RM	26.5	26.7	27.4	32.0	47.0	101.0
C3	SP	RM	28.2	29.5	28.8	32.7	45.2	90.8
C4	SP	RM	28.2	29.5	28.7	32.4	45.2	90.8
C5	DW	IP	49.4	12.8	50.6	17.6	Note (4)	Note (4)
C6	DW	XP	49.4	12.8	50.6	17.7	Note (4)	Note (4)
C7	DW	RM	33.5	39.3	34.5	45.5	53.9	121.2
M1	DW	GR	27.5	23.9	27.5	23.9	27.5	23.9
M2	RM	GR	12.9	-5.2	12.9	-5.2	12.9	-5.2
P1	IP	DP	43.0	0.0	43.3	1.5	Note (4)	Note (4)
P2	IP	XP	43.0	0.0	44.2	0.3	Note (4)	Note (4)
W1	RM	RM	10.0	0.0	10.0	0.0	10.0	0.0
W2	RM	GR	13.0	-4.9	13.0	-4.9	13.0	-4.9
W3	RM	AT	-17.7	42.3	-17.7	42.3	-17.7	42.3
S1	RM	RM	10.0	0.0	10.0	0.0	10.0	0.0
S2	RM	AT	-20.0	36.0	-20.0	36.0	-20.0	36.0

(1) See Figure 3G.1-20. for the location of sections.

(2) AT: Air

DBA: Design Basis Accident

DP: Equipment Storage Pool, Reactor Well, and Buffer Pool

DW: Drywell

GR: Ground

IP: I C/PCCS Pool

RM: RB Room outside Containment

SP: Suppression Pool

WW: Wetwell Air Space

XP: Expansion Pool

(3) Td: Average Temperature

Tg: Surface Temperature Difference (positive when temperature at Side 1 is higher)

(4) See Table 3G.5-1

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

$$1^{\circ}\text{C} = (^{\circ}\text{F} - 32)/1.8$$

**Table 3G.1-7      Pressure Loads Inside RCCV**

<b>Event</b>	<b>Drywell pressure in kPaG (psig)</b>	<b>Wetwell pressure in kPaG (psig)</b>	<b>Note</b>
<i>Normal operation</i>	9.0 (1.3)	9.0 (1.3)	
<i>SIT*1</i>	356.8 (51.8)	356.8 (51.8)	<i>Maximum pressure</i>
<i>SIT*2</i>	310 (45)	32.5 (4.75)	<i>Maximum differential pressure</i>
<i>LOCA (6 minutes)</i>	257 (37.3)	241 (35.0)	
<i>LOCA (72 hours)</i>	310 (45)	310 (45)	

\*      *SIT: Structural Integrity Test*

**Table 3G.1-8      Pressure Loads Inside IC/PCCS Pools**

<b>Event</b>	<b>IC/PCCS pool pressure in kPaG (psig)</b>
<i>Normal operation</i>	34.5 (5)
<i>LOCA</i>	48.3 (7)

**Table 3G.1-9                      Maximum Vertical Acceleration**

RB/FB Walls			RB/FB Slabs		
Elev. (m)	Node No.	Max. Vertical Acceleration (g)	Elev. (m)	Node No.	Max. Vertical Acceleration (g)
52.40*	110	1.25	52.40*	9101	1.20
34.00	109	0.83		9102	1.82
27.00	108	0.73		9103	3.14
22.50	107	0.73		9104	2.26
17.50	106	0.73		9105	2.32
13.57	105	0.74		9106	2.99
9.06	104	0.73		9107	2.80
4.65	103	0.78		9108	2.61
-1.00	102	0.76	34.00	9091	1.29
-6.40	101	0.68		9092	1.06
-11.50	2	0.63	27.00	9081	1.16
-15.50	1	0.51		9082	0.99
RCCV Wall				9083	1.09
34.00	209	0.90		9084	1.31
27.00	208	0.88		9085	0.97
17.50	206	0.73	22.50	9071	1.60
13.57	205	0.78		9072	1.31
9.06	204	0.65		9073	2.03
4.65	203	0.69		9074	1.31
-1.00	202	0.59		9075	1.16
-6.40	201	0.59	17.50	9061	1.79
RPV Pedestal/Vent Wall				9062	1.49
17.50	701	1.10		9063	0.82
14.50	702	1.04		9064	1.84
11.50	703	0.92		9065	1.42
8.50	704	0.77		99064	1.07
7.4625	705	0.70	13.57	9051	0.81
4.65	706, 303	0.67		9052	1.46
2.4165	377	0.64	9.06	9041	0.88
-1.00	302	0.59		9042	1.42
-2.753	376	0.51	4.65	9031	1.17
-6.40	301	0.50		9032	0.97
				9033	1.02
				9034	1.51
				9035	1.38
			-1.00	9021	1.12
				9022	1.45
				9023	1.01
				9024	0.89
				9025	1.34
				9026	1.57
				9027	0.88
			-6.40	9011	0.92
				9012	0.92
				9013	1.35

Note: See Figure 3A.7-4 for the node numbers.

\*: The difference between the modeled elevation 52.4 m and the actual elevation 52.7 m at the RB roof is negligibly small.

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):  
1 m=3.28 ft

**Table 3G.1-10 Selected Load Combinations for the RCCV**

Category	Load Combination											Acceptance Criteria <sup>(1)</sup>
	No. <sup>(2)</sup>	D	L	P <sub>t</sub>	P <sub>a</sub>	T <sub>a</sub>	E <sup>(3)</sup>	R <sub>a</sub> <sup>(3)</sup>	SRV <sup>(3)</sup>	CO <sup>(3)</sup>	Chugging <sup>(3)</sup>	
SIT (maximum pressure)	CV-1	1.0	1.0	1.0								S
LOCA (1.5Pa) 6 minutes	CV-7a	1.0	1.0		1.5	1.0		1.0	1.25	1.5		U
LOCA (1.5Pa) 72 hours	CV-7b	1.0	1.0		1.5	1.0		1.0	1.25		1.5	U
LOCA + SSE 6 minutes	CV-11 <sub>a</sub>	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0		U
LOCA + SSE 72 hours	CV-11 <sub>b</sub>	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	U

- (1) S = Allowable Stress as in ASME B&PV Code Section III, Div. 2, Subsection CC-3430 for Service Load Combination.  
U = Allowable Stress as in ASME B&PV Code Section III, Div. 2, Subsection CC-3420 for Factored Load Combination.
- (2) Based on Table 3.8-2
- (3) In load combinations that combine SSE with SRV, Chugging and CO, the loads are combined by SRSS.

**Table 3G.1-11 Selected Load Combinations for the RB**

Category	Load Combination												Acceptance Criteria <sup>(1)</sup>
	No. (2)	D	L	P <sub>a</sub> <sup>(3)</sup>	T <sub>o</sub>	T <sub>a</sub> <sup>(3)</sup>	E <sup>(4)</sup>	W	R <sub>a</sub> <sup>(4)</sup>	SRV <sup>(4)</sup>	CO <sup>(4)</sup>	Chugging <sup>(4)</sup>	
Severe Environmental	RB-4	1.05	1.3		1.3			1.3					U
LOCA (1.5P <sub>a</sub> ) 6 minutes	RB-8a	1.0	1.0	1.5		1.0			1.0	1.25	1.5		U
LOCA (1.5P <sub>a</sub> ) 72 hours	RB-8b	1.0	1.0	1.5		1.0			1.0	1.25		1.5	U
LOCA + SSE 6 minutes	RB-9a	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0		U
LOCA + SSE 72 hours	RB-9b	1.0	1.0	1.0		1.0	1.0		1.0	1.0		1.0	U

- (1) U = Envelope of "Allowable Stress as in ASME Section III, Div. 2, Subsection CC-3420 for Factored Load Combination" and "Required section strength based on the strength design method per ACI 349-01."
- (2) Based on Table 3.8-15
- (3) P<sub>a</sub> and T<sub>a</sub> are accident pressure load within the containment and thermal load generated by LOCA, respectively. P<sub>a</sub> and T<sub>a</sub> are indirect loads, but their effects are considered in the RB design.
- (4) In load combinations that combine SSE with SRV, Chugging and CO, the loads are combined by SRSS.



**Table 3G.1-12 Material Constants for Design Calculations**

			Reinforced Concrete			Steel		
			Basemat	Others	Top Slab	Carbon Steel Liner	Stainless Steel Liner	Structural Steel
			f <sub>c</sub> =4000psi 27.6MPa	f <sub>c</sub> =5000psi 34.5MPa	f <sub>c</sub> =6000psi 41.4MPa			
		Temperature  (°C)						
Young's Modulus (MPa)	Temperature Loads	<21	$2.49 \times 10^4$	$2.78 \times 10^4$	$3.04 \times 10^4$	$2.00 \times 10^5$		
		93	$1.81 \times 10^4$	$2.03 \times 10^4$	$2.22 \times 10^4$			
		204	$1.62 \times 10^4$	$1.81 \times 10^4$	$1.98 \times 10^4$			
	Other Loads		$2.49 \times 10^4$	$2.78 \times 10^4$	$3.04 \times 10^4$	$2.00 \times 10^{1*}$		$2.00 \times 10^5$
Poisson's Ratio			0.17			0.3		
Thermal Expansion (m/m°C)			$9.90 \times 10^{-6}$			$1.17 \times 10^{-5}$	$1.52 \times 10^{-5}$	$1.17 \times 10^{-5}$
Weight Density (MN/m³)			0.0235			0.0770		

\* Except for the local thickened portions of the liner where the diaphragm floor, vent wall and RPV support brackets are attached. The full value of the Young's modulus is considered for these thickened liners.

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

$$1^{\circ}\text{C} = (^{\circ}\text{F} - 32)/1.8$$

$$1 \text{ MPa} = 145.038 \text{ psi}$$

$$1 \text{ m/m}^{\circ}\text{C} = 0.556 \text{ ft/ft}^{\circ}\text{F}$$

$$1 \text{ MN/m}^3 = 6.366 \times 10^3 \text{ lbf/ft}^3$$

**Table 3G.1-13      *Results of NASTRAN Analysis, Dead Load***

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
1 RPV Pedestal Bottom	5006	0.065	-5.384	0.162	-0.160	-0.912	0.016	-0.024	-0.281
	5013	-0.339	-6.071	0.256	-0.102	-0.561	-0.001	-0.013	-0.078
	5024	-0.695	-6.038	0.010	-0.060	-0.421	0.002	0.010	-0.021
2 RPV Pedestal Mid-Height	6006	0.034	-5.281	0.276	0.009	0.015	0.030	0.038	-0.039
	6013	-0.027	-5.366	0.399	-0.054	-0.059	0.008	-0.014	0.014
	6024	0.068	-4.009	-0.431	0.014	-0.110	0.012	0.024	0.075
3 RPV Pedestal Top	6606	0.045	-3.875	0.723	0.237	1.692	0.149	0.009	-0.762
	6613	0.020	-3.931	-0.043	0.173	1.595	-0.179	0.021	-0.733
	6624	0.111	-3.789	0.254	0.201	1.578	0.183	-0.028	-0.710
4 RCCV Wetwell Bottom	1806	-0.457	-4.795	0.150	-0.006	-0.136	0.007	0.000	0.017
	1813	-0.553	-4.710	0.173	-0.017	-0.060	0.002	0.001	0.058
	1824	-0.441	-5.244	-0.087	-0.017	-0.102	0.003	-0.004	0.037
5 RCCV Wetwell Mid-Height	2606	-0.141	-4.293	0.199	0.003	-0.028	0.001	0.002	-0.074
	2613	-0.196	-4.314	0.171	-0.026	-0.065	0.002	-0.003	-0.039
	2624	-0.225	-4.723	-0.043	-0.005	-0.023	0.001	0.000	-0.069
6 RCCV Wetwell Top	3406	-0.106	-3.634	0.341	0.031	0.244	0.013	0.013	-0.103
	3413	-0.014	-4.044	0.130	-0.016	-0.082	-0.071	0.023	0.004
	3424	-0.071	-4.073	-0.010	0.005	0.023	-0.008	0.028	0.003
7 RCCV Drywell Bottom	3606	0.026	-3.246	0.280	-0.010	0.121	0.006	0.020	0.137
	3613	0.127	-3.629	0.157	0.059	0.325	-0.067	-0.016	0.244
	3624	-0.040	-4.074	0.043	0.056	0.306	-0.005	0.024	0.136
8 RCCV Drywell Mid-Height	4006	0.492	-2.715	0.192	-0.188	-0.472	-0.030	0.015	0.241
	4013	0.508	-3.707	0.278	-0.040	-0.379	0.008	-0.009	0.151
	4976	0.027	-3.328	0.148	-0.001	-0.179	-0.004	-0.008	0.103
9 RCCV Drywell Top	4406	0.425	-2.172	-0.113	-0.356	-1.783	-0.034	-0.009	0.448
	4413	-0.354	-3.765	0.154	-0.196	-1.039	0.009	-0.007	0.230
	4424	0.057	-2.613	0.113	-0.046	-0.468	0.006	0.002	0.095
10 Basemat @ Center	80003	-0.599	-0.812	0.121	4.906	5.322	-0.041	0.282	-0.229
	80007	-0.624	-0.836	0.111	4.925	5.322	-0.039	-0.040	-0.366
	80012	-0.617	-0.881	0.111	4.917	5.316	-0.037	-0.349	-0.054
11 Basemat Inside RPV Pedestal	80206	-0.520	-0.688	0.188	1.278	1.871	1.202	1.395	-1.309
	80213	-0.621	-0.864	0.198	2.488	0.272	-0.150	-0.073	-1.961
	80224	-0.696	-1.185	0.106	0.346	2.665	-0.226	-1.804	-0.165
12 S/P Slab @ RPV	83306	0.143	0.603	-0.221	1.344	0.959	-0.041	0.934	-0.028
	83313	0.358	0.483	-0.106	1.366	0.963	0.038	0.943	0.030
	83324	0.302	0.633	0.039	1.339	0.942	-0.043	0.932	-0.030
13 S/P Slab @ Center	83406	0.169	0.502	-0.205	-0.866	0.328	-0.008	0.324	0.000
	83413	0.434	0.342	-0.001	-0.856	0.314	0.000	0.329	0.001
	83424	0.352	0.526	-0.003	-0.864	0.306	-0.002	0.325	-0.001
14 S/P Slab @ RCCV	83506	0.190	0.401	-0.199	-0.874	-0.026	-0.011	-0.139	0.003
	83513	0.475	0.294	0.040	-0.893	-0.042	-0.002	-0.130	0.003
	83524	0.384	0.489	-0.004	-0.891	-0.040	-0.002	-0.134	-0.001
15 Topslab @ Drywell Head Opening	98120	See Table 3G.5-3							
	98135								
	98104								
16 Topslab @ Center	98149								
	98170								
	98109								
17 Topslab @ RCCV	98174								
	98197								
	98103								

**Table 3G.1-13 Results of NASTRAN Analysis, Dead Load (Continued)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
18 Wall Below RCCV Bottom	6	0.098	-7.190	0.535	-0.213	-1.578	0.012	-0.040	-0.489
	13	0.236	-5.600	0.423	-0.508	-2.681	0.003	-0.006	-0.803
	24	0.192	-6.143	-0.210	-0.541	-2.864	0.005	0.000	-0.842
19 Wall Below RCCV Mid-Height	806	-0.043	-6.071	0.154	0.023	-0.035	-0.020	0.010	-0.114
	813	-0.215	-5.479	0.358	-0.027	-0.048	-0.010	-0.013	-0.188
	824	-0.156	-6.049	-0.196	-0.031	-0.007	-0.006	0.001	-0.205
20 Wall Below RCCV Top	1606	-0.601	-5.326	0.084	0.105	0.505	0.004	-0.004	-0.212
	1613	-0.707	-5.191	0.243	0.097	0.600	0.003	0.000	-0.254
	1624	-0.592	-5.731	-0.141	0.095	0.563	0.001	-0.006	-0.230
21 Exterior Wall @ EL-11.50 to -10.50m	20011	-0.674	-3.865	-0.514	0.058	0.416	0.012	0.055	0.178
	20023	-0.005	-1.414	-0.529	0.072	-0.327	-0.004	-0.138	-0.188
	30010	-0.161	-2.230	0.064	-0.332	-1.808	0.013	0.001	0.430
	30020	-0.043	-1.267	-0.257	0.183	-0.649	-0.058	0.155	0.221
	40001	-0.040	-1.298	0.230	0.184	-0.648	0.060	-0.152	0.211
	40011	-0.324	-2.652	-0.012	-0.376	-2.024	-0.009	-0.001	0.488
22 Exterior Wall @ EL4.65 to 6.60m	22011	0.218	-3.114	0.655	-0.012	0.059	0.009	-0.017	0.055
	22023	0.019	-1.546	-0.468	-0.160	-0.010	-0.019	0.101	0.012
	32010	-0.004	-1.822	0.063	0.001	0.039	0.001	0.000	-0.019
	32020	-0.046	-2.037	-0.066	-0.059	-0.002	-0.005	-0.054	-0.008
	42001	-0.058	-2.113	-0.061	-0.076	-0.004	0.002	0.039	-0.002
	42011	-0.312	-2.274	-0.113	-0.002	0.031	-0.003	0.002	-0.012
23 Exterior Wall @ EL22.50 to 24.60m	24211	-0.196	-1.751	0.072	-0.066	-0.439	0.004	-0.005	-0.026
	24224	-0.034	-1.039	0.295	0.030	-0.043	-0.043	-0.064	-0.035
	34210	-0.004	-0.761	0.089	0.001	-0.033	0.002	0.003	0.001
	34220	0.048	-0.921	-0.154	0.052	-0.026	-0.009	0.041	0.002
	44201	0.025	-1.084	-0.328	0.043	-0.013	0.015	-0.047	-0.002
24 Basemat @ Wall Below RCCV	90140	0.240	-0.800	-0.158	-1.389	-1.121	2.521	-1.759	2.017
	90182	-0.258	-0.327	-0.067	0.663	-1.041	-0.319	0.232	0.644
	90111	-0.386	-0.561	0.033	-0.920	0.832	-0.397	0.691	0.138
25 Slab EL4.65m @ RCCV	93140	-0.159	0.140	0.087	0.077	0.097	-0.067	0.120	-0.097
	93182	0.144	0.091	0.000	0.028	0.112	0.008	-0.008	-0.149
	93111	0.054	0.172	-0.030	0.131	0.028	0.005	-0.140	-0.004
26 Slab EL17.5m @ RCCV	96144	-0.093	0.147	0.184	0.047	0.063	-0.045	0.104	-0.081
	96186	0.284	-0.071	-0.021	-0.002	-0.003	-0.002	-0.003	-0.036
	96113	-0.065	0.538	-0.051	-0.175	0.016	0.000	0.197	0.027
27 Slab EL27.0m @ RCCV	98472	See Table 3G.5-3							
	98514								
	98424								
28 Pool Girder @ Storage Pool	123054	See Table 3G.5-3							
	123154								
29 Pool Girder @ Well	123062	See Table 3G.5-3							
	123162								
30 Pool Girder @ Buffer Pool	123067	See Table 3G.5-3							
	123167								
31 MS Tunnel Wall and Slab	150122	-0.026	0.046	0.280	0.022	0.045	0.016	-0.010	-0.043
	96611	-0.011	0.297	-0.014	0.062	-0.080	-0.052	-0.073	0.017
	98614	-0.022	-0.175	-0.020	0.009	-0.515	-0.062	-0.050	0.030

S/P Slab: Suppression Pool Slab

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.1-14 Results of NASTRAN Analysis, Drywell Unit Pressure (1 MPa)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
1 RPV Pedestal Bottom	5006	-3.691	-4.672	-0.082	1.293	7.769	0.037	-0.011	3.421
	5013	-3.770	-4.277	-0.247	1.264	7.674	-0.004	-0.002	3.458
	5024	-3.625	-3.457	0.045	1.335	7.194	-0.035	0.029	3.109
2 RPV Pedestal Mid-Height	6006	4.551	-4.404	-0.467	-0.166	-0.605	-0.012	0.044	-0.493
	6013	4.467	-4.273	-0.254	-0.166	-0.652	-0.012	0.020	-0.489
	6024	5.180	-2.748	-0.354	0.183	-0.345	-0.003	-0.054	-0.211
3 RPV Pedestal Top	6606	2.350	-4.275	0.036	-0.252	-1.748	-0.293	0.218	1.030
	6613	1.826	-4.806	-0.358	-0.255	-1.238	0.271	-0.171	0.803
	6624	2.250	-4.596	0.028	-0.261	-1.874	-0.239	0.162	1.078
4 RCCV Wetwell Bottom	1806	0.548	3.676	-0.563	0.281	1.664	0.002	-0.001	0.216
	1813	0.515	2.795	-0.039	0.275	1.709	-0.001	-0.002	0.288
	1824	0.628	4.316	0.023	0.279	1.488	-0.007	0.003	0.213
5 RCCV Wetwell Mid-Height	2606	1.528	3.661	-0.616	0.015	0.513	0.036	-0.001	0.191
	2613	1.262	2.467	-0.012	0.038	0.404	-0.005	-0.001	0.201
	2624	1.510	4.226	-0.032	0.144	0.326	-0.005	0.003	0.115
6 RCCV Wetwell Top	3406	4.379	3.739	-0.076	-1.035	-5.767	1.331	-1.003	1.977
	3413	3.268	2.059	-0.415	-0.713	-4.144	-1.211	0.767	1.514
	3424	2.984	4.114	0.796	-0.666	-4.226	1.473	-0.897	1.497
7 RCCV Drywell Bottom	3606	4.452	7.434	-0.030	0.159	1.050	1.441	-0.405	1.617
	3613	3.451	5.759	-0.371	0.362	2.279	-1.270	0.152	2.109
	3624	3.474	9.462	0.715	0.559	2.851	1.534	-0.152	1.903
8 RCCV Drywell Mid-Height	4006	1.106	7.714	0.011	0.168	1.110	0.190	0.265	-1.516
	4013	1.576	5.589	0.372	-0.188	0.078	0.072	-0.031	-0.846
	4976	2.955	8.502	-0.503	0.112	0.458	0.002	-0.004	-1.048
9 RCCV Drywell Top	4406	-0.543	7.824	0.931	1.550	10.450	-0.001	0.047	-2.610
	4413	0.388	5.173	0.469	1.175	8.382	0.132	0.071	-2.781
	4424	2.734	7.187	-0.454	1.209	7.164	0.053	0.007	-2.128
10 Basemat @ Center	80003	2.658	2.969	-0.031	-17.349	-16.643	0.022	-0.451	0.335
	80007	2.689	2.987	-0.021	-17.339	-16.635	0.026	0.064	0.548
	80012	2.676	3.011	-0.016	-17.355	-16.629	0.025	0.541	0.074
11 Basemat Inside RPV Pedestal	80206	2.759	2.810	0.000	-12.124	-12.134	-1.543	-1.227	0.879
	80213	2.813	3.035	-0.113	-13.891	-10.392	0.075	-0.011	1.558
	80224	2.812	2.786	-0.038	-10.823	-13.368	0.135	1.711	0.047
12 S/P Slab @ RPV	83306	-1.210	0.977	-0.125	-3.755	-2.157	-0.051	-1.320	0.019
	83313	-1.410	0.822	-0.015	-3.752	-2.180	0.027	-1.331	-0.001
	83324	-1.148	0.999	-0.001	-3.808	-2.215	0.002	-1.357	-0.004
13 S/P Slab @ Center	83406	-0.659	0.353	-0.049	0.528	-1.319	-0.039	-0.919	-0.001
	83413	-0.707	0.337	-0.049	0.526	-1.337	0.011	-0.914	-0.002
	83424	-0.653	0.347	0.034	0.514	-1.313	0.006	-0.933	0.000
14 S/P Slab @ RCCV	83506	-0.458	0.124	-0.004	3.051	-0.101	-0.011	-0.699	-0.013
	83513	-0.452	0.198	-0.053	3.034	-0.117	0.004	-0.699	0.000
	83524	-0.522	0.088	0.034	3.076	-0.066	0.003	-0.714	0.000
15 Topslab @ Drywell Head Opening	98120	See Table 3G.5-4							
	98135								
	98104								
16 Topslab @ Center	98149								
	98170								
	98109								
17 Topslab @ RCCV	98174								
	98197								
	98103								

**Table 3G.1-14 Results of NASTRAN Analysis, Drywell Unit Pressure (1 MPa) (Continued)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
18 Wall Below RCCV Bottom	6	-0.810	3.022	-0.522	0.541	3.152	-0.010	0.024	1.051
	13	-0.629	2.747	-0.123	0.574	3.274	-0.001	-0.001	1.019
	24	-0.982	3.181	0.076	0.606	3.445	-0.005	0.004	1.075
19 Wall Below RCCV Mid-Height	806	0.124	3.121	-0.449	-0.007	0.032	0.012	-0.010	0.100
	813	0.192	2.523	-0.104	-0.004	0.033	0.006	0.024	0.196
	824	0.054	3.361	0.101	0.024	-0.025	0.004	-0.001	0.181
20 Wall Below RCCV Top	1606	0.822	3.044	-0.486	-0.313	-1.810	0.001	0.000	0.509
	1613	0.798	2.208	-0.073	-0.319	-1.796	-0.004	-0.001	0.541
	1624	0.875	3.604	0.068	-0.317	-1.988	-0.003	0.003	0.589
21 Exterior Wall @ EL-11.50 to -10.50m	20011	0.080	0.612	0.041	0.209	0.755	0.015	-0.015	0.226
	20023	0.012	-0.081	-0.105	-0.056	0.036	-0.002	0.001	0.020
	30010	0.294	-0.111	-0.038	0.287	1.392	-0.013	-0.002	-0.295
	30020	0.099	-0.301	-0.045	-0.096	0.024	0.029	0.034	0.001
	40001	0.051	-0.249	0.183	-0.088	0.099	-0.016	-0.008	-0.016
	40011	-0.156	0.064	-0.027	0.317	1.533	0.012	0.000	-0.331
22 Exterior Wall @ EL4.65 to 6.60m	22011	0.056	0.679	-0.102	0.009	0.005	0.005	0.004	-0.136
	22023	-0.005	-0.244	-0.102	-0.001	0.025	-0.005	0.015	-0.006
	32010	0.212	0.106	0.004	0.011	0.091	0.002	0.000	0.044
	32020	0.015	-0.458	0.370	0.016	0.035	-0.007	-0.003	0.025
	42001	-0.013	-0.383	0.407	0.016	0.029	-0.009	-0.001	0.000
	42011	0.032	0.867	-0.057	0.019	0.011	0.008	-0.004	0.081
23 Exterior Wall @ EL22.50 to 24.60m	24211	1.007	0.488	-0.092	0.171	0.963	0.030	0.029	-0.602
	24224	0.033	-1.268	-0.343	0.005	0.168	0.061	0.106	0.114
	34210	1.013	0.105	0.023	-0.041	0.132	0.017	-0.008	0.073
	34220	0.092	-1.195	0.477	0.033	0.112	0.006	0.031	-0.003
	44201	0.032	-0.901	0.667	0.068	0.082	-0.024	-0.016	-0.013
24 Basemat @ Wall Below RCCV	90140	-0.181	0.400	0.822	2.960	2.403	-3.390	0.332	-0.650
	90182	1.649	0.073	-0.087	-0.866	4.383	0.450	-0.077	-0.584
	90111	0.119	0.767	-0.104	4.456	-0.712	0.507	-0.645	-0.067
25 Slab EL4.65m @ RCCV	93140	-0.061	0.042	0.046	0.082	0.056	-0.060	0.013	-0.016
	93182	0.103	-0.078	0.016	-0.007	0.075	0.005	0.000	0.015
	93111	-0.079	0.009	0.010	0.131	0.006	0.003	-0.034	-0.002
26 Slab EL17.5m @ RCCV	96144	0.383	0.384	1.127	0.207	0.284	-0.200	0.044	-0.091
	96186	1.099	-0.517	0.124	0.029	0.359	-0.058	0.015	-0.145
	96113	-0.716	1.172	0.322	2.194	0.203	-0.348	-0.906	-0.093
27 Slab EL27.0m @ RCCV	98472	See Table 3G.5-4							
	98514								
	98424								
28 Pool Girder @ Storage Pool	123054	See Table 3G.5-4							
	123154								
29 Pool Girder @ Well	123062								
	123162								
30 Pool Girder @ Buffer Pool	123067								
	123167								
31 MS Tunnel Wall and Slab	150122	0.130	-0.696	0.208	-0.004	0.081	-0.012	0.009	-0.069
	96611	-0.036	0.673	-0.029	-0.062	-0.110	-0.020	0.021	0.008
	98614	0.010	-0.274	0.006	-0.483	-1.082	-0.164	0.146	0.052

S/P Slab: Suppression Pool Slab

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.1-15 Results of NASTRAN Analysis, Wetwell Unit Pressure (1 MPa)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
1 RPV Pedestal Bottom	5006	-0.608	-1.082	0.028	0.141	0.842	0.002	0.002	0.391
	5013	-0.617	-0.943	0.105	0.139	0.834	0.000	-0.001	0.398
	5024	-0.646	-0.792	0.023	0.150	0.865	-0.006	0.003	0.413
2 RPV Pedestal Mid-Height	6006	-0.383	-1.217	0.050	-0.018	-0.160	0.005	0.005	-0.061
	6013	-0.438	-0.971	0.107	-0.024	-0.151	0.003	-0.013	-0.068
	6024	-0.505	-0.482	-0.010	-0.063	-0.149	-0.004	0.006	-0.038
3 RPV Pedestal Top	6606	0.238	-1.879	0.127	0.728	4.751	0.094	0.206	-1.285
	6613	0.381	-1.609	0.122	0.681	4.526	-0.104	-0.184	-1.198
	6624	0.312	-1.185	-0.018	0.734	4.721	0.086	0.176	-1.277
4 RCCV Wetwell Bottom	1806	2.194	4.384	0.004	0.857	5.150	0.000	0.002	1.949
	1813	2.120	4.040	-0.025	0.850	5.150	-0.006	-0.003	1.978
	1824	2.362	3.999	0.029	0.824	5.092	0.013	0.000	1.973
5 RCCV Wetwell Mid-Height	2606	6.309	4.449	-0.072	-0.457	-2.275	-0.020	0.012	-0.091
	2613	5.859	3.894	-0.017	-0.474	-2.067	-0.002	-0.011	-0.061
	2624	6.107	3.815	-0.012	-0.445	-2.084	-0.006	0.005	-0.186
6 RCCV Wetwell Top	3406	2.774	4.473	-0.470	0.796	4.661	-1.229	0.929	-1.771
	3413	2.772	3.974	0.483	0.473	3.728	1.171	-0.714	-1.508
	3424	2.834	4.000	-0.754	0.795	4.958	-1.376	0.827	-1.853
7 RCCV Drywell Bottom	3606	2.182	0.922	-0.605	-0.216	-1.304	-1.244	0.372	-0.657
	3613	2.237	0.430	0.665	-0.555	-2.305	1.256	-0.117	-0.877
	3624	2.320	-0.311	-0.867	-0.496	-2.553	-1.437	0.134	-0.801
8 RCCV Drywell Mid-Height	4006	2.016	0.427	-0.178	0.115	-0.582	-0.035	-0.224	0.019
	4013	1.579	0.025	-0.032	-0.070	-0.172	-0.062	0.029	-0.367
	4976	1.561	-0.253	0.000	-0.037	-0.041	0.006	-0.008	-0.368
9 RCCV Drywell Top	4406	0.928	-0.133	-0.105	0.412	0.242	0.108	0.004	-0.508
	4413	0.229	-0.215	-0.110	0.147	0.684	-0.026	-0.035	-0.137
	4424	0.485	-0.194	0.017	0.136	0.794	-0.005	-0.011	-0.210
10 Basemat @ Center	80003	0.408	0.436	-0.001	-2.029	-1.955	0.012	0.032	-0.004
	80007	0.411	0.432	-0.003	-2.005	-1.950	0.016	0.025	-0.008
	80012	0.409	0.426	-0.002	-1.993	-1.949	0.013	0.015	0.000
11 Basemat Inside RPV Pedestal	80206	0.435	0.436	0.020	-2.210	-2.062	0.075	0.082	-0.041
	80213	0.431	0.443	-0.001	-2.025	-2.105	0.102	0.079	-0.056
	80224	0.429	0.367	-0.011	-1.958	-2.001	0.003	0.007	-0.012
12 S/P Slab @ RPV	83306	1.804	1.743	-0.093	-0.725	1.218	-0.004	4.169	-0.060
	83313	1.989	1.716	0.091	-0.648	1.243	-0.017	4.194	0.064
	83324	1.727	1.771	-0.024	-0.666	1.259	-0.001	4.192	-0.057
13 S/P Slab @ Center	83406	1.883	1.764	-0.040	-6.216	-1.484	-0.011	-0.326	0.000
	83413	2.058	1.708	0.041	-6.190	-1.474	-0.013	-0.318	0.001
	83424	1.865	1.847	-0.004	-6.201	-1.466	0.002	-0.316	0.001
14 S/P Slab @ RCCV	83506	1.884	1.742	-0.017	2.774	-0.378	-0.008	-3.774	-0.003
	83513	2.059	1.735	0.037	2.786	-0.377	-0.002	-3.771	-0.002
	83524	1.940	1.900	-0.020	2.768	-0.371	-0.001	-3.769	0.003
15 Topslab @ Drywell Head Opening	98120	See Table 3G.5-5							
	98135								
	98104								
16 Topslab @ Center	98149								
	98170								
	98109								
17 Topslab @ RCCV	98174								
	98197								
	98103								

**Table 3G.1-15 Results of NASTRAN Analysis, Wetwell Unit Pressure (1 MPa) (Continued)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
18 Wall Below RCCV Bottom	6	-0.242	0.189	-0.086	0.105	0.634	-0.004	0.007	0.193
	13	-0.221	-0.024	-0.050	0.131	0.728	0.000	0.000	0.218
	24	-0.279	-0.069	0.036	0.135	0.761	-0.001	0.001	0.230
19 Wall Below RCCV Mid-Height	806	0.151	0.148	0.020	0.041	0.234	0.012	0.001	-0.019
	813	0.194	-0.064	-0.019	0.066	0.253	0.004	0.004	0.015
	824	0.168	-0.093	0.037	0.047	0.251	0.000	-0.001	0.024
20 Wall Below RCCV Top	1606	1.582	0.093	0.009	-0.454	-2.619	0.000	0.002	0.845
	1613	1.552	-0.184	-0.020	-0.468	-2.683	-0.005	-0.002	0.910
	1624	1.745	-0.225	0.024	-0.492	-2.729	0.008	-0.001	0.940
21 Exterior Wall @ EL-11.50 to -10.50m	20011	0.133	0.521	0.020	0.083	0.315	0.007	-0.020	0.103
	20023	0.002	-0.002	-0.017	-0.025	0.039	0.000	0.014	0.019
	30010	0.183	0.305	0.001	0.100	0.533	-0.003	-0.002	-0.112
	30020	0.026	-0.145	-0.023	-0.045	0.042	0.013	0.003	-0.008
	40001	0.016	-0.132	0.058	-0.045	0.059	-0.009	0.002	-0.013
	40011	0.124	0.354	0.022	0.108	0.582	0.003	0.002	-0.125
22 Exterior Wall @ EL4.65 to 6.60m	22011	0.988	0.289	-0.103	-0.002	0.134	0.004	-0.015	0.308
	22023	0.115	0.345	0.199	0.296	0.060	-0.058	-0.101	-0.013
	32010	1.121	0.165	-0.061	-0.014	0.105	0.016	-0.001	-0.304
	32020	0.106	0.608	0.254	0.219	0.042	-0.106	0.154	0.013
	42001	0.146	0.653	-0.054	0.288	0.041	0.041	-0.106	0.021
	42011	1.033	0.244	0.147	-0.054	0.070	-0.025	0.003	-0.295
23 Exterior Wall @ EL22.50 to 24.60m	24211	0.420	0.462	0.004	0.033	0.220	-0.002	-0.005	-0.016
	24224	0.020	0.304	-0.156	-0.040	-0.051	0.014	0.000	-0.065
	34210	0.476	0.175	0.002	0.014	0.165	-0.019	0.002	0.032
	34220	-0.020	0.130	0.004	-0.014	0.029	0.017	-0.029	-0.015
	44201	-0.014	0.151	0.117	-0.008	0.021	-0.012	0.030	-0.009
24 Basemat @ Wall Below RCCV	90140	0.066	0.126	0.143	0.061	0.036	-0.432	-0.083	0.008
	90182	0.335	0.102	0.010	-0.304	0.000	0.061	-0.005	0.272
	90111	0.101	0.245	-0.016	-0.086	-0.321	0.074	0.319	0.006
25 Slab EL4.65m @ RCCV	93140	0.301	0.395	0.345	0.058	0.044	-0.052	0.002	-0.003
	93182	0.688	0.229	-0.053	-0.007	0.087	0.005	0.002	0.067
	93111	0.237	0.673	-0.131	0.061	-0.014	-0.001	0.060	-0.001
26 Slab EL17.5m @ RCCV	96144	-0.062	0.902	0.406	0.038	-0.087	0.044	0.008	0.024
	96186	0.854	-0.302	-0.427	0.019	-0.019	0.075	-0.023	-0.107
	96113	-0.512	1.384	-0.705	-0.863	-0.011	0.377	0.042	0.027
27 Slab EL27.0m @ RCCV	98472	See Table 3G.5-5							
	98514								
	98424								
28 Pool Girder @ Storage Pool	123054								
	123154								
29 Pool Girder @ Well	123062								
	123162								
30 Pool Girder @ Buffer Pool	123067								
	123167								
31 MS Tunnel Wall and Slab	150122	0.012	-0.082	-0.008	-0.007	0.018	0.006	0.001	-0.004
	96611	-0.069	0.450	-0.054	0.004	-0.027	0.005	0.001	0.000
	98614	0.009	-0.135	0.006	-0.049	-0.086	-0.019	0.013	0.005

S/P Slab: Suppression Pool Slab

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.1-16 Results of NASTRAN Analysis, Thermal Load (Normal Operation: Winter)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
1 RPV Pedestal Bottom	5006	-3.414	-0.437	-0.228	-5.952	-6.232	-0.029	0.060	0.693
	5013	-3.146	-0.241	-0.176	-6.047	-6.552	-0.004	0.031	0.609
	5024	-3.281	-0.093	-0.019	-6.099	-6.210	-0.018	-0.023	0.615
2 RPV Pedestal Mid-Height	6006	-1.875	-0.191	0.024	-5.727	-5.302	0.158	0.038	-0.715
	6013	-1.957	-0.333	-0.227	-5.832	-5.203	-0.029	-0.014	-0.829
	6024	-2.018	-0.147	-0.008	-6.491	-3.983	-0.231	0.008	-0.730
3 RPV Pedestal Top	6606	-0.858	-0.117	0.191	-5.574	-3.404	0.002	-0.384	-1.766
	6613	-0.634	-0.136	-0.213	-5.548	-3.423	0.039	0.446	-1.793
	6624	-0.505	-0.240	0.051	-5.515	-3.228	0.021	-0.592	-1.763
4 RCCV Wetwell Bottom	1806	-2.364	-1.092	-0.393	-3.686	-5.547	0.063	0.068	-0.442
	1813	-2.821	-3.328	-0.369	-3.574	-5.568	-0.014	-0.006	-0.440
	1824	-2.275	-3.899	-0.016	-3.677	-5.571	0.012	-0.055	-0.438
5 RCCV Wetwell Mid-Height	2606	-2.866	-1.303	-0.392	-3.019	-2.343	-0.006	0.052	-0.092
	2613	-4.048	-4.123	-0.086	-2.641	-1.955	0.004	-0.051	0.067
	2624	-3.423	-4.642	-0.097	-2.943	-2.007	-0.020	0.049	0.035
6 RCCV Wetwell Top	3406	0.492	-1.701	0.000	-3.082	-3.562	-0.094	0.191	0.555
	3413	-1.540	-5.098	0.249	-2.834	-3.203	0.001	0.007	0.537
	3424	0.135	-5.952	0.243	-2.665	-1.585	-0.007	0.000	0.021
7 RCCV Drywell Bottom	3606	-2.410	-1.874	-0.297	-4.072	-4.078	0.067	0.185	0.021
	3613	-1.820	-5.897	0.873	-2.990	-2.673	-0.069	-0.021	0.188
	3624	-13.505	-7.187	0.027	0.195	1.095	0.041	0.025	1.816
8 RCCV Drywell Mid-Height	4006	0.447	-1.590	0.301	-4.004	-3.956	0.072	0.027	-0.043
	4013	0.903	-6.938	0.768	-3.142	-2.965	0.023	-0.090	0.112
	4976	-8.133	-6.545	0.419	-0.449	-1.750	0.005	0.009	-0.181
9 RCCV Drywell Top	4406	4.600	-0.749	0.402	-4.043	-4.593	0.240	0.298	0.471
	4413	0.766	-7.522	-0.121	-3.419	-4.182	0.246	-0.067	0.633
	4424	-8.592	-5.731	0.628	0.047	0.691	-0.018	-0.019	-1.557
10 Basemat @ Center	80003	-4.765	-5.524	0.028	-7.912	-7.859	-0.046	0.022	-0.007
	80007	-4.791	-5.484	0.065	-7.884	-7.854	-0.043	0.019	-0.008
	80012	-4.795	-5.414	0.049	-7.873	-7.859	-0.039	0.014	0.000
11 Basemat Inside RPV Pedestal	80206	-4.774	-5.871	0.133	-8.328	-8.170	-0.037	0.012	-0.033
	80213	-4.985	-5.528	0.163	-8.093	-8.299	-0.201	-0.065	-0.074
	80224	-4.885	-5.287	0.089	-8.086	-7.944	-0.042	-0.046	0.008
12 S/P Slab @ RPV	83306	-5.525	-1.106	-0.056	-2.905	-2.636	0.001	0.174	-0.008
	83313	-5.868	-0.744	0.011	-2.878	-2.650	-0.020	0.210	0.008
	83324	-5.754	-0.559	0.371	-2.799	-2.576	-0.007	0.259	0.008
13 S/P Slab @ Center	83406	-4.135	-2.452	-0.298	-3.149	-2.794	-0.008	0.095	0.006
	83413	-4.776	-1.972	0.275	-3.253	-2.844	-0.009	0.146	-0.001
	83424	-4.435	-1.799	0.040	-3.257	-2.800	-0.001	0.166	-0.001
14 S/P Slab @ RCCV	83506	-3.428	-2.905	-0.271	-3.337	-2.977	-0.028	0.042	0.008
	83513	-4.174	-2.746	0.323	-3.676	-3.030	-0.006	0.144	0.002
	83524	-3.662	-2.334	-0.010	-3.675	-3.022	0.013	0.132	-0.005
15 Topslab @ Drywell Head Opening	98120	-8.250	-6.148	-4.390	1.179	1.118	1.034	0.015	0.125
	98135	-12.847	-3.720	2.344	2.076	0.076	-0.350	0.159	-0.065
	98104	-3.426	-7.468	2.585	0.228	2.116	-0.471	0.061	-0.121
16 Topslab @ Center	98149	-8.128	-5.389	-1.915	1.754	1.864	0.380	0.073	0.276
	98170	-8.549	-5.044	-0.673	1.759	2.872	-0.007	0.032	0.317
	98109	-7.315	-4.905	1.127	1.235	1.959	0.002	0.227	-0.049
17 Topslab @ RCCV	98174	-6.914	-5.095	-0.760	2.420	3.569	0.007	-0.253	0.688
	98197	-10.272	-4.984	-0.945	1.536	2.498	0.194	0.164	-0.574
	98103	-8.143	-5.630	-0.071	3.116	2.695	0.101	0.446	0.082



**Table 3G.1-16 Results of NASTRAN Analysis, Thermal Load (Normal Operation: Winter) (Continued)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
18 Wall Below RCCV Bottom	6	1.253	-0.205	-0.568	0.076	0.906	-0.033	0.012	0.034
	13	0.384	-2.513	-0.655	0.359	2.031	-0.003	0.018	0.443
	24	0.608	-2.607	0.109	0.369	2.061	-0.004	-0.001	0.459
19 Wall Below RCCV Mid-Height	806	1.106	-0.949	0.087	0.125	0.770	0.068	-0.045	0.040
	813	0.616	-2.464	-0.504	0.086	0.776	-0.022	0.007	0.463
	824	0.476	-2.699	0.077	0.100	0.784	0.014	0.008	0.416
20 Wall Below RCCV Top	1606	6.930	-1.551	0.139	-0.385	-1.749	0.078	0.068	1.318
	1613	6.711	-2.791	-0.408	-0.489	-2.841	-0.003	-0.010	1.707
	1624	7.196	-3.509	-0.106	-0.548	-2.794	-0.004	-0.051	1.745
21 Exterior Wall @ EL-11.50 to -10.50m	20011	2.857	2.770	0.707	0.218	0.937	0.029	-0.143	0.275
	20023	-1.456	-1.248	1.649	1.953	3.881	0.188	0.289	0.632
	30010	0.135	2.273	-0.121	1.014	3.199	-0.017	-0.023	-0.559
	30020	-0.118	-1.019	-0.219	0.131	1.084	0.109	-0.030	-0.275
	40001	-0.158	-0.676	-0.073	0.169	1.184	-0.072	0.112	-0.307
	40011	0.784	2.397	0.042	1.004	3.271	0.007	0.011	-0.589
22 Exterior Wall @ EL4.65 to 6.60m	22011	1.989	2.366	-0.092	-0.078	-0.066	0.029	0.015	0.113
	22023	1.813	-4.077	-2.023	-0.288	0.359	-0.041	0.709	0.422
	32010	12.350	5.928	0.012	-2.697	-2.528	-0.002	-0.002	-0.174
	32020	0.311	4.027	2.287	-0.573	-1.830	-0.392	0.720	0.111
	42001	2.250	2.855	2.390	-0.736	-1.651	-0.048	-0.662	-0.269
	42011	10.751	3.992	0.063	-2.795	-2.458	0.078	0.067	-0.089
23 Exterior Wall @ EL22.50 to 24.60m	24211	2.843	1.959	-0.374	-0.012	0.038	0.010	-0.116	1.643
	24224	0.119	3.714	-3.310	0.641	-0.241	-0.550	-0.622	-0.226
	34210	13.386	4.447	-0.429	-2.795	-2.685	0.027	-0.009	-0.153
	34220	1.581	3.765	2.292	0.666	-1.618	-0.429	1.495	0.117
24 Basemat @ Wall Below RCCV	44201	0.865	4.461	-0.102	0.302	-1.803	0.423	-1.817	0.106
	90140	1.036	1.410	1.316	1.084	0.020	-1.021	-0.512	-0.135
	90182	1.427	0.428	0.598	-0.072	-3.082	0.173	-0.153	2.372
25 Slab EL4.65m @ RCCV	90111	0.529	2.358	-0.001	-3.379	-0.412	0.034	2.474	0.116
	93140	-0.743	1.592	2.634	-0.402	-0.313	0.220	-0.105	0.085
	93182	2.346	-2.693	-0.779	-0.292	-1.483	-0.064	0.061	1.096
26 Slab EL17.5m @ RCCV	93111	-2.387	2.996	-0.082	-1.455	-0.268	-0.037	0.959	0.002
	96144	0.039	2.670	2.994	-0.152	-0.132	0.104	-0.028	0.043
	96186	2.697	-1.893	-1.089	-0.101	-0.480	-0.033	0.018	0.387
27 Slab EL27.0m @ RCCV	96113	-4.345	-3.845	-0.732	-3.635	-2.664	-0.140	0.735	-0.030
	98472	-0.491	-0.852	4.524	-0.425	-0.142	-0.156	0.325	-0.431
	98514	-0.578	-2.449	-1.119	-0.530	-0.406	-0.021	0.038	-0.376
28 Pool Girder @ Storage Pool	98424	-8.688	-9.621	-1.242	0.386	-0.509	0.134	-5.159	-0.068
	123054	0.578	-3.049	1.386	2.219	2.152	0.031	-0.307	0.546
	123154	0.882	0.664	-0.264	1.850	1.112	-0.331	-0.107	0.233
29 Pool Girder @ Well	123062	-2.848	-0.161	-0.520	0.096	0.138	0.035	-0.092	0.076
	123162	-2.548	-0.130	-0.518	0.072	-0.199	0.056	-0.181	0.097
30 Pool Girder @ Buffer Pool	123067	-3.044	-4.728	-1.664	0.540	0.402	-0.076	-0.115	0.516
	123167	-2.836	-2.339	-2.121	0.175	-0.523	-0.229	0.021	0.153
31 MS Tunnel Wall and Slab	150122	0.267	-0.536	1.825	1.079	3.149	-0.033	-0.584	0.414
	96611	-0.243	2.761	-0.171	-1.125	-6.749	-0.368	0.367	0.185
	98614	-0.176	2.269	-0.136	-0.720	-10.191	0.037	0.428	0.285

S/P Slab: Suppression Pool Slab

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.1-17 Results of NASTRAN Analysis, Thermal Load (LOCA After 6 minutes: Winter)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
1 RPV Pedestal Bottom	5006	-3.476	1.649	-0.329	-6.696	-6.462	-0.046	0.105	1.012
	5013	-3.121	1.796	-0.097	-6.854	-6.851	-0.006	0.027	0.925
	5024	-3.419	1.892	-0.003	-6.894	-6.129	-0.026	-0.036	1.045
2 RPV Pedestal Mid-Height	6006	0.080	1.775	0.154	-6.175	-4.043	0.264	0.065	-1.515
	6013	-0.061	1.444	-0.177	-6.419	-3.904	-0.057	-0.026	-1.669
	6024	-0.245	2.050	0.059	-7.408	-2.297	-0.304	-0.003	-1.547
3 RPV Pedestal Top	6606	20.997	2.192	0.564	-6.643	-5.510	-0.035	-1.941	0.870
	6613	21.088	1.964	-0.425	-6.702	-5.546	0.139	2.063	0.862
	6624	21.900	2.601	0.228	-6.671	-5.665	0.005	-2.338	1.055
4 RCCV Wetwell Bottom	1806	2.533	0.468	-0.194	-4.438	-8.138	0.077	0.083	-1.750
	1813	1.866	-2.167	-0.420	-4.274	-7.773	-0.025	-0.007	-1.523
	1824	2.926	-2.481	0.046	-4.432	-8.134	0.020	-0.085	-1.667
5 RCCV Wetwell Mid-Height	2606	1.379	0.586	-0.171	-3.308	-1.033	0.018	0.039	0.074
	2613	0.111	-2.544	-0.109	-3.090	-1.052	0.009	-0.075	0.370
	2624	0.965	-2.909	-0.087	-3.293	-0.935	-0.026	0.067	0.189
6 RCCV Wetwell Top	3406	11.723	1.461	0.327	-4.151	-8.468	-0.227	0.461	3.349
	3413	8.032	-3.439	0.044	-4.382	-9.151	-0.402	0.538	3.335
	3424	10.292	-4.166	0.471	-3.681	-5.045	-0.039	-0.006	2.165
7 RCCV Drywell Bottom	3606	8.504	1.377	0.674	-5.342	-9.036	0.607	0.534	-1.980
	3613	4.607	-4.161	1.005	-4.955	-6.227	-0.363	0.317	-0.820
	3624	-4.291	-6.043	0.252	-0.934	-2.498	0.068	0.000	0.351
8 RCCV Drywell Mid-Height	4006	5.952	2.178	0.212	-5.110	-5.057	0.011	-0.126	-0.683
	4013	4.287	-5.850	1.041	-4.672	-4.289	0.014	-0.132	-0.308
	4976	-2.660	-5.335	0.580	-0.954	-1.780	0.003	0.013	-0.584
9 RCCV Drywell Top	4406	6.433	1.711	-0.232	-4.475	-3.816	0.299	0.087	-0.150
	4413	0.711	-6.632	-0.292	-4.753	-4.467	0.253	-0.243	0.643
	4424	-5.846	-4.171	0.767	-0.363	1.129	-0.024	-0.022	-1.462
10 Basemat @ Center	80003	-4.270	-5.140	0.021	-8.130	-8.102	-0.039	0.029	-0.008
	80007	-4.296	-5.104	0.056	-8.096	-8.099	-0.037	0.028	-0.009
	80012	-4.302	-5.040	0.042	-8.079	-8.109	-0.032	0.024	-0.001
11 Basemat Inside RPV Pedestal	80206	-4.260	-5.523	0.137	-8.575	-8.460	0.003	0.005	-0.035
	80213	-4.445	-5.127	0.161	-8.289	-8.565	-0.151	-0.018	-0.103
	80224	-4.372	-4.948	0.081	-8.177	-8.193	-0.045	-0.038	0.010
12 S/P Slab @ RPV	83306	-10.607	10.981	0.454	-4.700	-2.770	0.032	-0.288	0.000
	83313	-10.822	11.242	-0.850	-4.737	-2.848	-0.039	-0.302	-0.028
	83324	-10.702	11.862	1.279	-4.487	-2.654	0.006	-0.156	0.046
13 S/P Slab @ Center	83406	-6.490	4.881	-0.530	-3.815	-3.181	-0.001	-0.306	0.016
	83413	-6.986	5.307	0.315	-3.900	-3.257	-0.015	-0.278	-0.011
	83424	-6.630	5.823	0.078	-3.895	-3.148	-0.003	-0.210	0.009
14 S/P Slab @ RCCV	83506	-3.948	2.320	-0.446	-2.906	-3.131	-0.038	-0.275	0.016
	83513	-4.567	2.419	0.440	-3.190	-3.174	-0.008	-0.192	-0.001
	83524	-4.038	3.201	-0.017	-3.278	-3.153	0.013	-0.168	-0.005
15 Topslab @ Drywell Head Opening	98120	-7.068	-4.258	-0.770	0.956	0.732	2.765	-0.161	-0.002
	98135	-8.729	-5.283	0.235	3.147	-2.057	-1.132	0.380	-0.267
	98104	-4.999	-1.752	0.585	-1.461	3.712	-1.500	0.185	-0.214
16 Topslab @ Center	98149	-6.075	-2.540	-1.137	2.229	2.310	0.496	0.037	0.048
	98170	-5.510	-3.566	-1.042	2.141	2.864	-0.042	0.030	0.389
	98109	-6.256	-0.887	0.773	1.219	2.564	-0.119	0.329	-0.005
17 Topslab @ RCCV	98174	-4.871	-2.689	-0.476	2.352	3.211	0.255	-0.023	0.434
	98197	-7.584	-2.926	-1.360	1.917	3.110	0.130	0.154	-0.447
	98103	-6.577	-2.458	-0.070	3.431	3.308	0.118	0.450	0.084

**Table 3G.1-17 Results of NASTRAN Analysis, Thermal Load (LOCA After 6 minutes: Winter) (Continued)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
18 Wall Below RCCV Bottom	6	1.177	-0.473	-0.669	0.101	1.063	-0.040	0.024	0.044
	13	0.307	-3.027	-0.689	0.408	2.284	-0.002	0.019	0.475
	24	0.412	-3.041	0.146	0.425	2.350	-0.005	-0.002	0.516
19 Wall Below RCCV Mid-Height	806	1.601	-1.332	0.182	0.235	1.292	0.083	-0.053	-0.063
	813	1.036	-2.990	-0.508	0.175	1.290	-0.027	0.006	0.450
	824	0.890	-3.046	0.126	0.176	1.306	0.019	0.010	0.396
20 Wall Below RCCV Top	1606	11.606	-2.042	0.301	-0.668	-3.250	0.099	0.085	2.306
	1613	11.229	-3.474	-0.425	-0.785	-4.386	-0.008	-0.014	2.714
	1624	12.187	-3.970	-0.124	-0.867	-4.480	-0.001	-0.082	2.817
21 Exterior Wall @ EL-11.50 to -10.50m	20011	3.023	3.384	0.790	0.274	1.136	0.041	-0.173	0.330
	20023	-1.459	-1.215	1.590	1.936	3.930	0.184	0.310	0.647
	30010	0.421	2.641	-0.135	1.081	3.585	-0.018	-0.024	-0.601
	30020	-0.090	-1.196	-0.238	0.081	1.104	0.123	-0.022	-0.270
	40001	-0.154	-0.831	0.014	0.123	1.237	-0.081	0.114	-0.310
	40011	0.865	2.785	0.044	1.075	3.674	0.007	0.012	-0.638
22 Exterior Wall @ EL4.65 to 6.60m	22011	3.577	2.789	-0.075	-0.128	-0.161	0.049	0.032	-0.031
	22023	1.984	-3.558	-1.991	0.092	0.423	-0.047	0.570	0.405
	32010	14.408	6.124	0.009	-2.798	-2.759	0.004	-0.008	0.040
	32020	0.445	4.720	2.524	-0.285	-1.833	-0.377	0.922	0.167
	42001	2.451	3.607	2.534	-0.371	-1.611	-0.058	-0.794	-0.254
	42011	12.432	4.405	0.143	-2.975	-2.774	0.081	0.081	0.172
23 Exterior Wall @ EL22.50 to 24.60m	24211	4.177	2.901	-0.313	0.092	0.628	0.014	-0.122	1.431
	24224	0.340	4.642	-3.562	0.871	-0.344	-0.446	-0.824	-0.417
	34210	15.323	4.794	-0.317	-2.778	-2.409	0.015	-0.011	0.104
	34220	1.721	4.437	2.297	0.980	-1.464	-0.240	1.609	0.013
	44201	1.001	5.209	0.300	0.668	-1.698	0.337	-1.911	0.044
24 Basemat @ Wall Below RCCV	90140	1.052	1.448	1.374	0.756	-0.217	-0.971	-0.682	-0.069
	90182	1.619	0.481	0.610	-0.246	-3.861	0.184	-0.141	2.769
	90111	0.567	2.209	-0.001	-4.129	-0.522	0.050	2.860	0.127
25 Slab EL4.65m @ RCCV	93140	-0.669	2.312	4.286	-0.515	-0.395	0.287	-0.135	0.111
	93182	4.229	-4.036	-1.098	-0.354	-1.829	-0.083	0.075	1.370
	93111	-3.602	4.956	-0.257	-1.768	-0.316	-0.047	1.178	0.000
26 Slab EL17.5m @ RCCV	96144	-0.269	4.712	6.965	-0.230	-0.125	0.167	-0.073	0.023
	96186	6.688	-4.125	-1.418	-0.091	-0.316	-0.048	0.016	0.347
	96113	-8.342	2.574	-1.682	-4.481	-2.783	-0.199	1.240	-0.059
27 Slab EL27.0m @ RCCV	98472	-0.778	-0.772	5.392	-0.313	0.031	-0.311	0.451	-0.561
	98514	0.436	-2.393	-1.392	-0.533	-0.070	-0.005	0.036	-0.726
	98424	-9.063	-6.855	-1.452	1.316	-0.418	0.194	-5.559	-0.101
28 Pool Girder @ Storage Pool	123054	1.314	-2.832	1.430	2.281	2.120	0.027	-0.232	0.482
	123154	1.031	0.747	-0.407	1.925	1.145	-0.338	-0.086	0.247
29 Pool Girder @ Well	123062	-1.254	-0.148	-0.719	0.101	0.323	0.027	0.057	0.172
	123162	-1.691	-0.032	-0.470	0.128	-0.117	-0.003	-0.151	0.085
30 Pool Girder @ Buffer Pool	123067	-2.405	-6.001	-1.842	0.639	0.439	-0.117	-0.150	0.470
	123167	-2.204	-2.669	-2.246	0.268	-0.449	-0.228	-0.011	0.180
31 MS Tunnel Wall and Slab	150122	0.224	-0.515	1.901	1.053	3.140	-0.007	-0.584	0.364
	96611	-0.447	4.103	-0.332	-1.287	-7.109	-0.423	0.426	0.209
	98614	-0.187	1.989	-0.145	-0.861	-10.477	-0.011	0.470	0.303

S/P Slab: Suppression Pool Slab

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.1-18 Results of NASTRAN Analysis, Thermal Load (LOCA After 72 hours: Winter)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
1 RPV Pedestal Bottom	5006	-12.849	0.250	-0.523	-16.011	-12.625	-0.093	0.227	4.158
	5013	-12.356	0.343	-0.104	-16.288	-13.239	-0.007	0.021	4.062
	5024	-12.862	0.231	0.003	-16.285	-11.829	-0.073	-0.054	4.265
2 RPV Pedestal Mid-Height	6006	-2.408	0.615	0.443	-16.093	-14.923	0.436	0.146	-1.774
	6013	-2.624	0.212	-0.206	-16.582	-14.795	-0.048	-0.033	-2.015
	6024	-2.728	0.667	0.076	-18.533	-11.361	-0.661	0.020	-1.697
3 RPV Pedestal Top	6606	8.837	0.682	0.577	-16.163	-12.297	0.057	-1.395	-2.012
	6613	9.213	0.732	-0.359	-16.199	-12.536	0.030	1.518	-1.952
	6624	9.545	0.848	0.253	-16.174	-12.377	0.066	-1.768	-1.800
4 RCCV Wetwell Bottom	1806	-1.533	-1.021	-0.228	-10.248	-14.646	0.090	0.096	-1.555
	1813	-2.037	-4.249	-0.394	-10.039	-14.121	-0.043	-0.006	-1.254
	1824	-1.011	-4.103	0.136	-10.224	-14.384	0.028	-0.105	-1.321
5 RCCV Wetwell Mid-Height	2606	-4.269	-1.249	-0.234	-9.962	-7.559	0.001	0.044	0.117
	2613	-5.197	-5.323	-0.038	-9.725	-7.432	-0.015	-0.093	0.418
	2624	-4.923	-4.754	-0.111	-10.020	-7.637	-0.043	0.078	0.194
6 RCCV Wetwell Top	3406	5.196	-0.343	0.501	-10.839	-14.129	0.028	0.144	2.477
	3413	3.430	-7.154	0.362	-10.781	-14.124	-0.109	0.133	2.640
	3424	2.843	-6.398	0.484	-9.990	-9.736	0.045	-0.108	0.896
7 RCCV Drywell Bottom	3606	0.851	-0.258	0.079	-12.665	-14.960	0.282	0.179	-0.838
	3613	-0.941	-8.499	1.390	-12.337	-13.241	-0.243	0.024	-0.345
	3624	-10.577	-8.035	0.298	-7.210	-6.858	0.089	-0.061	1.477
8 RCCV Drywell Mid-Height	4006	1.893	0.841	-0.323	-12.242	-12.219	0.193	-0.154	-0.810
	4013	1.197	-10.529	1.292	-12.197	-11.585	0.046	-0.165	-0.457
	4976	-7.092	-6.953	0.638	-7.681	-8.655	0.012	0.039	-0.305
9 RCCV Drywell Top	4406	6.726	0.270	-1.390	-11.635	-9.864	0.510	0.460	-0.602
	4413	-0.989	-11.897	-0.372	-12.126	-10.994	0.411	-0.180	0.175
	4424	-10.172	-5.565	0.973	-7.107	-5.872	-0.070	-0.009	-1.761
10 Basemat @ Center	80003	-1.587	-2.420	-0.001	-8.464	-8.777	-0.040	0.022	-0.010
	80007	-1.600	-2.375	0.039	-8.444	-8.779	-0.040	0.014	-0.014
	80012	-1.607	-2.298	0.028	-8.433	-8.799	-0.031	0.005	0.001
11 Basemat Inside RPV Pedestal	80206	-1.604	-2.924	0.120	-8.962	-9.256	0.034	-0.007	-0.049
	80213	-1.721	-2.346	0.088	-8.685	-9.343	-0.166	-0.026	-0.164
	80224	-1.574	-2.175	0.061	-8.644	-8.932	-0.052	-0.105	0.019
12 S/P Slab @ RPV	83306	-11.672	3.835	0.218	-9.639	-8.194	0.035	-0.073	-0.040
	83313	-11.910	4.316	-0.426	-9.668	-8.271	-0.025	-0.075	0.011
	83324	-11.696	4.693	0.966	-9.530	-8.130	-0.002	0.004	0.007
13 S/P Slab @ Center	83406	-8.140	-0.574	-0.507	-9.101	-8.502	0.000	-0.107	0.016
	83413	-8.751	0.109	0.485	-9.199	-8.591	-0.012	-0.069	-0.008
	83424	-8.209	0.422	0.013	-9.166	-8.499	0.001	-0.043	0.006
14 S/P Slab @ RCCV	83506	-6.270	-2.431	-0.382	-8.852	-8.637	-0.050	-0.135	0.021
	83513	-7.033	-2.078	0.612	-9.208	-8.687	-0.011	-0.022	0.001
	83524	-6.237	-1.445	-0.080	-9.171	-8.643	0.017	-0.039	-0.005
15 Topslab @ Drywell Head Opening	98120	See Tables 3G.5-6 to 3G.5-9							
	98135								
	98104								
16 Topslab @ Center	98149								
	98170								
	98109								
17 Topslab @ RCCV	98174								
	98197								
	98103								

**Table 3G.1-18 Results of NASTRAN Analysis, Thermal Load (LOCA After 72 hours: Winter) (Continued)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
18 Wall Below RCCV Bottom	6	0.745	-0.977	-0.895	0.238	1.920	-0.053	0.044	0.293
	13	-0.174	-4.065	-0.782	0.604	3.357	-0.002	0.023	0.785
	24	0.101	-3.765	0.212	0.594	3.314	-0.007	-0.003	0.779
19 Wall Below RCCV Mid-Height	806	1.907	-2.149	0.225	0.307	1.688	0.090	-0.068	-0.082
	813	1.360	-3.986	-0.566	0.221	1.702	-0.034	0.006	0.602
	824	1.151	-3.732	0.198	0.224	1.729	0.027	0.015	0.502
20 Wall Below RCCV Top	1606	15.858	-3.114	0.381	-0.839	-4.009	0.124	0.101	3.042
	1613	15.713	-4.649	-0.420	-1.005	-5.538	-0.011	-0.016	3.612
	1624	16.688	-4.842	-0.107	-1.115	-5.549	0.001	-0.106	3.698
21 Exterior Wall @ EL-11.50 to -10.50m	20011	3.314	4.817	0.922	0.447	1.837	0.052	-0.225	0.576
	20023	-1.453	-1.169	1.549	1.890	4.020	0.180	0.322	0.683
	30010	0.688	3.733	-0.258	1.289	4.763	-0.022	-0.031	-0.865
	30020	-0.058	-1.477	-0.392	0.021	1.209	0.144	-0.026	-0.282
	40001	-0.090	-1.141	0.056	0.039	1.330	-0.097	0.105	-0.322
	40011	1.295	3.630	0.051	1.243	4.654	0.011	0.015	-0.844
22 Exterior Wall @ EL4.65 to 6.60m	22011	5.080	4.474	-0.209	-0.175	-0.228	0.067	0.045	0.074
	22023	2.211	-3.114	-2.141	0.528	0.492	-0.052	0.386	0.393
	32010	16.739	7.724	-0.075	-2.893	-3.003	-0.001	-0.014	0.022
	32020	0.653	4.869	2.518	0.104	-1.860	-0.395	1.226	0.199
	42001	2.720	3.801	2.644	0.130	-1.563	-0.051	-0.998	-0.239
	42011	14.110	5.515	0.234	-3.164	-3.046	0.073	0.090	0.169
23 Exterior Wall @ EL22.50 to 24.60m	24211	6.073	5.669	-0.239	0.176	0.982	0.008	-0.147	1.336
	24224	1.011	5.349	-3.664	1.966	0.071	-0.637	-1.563	-0.323
	34210	21.813	5.545	-0.581	-2.903	-2.819	0.035	-0.002	-0.128
	34220	2.794	5.432	4.414	2.629	-1.178	-0.711	2.571	0.094
	44201	1.793	6.586	0.562	2.230	-1.491	0.539	-2.967	0.044
24 Basemat @ Wall Below RCCV	90140	0.838	1.691	1.751	-0.171	-1.046	-1.095	-1.135	0.139
	90182	1.908	0.687	0.488	-0.873	-5.527	0.260	-0.110	3.825
	90111	0.733	2.908	-0.011	-5.322	-1.147	0.107	3.687	0.151
25 Slab EL4.65m @ RCCV	93140	-0.383	3.018	5.804	-0.739	-0.564	0.413	-0.192	0.163
	93182	6.161	-5.154	-1.518	-0.481	-2.508	-0.114	0.105	1.903
	93111	-4.494	6.820	-0.448	-2.369	-0.414	-0.066	1.594	0.001
26 Slab EL17.5m @ RCCV	96144	0.733	5.839	8.138	-0.232	-0.178	0.174	-0.043	0.066
	96186	9.999	-4.559	-2.165	-0.150	-0.675	-0.057	0.023	0.638
	96113	-9.165	5.149	-1.811	-4.378	-2.755	-0.237	1.010	-0.100
27 Slab EL27.0m @ RCCV	98472	See Tables 3G.5-6 to 3G.5-9							
	98514								
	98424								
28 Pool Girder @ Storage Pool	123054	See Tables 3G.5-6 to 3G.5-9							
29 Pool Girder @ Well	123062								
30 Pool Girder @ Buffer Pool	123067								
31 MS Tunnel Wall and Slab	123162	See Tables 3G.5-6 to 3G.5-9							
	123167								
	150122	0.316	-0.711	1.797	0.940	3.101	0.011	-0.551	0.426
	96611	-0.557	4.662	-0.414	-1.254	-7.116	-0.406	0.420	0.206
	98614	-0.043	0.725	-0.043	-0.850	-9.922	-0.018	0.459	0.307

S/P Slab: Suppression Pool Slab

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.1-19 Results of NASTRAN Analysis, Seismic Load (Horizontal: North to South Direction)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
1 RPV	5006	-3.078	-4.175	-1.042	0.833	5.067	0.048	0.055	2.169
Pedestal	5013	-0.390	1.511	-1.461	0.297	1.837	-0.045	0.184	0.680
Bottom	5024	2.338	7.409	-0.116	-0.517	-1.859	0.009	0.013	-1.003
2 RPV	6006	0.367	-2.350	-0.847	-0.143	-0.031	0.008	0.133	-0.017
Pedestal	6013	-0.395	1.443	-1.458	-0.321	-0.158	-0.039	-0.055	0.014
Mid-Height	6024	-0.465	3.711	0.279	0.247	0.151	-0.039	-0.032	-0.200
3 RPV	6606	0.017	-1.487	-0.164	-0.294	-2.729	-0.257	0.607	0.877
Pedestal	6613	-1.086	1.320	-1.172	-0.447	-1.613	0.333	-0.203	0.294
Top	6624	0.385	3.868	-0.083	0.212	-0.055	0.042	-0.140	-0.074
4 RCCV	1806	-1.606	-1.571	-4.006	0.296	2.004	-0.079	0.033	0.748
Wetwell	1813	-0.404	2.958	-4.588	0.114	0.845	-0.040	0.019	0.342
Bottom	1824	0.823	6.222	-0.283	-0.034	-0.317	-0.008	0.002	-0.226
5 RCCV	2606	-0.346	-1.042	-4.081	-0.061	-0.101	-0.121	-0.015	0.195
Wetwell	2613	-0.770	2.654	-4.543	-0.046	-0.085	-0.043	-0.029	0.156
Mid-Height	2624	-0.026	4.626	-0.272	0.075	0.159	-0.002	-0.003	-0.036
6 RCCV	3406	0.033	-0.509	-3.758	-0.091	-0.210	-0.079	0.007	0.126
Wetwell	3413	-0.613	2.314	-4.337	-0.025	-0.166	-0.107	0.116	0.070
Top	3424	-0.571	3.362	-0.182	0.063	0.331	0.035	-0.019	-0.131
7 RCCV	3606	0.137	-0.283	-3.728	0.109	0.809	-0.008	0.028	0.356
Drywell	3613	-0.644	2.004	-3.951	0.094	0.502	-0.021	0.109	0.201
Bottom	3624	-0.605	3.556	-0.196	-0.051	-0.246	0.052	0.003	0.000
8 RCCV	4006	1.227	-0.182	-3.299	0.010	-0.327	-0.061	-0.071	0.238
Drywell	4013	-0.209	2.269	-3.819	0.015	-0.082	-0.084	0.017	0.120
Mid-Height	4976	-0.521	2.679	-0.246	-0.082	-0.178	-0.016	0.012	-0.033
9 RCCV	4406	1.216	-0.075	-2.465	-0.163	-0.891	0.060	0.075	0.192
Drywell	4413	0.646	2.551	-3.248	-0.107	-0.447	-0.002	0.014	0.079
Top	4424	-0.993	1.982	-0.206	-0.076	-0.383	-0.022	-0.006	0.001
10 Basemat @ Center	80003	3.080	2.306	-0.508	-7.882	-6.855	0.153	0.538	0.093
	80007	3.116	2.498	-0.430	-7.171	-6.634	0.306	0.665	0.119
	80012	2.788	2.823	-0.252	-6.620	-6.333	0.091	0.746	0.004
11 Basemat Inside RPV Pedestal	80206	3.713	1.292	-1.433	-9.991	-7.678	0.701	0.553	0.030
	80213	3.153	2.526	-2.026	-6.080	-4.595	1.368	0.864	0.774
	80224	2.472	4.250	-0.216	-0.051	-2.844	0.232	1.887	0.110
12 S/P Slab @ RPV	83306	-0.349	-0.831	-1.485	-2.817	-1.586	-0.299	-1.008	0.148
	83313	-0.394	-1.430	0.743	-1.611	-1.010	-0.429	-0.553	0.176
	83324	-0.614	-0.161	0.190	-0.241	-0.271	-0.029	-0.035	0.018
13 S/P Slab @ Center	83406	-0.287	-1.184	-1.348	0.406	-0.877	-0.229	-0.706	-0.011
	83413	-0.302	-1.151	0.698	0.211	-0.628	-0.292	-0.403	0.009
	83424	-0.872	-0.188	0.099	0.030	-0.303	-0.018	-0.056	0.001
14 S/P Slab @ RCCV	83506	-0.132	-1.321	-1.107	2.379	0.033	-0.030	-0.544	-0.050
	83513	-0.266	-0.932	0.680	1.308	-0.079	-0.045	-0.310	-0.055
	83524	-0.909	-0.287	0.053	0.150	-0.214	0.000	-0.034	-0.004
15 Topslab @ Drywell Head Opening	98120	See Table 3G.5-10							
	98135								
	98104								
16 Topslab @ Center	98149								
	98170								
	98109								
17 Topslab @ RCCV	98174								
	98197								
	98103								

**Table 3G.1-19 Results of NASTRAN Analysis, Seismic Load (Horizontal: North to South Direction) (Continued)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
18 Wall Below RCCV Bottom	6	-4.089	-2.984	-3.223	0.942	5.592	0.027	0.004	2.077
	13	0.044	2.815	-3.741	0.609	3.227	-0.055	0.100	1.002
	24	2.858	8.167	-0.026	0.203	1.094	-0.007	0.001	0.035
19 Wall Below RCCV Mid-Height	806	-2.161	-2.456	-3.484	-0.087	-0.286	-0.009	0.025	0.212
	813	-0.327	3.127	-4.708	-0.001	-0.043	-0.034	-0.003	0.282
	824	1.116	7.455	-0.159	0.028	0.188	-0.002	0.001	0.136
20 Wall Below RCCV Top	1606	-1.430	-1.890	-3.843	-0.279	-1.325	-0.071	0.012	0.200
	1613	-0.183	2.987	-4.716	-0.232	-1.214	-0.026	0.007	0.350
	1624	0.886	6.169	-0.227	-0.043	-0.346	-0.008	0.002	0.183
21 Exterior Wall @ EL-11.50 to -10.50m	20011	-0.416	-0.625	1.004	1.925	7.945	0.042	-0.075	2.959
	20023	0.143	-0.894	-1.064	-0.798	1.248	0.158	1.179	0.823
	30010	1.290	2.212	-3.435	0.480	2.603	-0.041	-0.077	-0.721
	30020	0.106	2.160	-0.480	0.058	1.101	0.015	-0.290	-0.250
	40001	0.368	1.938	-0.760	-0.169	0.566	-0.075	0.004	-0.162
	40011	3.319	3.604	-0.077	0.119	1.035	0.010	0.003	-0.190
22 Exterior Wall @ EL4.65 to 6.60m	22011	-0.375	-6.589	2.336	0.104	0.902	0.146	-0.030	0.823
	22023	0.009	-4.334	-1.290	-0.268	0.148	-0.135	0.328	0.115
	32010	-0.869	1.249	-4.104	-0.010	-0.012	-0.003	-0.001	-0.103
	32020	-0.044	3.032	-1.635	0.150	0.029	0.006	0.127	-0.005
	42001	0.119	3.220	-1.633	0.200	-0.014	-0.015	-0.075	-0.006
	42011	0.726	3.097	0.252	0.005	-0.067	0.008	0.000	0.083
23 Exterior Wall @ EL22.50 to 24.60m	24211	-1.009	-4.826	0.238	-0.200	-0.787	-0.045	0.004	0.877
	24224	-0.225	-6.903	0.344	0.657	0.947	-0.281	0.147	1.024
	34210	-1.170	0.230	-3.576	-0.029	-0.185	-0.009	0.011	-0.087
	34220	-0.065	1.547	-1.281	-0.006	0.005	0.002	0.001	-0.008
	44201	-0.117	1.850	-1.080	0.020	0.037	-0.012	0.027	-0.016
24 Basemat @ Wall Below RCCV	90140	0.231	1.224	-1.952	-6.981	-0.849	-0.232	-2.965	1.218
	90182	3.251	0.676	-1.468	-1.580	-0.623	1.398	-1.586	0.697
	90111	1.121	5.952	-0.261	0.290	-1.145	0.351	-1.961	-0.121
25 Slab EL4.65m @ RCCV	93140	-2.212	0.335	-0.130	-0.397	-0.242	0.172	-0.091	0.121
	93182	-0.561	-0.141	-0.474	-0.087	-0.334	-0.010	0.019	0.308
	93111	-0.076	-0.100	0.019	0.081	0.000	0.008	-0.055	0.002
26 Slab EL17.5m @ RCCV	96144	-0.481	0.159	0.141	-0.314	-0.250	0.168	-0.065	0.077
	96186	-0.589	-0.129	-0.051	-0.074	-0.338	-0.010	0.025	0.270
	96113	0.212	-1.012	-0.014	0.453	-0.039	-0.008	-0.423	-0.063
27 Slab EL27.0m @ RCCV	98472	See Table 3G.5-10							
	98514								
	98424								
28 Pool Girder @ Storage Pool	123054	See Table 3G.5-10							
	123154								
	123062								
29 Pool Girder @ Well	123162	See Table 3G.5-10							
	123067								
	123167								
31 MS Tunnel Wall and Slab	150122	-0.009	0.169	-0.046	-0.038	-0.142	-0.009	0.008	-0.031
	96611	0.034	-0.285	0.031	-0.097	-0.387	-0.021	0.042	0.016
	98614	0.040	-0.197	0.031	0.121	0.435	0.049	-0.038	-0.018

S/P Slab: Suppression Pool Slab

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft



**Table 3G.1-20 Results of NASTRAN Analysis, Seismic Load (Horizontal: East to West Direction)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
1 RPV Pedestal Bottom	5006	3.616	7.896	-1.994	-0.849	-4.468	-0.071	0.270	-1.899
	5013	5.107	12.264	0.228	-1.289	-6.829	-0.010	0.019	-3.064
	5024	0.410	0.731	3.301	-0.102	-0.450	0.017	-0.296	-0.196
2 RPV Pedestal Mid-Height	6006	-0.514	4.033	-2.796	0.013	0.146	-0.182	-0.004	-0.068
	6013	-0.991	6.124	0.364	0.229	0.113	-0.037	0.000	-0.218
	6024	-0.167	1.387	5.018	0.016	0.037	0.335	0.177	0.034
3 RPV Pedestal Top	6606	-0.946	2.274	-2.273	0.228	1.652	0.167	-0.116	-0.731
	6613	-0.779	3.354	0.061	0.555	2.493	-0.059	-0.146	-1.077
	6624	-0.105	0.242	3.331	0.039	0.167	-0.210	0.273	-0.086
4 RCCV Wetwell Bottom	1806	0.709	5.463	-4.576	-0.207	-1.028	-0.018	0.001	-0.388
	1813	1.098	7.033	0.944	-0.271	-1.619	-0.015	0.005	-0.661
	1824	0.050	0.539	7.272	-0.030	-0.115	0.089	-0.055	-0.058
5 RCCV Wetwell Mid-Height	2606	0.058	3.845	-4.121	0.016	0.080	-0.050	-0.007	-0.106
	2613	0.049	5.254	0.953	0.048	0.137	-0.018	-0.009	-0.248
	2624	0.047	0.284	6.677	0.011	0.038	0.110	0.036	-0.014
6 RCCV Wetwell Top	3406	-0.396	2.515	-3.894	0.039	0.160	-0.197	0.173	-0.103
	3413	-0.303	3.931	0.992	0.062	0.353	0.040	-0.074	-0.248
	3424	-0.180	0.191	5.780	0.028	0.036	0.019	0.009	-0.005
7 RCCV Drywell Bottom	3606	-0.453	2.336	-3.560	-0.048	-0.352	-0.054	0.168	-0.142
	3613	-0.305	4.102	1.145	-0.137	-0.791	-0.005	-0.062	-0.291
	3624	-0.121	0.243	5.543	-0.030	-0.089	0.021	0.024	-0.042
8 RCCV Drywell Mid-Height	4006	-0.971	1.370	-3.264	0.012	0.139	-0.095	0.037	-0.115
	4013	-1.098	3.192	0.982	0.062	0.312	0.006	-0.048	-0.322
	4976	0.129	0.105	5.749	0.045	0.036	0.022	0.038	-0.014
9 RCCV Drywell Top	4406	-1.388	0.546	-2.745	0.129	0.527	-0.010	0.005	-0.229
	4413	-0.912	2.428	0.851	0.028	0.966	0.161	0.051	-0.023
	4424	0.265	0.045	6.072	0.047	-0.005	-0.004	0.040	0.030
10 Basemat @ Center	80003	0.038	0.221	1.344	0.306	0.541	-0.515	0.018	0.897
	80007	0.573	-0.212	0.794	0.710	0.790	-0.263	-0.006	0.861
	80012	-0.120	0.174	0.664	0.117	0.115	0.121	-0.008	0.899
11 Basemat Inside RPV Pedestal	80206	1.779	-0.232	2.676	3.698	4.684	-2.110	-0.625	1.546
	80213	2.986	-0.463	0.725	4.767	7.918	-0.214	0.021	2.208
	80224	0.147	0.113	-1.881	0.485	0.394	1.018	0.080	0.433
12 S/P Slab @ RPV	83306	-0.494	-0.425	0.891	1.324	0.614	-0.365	0.519	0.181
	83313	-0.970	-0.307	0.268	1.939	0.952	0.057	0.747	-0.005
	83324	-0.058	-0.047	-1.477	0.134	0.059	0.519	0.051	-0.251
13 S/P Slab @ Center	83406	-0.361	-0.135	0.348	-0.242	0.242	-0.259	0.338	0.009
	83413	-1.016	-0.152	0.194	-0.305	0.399	0.036	0.490	0.001
	83424	-0.070	-0.035	-0.753	-0.021	0.021	0.360	0.034	0.005
14 S/P Slab @ RCCV	83506	-0.145	-0.185	0.080	-1.214	-0.198	-0.033	0.273	-0.057
	83513	-0.916	-0.244	0.146	-1.684	-0.241	0.013	0.384	0.005
	83524	-0.040	-0.061	-0.423	-0.124	-0.023	0.009	0.029	0.092
15 Topslab @ Drywell Head Opening	98120	See Table 3G.5-11							
	98135								
	98104								
16 Topslab @ Center	98149								
	98170								
	98109								
17 Topslab @ RCCV	98174								
	98197								
	98103								



**Table 3G.1-20 Results of NASTRAN Analysis, Seismic Load (Horizontal: East to West Direction) (Continued)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
18 Wall Below RCCV Bottom	6	4.230	10.950	-4.293	-0.720	-3.480	-0.050	0.151	-1.462
	13	4.826	10.395	0.412	-0.323	-2.046	-0.014	0.031	-1.063
	24	0.620	0.743	6.328	0.012	-0.156	0.097	-0.142	-0.100
19 Wall Below RCCV Mid-Height	806	0.719	8.364	-5.143	-0.026	0.175	-0.138	-0.023	0.008
	813	2.014	9.089	0.737	0.003	0.271	-0.015	-0.012	-0.119
	824	0.182	0.748	7.528	0.025	0.045	0.096	0.050	0.019
20 Wall Below RCCV Top	1606	0.573	5.830	-5.315	0.081	0.664	-0.012	-0.017	-0.149
	1613	0.954	7.084	0.921	0.184	1.109	-0.007	0.009	-0.240
	1624	0.049	0.602	7.469	-0.009	0.017	0.051	-0.040	0.018
21 Exterior Wall @ EL-11.50 to -10.50m	20011	-0.722	-1.086	-9.644	-0.079	0.489	0.033	0.100	0.107
	20023	-0.002	5.309	-0.104	0.229	0.275	-0.072	-0.017	0.074
	30010	3.516	4.149	1.063	-0.266	-0.885	-0.030	-0.023	0.295
	30020	0.484	3.244	1.306	-0.086	0.522	0.039	0.023	-0.160
	40001	-0.009	3.550	0.797	0.338	1.287	0.004	0.411	-0.235
	40011	-0.266	-0.415	4.312	0.014	-0.081	0.083	0.119	-0.014
22 Exterior Wall @ EL4.65 to 6.60m	22011	0.537	3.343	-6.626	0.042	-0.013	-0.019	0.032	0.006
	22023	0.038	5.577	-3.182	0.117	-0.083	0.087	-0.179	-0.082
	32010	0.671	4.350	1.026	-0.012	-0.086	-0.013	0.000	0.204
	32020	0.056	3.978	2.778	0.123	-0.061	0.010	0.091	0.017
	42001	-0.010	3.735	2.914	0.166	0.067	-0.012	-0.064	-0.031
	42011	0.192	-0.627	5.811	0.041	0.003	0.018	0.036	-0.014
23 Exterior Wall @ EL22.50 to 24.60m	24211	0.039	0.214	-5.700	-0.006	0.033	0.013	0.004	0.032
	24224	0.317	5.460	-4.157	-0.291	-0.134	-0.012	0.286	-0.057
	34210	-0.150	1.711	0.809	0.066	0.373	-0.007	-0.004	0.142
	34220	-0.136	1.750	2.505	0.147	0.144	0.006	0.041	-0.017
	44201	0.126	1.798	3.007	0.097	0.014	0.058	-0.092	0.023
24 Basemat @ Wall Below RCCV	90140	0.196	4.879	3.018	0.158	3.225	-2.906	3.389	-5.494
	90182	5.519	0.684	0.433	0.172	-0.757	-0.215	-0.078	-3.639
	90111	-0.237	0.778	-0.622	-0.498	0.380	1.211	-0.064	-2.795
25 Slab EL4.65m @ RCCV	93140	0.729	-0.254	-0.202	0.172	0.132	-0.098	0.049	-0.041
	93182	-0.084	-0.021	-0.149	0.083	0.457	0.014	-0.022	-0.412
	93111	0.142	0.032	-0.216	0.000	-0.009	-0.025	0.011	0.004
26 Slab EL17.5m @ RCCV	96144	-0.147	-0.247	-0.205	0.151	0.125	-0.097	0.048	-0.018
	96186	-0.432	0.199	-0.264	0.112	0.623	0.022	-0.033	-0.497
	96113	0.085	-0.188	0.580	0.079	0.029	0.003	-0.024	0.039
27 Slab EL27.0m @ RCCV	98472	See Table 3G.5-11							
	98514								
	98424								
28 Pool Girder @ Storage Pool	123054	See Table 3G.5-11							
	123154								
	123062								
29 Pool Girder @ Well	123162	See Table 3G.5-11							
	123067								
	123167								
31 MS Tunnel Wall and Slab	150122	-0.002	0.117	-0.022	-0.031	-0.115	-0.044	0.008	0.254
	96611	0.034	-0.078	-0.059	-0.013	-0.065	0.102	-0.004	-0.075
	98614	0.016	0.006	-0.009	0.034	0.113	0.347	-0.032	-0.021

S/P Slab: Suppression Pool

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.1-21 Results of NASTRAN Analysis, Seismic Load (Vertical: Upward Direction)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
1 RPV Pedestal Bottom	5006	-1.347	2.104	-0.142	0.416	2.400	-0.007	0.016	1.002
	5013	-1.094	2.642	-0.206	0.362	2.151	0.000	0.011	0.872
	5024	-0.811	2.855	-0.014	0.334	1.969	-0.008	-0.003	0.793
2 RPV Pedestal Mid-Height	6006	0.148	2.129	-0.204	-0.016	-0.066	-0.022	-0.020	0.015
	6013	0.166	2.268	-0.308	0.018	-0.024	-0.009	0.013	-0.025
	6024	0.050	1.700	0.177	-0.004	0.032	-0.006	-0.014	-0.053
3 RPV Pedestal Top	6606	0.340	1.739	-0.317	-0.389	-2.606	-0.100	-0.083	0.872
	6613	0.364	1.782	-0.164	-0.345	-2.532	0.118	0.054	0.845
	6624	0.262	1.715	-0.051	-0.365	-2.534	-0.122	-0.050	0.832
4 RCCV Wetwell Bottom	1806	0.410	4.305	-0.142	0.086	0.580	-0.010	0.000	0.125
	1813	0.526	4.234	-0.133	0.092	0.506	-0.004	0.000	0.094
	1824	0.435	4.688	0.050	0.092	0.549	-0.002	0.003	0.112
5 RCCV Wetwell Mid-Height	2606	0.219	3.889	-0.195	-0.003	0.025	-0.007	0.000	0.093
	2613	0.258	3.953	-0.136	0.023	0.051	-0.002	0.001	0.069
	2624	0.284	4.307	0.009	-0.001	0.004	-0.002	0.001	0.101
6 RCCV Wetwell Top	3406	0.299	3.274	-0.279	-0.098	-0.605	0.063	-0.097	0.217
	3413	0.083	3.770	-0.143	-0.036	-0.291	-0.033	0.040	0.113
	3424	0.164	3.715	-0.005	-0.045	-0.311	0.068	-0.075	0.088
7 RCCV Drywell Bottom	3606	0.144	3.079	-0.154	0.015	-0.026	0.058	-0.076	-0.104
	3613	-0.084	3.713	-0.179	0.015	0.043	-0.050	0.023	-0.136
	3624	0.100	3.864	-0.050	0.000	-0.053	0.070	-0.040	-0.075
8 RCCV Drywell Mid-Height	4006	-0.474	2.622	-0.080	0.172	0.557	0.047	-0.008	-0.246
	4013	-0.519	3.950	-0.244	0.053	0.441	0.001	0.007	-0.087
	4976	-0.012	3.210	-0.184	0.018	0.199	0.005	0.007	-0.053
9 RCCV Drywell Top	4406	-0.485	2.127	0.201	0.310	1.743	0.030	0.014	-0.374
	4413	0.510	4.141	-0.095	0.163	0.892	-0.006	0.007	-0.163
	4424	0.012	2.549	-0.147	0.028	0.331	-0.004	-0.001	-0.038
10 Basemat @ Center	80003	1.114	1.334	-0.056	-7.809	-8.015	0.028	-0.247	0.194
	80007	1.136	1.354	-0.047	-7.820	-8.014	0.028	0.036	0.314
	80012	1.133	1.390	-0.047	-7.817	-8.010	0.026	0.304	0.044
11 Basemat Inside RPV Pedestal	80206	1.061	1.209	-0.090	-5.062	-5.503	-0.898	-1.047	0.927
	80213	1.138	1.395	-0.134	-5.976	-4.336	0.101	0.047	1.429
	80224	1.234	1.559	-0.051	-4.341	-6.050	0.156	1.376	0.112
12 S/P Slab @ RPV	83306	-0.130	-0.374	0.192	-1.919	-1.347	0.009	-1.086	0.025
	83313	-0.284	-0.266	0.051	-1.931	-1.343	-0.009	-1.091	-0.024
	83324	-0.256	-0.392	0.019	-1.928	-1.342	0.015	-1.090	0.023
13 S/P Slab @ Center	83406	-0.187	-0.349	0.142	0.901	-0.611	0.002	-0.487	0.000
	83413	-0.380	-0.198	0.016	0.891	-0.591	0.001	-0.490	-0.002
	83424	-0.327	-0.344	0.005	0.898	-0.591	0.002	-0.492	0.001
14 S/P Slab @ RCCV	83506	-0.183	-0.304	0.139	1.510	-0.006	0.009	-0.062	-0.004
	83513	-0.396	-0.180	-0.010	1.527	0.016	0.003	-0.071	-0.003
	83524	-0.326	-0.340	0.001	1.539	0.015	0.001	-0.071	0.001
15 Topslab @ Drywell Head Opening	98120	See Table 3G.5-12							
	98135								
	98104								
16 Topslab @ Center	98149								
	98170								
	98109								
17 Topslab @ RCCV	98174								
	98197								
	98103								

**Table 3G.1-21 Results of NASTRAN Analysis, Seismic Load (Vertical: Upward Direction) (Continued)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
18 Wall Below RCCV Bottom	6	-0.370	6.048	-0.436	0.328	2.168	-0.011	0.033	0.699
	13	-0.499	4.721	-0.323	0.570	3.092	-0.003	0.004	0.953
	24	-0.466	5.196	0.151	0.596	3.239	-0.005	0.001	0.977
19 Wall Below RCCV Mid-Height	806	-0.054	5.223	-0.088	-0.016	0.030	0.023	-0.007	0.122
	813	0.109	4.681	-0.265	0.023	0.035	0.009	0.017	0.212
	824	0.060	5.158	0.138	0.028	-0.004	0.006	-0.001	0.221
20 Wall Below RCCV Top	1606	0.591	4.611	-0.064	-0.168	-0.903	-0.008	0.004	0.312
	1613	0.718	4.491	-0.181	-0.164	-0.992	-0.005	0.000	0.358
	1624	0.624	4.938	0.094	-0.163	-0.965	0.000	0.005	0.342
21 Exterior Wall @ EL-11.50 to -10.50m	20011	0.614	3.372	0.346	0.042	0.022	-0.005	-0.052	-0.022
	20023	0.002	1.062	0.427	-0.109	0.222	0.007	0.092	0.140
	30010	0.208	1.755	-0.053	0.358	1.916	-0.014	-0.002	-0.455
	30020	0.047	0.817	0.159	-0.175	0.514	0.054	-0.114	-0.174
	40001	0.049	0.842	-0.149	-0.182	0.521	-0.053	0.112	-0.170
	40011	0.329	2.102	0.008	0.395	2.093	0.010	0.001	-0.501
22 Exterior Wall @ EL4.65 to 6.60m	22011	-0.175	2.678	-0.601	0.011	-0.020	0.002	0.022	-0.020
	22023	-0.004	1.366	0.333	0.114	0.002	0.013	-0.072	-0.012
	32010	0.012	1.481	-0.045	-0.001	-0.033	-0.002	0.000	0.007
	32020	0.040	1.571	0.054	0.052	0.002	0.007	0.047	0.007
	42001	0.049	1.634	0.032	0.067	0.004	-0.002	-0.035	0.002
	42011	0.252	1.842	0.087	0.001	-0.025	0.003	-0.002	0.004
23 Exterior Wall @ EL22.50 to 24.60m	24211	0.132	1.386	-0.115	0.083	0.578	-0.013	0.003	0.151
	24224	0.048	1.081	-0.330	-0.020	0.047	0.060	0.054	0.030
	34210	0.006	0.653	-0.051	-0.006	0.002	-0.001	-0.004	-0.014
	34220	-0.039	0.810	0.142	-0.038	0.021	0.005	-0.031	0.000
	44201	-0.023	0.957	0.280	-0.031	0.012	-0.013	0.037	0.001
24 Basemat @ Wall Below RCCV	90140	-0.089	0.746	0.430	1.667	1.224	-2.812	1.354	-1.582
	90182	0.639	0.338	0.030	-0.860	1.733	0.351	-0.170	-0.447
	90111	0.386	0.881	-0.046	1.649	-0.999	0.431	-0.497	-0.097
25 Slab EL4.65m @ RCCV	93140	0.061	-0.102	-0.056	-0.091	-0.107	0.070	-0.132	0.109
	93182	-0.101	-0.089	-0.021	-0.034	-0.119	-0.007	0.009	0.175
	93111	-0.058	-0.120	0.023	-0.137	-0.034	-0.005	0.160	0.003
26 Slab EL17.5m @ RCCV	96144	0.239	-0.171	-0.124	-0.056	-0.058	0.040	-0.097	0.074
	96186	-0.239	0.094	0.038	-0.003	-0.003	-0.005	0.006	0.053
	96113	0.067	-0.427	0.079	0.130	-0.033	-0.016	-0.156	-0.020
27 Slab EL27.0m @ RCCV	98472	See Table 3G.5-12							
	98514								
	98424								
28 Pool Girder @ Storage Pool	123054	See Table 3G.5-12							
	123154								
29 Pool Girder @ Well	123062	See Table 3G.5-12							
	123162								
30 Pool Girder @ Buffer Pool	123067	See Table 3G.5-12							
	123167								
31 MS Tunnel Wall and Slab	150122	0.026	-0.081	-0.251	-0.017	-0.021	-0.016	0.010	0.049
	96611	0.014	-0.305	0.015	-0.044	0.160	0.065	0.071	-0.022
	98614	0.016	0.219	0.015	0.004	0.465	0.055	0.039	-0.029

S/P Slab: Suppression Pool Slab

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.1-22 Combined Forces and Moments: RCCV, Selected Load Combination CV-1**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
1 RPV Pedestal Bottom	5006	OTHR	-2.178	-7.665	-0.044	0.372	2.178	0.033	-0.011	1.259
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	5013	OTHR	-2.701	-8.068	0.048	0.310	2.375	-0.003	-0.005	1.445
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	5024	OTHR	-2.540	-7.479	0.051	0.482	2.124	-0.010	0.011	1.239
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2 RPV Pedestal Mid-Height	6006	OTHR	1.178	-7.403	0.008	-0.051	-0.210	0.024	0.075	-0.347
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	6013	OTHR	0.889	-7.370	0.187	-0.205	-0.269	0.004	-0.002	-0.329
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	6024	OTHR	1.233	-5.429	-0.514	0.296	0.070	0.015	-0.008	-0.265
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3 RPV Pedestal Top	6606	OTHR	0.579	-6.185	0.792	0.431	2.799	0.035	0.233	-0.992
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	6613	OTHR	0.263	-6.370	-0.098	0.292	2.826	-0.105	-0.092	-1.046
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	6624	OTHR	0.815	-6.023	0.318	0.408	2.487	0.144	0.061	-0.804
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4 RCCV Wetwell Bottom	1806	OTHR	0.296	-1.968	-0.046	0.371	2.208	0.018	0.010	0.784
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1813	OTHR	0.100	-2.368	0.194	0.364	2.330	-0.001	-0.003	0.894
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1824	OTHR	0.536	-2.275	0.002	0.363	2.110	0.008	-0.005	0.824
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5 RCCV Wetwell Mid-Height	2606	OTHR	2.621	-1.496	-0.094	-0.167	-0.662	-0.001	0.008	-0.046
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2613	OTHR	2.292	-2.140	0.183	-0.192	-0.683	0.000	-0.007	0.013
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2624	OTHR	2.618	-1.810	-0.015	-0.120	-0.694	-0.003	0.004	-0.082
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6 RCCV Wetwell Top	3406	OTHR	2.445	-0.817	0.115	-0.070	-0.222	0.069	-0.031	-0.014
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	3413	OTHR	2.124	-1.984	0.134	-0.107	-0.259	-0.095	0.048	0.018
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	3424	OTHR	2.104	-1.155	0.048	0.023	0.079	0.059	-0.019	-0.055
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7 RCCV Drywell Bottom	3606	OTHR	2.398	-0.271	0.025	-0.020	0.093	0.100	0.003	0.496
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	3613	OTHR	2.137	-1.514	0.222	-0.001	0.364	-0.080	0.001	0.698
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	3624	OTHR	2.088	-0.764	0.040	0.112	0.557	0.059	0.011	0.562
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8 RCCV Drywell Mid-Height	4006	OTHR	1.605	0.170	0.099	-0.086	-0.270	0.024	0.033	-0.282
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4013	OTHR	1.636	-1.780	0.362	-0.132	-0.409	0.009	-0.010	-0.271
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4976	OTHR	1.628	-0.342	-0.007	0.038	-0.013	0.001	-0.013	-0.376
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9 RCCV Drywell Top	4406	OTHR	0.581	0.551	0.150	0.331	1.985	0.002	0.009	-0.641
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4413	OTHR	-0.114	-2.059	0.252	0.270	2.156	0.046	0.005	-0.797
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4424	OTHR	1.200	-0.082	-0.023	0.428	2.315	0.024	0.003	-0.715
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**Table 3G.1-22 Combined Forces and Moments: RCCV, Selected Load Combination CV-1 (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
10 Basemat @ Center	80003	OTHR	-2.857	-1.587	0.149	-0.645	-0.062	-0.045	0.163	-0.110
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	80007	OTHR	-2.883	-1.594	0.134	-0.569	-0.040	-0.027	0.005	-0.179
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	80012	OTHR	-2.936	-1.583	0.135	-0.563	-0.037	-0.031	-0.151	-0.018
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
11 Basemat Inside RPV Pedestal	80206	OTHR	-2.524	-1.740	0.230	-2.539	-2.324	0.705	0.962	-1.142
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	80213	OTHR	-2.625	-1.588	0.088	-1.654	-3.090	-0.111	-0.079	-1.523
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	80224	OTHR	-3.109	-2.000	0.060	-2.744	-1.738	-0.161	-1.212	-0.143
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12 S/P Slab @ RPV	83306	OTHR	0.001	1.181	-0.423	-0.271	0.608	-0.065	1.933	-0.038
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	83313	OTHR	0.198	0.926	-0.090	-0.212	0.623	0.041	1.946	0.051
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	83324	OTHR	0.228	1.415	0.052	-0.305	0.574	-0.038	1.894	-0.055
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
13 S/P Slab @ Center	83406	OTHR	0.250	0.881	-0.316	-2.852	-0.673	-0.030	-0.134	0.003
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	83413	OTHR	0.577	0.669	-0.018	-2.824	-0.680	-0.005	-0.124	0.002
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	83424	OTHR	0.416	1.102	0.029	-2.793	-0.671	0.005	-0.155	0.000
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
14 S/P Slab @ RCCV	83506	OTHR	0.380	0.726	-0.243	1.282	-0.177	-0.026	-1.744	0.000
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	83513	OTHR	0.745	0.609	0.004	1.265	-0.185	-0.005	-1.734	0.002
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	83524	OTHR	0.482	0.996	0.030	1.389	-0.133	-0.001	-1.762	0.001
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
15 Topslab @ Drywell Head Opening	98120	OTHR	0.087	0.959	1.143	0.928	0.715	0.389	0.409	-0.810
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	98135	OTHR	-0.770	-0.415	-0.496	0.769	-0.198	0.170	0.167	-1.201
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	98104	OTHR	-0.243	2.469	-0.772	0.812	2.645	-0.300	-0.482	-0.706
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
16 Topslab @ Center	98149	OTHR	-0.098	1.443	-0.477	0.347	0.110	0.268	0.076	0.368
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	98170	OTHR	0.004	0.880	-0.384	0.610	0.618	-0.030	-0.054	-0.129
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	98109	OTHR	0.356	1.566	-0.142	0.995	1.912	-0.221	-0.050	-0.266
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
17 Topslab @ RCCV	98174	OTHR	0.671	1.195	-0.122	0.081	0.267	0.473	0.200	-0.198
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	98197	OTHR	0.312	1.220	-0.231	-0.173	-1.590	-0.120	-0.070	-1.105
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	98103	OTHR	0.665	1.699	-0.091	-0.975	0.423	-0.331	-0.898	-0.215
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

OTHR: Loads other than thermal loads

TEMP: Thermal loads

S/P Slab: Suppression Pool Slab

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.1-23 Combined Forces and Moments: RCCV, Selected Load Combination CV-7a**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
1 RPV Pedestal Bottom	5006	OTHR	-2.287	-7.803	-0.046	0.409	2.405	0.034	-0.011	1.359
		TEMP	-3.476	1.649	-0.329	-6.696	-6.462	-0.046	0.105	1.012
		HYDR	1.879	5.303	0.129	0.382	2.323	0.017	0.024	1.086
	5013	OTHR	-2.812	-8.194	0.042	0.347	2.600	-0.003	-0.005	1.546
		TEMP	-3.121	1.796	-0.097	-6.854	-6.851	-0.006	0.027	0.925
		HYDR	2.099	5.570	0.515	0.426	2.519	0.001	0.018	1.220
	5024	OTHR	-2.648	-7.584	0.053	0.521	2.336	-0.011	0.012	1.331
		TEMP	-3.419	1.892	-0.003	-6.894	-6.129	-0.026	-0.036	1.045
		HYDR	2.282	5.413	0.243	0.434	2.450	0.013	0.024	1.195
2 RPV Pedestal Mid-Height	6006	OTHR	1.306	-7.535	-0.005	-0.056	-0.228	0.023	0.076	-0.362
		TEMP	0.080	1.775	0.154	-6.175	-4.043	0.264	0.065	-1.515
		HYDR	0.446	5.872	0.309	0.056	0.390	0.033	0.047	0.082
	6013	OTHR	1.017	-7.496	0.181	-0.209	-0.288	0.004	-0.002	-0.344
		TEMP	-0.061	1.444	-0.177	-6.419	-3.904	-0.057	-0.026	-1.669
		HYDR	0.466	5.457	0.487	0.105	0.375	0.012	0.016	0.079
	6024	OTHR	1.379	-5.512	-0.524	0.299	0.059	0.015	-0.010	-0.271
		TEMP	-0.245	2.050	0.059	-7.408	-2.297	-0.304	-0.003	-1.547
		HYDR	0.457	4.341	0.599	0.078	0.360	0.027	0.026	0.028
3 RPV Pedestal Top	6606	OTHR	0.647	-6.317	0.792	0.426	2.771	0.028	0.237	-0.968
		TEMP	20.997	2.192	0.564	-6.643	-5.510	-0.035	-1.941	0.870
		HYDR	0.816	5.248	0.908	0.710	4.278	0.198	0.644	1.214
	6613	OTHR	0.323	-6.514	-0.107	0.288	2.811	-0.098	-0.098	-1.028
		TEMP	21.088	1.964	-0.425	-6.702	-5.546	0.139	2.063	0.862
		HYDR	0.797	4.919	0.398	0.627	4.016	0.173	0.420	1.197
	6624	OTHR	0.876	-6.161	0.319	0.402	2.455	0.137	0.067	-0.779
		TEMP	21.900	2.601	0.228	-6.671	-5.665	0.005	-2.338	1.055
		HYDR	0.728	5.071	0.435	0.617	3.907	0.196	0.555	1.147
4 RCCV Wetwell Bottom	1806	OTHR	0.322	-1.857	-0.072	0.383	2.280	0.018	0.011	0.800
		TEMP	2.533	0.468	-0.194	-4.438	-8.138	0.077	0.083	-1.750
		HYDR	0.961	1.171	0.676	0.558	3.366	0.014	0.008	1.396
	1813	OTHR	0.127	-2.285	0.197	0.376	2.404	-0.001	-0.003	0.913
		TEMP	1.866	-2.167	-0.420	-4.274	-7.773	-0.025	-0.007	-1.523
		HYDR	0.921	1.191	0.607	0.561	3.342	0.011	0.005	1.422
	1824	OTHR	0.560	-2.123	0.005	0.375	2.182	0.008	-0.005	0.842
		TEMP	2.926	-2.481	0.046	-4.432	-8.134	0.020	-0.085	-1.667
		HYDR	1.036	0.822	0.573	0.563	3.392	0.013	0.010	1.440
5 RCCV Wetwell Mid-Height	2606	OTHR	2.697	-1.395	-0.128	-0.168	-0.660	-0.001	0.008	-0.041
		TEMP	1.379	0.586	-0.171	-3.308	-1.033	0.018	0.039	0.074
		HYDR	1.233	0.863	0.779	0.072	0.415	0.034	0.005	0.255
	2613	OTHR	2.356	-2.073	0.187	-0.193	-0.684	0.000	-0.007	0.021
		TEMP	0.111	-2.544	-0.109	-3.090	-1.052	0.009	-0.075	0.370
		HYDR	1.197	0.898	0.639	0.061	0.325	0.032	0.014	0.207
	2624	OTHR	2.683	-1.650	-0.014	-0.119	-0.695	-0.003	0.004	-0.080
		TEMP	0.965	-2.909	-0.087	-3.293	-0.935	-0.026	0.067	0.189
		HYDR	1.396	0.751	0.518	0.094	0.326	0.008	0.009	0.195
6 RCCV Wetwell Top	3406	OTHR	2.583	-0.732	0.088	-0.093	-0.366	0.101	-0.058	0.034
		TEMP	11.723	1.461	0.327	-4.151	-8.468	-0.227	0.461	3.349
		HYDR	0.925	0.689	0.833	0.140	0.541	0.198	0.231	0.288
	3413	OTHR	2.211	-1.923	0.125	-0.120	-0.331	-0.124	0.067	0.045
		TEMP	8.032	-3.439	0.044	-4.382	-9.151	-0.402	0.538	3.335
		HYDR	0.721	0.752	0.525	0.073	0.374	0.097	0.102	0.243
	3424	OTHR	2.198	-0.989	0.068	0.007	-0.016	0.095	-0.041	-0.022
		TEMP	10.292	-4.166	0.471	-3.681	-5.045	-0.039	-0.006	2.165
		HYDR	0.751	0.626	0.408	0.032	0.340	0.055	0.081	0.216

**Table 3G.1-23 Combined Forces and Moments: RCCV, Selected Load Combination CV-7a (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
7 RCCV Drywell Bottom	3606	OTHR	2.537	-0.105	0.004	-0.012	0.119	0.132	-0.010	0.531
		TEMP	8.504	1.377	0.674	-5.342	-9.036	0.607	0.534	-1.980
		HYDR	0.961	0.714	0.535	0.125	0.496	0.056	0.221	0.186
	3613	OTHR	2.228	-1.361	0.209	0.013	0.461	-0.112	0.005	0.768
		TEMP	4.607	-4.161	1.005	-4.955	-6.227	-0.363	0.317	-0.820
		HYDR	0.665	0.611	0.213	0.107	0.486	0.119	0.106	0.166
	3624	OTHR	2.197	-0.462	0.056	0.126	0.630	0.096	0.007	0.611
		TEMP	-4.291	-6.043	0.252	-0.934	-2.498	0.068	0.000	0.351
		HYDR	0.597	0.407	0.433	0.100	0.456	0.040	0.074	0.135
8 RCCV Drywell Mid-Height	4006	OTHR	1.673	0.298	0.077	-0.061	-0.208	0.030	0.034	-0.338
		TEMP	5.952	2.178	0.212	-5.110	-5.057	0.011	-0.126	-0.683
		HYDR	0.956	0.591	0.256	0.050	0.486	0.032	0.165	0.156
	4013	OTHR	1.716	-1.596	0.362	-0.143	-0.411	0.010	-0.011	-0.283
		TEMP	4.287	-5.850	1.041	-4.672	-4.289	0.014	-0.132	-0.308
		HYDR	0.706	0.748	0.111	0.058	0.105	0.052	0.061	0.119
	4976	OTHR	1.740	-0.073	-0.025	0.044	0.006	0.001	-0.014	-0.409
		TEMP	-2.660	-5.335	0.580	-0.954	-1.780	0.003	0.013	-0.584
		HYDR	0.283	0.329	0.312	0.043	0.045	0.019	0.008	0.096
9 RCCV Drywell Top	4406	OTHR	0.629	0.603	0.169	0.405	2.385	0.017	0.013	-0.737
		TEMP	6.433	1.711	-0.232	-4.475	-3.816	0.299	0.087	-0.150
		HYDR	0.301	0.362	0.066	0.108	0.442	0.083	0.088	0.339
	4413	OTHR	0.017	-1.850	0.263	0.286	2.323	0.050	0.008	-0.850
		TEMP	0.711	-6.632	-0.292	-4.753	-4.467	0.253	-0.243	0.643
		HYDR	0.754	0.888	0.339	0.335	0.363	0.254	0.118	0.389
	4424	OTHR	1.321	0.141	-0.039	0.466	2.527	0.026	0.002	-0.774
		TEMP	-5.846	-4.171	0.767	-0.363	1.129	-0.024	-0.022	-1.462
		HYDR	0.183	0.262	0.219	0.052	0.309	0.004	0.007	0.128
10 Basemat @ Center	80003	OTHR	-2.778	-1.498	0.148	-1.154	-0.552	-0.045	0.150	-0.101
		TEMP	-4.270	-5.140	0.021	-8.130	-8.102	-0.039	0.029	-0.008
		HYDR	1.283	1.173	0.112	4.575	4.159	0.065	0.277	0.266
	80007	OTHR	-2.803	-1.505	0.133	-1.078	-0.530	-0.027	0.007	-0.163
		TEMP	-4.296	-5.104	0.056	-8.096	-8.099	-0.037	0.028	-0.009
		HYDR	1.280	1.155	0.094	4.490	4.145	0.068	0.228	0.317
	80012	OTHR	-2.856	-1.493	0.134	-1.072	-0.527	-0.031	-0.136	-0.016
		TEMP	-4.302	-5.040	0.042	-8.079	-8.109	-0.032	0.024	-0.001
		HYDR	1.250	1.127	0.072	4.442	4.108	0.058	0.351	0.201
11 Basemat Inside RPV Pedestal	80206	OTHR	-2.442	-1.655	0.230	-2.898	-2.684	0.661	0.928	-1.116
		TEMP	-4.260	-5.523	0.137	-8.575	-8.460	0.003	0.005	-0.035
		HYDR	1.472	1.255	0.219	6.569	5.991	0.976	0.802	0.838
	80213	OTHR	-2.542	-1.498	0.084	-2.063	-3.401	-0.108	-0.079	-1.479
		TEMP	-4.445	-5.127	0.161	-8.289	-8.565	-0.151	-0.018	-0.103
		HYDR	1.362	1.183	0.128	5.525	6.846	0.593	0.475	1.091
	80224	OTHR	-3.024	-1.917	0.059	-3.067	-2.134	-0.157	-1.163	-0.142
		TEMP	-4.372	-4.948	0.081	-8.177	-8.193	-0.045	-0.038	0.010
		HYDR	1.226	0.902	0.114	6.560	5.212	0.461	1.049	0.380



**Table 3G.1-23 Combined Forces and Moments: RCCV, Selected Load Combination CV-7a (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
12 S/P Slab @ RPV	83306	OTHR	-0.025	1.218	-0.421	-0.381	0.552	-0.067	1.915	-0.037
		TEMP	-10.607	10.981	0.454	-4.700	-2.770	0.032	-0.288	0.000
		HYDR	1.543	1.102	0.524	1.382	0.906	0.093	2.882	0.066
	83313	OTHR	0.167	0.963	-0.090	-0.322	0.566	0.042	1.928	0.051
		TEMP	-10.822	11.242	-0.850	-4.737	-2.848	-0.039	-0.302	-0.028
		HYDR	1.473	1.129	0.322	1.340	0.825	0.152	2.839	0.054
	83324	OTHR	0.205	1.447	0.051	-0.420	0.516	-0.038	1.874	-0.056
		TEMP	-10.702	11.862	1.279	-4.487	-2.654	0.006	-1.156	0.046
		HYDR	1.528	1.190	0.345	1.265	0.729	0.108	2.762	0.063
13 S/P Slab @ Center	83406	OTHR	0.240	0.901	-0.312	-2.866	-0.718	-0.032	-0.162	0.003
		TEMP	-6.490	4.881	-0.530	-3.815	-3.181	-0.001	-0.306	0.016
		HYDR	1.511	1.103	0.306	4.347	1.357	0.069	0.408	0.004
	83413	OTHR	0.565	0.691	-0.019	-2.838	-0.725	-0.004	-0.152	0.002
		TEMP	-6.986	5.307	0.315	-3.900	-3.257	-0.015	-0.278	-0.011
		HYDR	1.444	1.138	0.180	4.326	1.324	0.080	0.394	0.004
	83424	OTHR	0.410	1.115	0.029	-2.807	-0.716	0.005	-0.184	0.000
		TEMP	-6.630	5.823	0.078	-3.895	-3.148	-0.003	-0.210	0.009
		HYDR	1.507	1.226	0.182	4.294	1.302	0.068	0.386	0.004
14 S/P Slab @ RCCV	83506	OTHR	0.376	0.740	-0.238	1.382	-0.183	-0.026	-1.782	-0.001
		TEMP	-3.948	2.320	-0.446	-2.906	-3.131	-0.038	-0.275	0.016
		HYDR	1.408	1.094	0.225	2.419	0.376	0.023	2.689	0.014
	83513	OTHR	0.740	0.628	0.003	1.364	-0.190	-0.005	-1.771	0.002
		TEMP	-4.567	2.419	0.440	-3.190	-3.174	-0.008	-0.192	-0.001
		HYDR	1.347	1.138	0.178	2.366	0.364	0.023	2.683	0.010
	83524	OTHR	0.480	1.002	0.030	1.493	-0.135	-0.001	-1.801	0.001
		TEMP	-4.038	3.201	-0.017	-3.278	-3.153	0.013	-0.168	-0.005
		HYDR	1.417	1.245	0.172	2.365	0.340	0.020	2.677	0.010
15 Topslab @ Drywell Head Opening	98120	OTHR	0.055	1.006	1.223	1.048	0.810	0.451	0.439	-0.886
		TEMP	-7.068	-4.258	-0.770	0.956	0.732	2.765	-0.161	-0.002
		HYDR	0.343	0.110	0.142	0.073	0.106	0.053	0.013	0.028
	98135	OTHR	-0.896	-0.445	-0.543	0.896	-0.228	0.171	0.188	-1.324
		TEMP	-8.729	-5.283	0.235	3.147	-2.057	-1.132	0.380	-0.267
		HYDR	0.547	0.079	0.114	0.098	0.030	0.024	0.007	0.012
	98104	OTHR	-0.260	2.515	-0.837	0.891	2.941	-0.344	-0.523	-0.787
		TEMP	-4.999	-1.752	0.585	-1.461	3.712	-1.500	0.185	-0.214
		HYDR	0.101	0.422	0.164	0.030	0.178	0.039	0.008	0.065
16 Topslab @ Center	98149	OTHR	-0.143	1.753	-0.555	0.497	0.259	0.291	0.075	0.329
		TEMP	-6.075	-2.540	-1.137	2.229	2.310	0.496	0.037	0.048
		HYDR	0.506	0.266	0.055	0.068	0.053	0.037	0.023	0.029
	98170	OTHR	0.015	1.233	-0.449	0.735	0.818	-0.036	-0.026	-0.063
		TEMP	-5.510	-3.566	-1.042	2.141	2.864	-0.042	0.030	0.389
		HYDR	0.367	0.263	0.176	0.052	0.074	0.017	0.007	0.007
	98109	OTHR	0.404	1.649	-0.158	1.143	2.125	-0.248	-0.058	-0.289
		TEMP	-6.256	-0.887	0.773	1.219	2.564	-0.119	0.329	-0.005
		HYDR	0.065	0.222	0.272	0.041	0.120	0.037	0.007	0.019
17 Topslab @ RCCV	98174	OTHR	0.775	1.504	-0.146	0.258	0.459	0.506	0.221	-0.153
		TEMP	-4.871	-2.689	-0.476	2.352	3.211	0.255	-0.023	0.434
		HYDR	0.430	0.275	0.097	0.162	0.179	0.117	0.059	0.053
	98197	OTHR	0.479	1.612	-0.231	-0.168	-1.929	-0.140	-0.072	-1.169
		TEMP	-7.584	-2.926	-1.360	1.917	3.110	0.130	0.154	-0.447
		HYDR	0.602	0.383	0.154	0.104	0.187	0.049	0.023	0.052
	98103	OTHR	0.750	1.850	-0.098	-1.204	0.430	-0.373	-1.049	-0.241
		TEMP	-6.577	-2.458	-0.070	3.431	3.308	0.118	0.450	0.084
		HYDR	0.085	0.251	0.323	0.127	0.113	0.021	0.033	0.002

OTHR: Loads other than thermal and hydrodynamic loads

TEMP: Thermal loads

HYDR: Hydrodynamic loads

S/P: Suppression Pool

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft



**Table 3G.1-24 Combined Forces and Moments: RCCV, Selected Load Combination CV-7b**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
1 RPV Pedestal Bottom	5006	OTHR	-2.643	-8.287	-0.049	0.527	3.110	0.037	-0.012	1.672
		TEMP	-12.849	0.250	-0.523	-16.011	-12.625	-0.093	0.227	4.158
		HYDR	1.386	3.966	0.120	0.281	1.716	0.012	0.017	0.800
	5013	OTHR	-3.176	-8.631	0.033	0.462	3.296	-0.003	-0.005	1.862
		TEMP	-12.356	0.343	-0.104	-16.288	-13.239	-0.007	0.021	4.062
		HYDR	1.546	4.064	0.486	0.313	1.855	0.001	0.012	0.897
	5024	OTHR	-3.003	-7.940	0.059	0.643	2.998	-0.015	0.014	1.621
		TEMP	-12.862	0.231	0.003	-16.285	-11.829	-0.073	-0.054	4.265
		HYDR	1.685	3.975	0.243	0.322	1.818	0.009	0.017	0.885
2 RPV Pedestal Mid-Height	6006	OTHR	1.628	-8.011	-0.037	-0.071	-0.293	0.022	0.080	-0.407
		TEMP	-2.408	0.615	0.443	-16.093	-14.923	0.436	0.146	-1.774
		HYDR	0.355	4.530	0.223	0.040	0.318	0.025	0.036	0.059
	6013	OTHR	1.327	-7.936	0.172	-0.225	-0.356	0.003	-0.001	-0.389
		TEMP	-2.624	0.212	-0.206	-16.582	-14.795	-0.048	-0.033	-2.015
		HYDR	0.348	4.059	0.457	0.077	0.290	0.008	0.011	0.058
	6024	OTHR	1.738	-5.780	-0.553	0.307	0.016	0.015	-0.013	-0.292
		TEMP	-2.728	0.667	0.076	-18.533	-11.361	-0.661	0.020	-1.697
		HYDR	0.347	3.315	0.485	0.055	0.280	0.022	0.018	0.024
3 RPV Pedestal Top	6606	OTHR	0.859	-6.851	0.808	0.482	3.124	0.014	0.276	-1.019
		TEMP	8.837	0.682	0.577	-16.163	-12.297	0.057	-1.395	-2.012
		HYDR	0.734	3.973	0.751	0.565	3.241	0.197	0.624	0.881
	6613	OTHR	0.507	-7.063	-0.123	0.339	3.181	-0.088	-0.130	-1.088
		TEMP	9.213	0.732	-0.359	-16.199	-12.536	0.030	1.518	-1.952
		HYDR	0.698	3.604	0.413	0.487	2.967	0.148	0.400	0.865
	6624	OTHR	1.087	-6.649	0.320	0.458	2.794	0.127	0.098	-0.825
		TEMP	9.545	0.848	0.253	-16.174	-12.377	0.066	-1.768	-1.800
		HYDR	0.656	3.799	0.358	0.487	2.933	0.184	0.530	0.838
4 RCCV Wetwell Bottom	1806	OTHR	0.593	-1.111	-0.117	0.494	2.945	0.018	0.011	1.019
		TEMP	-1.533	-1.021	-0.228	-10.248	-14.646	0.090	0.096	-1.555
		HYDR	0.744	0.794	0.484	0.391	2.348	0.010	0.006	0.984
	1813	OTHR	0.387	-1.645	0.191	0.486	3.073	-0.002	-0.003	1.141
		TEMP	-2.037	-4.249	-0.394	-10.039	-14.121	-0.043	-0.006	-1.254
		HYDR	0.721	0.812	0.419	0.394	2.340	0.009	0.005	0.997
	1824	OTHR	0.855	-1.366	0.010	0.483	2.827	0.009	-0.005	1.063
		TEMP	-1.011	-4.103	0.136	-10.224	-14.384	0.028	-0.105	-1.321
		HYDR	0.813	0.553	0.410	0.403	2.410	0.011	0.009	1.025
5 RCCV Wetwell Mid-Height	2606	OTHR	3.471	-0.643	-0.184	-0.214	-0.854	-0.001	0.009	-0.035
		TEMP	-4.269	-1.249	-0.234	-9.962	-7.559	0.001	0.044	0.117
		HYDR	0.909	0.588	0.546	0.055	0.314	0.023	0.003	0.189
	2613	OTHR	3.063	-1.473	0.184	-0.239	-0.866	-0.001	-0.008	0.030
		TEMP	-5.197	-5.323	-0.038	-9.725	-7.432	-0.015	-0.093	0.418
		HYDR	0.872	0.617	0.438	0.046	0.247	0.021	0.010	0.154
	2624	OTHR	3.435	-0.919	-0.018	-0.154	-0.885	-0.004	0.005	-0.090
		TEMP	-4.923	-4.754	-0.111	-10.020	-7.637	-0.043	0.078	0.194
		HYDR	1.010	0.508	0.363	0.067	0.252	0.006	0.007	0.149
6 RCCV Wetwell Top	3406	OTHR	3.219	0.028	0.033	-0.093	-0.342	0.079	-0.041	0.008
		TEMP	5.196	-0.343	0.501	-10.839	-14.129	0.028	0.144	2.477
		HYDR	0.656	0.480	0.585	0.102	0.399	0.139	0.162	0.204
	3413	OTHR	2.758	-1.348	0.142	-0.128	-0.275	-0.099	0.054	0.009
		TEMP	3.430	-7.154	0.362	-10.781	-14.124	-0.109	0.133	2.640
		HYDR	0.505	0.527	0.365	0.052	0.272	0.071	0.073	0.167
	3424	OTHR	2.729	-0.248	0.054	0.037	0.161	0.069	-0.027	-0.095
		TEMP	2.843	-6.398	0.484	-9.990	-9.736	0.045	-0.108	0.896
		HYDR	0.515	0.430	0.287	0.022	0.227	0.039	0.057	0.148

**Table 3G.1-24 Combined Forces and Moments: RCCV, Selected Load Combination CV-7b (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
7 RCCV Drywell Bottom	3606	OTHR	3.117	0.581	-0.061	-0.022	0.067	0.118	-0.004	0.591
		TEMP	0.851	-0.258	0.079	-12.665	-14.960	0.282	0.179	-0.838
		HYDR	0.686	0.499	0.370	0.087	0.343	0.037	0.156	0.129
	3613	OTHR	2.733	-0.859	0.248	-0.016	0.404	-0.083	0.005	0.845
		TEMP	-0.941	-8.499	1.390	-12.337	-13.241	-0.243	0.024	-0.345
		HYDR	0.472	0.428	0.150	0.074	0.339	0.084	0.076	0.116
	3624	OTHR	2.713	0.258	0.023	0.119	0.592	0.069	0.009	0.680
		TEMP	-10.577	-8.035	0.298	-7.210	-6.858	0.089	-0.061	1.477
		HYDR	0.410	0.275	0.305	0.071	0.324	0.028	0.052	0.095
8 RCCV Drywell Mid-Height	4006	OTHR	1.969	0.955	0.059	-0.036	-0.180	0.041	0.032	-0.456
		TEMP	1.893	0.841	-0.323	-12.242	-12.219	0.193	-0.154	-0.810
		HYDR	0.681	0.411	0.172	0.035	0.337	0.023	0.117	0.109
	4013	OTHR	2.004	-1.149	0.388	-0.166	-0.422	0.010	-0.011	-0.388
		TEMP	1.197	-10.529	1.292	-12.197	-11.585	0.046	-0.165	-0.457
		HYDR	0.500	0.530	0.072	0.039	0.071	0.037	0.044	0.082
	4976	OTHR	2.136	0.576	-0.065	0.049	0.039	0.002	-0.015	-0.530
		TEMP	-7.092	-6.953	0.638	-7.681	-8.655	0.012	0.039	-0.305
		HYDR	0.194	0.228	0.217	0.029	0.033	0.013	0.006	0.069
9 RCCV Drywell Top	4406	OTHR	0.682	1.212	0.232	0.571	3.241	0.028	0.017	-0.997
		TEMP	6.726	0.270	-1.390	-11.635	-9.864	0.510	0.460	-0.602
		HYDR	0.216	0.252	0.050	0.075	0.309	0.059	0.062	0.235
	4413	OTHR	0.071	-1.461	0.289	0.395	3.060	0.058	0.010	-1.085
		TEMP	-0.989	-11.897	-0.372	-12.126	-10.994	0.411	-0.180	0.175
		HYDR	0.515	0.626	0.245	0.237	0.250	0.181	0.084	0.270
	4424	OTHR	1.588	0.692	-0.074	0.577	3.179	0.029	0.002	-0.965
		TEMP	-10.172	-5.565	0.973	-7.107	-5.872	-0.070	-0.009	-1.761
		HYDR	0.128	0.188	0.151	0.037	0.220	0.003	0.005	0.087
10 Basemat @ Center	80003	OTHR	-2.525	-1.217	0.146	-2.743	-2.077	-0.042	0.118	-0.074
		TEMP	-1.587	-2.420	-0.001	-8.464	-8.777	-0.040	0.022	-0.010
		HYDR	0.927	0.853	0.083	3.426	3.125	0.057	0.241	0.224
	80007	OTHR	-2.546	-1.223	0.131	-2.664	-2.054	-0.023	0.014	-0.120
		TEMP	-1.600	-2.375	0.039	-8.444	-8.779	-0.040	0.014	-0.014
		HYDR	0.925	0.836	0.072	3.359	3.115	0.061	0.210	0.259
	80012	OTHR	-2.601	-1.209	0.133	-2.658	-2.050	-0.027	-0.091	-0.010
		TEMP	-1.607	-2.298	0.028	-8.433	-8.799	-0.031	0.005	0.001
		HYDR	0.901	0.812	0.055	3.323	3.083	0.048	0.293	0.182
11 Basemat Inside RPV Pedestal	80206	OTHR	-2.177	-1.386	0.232	-4.091	-3.863	0.546	0.838	-1.051
		TEMP	-1.604	-2.924	0.120	-8.962	-9.256	0.034	-0.007	-0.049
		HYDR	1.081	0.938	0.151	4.965	4.512	0.804	0.639	0.640
	80213	OTHR	-2.274	-1.211	0.075	-3.377	-4.445	-0.092	-0.071	-1.360
		TEMP	-1.721	-2.346	0.088	-8.685	-9.343	-0.166	-0.026	-0.164
		HYDR	0.989	0.860	0.085	4.109	5.137	0.558	0.450	0.810
	80224	OTHR	-2.756	-1.657	0.054	-4.130	-3.404	-0.146	-1.026	-0.139
		TEMP	-1.574	-2.175	0.061	-8.644	-8.932	-0.052	-0.105	0.019
		HYDR	0.883	0.637	0.082	4.962	3.893	0.423	0.799	0.352

**Table 3G.1-24 Combined Forces and Moments: RCCV, Selected Load Combination CV-7b (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
12 S/P Slab @ RPV	83306	OTHR	0.066	1.476	-0.440	-0.755	0.507	-0.071	2.241	-0.042
		TEMP	-11.672	3.835	0.218	-9.639	-8.194	0.035	-0.073	-0.040
		HYDR	1.298	0.806	0.476	1.029	0.690	0.081	2.027	0.049
	83313	OTHR	0.261	1.206	-0.082	-0.687	0.522	0.042	2.256	0.058
		TEMP	-11.910	4.316	-0.426	-9.668	-8.271	-0.025	-0.075	0.011
		HYDR	1.213	0.820	0.328	1.005	0.623	0.139	1.996	0.041
	83324	OTHR	0.293	1.710	0.048	-0.791	0.470	-0.037	2.200	-0.062
		TEMP	-11.696	4.693	0.966	-9.530	-8.130	-0.002	0.004	0.007
		HYDR	1.256	0.871	0.342	0.951	0.560	0.098	1.945	0.048
	83406	OTHR	0.383	1.111	-0.320	-3.467	-0.976	-0.036	-0.269	0.003
		TEMP	-8.140	-0.574	-0.507	-9.101	-8.502	0.000	-0.107	0.016
		HYDR	1.234	0.820	0.265	3.030	0.974	0.060	0.303	0.004
13 S/P Slab @ Center	83413	OTHR	0.722	0.895	-0.019	-3.437	-0.984	-0.005	-0.257	0.002
		TEMP	-8.751	0.109	0.485	-9.199	-8.591	-0.012	-0.069	-0.008
		HYDR	1.150	0.845	0.178	3.015	0.946	0.074	0.292	0.004
	83424	OTHR	0.551	1.334	0.031	-3.408	-0.972	0.006	-0.291	0.000
		TEMP	-8.209	0.422	0.013	-9.166	-8.499	0.001	-0.043	0.006
		HYDR	1.203	0.917	0.178	2.995	0.931	0.063	0.287	0.004
	83506	OTHR	0.535	0.930	-0.240	1.912	-0.230	-0.028	-2.228	-0.002
		TEMP	-6.270	-2.431	-0.382	-8.852	-8.637	-0.050	-0.135	0.021
		HYDR	1.115	0.816	0.196	1.745	0.260	0.020	1.878	0.011
	83513	OTHR	0.917	0.823	0.002	1.894	-0.239	-0.005	-2.217	0.002
		TEMP	-7.033	-2.078	0.612	-9.208	-8.687	-0.011	-0.022	0.001
		HYDR	1.042	0.850	0.169	1.702	0.249	0.023	1.873	0.009
14 S/P Slab @ RCCV	83524	OTHR	0.640	1.206	0.030	2.024	-0.179	0.000	-2.248	0.002
		TEMP	-6.237	-1.445	-0.080	-9.171	-8.643	0.017	-0.039	-0.005
		HYDR	1.097	0.937	0.164	1.708	0.232	0.020	1.870	0.009
15 Topslab @ Drywell Head Opening	98120	OTHR								
		TEMP								
		HYDR								
	98135	OTHR								
		TEMP								
		HYDR								
	98104	OTHR								
		TEMP								
		HYDR								
16 Topslab @ Center	98149	OTHR								
		TEMP								
		HYDR								
	98170	OTHR								
		TEMP								
		HYDR								
	98109	OTHR								
		TEMP								
		HYDR								
17 Topslab @ RCCV	98174	OTHR								
		TEMP								
		HYDR								
	98197	OTHR								
		TEMP								
		HYDR								
	98103	OTHR								
		TEMP								
		HYDR								

See Tables 3G.5-13 to 3G.5-16

OTHR: Loads other than thermal and hydrodynamic loads

TEMP: Thermal loads

HYDR: Hydrodynamic loads

S/P: Suppression Pool

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.1-25 Combined Forces and Moments: RCCV, Selected Load Combination CV-11a**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
1 RPV Pedestal Bottom	5006	OTHR	-1.739	-7.073	-0.039	0.226	1.305	0.029	-0.010	0.873
		TEMP	-3.476	1.649	-0.329	-6.696	-6.462	-0.046	0.105	1.012
		SEIS	5.298	9.209	2.533	1.297	7.221	0.131	0.298	3.152
		HYDR	1.333	3.785	0.094	0.270	1.646	0.012	0.017	0.770
	5013	OTHR	-2.253	-7.531	0.061	0.168	1.513	-0.002	-0.005	1.054
		TEMP	-3.121	1.796	-0.097	-6.854	-6.851	-0.006	0.027	0.925
		SEIS	5.606	13.008	1.616	1.531	7.718	0.056	0.200	3.420
		HYDR	1.490	3.953	0.386	0.302	1.787	0.001	0.012	0.866
	5024	OTHR	-2.104	-7.043	0.044	0.331	1.307	-0.006	0.008	0.881
		TEMP	-3.419	1.892	-0.003	-6.894	-6.129	-0.026	-0.036	1.045
		SEIS	3.003	8.339	3.354	0.757	3.064	0.027	0.299	1.464
		HYDR	1.625	3.854	0.189	0.309	1.745	0.009	0.017	0.851
2 RPV Pedestal Mid-Height	6006	OTHR	0.768	-6.822	0.049	-0.032	-0.131	0.024	0.069	-0.291
		TEMP	0.080	1.775	0.154	-6.175	-4.043	0.264	0.065	-1.515
		SEIS	1.153	5.223	3.261	0.172	0.218	0.255	0.316	0.176
		HYDR	0.321	4.221	0.218	0.039	0.284	0.023	0.033	0.059
	6013	OTHR	0.495	-6.830	0.201	-0.185	-0.186	0.005	-0.003	-0.272
		TEMP	-0.061	1.444	-0.177	-6.419	-3.904	-0.057	-0.026	-1.669
		SEIS	1.465	6.708	1.722	1.080	0.528	0.087	0.093	0.445
		HYDR	0.331	3.890	0.369	0.074	0.270	0.008	0.011	0.057
	6024	OTHR	0.774	-5.100	-0.477	0.284	0.121	0.016	-0.003	-0.239
		TEMP	-0.245	2.050	0.059	-7.408	-2.297	-0.304	-0.003	-1.547
		SEIS	1.020	4.482	5.110	0.945	0.580	0.341	0.213	0.438
		HYDR	0.328	3.114	0.438	0.055	0.261	0.019	0.019	0.021
3 RPV Pedestal Top	6606	OTHR	0.317	-5.541	0.773	0.371	2.423	0.054	0.185	-0.946
		TEMP	20.997	2.192	0.564	-6.643	-5.510	-0.035	-1.941	0.870
		SEIS	1.720	3.276	2.761	0.619	4.163	0.652	1.283	1.596
		HYDR	0.601	3.767	0.658	0.515	3.067	0.157	0.498	0.865
	6613	OTHR	0.040	-5.703	-0.076	0.239	2.425	-0.120	-0.054	-0.987
		TEMP	21.088	1.964	-0.425	-6.702	-5.546	0.139	2.063	0.862
		SEIS	2.522	4.072	1.265	1.131	3.943	0.418	0.353	1.478
		HYDR	0.579	3.509	0.305	0.452	2.863	0.129	0.324	0.851
	6624	OTHR	0.551	-5.428	0.318	0.348	2.127	0.158	0.025	-0.763
		TEMP	21.900	2.601	0.228	-6.671	-5.665	0.005	-2.338	1.055
		SEIS	1.715	4.318	3.393	0.669	2.541	0.293	0.367	0.909
		HYDR	0.534	3.632	0.319	0.447	2.797	0.153	0.426	0.817
4 RCCV Wetwell Bottom	1806	OTHR	-0.013	-2.852	0.003	0.243	1.445	0.017	0.010	0.537
		TEMP	2.533	0.468	-0.194	-4.438	-8.138	0.077	0.083	-1.750
		SEIS	2.166	7.214	6.356	0.406	2.376	0.128	0.034	0.884
		HYDR	0.703	0.817	0.455	0.397	2.392	0.010	0.005	0.996
	1813	OTHR	-0.195	-3.126	0.204	0.238	1.563	0.000	-0.002	0.637
		TEMP	1.866	-2.167	-0.420	-4.274	-7.773	-0.025	-0.007	-1.523
		SEIS	1.533	8.760	4.947	0.356	1.941	0.055	0.025	0.802
		HYDR	0.673	0.829	0.413	0.399	2.377	0.008	0.004	1.013
	1824	OTHR	0.197	-3.163	-0.002	0.240	1.375	0.008	-0.006	0.576
		TEMP	2.926	-2.481	0.046	-4.432	-8.134	0.020	-0.085	-1.667
		SEIS	1.165	7.835	7.408	0.148	0.664	0.093	0.062	0.312
		HYDR	0.756	0.570	0.387	0.403	2.421	0.009	0.007	1.029

**Table 3G.1-25 Combined Forces and Moments: RCCV, Selected Load Combination CV-11a (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
5 RCCV Wetwell Mid-Height	2606	OTHR	1.740	-2.393	-0.035	-0.115	-0.451	-0.003	0.007	-0.055
		TEMP	1.379	0.586	-0.171	-3.308	-1.033	0.018	0.039	0.074
		SEIS	0.502	5.610	5.947	0.084	0.164	0.156	0.022	0.244
		HYDR	0.888	0.605	0.524	0.052	0.296	0.023	0.004	0.184
	2613	OTHR	1.488	-2.852	0.189	-0.141	-0.486	0.001	-0.006	0.001
		TEMP	0.111	-2.544	-0.109	-3.090	-1.052	0.009	-0.075	0.370
		SEIS	1.143	7.169	4.887	0.113	0.220	0.058	0.033	0.318
		HYDR	0.859	0.630	0.432	0.044	0.234	0.021	0.010	0.149
	2624	OTHR	1.755	-2.660	-0.009	-0.084	-0.486	-0.002	0.003	-0.072
		TEMP	0.965	-2.909	-0.087	-3.293	-0.935	-0.026	0.067	0.189
		SEIS	0.510	6.406	6.772	0.114	0.220	0.117	0.041	0.125
		HYDR	0.999	0.525	0.348	0.067	0.237	0.006	0.006	0.142
6 RCCV Wetwell Top	3406	OTHR	1.687	-1.737	0.162	-0.057	-0.186	0.078	-0.040	-0.007
		TEMP	11.723	1.461	0.327	-4.151	-8.468	-0.227	0.461	3.349
		SEIS	0.518	4.183	5.523	0.142	0.667	0.242	0.209	0.277
		HYDR	0.630	0.484	0.561	0.095	0.369	0.133	0.156	0.196
	3413	OTHR	1.464	-2.661	0.120	-0.087	-0.257	-0.109	0.054	0.035
		TEMP	8.032	-3.439	0.044	-4.382	-9.151	-0.402	0.538	3.335
		SEIS	0.905	6.033	4.629	0.088	0.536	0.122	0.146	0.314
		HYDR	0.491	0.532	0.354	0.050	0.255	0.066	0.069	0.166
	3424	OTHR	1.475	-2.009	0.057	-0.003	-0.071	0.071	-0.025	0.009
		TEMP	10.292	-4.166	0.471	-3.681	-5.045	-0.039	-0.006	2.165
		SEIS	0.839	5.113	5.841	0.088	0.555	0.086	0.080	0.201
		HYDR	0.520	0.441	0.274	0.022	0.234	0.037	0.056	0.151
7 RCCV Drywell Bottom	3606	OTHR	1.702	-1.154	0.087	-0.008	0.140	0.098	-0.002	0.405
		TEMP	8.504	1.377	0.674	-5.342	-9.036	0.607	0.534	-1.980
		SEIS	0.521	3.896	5.237	0.122	0.893	0.084	0.199	0.401
		HYDR	0.652	0.500	0.361	0.085	0.342	0.038	0.149	0.126
	3613	OTHR	1.521	-2.148	0.178	0.031	0.432	-0.099	-0.001	0.598
		TEMP	4.607	-4.161	1.005	-4.955	-6.227	-0.363	0.317	-0.820
		SEIS	0.899	5.982	4.243	0.190	0.965	0.056	0.130	0.387
		HYDR	0.450	0.433	0.143	0.075	0.341	0.080	0.072	0.114
	3624	OTHR	1.471	-1.651	0.069	0.113	0.570	0.072	0.010	0.464
		TEMP	-4.291	-6.043	0.252	-0.934	-2.498	0.068	0.000	0.351
		SEIS	0.793	5.306	5.607	0.084	0.306	0.094	0.049	0.088
		HYDR	0.411	0.284	0.291	0.071	0.323	0.027	0.050	0.094
8 RCCV Drywell Mid-Height	4006	OTHR	1.279	-0.713	0.104	-0.103	-0.292	0.009	0.029	-0.141
		TEMP	5.952	2.178	0.212	-5.110	-5.057	0.011	-0.126	-0.683
		SEIS	1.651	2.975	4.729	0.173	0.663	0.135	0.082	0.363
		HYDR	0.646	0.410	0.173	0.035	0.329	0.021	0.111	0.106
	4013	OTHR	1.314	-2.325	0.322	-0.109	-0.399	0.009	-0.010	-0.135
		TEMP	4.287	-5.850	1.041	-4.672	-4.289	0.014	-0.132	-0.308
		SEIS	1.299	5.676	4.067	0.094	0.550	0.085	0.051	0.366
		HYDR	0.476	0.531	0.075	0.039	0.073	0.035	0.041	0.083
	4976	OTHR	1.166	-1.144	0.040	0.033	-0.050	0.000	-0.012	-0.230
		TEMP	-2.660	-5.335	0.580	-0.954	-1.780	0.003	0.013	-0.584
		SEIS	0.611	4.233	5.826	0.102	0.277	0.040	0.041	0.078
		HYDR	0.193	0.232	0.209	0.030	0.031	0.013	0.005	0.069

**Table 3G.1-25 Combined Forces and Moments: RCCV, Selected Load Combination CV-11a (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
9 RCCV Drywell Top	4406	OTHR	0.567	-0.329	0.064	0.147	0.980	-0.001	0.006	-0.334
		TEMP	6.433	1.711	-0.232	-4.475	-3.816	0.299	0.087	-0.150
		SEIS	1.923	2.201	3.826	0.374	2.035	0.074	0.087	0.482
		HYDR	0.203	0.252	0.046	0.073	0.300	0.056	0.059	0.229
	4413	OTHR	-0.100	-2.509	0.217	0.124	1.189	0.036	0.003	-0.485
		TEMP	0.711	-6.632	-0.292	-4.753	-4.467	0.253	-0.243	0.643
		SEIS	1.311	5.546	3.537	0.199	1.434	0.163	0.053	0.196
		HYDR	0.516	0.629	0.230	0.226	0.253	0.171	0.080	0.264
	4424	OTHR	0.898	-0.765	0.018	0.294	1.510	0.019	0.003	-0.477
		TEMP	-5.846	-4.171	0.767	-0.363	1.129	-0.024	-0.022	-1.462
		SEIS	1.049	3.271	6.202	0.107	0.570	0.029	0.044	0.067
		HYDR	0.123	0.187	0.147	0.037	0.220	0.003	0.005	0.090
10 Basemat @ Center	80003	OTHR	-3.169	-1.933	0.152	1.321	1.823	-0.049	0.204	-0.143
		TEMP	-4.270	-5.140	0.021	-8.130	-8.102	-0.039	0.029	-0.008
		SEIS	3.276	2.673	1.515	11.475	10.858	0.559	0.608	0.927
		HYDR	0.908	0.831	0.076	3.250	2.955	0.047	0.202	0.192
	80007	OTHR	-3.198	-1.942	0.136	1.392	1.844	-0.032	-0.005	-0.233
		TEMP	-4.296	-5.104	0.056	-8.096	-8.099	-0.037	0.028	-0.009
		SEIS	3.366	2.850	0.987	11.022	10.741	0.435	0.677	0.928
		HYDR	0.906	0.817	0.065	3.190	2.945	0.049	0.168	0.228
	80012	OTHR	-3.249	-1.932	0.137	1.399	1.846	-0.035	-0.207	-0.025
		TEMP	-4.302	-5.040	0.042	-8.079	-8.109	-0.032	0.024	-0.001
		SEIS	3.012	3.152	0.799	10.595	10.490	0.184	0.814	0.902
		HYDR	0.885	0.797	0.050	3.157	2.919	0.041	0.254	0.145
11 Basemat Inside RPV Pedestal	80206	OTHR	-2.849	-2.069	0.228	-1.074	-0.876	0.850	1.075	-1.224
		TEMP	-4.260	-5.523	0.137	-8.575	-8.460	0.003	0.005	-0.035
		SEIS	4.254	1.786	3.108	12.614	11.117	2.433	1.559	2.036
		HYDR	1.044	0.895	0.149	4.683	4.269	0.707	0.579	0.597
	80213	OTHR	-2.956	-1.942	0.099	-0.034	-1.811	-0.130	-0.087	-1.672
		TEMP	-4.445	-5.127	0.161	-8.289	-8.565	-0.151	-0.018	-0.103
		SEIS	4.499	2.923	2.205	10.423	10.734	1.423	0.876	2.876
		HYDR	0.965	0.838	0.086	3.929	4.879	0.437	0.351	0.777
	80224	OTHR	-3.438	-2.320	0.065	-1.439	-0.174	-0.175	-1.384	-0.146
		TEMP	-4.372	-4.948	0.081	-8.177	-8.193	-0.045	-0.038	0.010
		SEIS	2.767	4.528	1.898	4.469	6.816	1.090	2.449	0.531
		HYDR	0.869	0.635	0.079	4.696	3.714	0.336	0.750	0.279

**Table 3G.1-25 Combined Forces and Moments: RCCV, Selected Load Combination CV-11a (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
12 S/P Slab @ RPV	83306	OTHR	-0.087	0.882	-0.395	0.188	0.683	-0.060	1.582	-0.032
		TEMP	-10.607	10.981	0.454	-4.700	-2.770	0.032	-0.288	0.000
		SEIS	0.618	1.006	1.743	3.681	2.185	0.480	1.583	0.243
		HYDR	1.136	0.794	0.394	0.982	0.646	0.066	2.051	0.046
	83313	OTHR	0.109	0.649	-0.099	0.238	0.696	0.040	1.593	0.044
		TEMP	-10.822	11.242	-0.850	-4.737	-2.848	-0.039	-0.302	-0.028
		SEIS	1.085	1.488	0.797	3.219	1.952	0.433	1.463	0.182
		HYDR	1.082	0.810	0.252	0.956	0.588	0.111	2.021	0.039
	83324	OTHR	0.144	1.107	0.054	0.151	0.649	-0.038	1.543	-0.048
		TEMP	-10.702	11.862	1.279	-4.487	-2.654	0.006	-0.156	0.046
		SEIS	0.668	0.426	1.509	1.956	1.375	0.521	1.095	0.258
		HYDR	1.121	0.856	0.266	0.907	0.523	0.078	1.968	0.045
13 S/P Slab @ Center	83406	OTHR	0.098	0.642	-0.303	-2.185	-0.369	-0.025	-0.005	0.003
		TEMP	-6.490	4.881	-0.530	-3.815	-3.181	-0.001	-0.306	0.016
		SEIS	0.498	1.242	1.400	1.035	1.101	0.361	0.933	0.026
		HYDR	1.106	0.797	0.225	3.093	0.966	0.049	0.290	0.003
	83413	OTHR	0.409	0.441	-0.018	-2.160	-0.375	-0.004	0.004	0.002
		TEMP	-6.986	5.307	0.315	-3.900	-3.257	-0.015	-0.278	-0.011
		SEIS	1.126	1.180	0.726	1.014	0.969	0.298	0.828	0.011
		HYDR	1.054	0.819	0.140	3.078	0.943	0.058	0.281	0.003
	83424	OTHR	0.268	0.850	0.025	-2.126	-0.371	0.004	-0.025	0.000
		TEMP	-6.630	5.823	0.078	-3.895	-3.148	-0.003	-0.210	0.009
		SEIS	0.934	0.394	0.771	0.910	0.679	0.362	0.502	0.007
		HYDR	1.100	0.884	0.137	3.056	0.928	0.049	0.276	0.003
14 S/P Slab @ RCCV	83506	OTHR	0.208	0.513	-0.237	0.656	-0.124	-0.024	-1.237	0.001
		TEMP	-3.948	2.320	-0.446	-2.906	-3.131	-0.038	-0.275	0.016
		SEIS	0.268	1.370	1.119	3.124	0.231	0.084	0.620	0.086
		HYDR	1.024	0.791	0.166	1.721	0.267	0.017	1.913	0.010
	83513	OTHR	0.551	0.392	0.005	0.639	-0.130	-0.005	-1.227	0.002
		TEMP	-4.567	2.419	0.440	-3.190	-3.174	-0.008	-0.192	-0.001
		SEIS	1.033	0.985	0.696	2.796	0.328	0.054	0.526	0.056
		HYDR	0.978	0.820	0.137	1.684	0.258	0.017	1.909	0.008
	83524	OTHR	0.312	0.763	0.028	0.763	-0.083	-0.001	-1.255	0.001
		TEMP	-4.038	3.201	-0.017	-3.278	-3.153	0.013	-0.168	-0.005
		SEIS	0.967	0.450	0.436	1.590	0.290	0.012	0.102	0.092
		HYDR	1.028	0.899	0.128	1.687	0.241	0.015	1.906	0.007

**Table 3G.1-25 Combined Forces and Moments: RCCV, Selected Load Combination CV-11a (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
15 Topslab @ Drywell Head Opening	98120	OTHR	0.425	0.777	0.966	0.548	0.449	0.201	0.310	-0.492
		TEMP	-7.068	-4.258	-0.770	0.956	0.732	2.765	-0.161	-0.002
		SEIS	1.555	0.940	0.893	0.425	0.527	0.317	0.136	0.305
		HYDR	0.234	0.076	0.098	0.050	0.072	0.037	0.009	0.019
	98135	OTHR	0.313	-0.231	-0.417	0.361	-0.070	0.154	0.101	-0.768
		TEMP	-8.729	-5.283	0.235	3.147	-2.057	-1.132	0.380	-0.267
		SEIS	2.718	0.341	0.531	0.717	0.333	0.139	0.083	0.353
		HYDR	0.372	0.053	0.077	0.068	0.020	0.017	0.005	0.008
	98104	OTHR	-0.151	1.909	-0.582	0.522	1.506	-0.133	-0.345	-0.436
		TEMP	-4.999	-1.752	0.585	-1.461	3.712	-1.500	0.185	-0.214
		SEIS	0.357	1.849	0.540	0.213	1.418	0.271	0.062	0.441
		HYDR	0.068	0.287	0.110	0.021	0.123	0.027	0.005	0.044
16 Topslab @ Center	98149	OTHR	0.478	1.057	-0.192	0.060	0.040	0.233	0.034	0.121
		TEMP	-6.075	-2.540	-1.137	2.229	2.310	0.496	0.037	0.048
		SEIS	1.936	0.665	0.775	0.778	0.442	0.176	0.091	0.291
		HYDR	0.345	0.181	0.037	0.047	0.036	0.026	0.016	0.020
	98170	OTHR	0.445	0.801	-0.269	0.217	0.189	-0.003	-0.016	-0.049
		TEMP	-5.510	-3.566	-1.042	2.141	2.864	-0.042	0.030	0.389
		SEIS	1.629	0.320	0.852	0.796	0.995	0.057	0.033	0.039
		HYDR	0.250	0.178	0.120	0.036	0.051	0.012	0.005	0.005
	98109	OTHR	0.305	1.273	-0.105	0.530	1.115	-0.114	-0.007	-0.173
		TEMP	-6.256	-0.887	0.773	1.219	2.564	-0.119	0.329	-0.005
		SEIS	0.193	1.488	0.657	0.713	0.991	0.192	0.115	0.152
		HYDR	0.044	0.151	0.182	0.029	0.084	0.025	0.005	0.013
17 Topslab @ RCCV	98174	OTHR	0.786	0.947	-0.024	-0.091	0.038	0.268	0.086	-0.081
		TEMP	-4.871	-2.689	-0.476	2.352	3.211	0.255	-0.023	0.434
		SEIS	1.728	1.206	0.788	0.842	0.842	0.344	0.225	0.151
		HYDR	0.293	0.187	0.067	0.110	0.121	0.081	0.040	0.036
	98197	OTHR	0.418	1.078	-0.214	-0.238	-0.895	-0.043	-0.032	-0.533
		TEMP	-7.584	-2.926	-1.360	1.917	3.110	0.130	0.154	-0.447
		SEIS	1.480	0.527	0.888	0.438	1.071	0.179	0.068	0.677
		HYDR	0.411	0.261	0.107	0.072	0.127	0.034	0.016	0.036
	98103	OTHR	0.444	1.355	-0.049	-0.180	0.381	-0.179	-0.389	-0.123
		TEMP	-6.577	-2.458	-0.070	3.431	3.308	0.118	0.450	0.084
		SEIS	0.296	1.626	1.181	2.170	0.708	0.293	0.947	0.120
		HYDR	0.058	0.171	0.217	0.090	0.080	0.014	0.023	0.002

OTHR: Loads other than thermal, seismic and hydrodynamic loads

TEMP: Thermal loads

SEIS: Seismic loads

HYDR: Hydrodynamic loads

S/P Slab: Suppression Pool Slab

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft



**Table 3G.1-26 Combined Forces and Moments: RCCV, Selected Load Combination CV-11b**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
1 RPV Pedestal Bottom	5006	OTHR	-1.977	-7.395	-0.041	0.305	1.775	0.031	-0.010	1.081
		TEMP	-12.849	0.250	-0.523	-16.011	-12.625	-0.093	0.227	4.158
		SEIS	5.298	9.209	2.533	1.297	7.221	0.131	0.298	3.152
		HYDR	1.030	2.969	0.088	0.208	1.273	0.009	0.012	0.595
	5013	OTHR	-2.496	-7.823	0.055	0.244	1.977	-0.002	-0.005	1.264
		TEMP	-12.356	0.343	-0.104	-16.288	-13.239	-0.007	0.021	4.062
		SEIS	5.606	13.008	1.616	1.531	7.718	0.056	0.200	3.420
		HYDR	1.150	3.029	0.369	0.232	1.379	0.001	0.009	0.668
	5024	OTHR	-2.341	-7.281	0.048	0.412	1.748	-0.008	0.009	1.074
		TEMP	-12.862	0.231	0.003	-16.285	-11.829	-0.073	-0.054	4.265
		SEIS	3.003	8.339	3.354	0.757	3.064	0.027	0.299	1.464
		HYDR	1.260	2.975	0.188	0.241	1.360	0.007	0.012	0.662
2 RPV Pedestal Mid-Height	6006	OTHR	0.982	-7.139	0.028	-0.042	-0.174	0.024	0.072	-0.321
		TEMP	-2.408	0.615	0.443	-16.093	-14.923	0.436	0.146	-1.774
		SEIS	1.153	5.223	3.261	0.172	0.218	0.255	0.316	0.176
		HYDR	0.266	3.408	0.166	0.030	0.241	0.019	0.027	0.044
	6013	OTHR	0.702	-7.124	0.195	-0.196	-0.231	0.004	-0.003	-0.303
		TEMP	-2.624	0.212	-0.206	-16.582	-14.795	-0.048	-0.033	-2.015
		SEIS	1.465	6.708	1.722	1.080	0.528	0.087	0.093	0.445
		HYDR	0.259	3.036	0.351	0.057	0.219	0.006	0.009	0.045
	6024	OTHR	1.014	-5.279	-0.497	0.289	0.093	0.016	-0.006	-0.253
		TEMP	-2.728	0.667	0.076	-18.533	-11.361	-0.661	0.020	-1.697
		SEIS	1.020	4.482	5.110	0.945	0.580	0.341	0.213	0.438
		HYDR	0.261	2.491	0.369	0.041	0.212	0.016	0.014	0.019
3 RPV Pedestal Top	6606	OTHR	0.458	-5.898	0.784	0.408	2.659	0.045	0.211	-0.980
		TEMP	8.837	0.682	0.577	-16.163	-12.297	0.057	-1.395	-2.012
		SEIS	1.720	3.276	2.761	0.619	4.163	0.652	1.283	1.596
		HYDR	0.552	2.994	0.564	0.428	2.438	0.156	0.487	0.661
	6613	OTHR	0.163	-6.069	-0.087	0.272	2.672	-0.113	-0.075	-1.027
		TEMP	9.213	0.732	-0.359	-16.199	-12.536	0.030	1.518	-1.952
		SEIS	2.522	4.072	1.265	1.131	3.943	0.418	0.353	1.478
		HYDR	0.519	2.708	0.314	0.367	2.223	0.114	0.313	0.649
	6624	OTHR	0.692	-5.753	0.318	0.385	2.353	0.151	0.046	-0.794
		TEMP	9.545	0.848	0.253	-16.174	-12.377	0.066	-1.768	-1.800
		SEIS	1.715	4.318	3.393	0.669	2.541	0.293	0.367	0.909
		HYDR	0.491	2.860	0.273	0.368	2.206	0.145	0.411	0.629
4 RCCV Wetwell Bottom	1806	OTHR	0.168	-2.355	-0.027	0.317	1.889	0.018	0.011	0.683
		TEMP	-1.533	-1.021	-0.228	-10.248	-14.646	0.090	0.096	-1.555
		SEIS	2.166	7.214	6.356	0.406	2.376	0.128	0.034	0.884
		HYDR	0.574	0.582	0.330	0.296	1.771	0.007	0.004	0.746
	1813	OTHR	-0.022	-2.699	0.200	0.311	2.009	-0.001	-0.003	0.789
		TEMP	-2.037	-4.249	-0.394	-10.039	-14.121	-0.043	-0.006	-1.254
		SEIS	1.533	8.760	4.947	0.356	1.941	0.055	0.025	0.802
		HYDR	0.555	0.592	0.291	0.298	1.767	0.007	0.004	0.755
	1824	OTHR	0.393	-2.658	0.001	0.311	1.806	0.008	-0.005	0.723
		TEMP	-1.011	-4.103	0.136	-10.224	-14.384	0.028	-0.105	-1.321
		SEIS	1.165	7.835	7.408	0.148	0.664	0.093	0.062	0.312
		HYDR	0.623	0.400	0.281	0.305	1.826	0.008	0.007	0.778

**Table 3G.1-26 Combined Forces and Moments: RCCV, Selected Load Combination CV-11b (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
5 RCCV Wetwell Mid-Height	2606	OTHR	2.256	-1.892	-0.073	-0.146	-0.581	-0.003	0.008	-0.051
		TEMP	-4.269	-1.249	-0.234	-9.962	-7.559	0.001	0.044	0.117
		SEIS	0.502	5.610	5.947	0.084	0.164	0.156	0.022	0.244
		HYDR	0.693	0.434	0.372	0.042	0.234	0.016	0.002	0.144
	2613	OTHR	1.959	-2.452	0.187	-0.172	-0.607	0.000	-0.006	0.008
		TEMP	-5.197	-5.323	-0.038	-9.725	-7.432	-0.015	-0.093	0.418
		SEIS	1.143	7.169	4.887	0.113	0.220	0.058	0.033	0.318
		HYDR	0.662	0.456	0.300	0.035	0.187	0.014	0.008	0.117
	2624	OTHR	2.257	-2.172	-0.012	-0.107	-0.612	-0.002	0.003	-0.079
		TEMP	-4.923	-4.754	-0.111	-10.020	-7.637	-0.043	0.078	0.194
		SEIS	0.510	6.406	6.772	0.114	0.220	0.117	0.041	0.125
		HYDR	0.765	0.373	0.246	0.051	0.193	0.005	0.005	0.115
6 RCCV Wetwell Top	3406	OTHR	2.110	-1.230	0.125	-0.057	-0.170	0.064	-0.029	-0.024
		TEMP	5.196	-0.343	0.501	-10.839	-14.129	0.028	0.144	2.477
		SEIS	0.518	4.183	5.523	0.142	0.667	0.242	0.209	0.277
		HYDR	0.457	0.355	0.398	0.070	0.277	0.095	0.111	0.142
	3413	OTHR	1.828	-2.277	0.131	-0.092	-0.220	-0.093	0.046	0.011
		TEMP	3.430	-7.154	0.362	-10.781	-14.124	-0.109	0.133	2.640
		SEIS	0.905	6.033	4.629	0.088	0.536	0.122	0.146	0.314
		HYDR	0.351	0.394	0.249	0.037	0.189	0.049	0.050	0.117
	3424	OTHR	1.829	-1.515	0.047	0.017	0.047	0.054	-0.016	-0.039
		TEMP	2.843	-6.398	0.484	-9.990	-9.736	0.045	-0.108	0.896
		SEIS	0.839	5.113	5.841	0.088	0.555	0.086	0.080	0.201
		HYDR	0.371	0.320	0.194	0.016	0.163	0.027	0.040	0.108
7 RCCV Drywell Bottom	3606	OTHR	2.088	-0.697	0.043	-0.015	0.106	0.089	0.002	0.445
		TEMP	0.851	-0.258	0.079	-12.665	-14.960	0.282	0.179	-0.838
		SEIS	0.521	3.896	5.237	0.122	0.893	0.084	0.199	0.401
		HYDR	0.472	0.366	0.253	0.061	0.246	0.025	0.107	0.089
	3613	OTHR	1.858	-1.813	0.204	0.012	0.394	-0.080	-0.001	0.650
		TEMP	-0.941	-8.499	1.390	-12.337	-13.241	-0.243	0.024	-0.345
		SEIS	0.899	5.982	4.243	0.190	0.965	0.056	0.130	0.387
		HYDR	0.324	0.321	0.101	0.054	0.250	0.057	0.052	0.082
	3624	OTHR	1.816	-1.171	0.047	0.109	0.545	0.054	0.011	0.509
		TEMP	-10.577	-8.035	0.298	-7.210	-6.858	0.089	-0.061	1.477
		SEIS	0.793	5.306	5.607	0.084	0.306	0.094	0.049	0.088
		HYDR	0.292	0.201	0.206	0.053	0.242	0.019	0.036	0.069
8 RCCV Drywell Mid-Height	4006	OTHR	1.477	-0.275	0.092	-0.086	-0.273	0.017	0.027	-0.220
		TEMP	1.893	0.841	-0.323	-12.242	-12.219	0.193	-0.154	-0.810
		SEIS	1.651	2.975	4.729	0.173	0.663	0.135	0.082	0.363
		HYDR	0.466	0.297	0.118	0.025	0.231	0.015	0.079	0.076
	4013	OTHR	1.506	-2.027	0.339	-0.124	-0.407	0.008	-0.010	-0.205
		TEMP	1.197	-10.529	1.292	-12.197	-11.585	0.046	-0.165	-0.457
		SEIS	1.299	5.676	4.067	0.094	0.550	0.085	0.051	0.366
		HYDR	0.341	0.398	0.050	0.027	0.051	0.025	0.030	0.059
	4976	OTHR	1.430	-0.711	0.014	0.036	-0.028	0.001	-0.013	-0.310
		TEMP	-7.092	-6.953	0.638	-7.681	-8.655	0.012	0.039	-0.305
		SEIS	0.611	4.233	5.826	0.102	0.277	0.040	0.041	0.078
		HYDR	0.135	0.170	0.146	0.021	0.023	0.009	0.004	0.052

**Table 3G.1-26 Combined Forces and Moments: RCCV, Selected Load Combination CV-11b (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
9 RCCV Drywell Top	4406	OTHR	0.602	0.077	0.106	0.258	1.551	0.007	0.009	-0.507
		TEMP	6.726	0.270	-1.390	-11.635	-9.864	0.510	0.460	-0.602
		SEIS	1.923	2.201	3.826	0.374	2.035	0.074	0.087	0.482
		HYDR	0.148	0.182	0.036	0.052	0.214	0.040	0.043	0.162
	4413	OTHR	-0.064	-2.250	0.234	0.196	1.681	0.041	0.004	-0.642
		TEMP	-0.989	-11.897	-0.372	-12.126	-10.994	0.411	-0.180	0.175
		SEIS	1.311	5.546	3.537	0.199	1.434	0.163	0.053	0.196
		HYDR	0.363	0.469	0.168	0.162	0.182	0.123	0.057	0.187
	4424	OTHR	1.076	-0.398	-0.005	0.367	1.945	0.022	0.002	-0.604
		TEMP	-10.172	-5.565	0.973	-7.107	-5.872	-0.070	-0.009	-1.761
		SEIS	1.049	3.271	6.202	0.107	0.570	0.029	0.044	0.067
		HYDR	0.087	0.142	0.101	0.028	0.166	0.002	0.003	0.064
10 Basemat @ Center	80003	OTHR	-3.000	-1.745	0.151	0.261	0.806	-0.047	0.182	-0.126
		TEMP	-1.587	-2.420	-0.001	-8.464	-8.777	-0.040	0.022	-0.010
		SEIS	3.276	2.673	1.515	11.475	10.858	0.559	0.608	0.927
		HYDR	0.689	0.634	0.057	2.545	2.321	0.042	0.180	0.166
	80007	OTHR	-3.027	-1.753	0.135	0.335	0.827	-0.029	0.001	-0.204
		TEMP	-1.600	-2.375	0.039	-8.444	-8.779	-0.040	0.014	-0.014
		SEIS	3.366	2.850	0.987	11.022	10.741	0.435	0.677	0.928
		HYDR	0.688	0.622	0.051	2.496	2.314	0.045	0.157	0.193
	80012	OTHR	-3.079	-1.743	0.136	0.341	0.830	-0.033	-0.177	-0.021
		TEMP	-1.607	-2.298	0.028	-8.433	-8.799	-0.031	0.005	0.001
		SEIS	3.012	3.152	0.799	10.595	10.490	0.184	0.814	0.902
		HYDR	0.671	0.603	0.038	2.471	2.290	0.035	0.219	0.134
11 Basemat Inside RPV Pedestal	80206	OTHR	-2.673	-1.890	0.229	-1.869	-1.661	0.774	1.016	-1.181
		TEMP	-1.604	-2.924	0.120	-8.962	-9.256	0.034	-0.007	-0.049
		SEIS	4.254	1.786	3.108	12.614	11.117	2.433	1.559	2.036
		HYDR	0.804	0.702	0.105	3.702	3.366	0.602	0.480	0.476
	80213	OTHR	-2.777	-1.750	0.093	-0.910	-2.507	-0.119	-0.082	-1.593
		TEMP	-1.721	-2.346	0.088	-8.685	-9.343	-0.166	-0.026	-0.164
		SEIS	4.499	2.923	2.205	10.423	10.734	1.423	0.876	2.876
		HYDR	0.736	0.640	0.058	3.062	3.834	0.416	0.337	0.605
	80224	OTHR	-3.259	-2.147	0.062	-2.148	-1.021	-0.168	-1.292	-0.145
		TEMP	-1.574	-2.175	0.061	-8.644	-8.932	-0.052	-0.105	0.019
		SEIS	2.767	4.528	1.898	4.469	6.816	1.090	2.449	0.531
		HYDR	0.659	0.470	0.058	3.723	2.907	0.313	0.598	0.262

**Table 3G.1-26 Combined Forces and Moments: RCCV, Selected Load Combination CV-11b (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
12 S/P Slab @ RPV	83306	OTHR	-0.027	1.054	-0.409	-0.061	0.652	-0.063	1.799	-0.036
		TEMP	-11.672	3.835	0.218	-9.639	-8.194	0.035	-0.073	-0.040
		SEIS	0.618	1.006	1.743	3.681	2.185	0.480	1.583	0.243
		HYDR	0.990	0.616	0.366	0.765	0.514	0.058	1.530	0.036
	83313	OTHR	0.171	0.811	-0.094	-0.005	0.667	0.040	1.812	0.048
		TEMP	-11.910	4.316	-0.426	-9.668	-8.271	-0.025	-0.075	0.011
		SEIS	1.085	1.488	0.797	3.219	1.952	0.433	1.463	0.182
		HYDR	0.927	0.623	0.255	0.751	0.465	0.104	1.507	0.030
	83324	OTHR	0.202	1.282	0.052	-0.097	0.618	-0.038	1.761	-0.052
		TEMP	-11.696	4.693	0.966	-9.530	-8.130	-0.002	0.004	0.007
		SEIS	0.668	0.426	1.509	1.956	1.375	0.521	1.095	0.258
		HYDR	0.959	0.664	0.265	0.716	0.420	0.072	1.470	0.036
13 S/P Slab @ Center	83406	OTHR	0.193	0.783	-0.308	-2.586	-0.542	-0.028	-0.076	0.003
		TEMP	-8.140	-0.574	-0.507	-9.101	-8.502	0.000	-0.107	0.016
		SEIS	0.498	1.242	1.400	1.035	1.101	0.361	0.933	0.026
		HYDR	0.941	0.627	0.200	2.291	0.733	0.043	0.226	0.003
	83413	OTHR	0.513	0.576	-0.017	-2.559	-0.548	-0.004	-0.066	0.002
		TEMP	-8.751	0.109	0.485	-9.199	-8.591	-0.012	-0.069	-0.008
		SEIS	1.126	1.180	0.726	1.014	0.969	0.298	0.828	0.011
		HYDR	0.879	0.643	0.139	2.280	0.712	0.055	0.218	0.003
	83424	OTHR	0.362	0.996	0.027	-2.526	-0.541	0.005	-0.097	0.000
		TEMP	-8.209	0.422	0.013	-9.166	-8.499	0.001	-0.043	0.006
		SEIS	0.934	0.394	0.771	0.910	0.679	0.362	0.502	0.007
		HYDR	0.919	0.699	0.135	2.265	0.703	0.046	0.216	0.003
14 S/P Slab @ RCCV	83506	OTHR	0.313	0.640	-0.238	1.009	-0.155	-0.025	-1.535	0.001
		TEMP	-6.270	-2.431	-0.382	-8.852	-8.637	-0.050	-0.135	0.021
		SEIS	0.268	1.370	1.119	3.124	0.231	0.084	0.620	0.086
		HYDR	0.849	0.624	0.149	1.309	0.196	0.015	1.419	0.008
	83513	OTHR	0.669	0.522	0.005	0.992	-0.162	-0.005	-1.524	0.002
		TEMP	-7.033	-2.078	0.612	-9.208	-8.687	-0.011	-0.022	0.001
		SEIS	1.033	0.985	0.696	2.796	0.328	0.054	0.526	0.056
		HYDR	0.795	0.647	0.132	1.278	0.187	0.017	1.416	0.007
	83524	OTHR	0.418	0.899	0.028	1.117	-0.112	-0.001	-1.553	0.001
		TEMP	-6.237	-1.445	-0.080	-9.171	-8.643	0.017	-0.039	-0.005
		SEIS	0.967	0.450	0.436	1.590	0.290	0.012	0.102	0.092
		HYDR	0.836	0.714	0.124	1.287	0.175	0.015	1.415	0.006

**Table 3G.1-26 Combined Forces and Moments: RCCV, Selected Load Combination CV-11b (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
15 Topslab @ Drywell Head Opening	98120	OTHR								
		TEMP								
		SEIS								
		HYDR								
	98135	OTHR								
		TEMP								
		SEIS								
		HYDR								
	98104	OTHR								
		TEMP								
		SEIS								
		HYDR								
16 Topslab @ Center	98149	OTHR	See <a href="#">Tables 3G.5-17</a> to <a href="#">3G.5-20</a>							
		TEMP								
		SEIS								
		HYDR								
	98170	OTHR								
		TEMP								
		SEIS								
		HYDR								
	98109	OTHR								
		TEMP								
		SEIS								
		HYDR								
17 Topslab @ RCCV	98174	OTHR								
		TEMP								
		SEIS								
		HYDR								
	98197	OTHR								
		TEMP								
		SEIS								
		HYDR								
	98103	OTHR								
		TEMP								
		SEIS								
		HYDR								

See [Tables 3G.5-17 to 3G.5-20](#)

OTHR: Loads other than thermal, seismic and hydrodynamic loads

TEMP: Thermal loads

SEIS: Seismic loads

HYDR: Hydrodynamic loads

S/P Slab: Suppression Pool Slab

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.1-27 Sectional Thicknesses and Rebar Ratios of RCCV Used in the Evaluation**

Location	Element ID	Thickness (m)	Primary Reinforcement					Shear Tie	
			Position	Direction 1 <sup>(1)</sup>		Direction 2 <sup>(1)</sup>		Arrangement	Ratio (%)
				Arrangement <sup>(2)</sup>	Ratio (%)	Arrangement <sup>(2)</sup>	Ratio (%)		
1 RPV Pedestal Bottom	5006 5013 5024	2.4	Inside	2-#18@300	0.717	3-#18@3.6° (+1-#18@3.6°)	1.007	#9@1.8°x300	1.007
			Outside	3-#18@300	1.075	3-#18@1.8° (+1-#18@1.8°)	2.013		
2 RPV Pedestal Mid-Height	6006 6013 6024	2.4	Inside	2-#18@300	0.717	3-#18@3.6°	0.755	#9@3.6°x600	0.252
			Outside	3-#18@300	1.075	3-#18@1.8°	1.510		
3 RPV Pedestal Top	6606 6613 6624	2.4	Inside	2-#18@300 (+1-#18@300)	1.075	3-#18@3.6°	0.755	#9@1.8°x300	1.007
			Outside	3-#18@300 (+1-#18@300)	1.434	3-#18@1.8°	1.510		
4 RCCV Wetwell Bottom	1806 1813 1824	2.0	Inside	2-#18@300 +1-#18@600	1.075	3-#18@0.9° (+1-#18@3.6°)	1.405	#9@1.2°x300	0.540
			Outside	3-#18@300	1.290	3-#18@0.9° (+1-#18@1.8°)	1.513		
5 RCCV Wetwell Mid-Height	2606 2613 2624	2.0	Inside	2-#18@300 +1-#18@600	1.075	2-#18@0.9°	0.865	#9@1.2°x600	0.270
			Outside	3-#18@300 +1-#18@600	1.505	3-#18@0.9° +1-#18@0.9°	1.729		
6 RCCV Wetwell Top	3406 3413 3424	2.0	Inside	2-#18@300 +1-#18@600 (+1-#18@600 +1-#18@600)	1.720	2-#18@0.9°	0.865	#9@0.9°x300	0.721
			Outside	3-#18@300 +1-#18@600 (+2-#18@600)	1.935	3-#18@0.9° +1-#18@0.9°	1.729		
7 RCCV Drywell Bottom	3606 3613 3624	2.0	Inside	2-#18@300 +1-#18@600 (+2-#18@600)	1.505	2-#18@0.9°	0.865	#9@0.9°x300	0.721
			Outside	3-#18@300 +1-#18@300 (+1-#18@600 +1-#18@600)	2.151	3-#18@0.9° +1-#18@0.9°	1.729		
8 RCCV Drywell Mid-Height	4006 4013 4976	2.0	Inside	2-#18@300 +1-#18@600	1.075	2-#18@0.9°	0.865	#9@1.2°x600	0.270
			Outside	3-#18@300 +1-#18@600	1.505	3-#18@0.9° +1-#18@0.9°	1.729		
9 RCCV Drywell Top	4406 4413	2.0	Inside	2-#18@300 +1-#18@600	1.075	2-#18@0.9°	0.865	#9@1.2°x300	0.540
			Outside	3-#18@300 +1-#18@600	1.505	3-#18@0.9° +1-#18@0.9°	1.729		
	4424	2.0	Inside	2-#18@300	0.860	2-#18@0.9° (+1-#18@1.8°)	1.081	#9@1.2°x300	0.540
			Outside	3-#18@300	1.290	3-#18@0.9°	1.297		

**Table 3G.1-27 Sectional Thicknesses and Rebar Ratios of RCCV Used in the Evaluation (Continued)**

Location	Element ID	Thickness (m)	Primary Reinforcement					Shear Tie	
			Position	Direction 1 <sup>(1)</sup>		Direction 2 <sup>(1)</sup>		Arrangement	Ratio (%)
				Arrangement <sup>(2)</sup>	Ratio (%)	Arrangement <sup>(2)</sup>	Ratio (%)		
10 Basemat @ Center	80003 80007 80012	5.1	Top	3-#11@120	0.493	3-#11@120	0.493	#9@600x600	0.179
			Bottom	5-#11@200	0.493	5-#11@200	0.493		
11 Basemat Inside RPV Pedestal	80206 80213 80224	5.1	Top	5-#11@1.8°	0.507	4-#11@200 +1-#11@400	0.444	#11@1.8°x400	1.292
			Bottom	5-#11@200	0.493	5-#11@200	0.493		
12 S/P Slab @ RPV	83306 83313 83324	2.0	Top	2-#18@1.8°	0.913	2-#18@300	0.860	#9@1.2°x300	1.141
			Bottom	2-#18@1.8°	0.913	2-#18@300	0.860		
13 S/P Slab @ Center	83406 83413 83424	2.0	Top	2-#18@0.9°	1.264	2-#18@300	0.860	#9@1.8°x600	0.263
			Bottom	2-#18@0.9°	1.264	2-#18@300	0.860		
14 S/P Slab @ RCCV	83506 83513 83524	2.0	Top	2-#18@0.9°	0.966	2-#18@300	0.860	#9@0.72°x300	1.007
			Bottom	2-#18@0.9°	0.966	2-#18@300	0.860		
15 Top slab @ Drywell Head Opening	98120 98135	2.4	Top	See Table 3G.5-21					
			Bottom						
	98104	2.4	Top						
			Bottom						
16 Top slab @ Center	98149	2.4	Top						
			Bottom						
	93109	2.4	Top						
			Bottom						
	98170	2.4	Top						
			Bottom						
17 Top slab @ RCCV	98174	2.4	Top						
			Bottom						
	98197	2.4	Top						
			Bottom						
	98103	2.4	Top						
			Bottom						

(1) RCCV, Pedestal Direction 1: Hoop Direction 2: Vertical

S/P Slab: Suppression Pool Slab Direction 1: Radial

Top slab

Basemat @center

Basemat Inside RPV Pedestal

Direction 1: N-S

Direction 1: N-S

Direction 1: Top: Radial, Bottom: N-S

Direction 2: Circumferential

Direction 2: E-W

Direction 2: E-W

Direction 2: Top: Circumferential, Bottom: E-W

(2) Rebar in parenthesis indicates additional bars locally required.

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 m = 3.28 ft

**Table 3G.1-28      Rebar and Concrete Stresses of RCCV: Selected Load Combination CV-1**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				
		Calculated	Allowable	Calculated				Allowable
				Direction 1*		Direction 2*		
				In/Top	Out/Bottom	In/Top	Out/Bottom	
1 RPV	5006	-4.1	-15.5	-2.5	-3.4	-10.4	-24.5	310.2
Pedestal Bottom	5013	-4.4	-15.5	-4.2	-4.2	-10.4	-26.0	310.2
	5024	-4.0	-15.5	-3.1	-4.9	-10.1	-23.7	310.2
2 RPV	6006	-3.1	-15.5	33.4	23.2	-21.0	-17.4	310.2
Pedestal Mid-Height	6013	-3.1	-15.5	19.4	21.6	-21.1	-17.1	310.2
	6024	-2.1	-15.5	49.0	17.0	-13.8	-12.9	310.2
3 RPV	6606	-4.7	-15.5	24.6	5.2	-0.9	-25.4	310.2
Pedestal Top	6613	-4.6	-15.5	11.6	3.3	-5.1	-25.9	310.2
	6624	-4.3	-15.5	26.3	6.1	-4.6	-24.0	310.2
4 RCCV	1806	-4.8	-15.5	19.1	3.2	24.8	-17.4	310.2
Wetwell Bottom	1813	-5.1	-15.5	15.2	2.4	23.4	-18.7	310.2
	1824	-4.6	-15.5	24.9	5.0	18.3	-18.1	310.2
5 RCCV	2606	-1.4	-15.5	57.3	45.8	-12.3	1.7	310.2
Wetwell Mid-Height	2613	-1.6	-15.5	48.7	41.5	-16.5	1.9	310.2
	2624	-1.7	-15.5	58.9	44.4	-10.2	-1.7	310.2
6 RCCV	3406	-0.9	-15.5	37.2	30.4	2.2	-3.4	310.2
Wetwell Top	3413	-1.0	-15.5	30.6	27.8	-16.9	3.3	310.2
	3424	-0.6	-15.5	33.6	24.5	0.5	-6.3	310.2
7 RCCV	3606	-0.5	-15.5	41.9	26.3	9.2	-6.2	310.2
Drywell Bottom	3613	-1.3	-15.5	37.7	24.0	-5.8	-3.1	310.2
	3624	-0.6	-15.5	39.8	20.6	8.6	-10.7	310.2
8 RCCV	4006	-0.2	-15.5	37.1	28.0	0.8	10.5	310.2
Drywell Mid-Height	4013	-1.4	-15.5	36.2	30.4	-7.0	-1.0	310.2
	4976	-0.2	-15.5	40.7	24.7	-1.2	-0.9	310.2
9 RCCV	4406	-4.9	-15.5	30.2	6.8	94.9	-1.5	310.2
Drywell Top	4413	-4.9	-15.5	10.2	1.9	35.0	-16.1	310.2
	4424	-5.6	-15.5	55.4	12.5	74.2	-6.4	310.2
10 Basemat @ Center	80003	-0.7	-12.4	-4.3	-2.8	-1.6	-1.7	310.2
	80007	-0.7	-12.4	-4.3	-2.9	-1.6	-1.7	310.2
	80012	-0.7	-12.4	-4.4	-3.0	-1.6	-1.7	310.2
11 Basemat Inside RPV Pedestal	80206	-1.3	-12.4	-4.4	0.3	-2.9	1.9	310.2
	80213	-1.2	-12.4	-2.5	-1.6	-4.2	6.4	310.2
	80224	-1.2	-12.4	-5.4	-0.5	-3.0	-0.3	310.2
12 S/P Slab @ RPV	83306	-0.7	-15.5	13.9	20.7	72.8	12.0	310.2
	83313	-0.2	-15.5	0.8	18.5	55.8	0.9	310.2
	83324	-0.2	-15.5	-3.1	22.0	67.7	15.7	310.2
13 S/P Slab @ Center	83406	-6.0	-15.5	-7.0	81.8	13.3	60.7	310.2
	83413	-5.6	-15.5	-4.9	83.1	5.5	46.3	310.2
	83424	-5.8	-15.5	-7.3	79.2	10.9	59.7	310.2
14 S/P Slab @ RCCV	83506	-3.6	-15.5	67.2	-12.6	25.8	18.0	310.2
	83513	-3.1	-15.5	69.7	-8.5	13.5	10.9	310.2
	83524	-3.9	-15.5	66.1	-14.4	28.5	19.0	310.2
15 Topslab @ Drywell Head Opening	98120	-3.3	-15.5	107.8	12.3	115.6	22.7	310.2
	98135	-1.2	-15.5	9.0	-6.5	-9.8	4.9	310.2
	98104	-4.1	-15.5	82.3	10.6	146.9	14.5	310.2
16 Topslab @ Center	98149	-1.0	-15.5	18.7	17.0	38.7	66.2	310.2
	98170	-1.7	-15.5	45.8	3.9	69.0	12.9	310.2
	98109	-3.7	-15.5	60.3	5.9	93.7	6.5	310.2
17 Topslab @ RCCV	98174	-2.7	-15.5	33.2	46.5	44.4	44.0	310.2
	98197	-2.7	-15.5	10.5	26.1	8.3	106.5	310.2
	98103	-3.7	-15.5	33.9	59.3	52.7	45.9	310.2

Note: Negative value means compression.

Note \*: RCCV, Pedestal

S/P Slab: Suppression Pool Slab

Top slab

Basemat @center

Basemat Inside RPV Pedestal

Direction 1: Hoop

Direction 1: Radial

Direction 1: N-S

Direction 1: N-S

Direction 1: Top :Radial, Bottom: N-S

Direction 2: Vertical

Direction 2: Circumferential

Direction 2: E-W

Direction 2: E-W

Direction2 Top: Circumferential, Bottom: E-W

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1MPa = 145.038 psi



**Table 3G.1-29 Rebar and Concrete Stresses of RCCV: Selected Load Combination CV-7a**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				
		Calculated	Allowable	Calculated				Allowable
				Direction 1 <sup>*</sup>		Direction 2 <sup>*</sup>		
				In/Top	Out/Bottom	In/Top	Out/Bottom	
1 RPV	5006	-7.3	-28.7	-20.4	29.9	-41.6	-20.8	367.9
Pedestal Bottom	5013	-7.9	-28.7	-22.7	8.1	-43.7	-17.2	367.9
	5024	-7.4	-28.7	-22.8	30.6	-41.0	-16.1	367.9
2 RPV	6006	-7.8	-28.7	7.4	90.1	-45.1	-24.8	367.9
Pedestal Mid-Height	6013	-7.7	-28.7	-4.6	91.1	-43.5	20.7	367.9
	6024	-5.5	-28.7	5.0	97.6	-28.8	21.2	367.9
3 RPV	6606	-5.1	-28.7	224.4	235.4	96.1	-131.5	367.9
Pedestal Top	6613	-7.8	-28.7	216.9	233.5	23.6	-60.1	367.9
	6624	-11.0	-28.7	220.6	226.9	-101.7	45.8	367.9
4 RCCV	1806	-11.3	-29.0	36.7	118.3	59.9	79.3	369.7
Wetwell Bottom	1813	-9.6	-29.0	-9.7	20.4	40.5	50.9	369.7
	1824	-10.9	-29.0	-44.0	-29.7	-31.6	69.6	369.7
5 RCCV	2606	-4.2	-29.1	-14.9	33.5	-15.8	19.0	370.2
Wetwell Mid-Height	2613	-3.8	-29.1	24.8	102.6	-20.3	6.0	370.2
	2624	-4.2	-29.1	-19.9	11.7	-15.6	4.2	370.2
6 RCCV	3406	-2.4	-29.1	259.8	266.3	-82.5	138.2	370.2
Wetwell Top	3413	-8.5	-29.1	217.4	229.9	-163.9	93.1	370.2
	3424	-9.4	-29.1	276.4	292.1	-126.8	123.7	370.2
7 RCCV	3606	-8.7	-28.7	158.0	159.9	-42.0	121.5	367.8
Drywell Bottom	3613	-14.4	-28.7	77.4	147.2	-57.4	52.0	367.8
	3624	-3.6	-27.7	107.3	96.7	-58.3	59.5	360.2
8 RCCV	4006	-3.5	-28.7	104.8	145.0	-48.8	78.4	367.8
Drywell Mid-Height	4013	-10.2	-28.7	75.4	135.9	-46.6	64.5	367.8
	4976	-1.3	-27.7	96.4	85.5	-27.0	35.3	360.2
9 RCCV	4406	-5.6	-28.7	44.5	97.6	18.5	-9.5	367.8
Drywell Top	4413	-4.0	-28.7	-8.6	67.4	2.5	-10.7	367.8
	4424	-8.9	-27.7	78.3	36.4	121.8	-10.3	360.2
10 Basemat @ Center	80003	-4.9	-23.2	-16.6	14.2	-14.6	13.8	370.2
	80007	-4.8	-23.2	-16.8	13.2	-14.5	13.8	370.2
	80012	-4.8	-23.2	-16.9	12.8	-14.2	14.0	370.2
11 Basemat Inside RPV Pedestal	80206	-7.3	-23.2	-7.8	37.6	-12.9	38.0	370.2
	80213	-7.2	-23.2	-5.1	25.7	-13.2	56.7	370.2
	80224	-6.6	-23.2	-11.9	34.4	-11.0	30.7	370.2
12 S/P Slab @ RPV	83306	-7.9	-29.0	-22.4	-14.1	-43.8	-25.2	369.8
	83313	-4.0	-29.0	-58.4	67.5	126.6	284.3	369.8
	83324	-3.7	-29.0	-47.4	83.2	154.3	304.9	369.8
13 S/P Slab @ Center	83406	-17.4	-29.0	-42.7	136.7	38.4	280.0	369.8
	83413	-17.6	-29.0	-50.3	116.3	30.8	253.6	369.8
	83424	-16.9	-29.0	-47.1	129.3	37.4	269.6	369.8
14 S/P Slab @ RCCV	83506	-5.5	-29.0	41.5	57.2	-4.7	181.0	369.8
	83513	-22.4	-29.0	-143.6	-155.7	30.9	146.9	369.8
	83524	-6.4	-29.0	21.3	40.6	27.4	173.6	369.8
15 Topslab @ Drywell Head Opening	98120	-14.6	-27.9	100.9	-13.9	198.0	14.3	361.7
	98135	-4.4	-27.9	-2.8	-24.6	-14.8	26.2	361.7
	98104	-12.4	-27.9	37.8	-2.5	239.2	-11.3	361.7
16 Topslab @ Center	98149	-9.3	-28.0	-15.4	86.2	132.3	34.3	362.7
	98170	-6.5	-28.0	151.7	19.8	223.7	21.6	362.7
	98109	-5.2	-28.0	94.4	13.4	174.3	9.3	362.7
	98174	-9.0	-28.0	94.6	-4.7	140.4	9.8	362.7
17 Topslab @ RCCV	98197	-1.9	-28.0	143.3	64.6	152.0	103.2	362.7
	98103	-2.6	-28.0	22.6	5.2	89.6	5.8	362.7

Note: Negative value means compression.

Note \*: RCCV, Pedestal

S/P Slab: Suppression Pool Slab

Top slab

Basemat @center

Basemat Inside RPV Pedestal

Direction 1: Hoop

Direction 1: Radial

Direction 1: N-S

Direction 1: N-S

Direction 1: Top :Radial, Bottom: N-S

Direction 2: Vertical

Direction 2: Circumferential

Direction 2: E-W

Direction 2: E-W

Direction 2 Top: Circumferential, Bottom: E-W

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MPa = 145.038 psi

**Table 3G.1-30 Rebar and Concrete Stresses of RCCV: Selected Load Combination CV-7b**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				
		Calculated	Allowable	Calculated				Allowable
				Direction 1		Direction 2		
				In/Top	Out/Bottom	In/Top	Out/Bottom	
1 RPV	5006	-14.8	-27.9	-82.3	-25.1	-31.5	-10.3	361.6
Pedestal Bottom	5013	-15.8	-27.9	-87.4	-29.5	-38.5	-7.6	361.6
	5024	-16.5	-27.9	-93.2	-34.5	-34.1	-6.7	361.6
2 RPV	6006	-11.5	-27.9	-47.6	5.2	-51.9	70.6	361.6
Pedestal Mid-Height	6013	-12.7	-27.9	-47.0	14.6	-59.2	71.4	361.6
	6024	-12.3	-27.9	-46.4	34.3	-42.0	59.5	361.6
3 RPV	6606	-20.2	-27.9	-121.5	-75.0	-34.0	8.9	361.6
Pedestal Top	6613	-11.3	-27.9	-49.2	-7.0	-50.1	10.1	361.6
	6624	-12.1	-27.9	-14.8	118.9	-57.7	16.5	361.6
4 RCCV	1806	-12.2	-28.3	-12.5	117.0	-24.8	95.4	364.4
Wetwell Bottom	1813	-11.7	-28.3	-15.1	115.5	-31.4	70.8	364.4
	1824	-13.6	-28.3	-11.7	126.5	-35.3	99.1	364.4
5 RCCV	2606	-10.5	-28.2	20.6	183.0	-28.4	85.9	363.8
Wetwell Mid-Height	2613	-10.8	-28.2	11.6	175.4	-36.4	51.8	363.8
	2624	-10.7	-28.2	18.3	180.1	-38.3	60.6	363.8
6 RCCV	3406	-11.2	-28.2	-45.6	-1.1	-32.1	104.4	363.8
Wetwell Top	3413	-12.9	-28.2	-12.1	85.9	-63.9	-4.3	363.8
	3424	-10.5	-28.2	-17.0	93.4	-19.1	134.0	363.8
7 RCCV	3606	-14.8	-27.7	15.6	152.1	-40.7	149.8	360.2
Drywell Bottom	3613	-13.9	-27.7	-21.1	77.5	-65.7	7.8	360.2
	3624	-7.1	-26.7	25.8	129.3	-5.2	149.1	352.9
8 RCCV	4006	-11.7	-27.7	20.6	183.7	-19.0	145.7	360.2
Drywell Mid-Height	4013	-10.4	-27.7	14.0	172.5	-35.9	70.2	360.2
	4976	-9.4	-26.7	11.5	134.7	-25.0	85.2	352.9
9 RCCV	4406	-6.3	-27.7	-29.0	175.7	86.2	48.4	360.2
Drywell Top	4413	-8.6	-27.7	-22.4	81.4	-9.2	-11.6	360.2
	4424	-7.8	-26.7	-10.5	117.8	6.9	61.2	352.9
10 Basemat @ Center	80003	-4.3	-23.2	-9.0	26.1	-5.8	30.9	370.2
	80007	-4.2	-23.2	-9.2	25.1	-5.7	30.9	370.2
	80012	-4.2	-23.2	-9.5	24.4	-5.4	31.1	370.2
11 Basemat Inside	80206	-6.4	-23.2	-3.6	46.9	-6.4	53.7	370.2
RPV Pedestal	80213	-6.4	-23.2	5.5	37.1	-6.0	70.2	370.2
	80224	-6.0	-23.2	-4.8	46.5	-3.8	48.0	370.2
12 S/P Slab @ RPV	83306	-12.2	-28.3	-48.5	-24.1	-40.0	77.2	364.4
	83313	-11.9	-28.3	-45.9	-17.0	-35.9	84.5	364.4
	83324	-12.2	-28.3	-38.1	-9.4	-35.2	97.0	364.4
13 S/P Slab @ Center	83406	-21.5	-28.3	-59.9	113.8	-13.4	306.7	364.4
	83413	-21.4	-28.3	-28.1	205.3	-13.3	298.9	364.4
	83424	-19.4	-28.3	-37.3	186.7	-10.6	316.6	364.4
14 S/P Slab @ RCCV	83506	-11.3	-28.3	21.2	41.1	-21.5	175.4	364.4
	83513	-9.7	-28.3	23.4	58.4	-28.1	175.1	364.4
	83524	-9.4	-28.3	24.5	30.8	-17.6	196.3	364.4
15 Topslab @ Drywell Head Opening	98120	See Tables 3G.5-22 to 3G.5-25						
	98135							
	98104							
	98109							
16 Topslab @ Center	98149							
	98170							
	98109							
17 Topslab @ RCCV	98174							
	98197							
	98103							

Note: Negative value means compression.

Note \*: RCCV, Pedesta

S/P Slab: Supression Pool Slab

Top slab

Basemat @center

Basemat Inside RPV Pedestal

Direction 1: Hoop

Direction 1: Radial

Direction 1: N-S

Direction 1: N-S

Direction 1: Top :Radial, Bottom: N-S

Direction 2: Vertical

Direction 2: Circumferential

Direction 2: E-W

Direction 2: E-W

Direction 2 Top: Circumferential, Bottom: E-W

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MPa = 145.038 psi

**Table 3G.1-31      Rebar and Concrete Stresses of RCCV: Selected Load Combination CV-11a**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				
		Calculated	Allowable	Calculated				Allowable
				Direction 1 <sup>*</sup>		Direction 2 <sup>*</sup>		
				In/Top	Out/Bottom	In/Top	Out/Bottom	
1 RPV Pedestal Bottom	5006	-14.6	-28.7	92.3	121.9	260.6	-20.6	367.9
	5013	-16.4	-28.7	87.9	115.9	320.0	12.9	367.9
	5024	-11.0	-28.7	40.4	121.3	169.5	44.9	367.9
2 RPV Pedestal Mid-Height	6006	-8.2	-28.7	14.1	113.2	-41.1	72.0	367.9
	6013	-8.7	-28.7	5.5	127.8	-47.4	74.9	367.9
	6024	-7.1	-28.7	78.6	167.8	139.6	91.0	367.9
3 RPV Pedestal Top	6606	-5.7	-28.7	269.4	256.7	268.0	-143.6	367.9
	6613	-7.5	-28.7	237.1	270.2	69.3	106.5	367.9
	6624	-9.0	-28.7	253.3	256.5	-121.7	153.1	367.9
4 RCCV Wetwell Bottom	1806	-10.0	-29.0	140.0	213.4	220.7	125.8	369.7
	1813	-13.6	-29.0	108.8	127.1	203.0	121.3	369.7
	1824	-14.6	-29.0	-42.2	50.0	145.3	138.6	369.7
5 RCCV Wetwell Mid-Height	2606	-7.5	-29.1	51.3	106.2	201.6	159.1	370.2
	2613	-7.6	-29.1	89.6	129.0	173.6	135.9	370.2
	2624	-9.0	-29.1	93.5	119.0	200.9	143.2	370.2
6 RCCV Wetwell Top	3406	-7.8	-29.1	296.4	295.0	138.0	181.1	370.2
	3413	-9.7	-29.1	244.3	246.8	-170.6	154.5	370.2
	3424	-8.4	-29.1	318.3	326.0	-142.6	258.9	370.2
7 RCCV Drywell Bottom	3606	-8.9	-28.7	203.5	187.8	70.7	206.6	367.8
	3613	-8.5	-28.7	109.5	165.5	79.3	71.9	367.8
	3624	-9.2	-27.7	165.6	129.7	99.5	174.6	360.2
8 RCCV Drywell Mid-Height	4006	-6.0	-28.7	182.7	206.4	113.9	139.3	367.8
	4013	-8.2	-28.7	131.1	174.3	87.2	125.6	367.8
	4976	-7.4	-27.7	177.0	144.9	184.2	142.8	360.2
9 RCCV Drywell Top	4406	-5.7	-28.7	110.8	180.5	199.1	88.3	367.8
	4413	-7.1	-28.7	34.3	112.1	208.9	49.9	367.8
	4424	-7.9	-27.7	227.5	141.9	209.3	113.7	360.2
10 Basemat @ Center	80003	-8.1	-23.2	-21.0	35.5	-19.1	35.6	370.2
	80007	-7.6	-23.2	-22.2	27.1	-20.4	28.9	370.2
	80012	-7.2	-23.2	-21.9	24.5	-21.3	24.2	370.2
11 Basemat Inside RPV Pedestal	80206	-9.2	-23.2	73.7	46.8	-4.6	56.6	370.2
	80213	-10.0	-23.2	9.1	45.0	-17.7	75.0	370.2
	80224	-6.9	-23.2	-15.6	21.6	-20.8	17.7	370.2
12 S/P Slab @ RPV	83306	-9.9	-29.0	-26.1	52.0	-57.6	-34.8	369.8
	83313	-7.9	-29.0	45.8	-65.6	156.5	349.4	369.8
	83324	-6.5	-29.0	55.9	37.7	175.0	345.8	369.8
13 S/P Slab @ Center	83406	-12.7	-29.0	-29.7	110.8	45.8	290.5	369.8
	83413	-15.1	-29.0	-40.3	81.5	34.2	251.9	369.8
	83424	-12.9	-29.0	-38.8	86.4	42.6	236.8	369.8
14 S/P Slab @ RCCV	83506	-8.0	-29.0	104.5	78.7	36.5	202.9	369.8
	83513	-25.6	-29.0	-161.4	-149.0	35.8	143.7	369.8
	83524	-5.9	-29.0	59.2	-33.7	25.9	158.9	369.8
15 Topslab @ Drywell Head Opening	98120	-14.6	-27.9	95.4	-15.6	225.2	33.7	361.7
	98135	-4.8	-27.9	20.0	-27.8	-15.2	28.4	361.7
	98104	-11.6	-27.9	8.4	-3.1	247.4	-13.5	361.7
16 Topslab @ Center	98149	-7.1	-28.0	103.5	5.5	125.6	25.4	362.7
	98170	-6.4	-28.0	255.5	50.3	261.0	24.4	362.7
	98109	-3.5	-28.0	109.9	16.9	201.7	24.2	362.7
17 Topslab @ RCCV	98174	-7.9	-28.0	59.4	44.4	163.9	13.4	362.7
	98197	-2.9	-28.0	193.5	99.6	248.5	56.1	362.7
	98103	-7.1	-28.0	128.6	56.3	142.0	29.7	362.7

Note: Negative value means compression.

Note \*:      RCCV, Pedestal      Direction 1: Hoop      Direction 2: Vertical  
                  S/P Slab: Suppression Pool Slab      Direction 1: Radial      Direction 2: Circumferential  
                  Top slab      Direction 1: N-S      Direction 2: E-W  
                  Basemat @center      Direction 1: N-S      Direction 2: E-W  
                  Basemat Inside RPV Pedestal      Direction 1: Top :Radial, Bottom: N-S      Direction 2 Top: Circumferential, Bottom: E-W

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MPa = 145.038 psi

**Table 3G.1-32 Rebar and Concrete Stresses of RCCV: Selected Load Combination CV-11b**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				
		Calculated	Allowable	Calculated				Allowable
				Direction 1 <sup>*</sup>		Direction 2 <sup>*</sup>		
				In/Top	Out/Bottom	In/Top	Out/Bottom	
1 RPV	5006	-18.3	-27.9	-90.9	-29.2	167.5	11.2	361.6
Pedestal Bottom	5013	-19.5	-27.9	-95.4	-32.9	208.6	23.2	361.6
	5024	-17.9	-27.9	-95.3	-33.6	-56.4	29.7	361.6
2 RPV	6006	-13.0	-27.9	-49.8	39.3	-53.2	122.3	361.6
Pedestal Mid-Height	6013	-13.7	-27.9	-53.9	22.1	-64.5	125.8	361.6
	6024	-14.2	-27.9	-53.0	99.9	-44.4	134.8	361.6
3 RPV	6606	-21.7	-27.9	-125.4	-78.1	-42.8	29.0	361.6
Pedestal Top	6613	-14.4	-27.9	-56.9	-9.0	-60.4	30.8	361.6
	6624	-13.3	-27.9	-14.9	158.1	-55.7	68.3	361.6
4 RCCV	1806	-17.8	-28.3	107.3	229.9	162.9	201.9	364.4
Wetwell Bottom	1813	-16.3	-28.3	51.2	211.3	134.1	190.3	364.4
	1824	-17.1	-28.3	58.1	231.7	107.4	252.1	364.4
5 RCCV	2606	-10.3	-28.2	41.1	218.9	81.2	207.0	363.8
Wetwell Mid-Height	2613	-11.8	-28.2	19.0	204.0	-49.5	197.9	363.8
	2624	-11.8	-28.2	65.3	241.8	74.4	220.8	363.8
6 RCCV	3406	-14.2	-28.2	-41.9	53.7	-47.6	167.7	363.8
Wetwell Top	3413	-16.8	-28.2	-9.8	112.5	-84.6	79.7	363.8
	3424	-9.8	-28.2	3.8	171.2	41.7	269.8	363.8
7 RCCV	3606	-16.4	-27.7	38.0	190.5	-55.0	240.1	360.2
Drywell Bottom	3613	-18.2	-27.7	-19.9	84.9	-89.8	31.5	360.2
	3624	-7.4	-26.7	121.1	192.8	141.5	281.8	352.9
8 RCCV	4006	-8.9	-27.7	61.8	277.6	-17.6	258.3	360.2
Drywell Mid-Height	4013	-12.9	-27.7	34.9	220.8	-51.4	143.4	360.2
	4976	-10.4	-26.7	40.3	205.8	-29.2	198.4	352.9
9 RCCV	4406	-6.9	-27.7	71.3	277.5	65.7	210.6	360.2
Drywell Top	4413	-11.3	-27.7	-18.5	154.9	118.8	47.1	360.2
	4424	-9.3	-26.7	29.7	225.5	83.2	204.3	352.9
10 Basemat @ Center	80003	-8.5	-23.2	77.2	62.0	80.0	66.0	370.2
	80007	-7.9	-23.2	58.1	49.7	71.1	54.6	370.2
	80012	-7.4	-23.2	36.2	45.9	74.2	46.3	370.2
11 Basemat Inside	80206	-8.1	-23.2	172.5	67.4	15.8	84.9	370.2
RPV Pedestal	80213	-9.7	-23.2	100.6	63.4	131.2	99.5	370.2
	80224	-6.7	-23.2	10.6	36.5	70.2	33.4	370.2
12 S/P Slab @ RPV	83306	-16.1	-28.3	-56.4	-47.5	-49.3	113.2	364.4
	83313	-16.5	-28.3	-52.2	-35.8	-45.4	112.9	364.4
	83324	-16.1	-28.3	-34.6	47.3	-36.9	147.9	364.4
13 S/P Slab @ Center	83406	-18.3	-28.3	-48.5	96.8	-17.0	323.2	364.4
	83413	-20.3	-28.3	-21.4	172.5	-13.8	315.3	364.4
	83424	-16.4	-28.3	-32.3	146.3	-8.8	290.4	364.4
14 S/P Slab @ RCCV	83506	-18.0	-28.3	49.2	144.7	-48.8	189.3	364.4
	83513	-13.6	-28.3	26.7	137.5	-24.2	139.3	364.4
	83524	-11.3	-28.3	-20.9	65.1	-17.4	188.4	364.4
15 Topslab @ Drywell Head Opening	98120	See Tables 3G.5-26 to 3G.5-29						
	98135							
	98104							
16 Topslab @ Center	98149							
	98170							
	98109							
17 Topslab @ RCCV	98174							
	98197							
	98103							

Note: Negative value means compression.

Note \*: RCCV, Pedesta

S/P Slab: Supression Pool Slab

Top slab

Basemat @center

Basemat Inside RPV Pedestal

Direction 1: Hoop

Direction 1: Radial

Direction 1: N-S

Direction 1: N-S

Direction 1: Top :Radial, Bottom: N-S

Direction 2: Vertical

Direction 2: Circumferential

Direction 2: E-W

Direction 2: E-W

Direction 2 Top: Circumferential, Bottom: E-W

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MPa = 145.038 psi

**Table 3G.1-33      Transverse Shear of RCCV**

Location	Element ID	LOAD ID	Shear Force Q (MN/m)	d (m)	Shear Stress (MPa)			Shear Tie Ratio (%)	
					Vu	Vc	Vs	required	provided
1 RPV Pedestal Bottom	5006	CV-11b	7.50	1.99	4.44	2.89	1.55	0.386	1.010
	5013	CV-11a	3.43	2.02	2.00	0.14	1.86	0.455	1.010
	5024	CV-7b	6.22	1.99	3.68	2.59	1.09	0.270	1.010
2 RPV Pedestal Mid-Height	6006	CV-11b	2.02	1.94	1.23	0.91	0.32	0.081	0.252
	6013	CV-11a	2.83	1.94	1.72	0.77	0.95	0.231	0.252
	6024	CV-11b	2.60	1.94	1.58	0.88	0.70	0.174	0.252
3 RPV Pedestal Top	6606	CV-11a	3.62	1.99	2.14	0.66	1.48	0.362	1.010
	6613	CV-7a	0.12	2.08	0.07	0.07	0.00	0.000	1.010
	6624	CV-11a	2.51	1.97	1.50	0.96	0.54	0.131	1.010
4 RCCV Wetwell Bottom	1806	CV-11a	1.16	1.59	0.86	0.22	0.64	0.155	0.540
	1813	CV-11a	0.85	1.59	0.63	0.23	0.40	0.097	0.540
	1824	CV-11b	0.66	1.57	0.50	0.28	0.22	0.053	0.540
5 RCCV Wetwell Mid-Height	2606	CV-11b	0.25	1.59	0.18	0.18	0.00	0.000	0.270
	2613	CV-11a	0.12	1.60	0.09	0.09	0.00	0.000	0.270
	2624	CV-7b	0.18	1.59	0.13	1.05	0.00	0.000	0.270
6 RCCV Wetwell Top	3406	CV-7a	2.21	1.59	1.63	0.65	0.99	0.240	0.721
	3413	CV-1	0.05	1.67	0.03	0.03	0.00	0.000	0.721
	3424	CV-11a	2.75	1.59	2.04	0.60	1.44	0.350	0.721
7 RCCV Drywell Bottom	3606	CV-11b	2.30	1.66	1.63	0.00	1.63	0.408	0.721
	3613	CV-7a	0.09	1.62	0.06	0.06	0.00	0.000	0.721
	3624	CV-11b	2.68	1.59	1.98	0.03	1.96	0.499	0.721
8 RCCV Drywell Mid-Height	4006	CV-11b	1.10	1.59	0.81	0.32	0.49	0.123	0.270
	4013	CV-11a	0.06	1.59	0.05	0.05	0.00	0.000	0.270
	4976	CV-11a	0.41	1.59	0.30	0.49	0.00	0.000	0.270
9 RCCV Drywell Top	4406	CV-11b	1.44	1.59	1.07	0.28	0.79	0.196	0.540
	4413	CV-11a	0.20	1.67	0.14	0.14	0.00	0.000	0.540
	4424	CV-7b	1.39	1.54	1.06	0.92	0.15	0.038	0.540
10 Basemat @ Center	80003	CV-11b	0.92	3.54	0.31	0.86	0.00	0.000	0.179
	80007	CV-11b	1.00	3.53	0.33	0.91	0.00	0.000	0.179
	80012	CV-11b	1.12	3.53	0.37	0.99	0.00	0.000	0.179
11 Basemat Inside RPV Pedestal	80206	CV-11b	4.23	4.63	1.08	1.57	0.00	0.000	1.290
	80213	CV-11b	4.74	4.61	1.21	1.07	0.14	0.034	1.290
	80224	CV-11b	3.96	4.65	1.00	1.78	0.00	0.000	1.290
12 S/P Slab @ RPV	83306	CV-11a	4.24	1.53	3.27	2.38	0.89	0.217	1.140
	83313	CV-7a	4.69	1.76	3.14	2.38	0.76	0.185	1.140
	83324	CV-7a	4.62	1.76	3.10	2.34	0.76	0.184	1.140
13 S/P Slab @ Center	83406	CV-1	0.13	1.76	0.08	0.08	0.00	0.000	0.263
	83413	CV-1	0.12	1.76	0.07	0.07	0.00	0.000	0.263
	83424	CV-1	0.16	1.76	0.09	0.09	0.00	0.000	0.263
14 S/P Slab @ RCCV	83506	CV-7a	4.35	1.53	3.36	2.07	1.28	0.312	1.010
	83513	CV-7b	4.12	1.76	2.76	1.90	0.87	0.214	1.010
	83524	CV-7a	5.61	1.53	4.33	2.10	2.23	0.542	1.010
15 Topslab @ Drywell Head Opening	98120	See Table 3G.5-30							
	98135								
	98104	CV-7b	3.21	1.93	1.96	1.50	0.46	0.118	0.358
16 Topslab @ Center	98149	CV-11b	1.28	1.99	0.76	0.52	0.23	0.060	0.179
	98170	See Table 3G.5-30							
	98109								
17 Topslab @ RCCV	98174								
	98197	CV-7b	1.97	1.96	1.19	0.79	0.40	0.101	0.717
	98103	See Table 3G.5-30							

S/P Slab: Suppression Pool Slab SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MPa = 145.038 psi

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 m = 3.28 ft

**Table 3G.1-34 Tangential Shear of RCCV**

Location	Element ID	Load ID	Section Forces			Thickness t (m)	Rebar Area (cm <sup>2</sup> /m)		rAs/pAs	v <sub>so</sub> (MPa)		v <sub>u</sub> (MPa)	
			Nx/Ny (MN/m)	Nxl/Nyl (MN/m)	V (MN/m)		Required rAs	Provided pAs		Calculated	Allowable	Calculated	Allowable 0.4f <sub>c</sub> '-v <sub>so</sub>
1 RPV Pedestal Bottom	5006	CV-11a	-5.215	5.463	2.534	2.40	21.9	431.3	0.051	1.06	4.83	1.06	12.46
		CV-11a	-5.424	-9.956	-2.534	2.40	131.8	724.8	0.182	1.06	4.83	1.06	12.46
	5013	CV-11a	-5.375	-5.801	-1.662	2.40	17.9	431.3	0.042	0.69	4.83	0.69	12.82
		CV-11a	-5.735	-13.595	-1.662	2.40	216.4	724.8	0.299	0.69	4.83	0.69	12.82
	5024	CV-11a	-5.523	3.414	-3.359	2.40	-19.9	431.3	-0.046	1.40	4.83	1.40	12.12
		CV-11a	-5.151	-9.187	3.359	2.40	125.9	724.8	0.174	1.40	4.83	1.40	12.12
2 RPV Pedestal Mid-Height	6006	CV-11a	0.847	1.197	3.269	2.40	117.7	431.3	0.273	1.36	4.83	1.36	12.16
		CV-11a	-5.047	-6.716	3.269	2.40	65.8	543.6	0.121	1.36	4.83	1.36	12.16
	6013	CV-11a	0.434	1.502	1.761	2.40	74.7	431.3	0.173	0.73	4.83	0.73	12.78
		CV-11a	-5.386	-7.754	1.761	2.40	69.7	543.6	0.128	0.73	4.83	0.73	12.78
	6024	CV-11a	0.529	-1.071	5.128	2.40	156.8	431.3	0.364	2.14	4.83	2.14	11.38
		CV-11a	-3.050	-5.458	-5.128	2.40	120.7	543.6	0.222	2.14	4.83	2.14	11.38
3 RPV Pedestal Top	6606	CV-11a	21.310	1.821	2.838	2.40	670.9	602.4	1.114	1.18	4.83	1.18	12.33
		CV-11a	-3.349	4.992	-2.838	2.40	65.1	543.6	0.120	1.18	4.83	1.18	12.33
	6613	CV-11a	21.130	-2.587	1.302	2.40	653.1	602.4	1.084	0.54	4.83	0.54	12.97
		CV-11a	-3.740	5.376	1.302	2.40	48.7	543.6	0.090	0.54	4.83	0.54	12.97
	6624	CV-11a	22.450	-1.796	-3.408	2.40	715.0	602.4	1.187	1.42	4.83	1.42	12.10
		CV-11a	-2.826	5.643	-3.408	2.40	102.4	543.6	0.188	1.42	4.83	1.42	12.10
4 RCCV Wetwell Bottom	1806	CV-11a	2.459	2.258	-6.054	2.00	241.3	474.0	0.509	3.03	4.85	3.03	10.61
		CV-11a	-2.674	7.237	6.054	2.00	182.9	584.0	0.313	3.03	4.85	3.03	10.61
	1813	CV-11a	1.926	1.686	-4.807	2.00	189.9	474.0	0.401	2.40	4.85	2.40	11.23
		CV-11a	-4.816	8.594	4.807	2.00	136.1	584.0	0.233	2.40	4.85	2.40	11.23
	1824	CV-11a	3.097	-1.402	7.151	2.00	280.8	474.0	0.592	3.58	4.85	3.58	10.06
		CV-11a	-5.384	-7.837	-7.151	2.00	141.3	584.0	0.242	3.58	4.85	3.58	10.06

**Table 3G.1-34 Tangential Shear of RCCV (Continued)**

Location	Element ID	Load ID	Section Forces			Thickness t (m)	Rebar Area (cm <sup>2</sup> /m)		rAs/pAs	v <sub>so</sub> (MPa)		v <sub>u</sub> (MPa)	
			Nx/Ny (MN/m)	Nxl/Nyl (MN/m)	V (MN/m)		Required rAs	Provided pAs		Calculated	Allowable	Calculated	Allowable 0.4f <sub>c</sub> '-v <sub>so</sub>
5 RCCV Wetwell Mid-Height	2606	CV-11a	3.212	1.053	-5.695	2.00	243.2	518.0	0.469	2.85	4.85	2.85	10.82
		CV-11a	-2.149	5.645	5.695	2.00	158.5	519.0	0.305	2.85	4.85	2.85	10.82
	2613	CV-11a	1.970	-1.390	4.710	2.00	185.9	518.0	0.359	2.35	4.85	2.35	11.31
		CV-11a	-4.878	6.891	4.710	2.00	93.7	519.0	0.181	2.35	4.85	2.35	11.31
	2624	CV-11a	2.981	1.100	-6.534	2.00	259.5	518.0	0.501	3.27	4.85	3.27	10.40
		CV-11a	-5.395	6.525	6.534	2.00	103.7	519.0	0.200	3.27	4.85	3.27	10.40
6 RCCV Wetwell Top	3406	CV-11a	12.270	-0.890	-5.123	2.00	471.9	732.0	0.645	2.56	4.85	2.56	11.11
		CV-11a	-1.121	4.244	-5.123	2.00	149.4	519.0	0.288	2.56	4.85	2.56	11.11
	3413	CV-11a	9.959	-0.833	-4.355	2.00	388.8	732.0	0.531	2.18	4.85	2.18	11.49
		CV-11a	-5.076	-5.818	4.355	2.00	59.2	519.0	0.114	2.18	4.85	2.18	11.49
	3424	CV-11a	12.970	0.780	5.796	2.00	508.3	732.0	0.694	2.90	4.85	2.90	10.77
		CV-11a	-6.242	5.319	-5.796	2.00	43.9	519.0	0.085	2.90	4.85	2.90	10.77
7 RCCV Drywell Bottom	3606	CV-11a	8.869	-0.850	4.838	2.00	374.7	732.0	0.512	2.42	4.82	2.42	11.09
		CV-11a	-0.303	-4.017	-4.838	2.00	162.7	519.0	0.314	2.42	4.82	2.42	11.09
	3613	CV-11a	6.543	-0.890	-4.051	2.00	290.6	732.0	0.397	2.03	4.82	2.03	11.49
		CV-11a	-5.059	-5.672	4.051	2.00	52.0	519.0	0.100	2.03	4.82	2.03	11.49
	3624	CV-11a	-1.503	-0.717	5.484	2.00	111.8	732.0	0.153	2.74	4.74	2.74	10.28
		CV-11a	-7.889	5.133	-5.484	2.00	-10.5	519.0	-0.020	2.74	4.74	2.74	10.28
8 RCCV Drywell Mid-Height	4006	CV-11a	6.865	-1.685	4.463	2.00	316.3	518.0	0.611	2.23	4.82	2.23	11.28
		CV-11a	0.325	3.274	-4.463	2.00	159.3	519.0	0.307	2.23	4.82	2.23	11.28
	4013	CV-11a	5.737	-1.361	-3.907	2.00	268.4	518.0	0.518	1.95	4.82	1.95	11.56
		CV-11a	-6.359	-5.125	3.907	2.00	2.3	519.0	0.004	1.95	4.82	1.95	11.56
	4976	CV-11a	-0.868	-0.691	5.752	2.00	136.7	518.0	0.264	2.88	4.74	2.88	10.14
		CV-11a	-7.229	-4.391	5.752	2.00	0.2	519.0	0.000	2.88	4.74	2.88	10.14
9 RCCV Drywell Top	4406	CV-11b	6.052	-1.918	3.779	2.00	285.7	518.0	0.551	1.89	4.74	1.89	11.13
		CV-11a	-0.692	-2.901	3.779	2.00	110.7	519.0	0.213	1.89	4.82	1.89	11.62
	4413	CV-11a	2.288	-1.407	-3.363	2.00	161.3	518.0	0.311	1.68	4.82	1.68	11.83
		CV-11a	-7.150	-4.833	3.363	2.00	-34.3	519.0	-0.066	1.68	4.82	1.68	11.83
	4424	CV-11a	-4.353	0.966	-5.943	2.00	46.3	430.0	0.108	2.97	4.74	2.97	10.05
		CV-11a	-6.413	-3.925	5.943	2.00	19.7	476.0	0.041	2.97	4.74	2.97	10.05

Note: Top and bottom lines for each element indicate evaluation results for hoop and vertical rebars, respectively.

Nomenclature:

Nx, Ny: axial forces in the hoop and vertical directions due to pressure and dead loads, respectively

Nxl, Nyl: axial forces in the hoop and vertical directions due to lateral loads, respectively

V: tangential shear due to lateral loads

v<sub>so</sub>: tangential shear stress borne by orthogonal rebars (Refer to Table 3.8-3.)

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only): 1 MPa = 145.038 psi, 1 MN/m = 6.852x10<sup>4</sup> lbf/ft,

1 m = 3.28 ft

**Table 3G.1-35      Containment Liner Plate Strains (Max)**

Category	Calculated Strain					Allowable Tension Allowable Compression
	Cylinder	Pedestal	DW Bottom	WW Bottom	Top Slab	
Test	0.0004	0.0004	0.0000	0.0002	0.0003	0.002
	-0.0012	-0.0006	-0.0001	-0.0002	-0.0001	-0.002
Normal Operation	0.0005	0.0005	0.0001	0.0004	0.0002	0.002
	-0.0008	-0.0010	-0.0003	-0.0006	-0.0005	-0.002
Severe Environment	0.0005	0.0005	0.0001	0.0004	0.0002	0.003
	-0.0008	-0.0010	-0.0003	-0.0006	-0.0005	-0.005
Extreme Environment	0.0005	0.0005	0.0001	0.0004	0.0002	0.003
	-0.0008	-0.0010	-0.0003	-0.0006	-0.0005	-0.005
Abnormal; LOCA	0.0007	0.0005	0.0001	0.0004	0.0006	0.003
	-0.0034	-0.0028	-0.0003	-0.0022	-0.0017	-0.005
Abnormal/Extreme Environment	0.0014	0.0007	0.0002	0.0009	0.0008	0.003
	-0.0041	-0.0030	-0.0004	-0.0026	-0.0019	-0.005



**Table 3G.1-35      Containment Liner Plate Strains (Max) (Continued)**

Category	Calculated Strain		Allowable Tension Allowable Compression
	D/F Thick Plate	Pedestal Thick Plate	
Test	0.0005	0.0002	0.002
	-0.0002	-0.0002	-0.002
Normal Operation	0.0002	0.0002	0.002
	-0.0005	-0.0007	-0.002
Severe Environment	0.0002	0.0002	0.003
	-0.0005	-0.0007	-0.005
Extreme Environment	0.0002	0.0002	0.003
	-0.0005	-0.0007	-0.005
Abnormal; LOCA	0.0008	0.0003	0.003
	-0.0017	-0.0021	-0.005
Abnormal/Extreme Environment	0.0009	0.0004	0.003
	-0.0017	-0.0022	-0.005

**Table 3G.1-36 Drywell Head Elements Stress Summary**

Service Level	$P_L$		$P_L+P_b$		$P_L+P_b+Q$	
	Calculated Stress (MPa)	Allowable Stress (MPa)	Calculated Stress (MPa)	Allowable Stress (MPa)	Calculated Stress (MPa)	Allowable Stress (MPa)
Test Condition	77	262	77	262	-	-
Design Condition	66	227	66	227	-	-
A, B	78	227	78	227	797 <sup>(1)</sup>	456
C	103	342	103	342	-	-
D	103	430	103	430	-	-

(1) Acceptable by meeting all requirements for simplified elastic-plastic analysis stipulated in NE-3228.3 of ASME B&PV Code, Sec. III

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MPa = 145.038 psi

**Table 3G.1-37 Diaphragm Floor (D/F) Slab Elements Stress Summary**

Structural Elements	Member Size	Governing Load Combination	Stress or Stress Ratio	Allowable Stress	Acceptance Criteria <sup>*2</sup>
Top Plate <sup>*1</sup>	25mm	Normal Normal	$\sigma_{min} = -214\text{MPa}$ $\tau_{max} = 107\text{MPa}$	$\sigma = 261\text{MPa}$ $\tau = 174\text{MPa}$	1.0S 1.0S
Bottom Plate	25mm	Normal Normal	$\sigma_{max} = 202\text{MPa}$ $\tau_{max} = 101\text{MPa}$	$\sigma = 272\text{MPa}$ $\tau = 181\text{MPa}$	1.0S 1.0S
Radial Web Plate (Upper Web)	25mm	Abnormal Normal	$\sigma_{min} = -343\text{MPa}$ $\tau_{max} = 168\text{MPa}$	$\sigma = 391\text{MPa}$ $\tau = 174\text{MPa}$	1.5S 1.0S
Radial Web Plate (Lower Web) <sup>*1</sup>	25mm	Normal Abnormal/Extreme	$\sigma_{min} = -229\text{MPa}$ $\tau_{max} = 224\text{MPa}$	$\sigma = 261\text{MPa}$ $\tau = 253\text{MPa}$	1.0S 1.4S
Tangential Web Plate	25mm	Abnormal Abnormal/Extreme	$\sigma_{min} = -334\text{MPa}$ $\tau_{max} = 201\text{MPa}$	$\sigma = 391\text{MPa}$ $\tau = 243\text{MPa}$	1.5S 1.4S
Bottom Flange <sup>*1</sup>	38mm	Normal Normal	$\sigma_{min} = -186\text{MPa}$ $\tau_{max} = 93\text{MPa}$	$\sigma = 269\text{MPa}$ $\tau = 181\text{MPa}$	1.0S 1.0S

<sup>\*1</sup> Thermal stress associated with extreme and abnormal load conditions meets deformation limits of AISC N690 Subsection Q1.5.7.2. The total stress excluding thermal stress satisfies the allowable stress limit in Table Q1.5.7.1 of AISC N690.

<sup>\*2</sup> S = Allowable stress limit specified in part 1 of AISC N690.

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MPa = 145.038 psi

1 mm = 0.0393 in

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**Table 3G.1-38      Diaphragm Floor (D/F) Slab Anchorage Structural Capacity**

Anchor Locations	Governing Load Combination	Design Load (kN)	No. of Anchor Bars Provided	Total Capacity (kN)	Acceptance Criteria <sup>(1)</sup>
Top Plate	Normal (SIT)	736/deg	1-#18 @ 0.9 deg	782/deg	0.66F <sub>y</sub>
Bottom Plate	Normal	151/deg	1-#18 @ 0.9 deg	592/deg	0.5F <sub>y</sub>
Girder Radial Web Plate	Abnormal/Extreme	3418	5-#18	4804	0.9F <sub>y</sub>
Girder Bottom Flange	Abnormal/Extreme	1020	5-#18	4804	0.9F <sub>y</sub>

<sup>(1)</sup>       $F_y$  = Specified minimum yield stress.

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):  
1 kN = 224.809 lbf

**Table 3G.1-39 Vent Wall Structural Elements Stress Summary**

Structural Elements	Member Size	Governing Load Combination	Calculated Stress	Allowable Stress	Acceptance Criteria <sup>(1)</sup>
Inner Cylinder	25mm	Abnormal/Extreme Abnormal/Extreme	$\sigma_{min} = -221\text{MPa}$ $\tau_{max} = 139\text{MPa}$	$\sigma = 417\text{MPa}$ $\tau = 243\text{MPa}$	1.6S 1.4S
Outer Cylinder	25mm	Abnormal/Extreme Abnormal/Extreme	$\sigma_{min} = -239\text{MPa}$ $\tau_{max} = 139\text{MPa}$	$\sigma = 435\text{MPa}$ $\tau = 253\text{MPa}$	1.6S 1.4S
Radial Web Plate	25mm	Abnormal Abnormal/Extreme	$\sigma_{min} = -263\text{MPa}$ $\tau_{max} = 173\text{MPa}$	$\sigma = 391\text{MPa}$ $\tau = 243\text{MPa}$	1.5S 1.4S

(1) S = Allowable stress limit specified in part 1 of AISC N690.

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MPa = 145.038 psi

1 mm = 0.0393 in

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**Table 3G.1-40      Reactor Shield Wall (RSW) Structural Element Stress Summary**

Structural Element	Member Size	Governing Load Combination	Calculated Stress	Allowable	Acceptance Criteria <sup>(1)</sup>
RSW Cylindrical Shell	210mm 210mm	Abnormal Abnormal/Extreme	$\sigma_{min} = -277\text{MPa}$ $\tau_{max} = 145\text{MPa}$	$\sigma = 391\text{MPa}$ $\tau = 243\text{MPa}$	1.5S 1.4S

<sup>(1)</sup>      S = Allowable stress limit specified in part 1 of AISC N690.

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MPa = 145.038 psi

1 mm = 0.0393 in

**Table 3G.1-41 RPV Support Bracket Structural Elements Stress Summary**

Structural Elements	Member Size	Governing Load Combination	Stress or Stress Ratio	Allowable Stress	Acceptance Criteria <sup>(1)</sup>
Horizontal Plate	100mm 150mm	Abnormal/Extreme Severe	$\sigma_{min} = -191\text{MPa}$ $\tau_{max} = 45\text{MPa}$	$\sigma = 417\text{MPa}$ $\tau = 94\text{MPa}$	1.6S 1.0S
Vertical Plate	150mm 150mm	Abnormal/Extreme Abnormal/Extreme	$\sigma_{min} = -164\text{MPa}$ $\tau_{max} = 98\text{MPa}$	$\sigma = 225\text{MPa}$ $\tau = 131\text{MPa}$	1.6S 1.4S

<sup>(1)</sup> S = Allowable stress limit specified in Part 1 of AISC N690.

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MPa = 145.038 psi

1 mm = 0.0393 in

**Table 3G.1-42 Vent Wall and RPV Support Bracket Anchorage Structural Capacity**

Anchor Locations	Governing Load Combination	Design Load (kN)	No. of Anchor Bars Provided	Total Capacity (kN)	Acceptance Criteria <sup>(1)</sup>
Vent Wall	Abnormal/Extreme	1365/deg	4-#18 @ 1.8deg	2112/deg	0.9Fy
RPV Support Bracket	Abnormal/Extreme	33185	72-#18	69178	0.9Fy

<sup>(1)</sup> Fy = Specified minimum yield stress.

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MPa = 145.038 psi

1 mm = 0.0393 in

**Table 3G.1-43 GDCS Pool Structural Elements Stress Summary**

Structural Elements	Member Size	Governing Load Combination	Stress or Stress Ratio	Allowable Stress	Acceptance Criteria <sup>(1)</sup>
Wall Plate	16mm	Abnormal Abnormal/Extreme	$\sigma_{min} = -371MPa$ $\tau_{max} = 203MPa$	$\sigma = 391MPa$ $\tau = 243MPa$	1.5S 1.4S
Vertical Column	HSS550mmx550mmx25mm	Severe Severe	Ratio = 0.56 $\tau = 51MPa$	Ratio = 1.0 $\tau = 174MPa$	1.0S 1.0S
Vertical Column	HSS800mmx800mmx65mm	Abnormal Severe	Ratio = 0.44 $\tau = 33MPa$	Ratio = 1.0 $\tau = 174MPa$	1.5S 1.0S
Horizontal Member	HSS450mmx450mmx25mm	Abnormal/Extreme Abnormal/Extreme	Ratio = 0.44 $\tau = 27MPa$	Ratio = 1.0 $\tau = 243MPa$	1.6S 1.4S
Bracing Member	HSS350mmx350mmx35mm	Severe Abnormal/Extreme	Ratio = 0.44 $\tau = 29MPa$	Ratio = 1.0 $\tau = 243MPa$	1.0S 1.4S

<sup>(1)</sup> S = Allowable stress limit specified in Part 1 of AISC N690.

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MPa = 145.038 psi

1 mm = 0.0393 in



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**Table 3G.1-44      GDCS Pool Anchorage Structural Capacity**

<b>Anchor Locations</b>	<b>Governing Load Combination</b>	<b>Design Load/Anchor Bar (kN)</b>	<b>Capacity/Anchor Bar (kN)</b>	<b>Acceptance Criteria<sup>(1)</sup></b>
Bracing Members @ RCCV Wall	Abnormal/Extreme	657	960	0.9F <sub>y</sub>
Horizontal Members @ RCCV Wall	Abnormal/Extreme	711	960	0.9F <sub>y</sub>

<sup>(1)</sup>       $F_y$  = Specified minimum yield stress.

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):  
1 kN = 224.809 lbf

**Table 3G.1-45 Combined Forces and Moments: RB, Selected Load Combination RB-4**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
18 Wall Below RCCV Bottom	6	OTHR	-1.555	-7.556	-0.217	-0.203	-1.484	-0.004	0.000	-0.343
		TEMP	1.628	-0.267	-0.739	0.099	1.178	-0.043	0.016	0.044
	13	OTHR	-1.526	-5.797	-0.069	-0.547	-2.894	0.007	-0.004	-0.800
		TEMP	0.500	-3.267	-0.851	0.466	2.640	-0.003	0.023	0.576
	24	OTHR	-1.088	-6.308	-0.198	-0.613	-3.706	0.000	0.001	-1.245
		TEMP	0.791	-3.390	0.142	0.480	2.679	-0.006	-0.001	0.596
19 Wall Below RCCV Mid-Height	806	OTHR	-1.570	-6.314	-0.142	-0.008	-0.036	-0.031	-0.016	-0.096
		TEMP	1.438	-1.233	0.113	0.162	1.001	0.089	-0.059	0.052
	813	OTHR	-2.077	-5.627	0.100	-0.040	0.060	-0.009	-0.004	-0.081
		TEMP	0.801	-3.203	-0.655	0.112	1.009	-0.029	0.009	0.603
	824	OTHR	-2.350	-6.245	-0.080	0.118	0.441	0.012	-0.001	0.099
		TEMP	0.618	-3.509	0.100	0.129	1.019	0.019	0.011	0.540
20 Wall Below RCCV Top	1606	OTHR	-1.034	-5.635	0.064	0.044	0.266	0.031	0.007	-0.191
		TEMP	9.010	-2.016	0.181	-0.500	-2.273	0.101	0.089	1.713
	1613	OTHR	-1.230	-5.399	0.236	0.018	0.253	-0.001	-0.002	-0.190
		TEMP	8.724	-3.628	-0.531	-0.636	-3.693	-0.004	-0.014	2.219
	1624	OTHR	-0.815	-5.802	-0.021	-0.015	-0.191	0.005	-0.008	0.003
		TEMP	9.355	-4.562	-0.137	-0.712	-3.632	-0.005	-0.066	2.268
21 Exterior Wall @ EL-11.50 to -10.50m	20011	OTHR	-2.253	-3.856	-0.807	0.095	0.681	0.010	0.046	0.221
		TEMP	3.715	3.601	0.919	0.284	1.218	0.038	-0.186	0.357
	20023	OTHR	-1.511	-1.520	-0.589	-0.013	-0.247	0.020	-0.032	-0.138
		TEMP	-1.892	-1.622	2.144	2.538	5.046	0.244	0.376	0.822
	30010	OTHR	-1.694	-2.495	-0.259	-0.332	-1.767	0.015	0.002	1.168
		TEMP	0.175	2.955	-0.157	1.319	4.158	-0.022	-0.030	-0.727
	30020	OTHR	-1.290	-1.597	-0.210	-0.698	-0.856	0.025	-0.256	0.369
		TEMP	-0.154	-1.324	-0.285	0.170	1.409	0.142	-0.039	-0.357
	40001	OTHR	-0.998	-1.836	0.308	-0.425	-1.297	-0.265	0.133	0.769
		TEMP	-0.205	-0.878	-0.095	0.220	1.540	-0.094	0.145	-0.398
	40011	OTHR	-1.637	-3.392	-0.032	-0.397	-2.272	-0.004	0.007	2.058
		TEMP	1.019	3.116	0.054	1.305	4.252	0.008	0.014	-0.766
22 Exterior Wall @ EL4.65 to 6.60m	22011	OTHR	-0.238	-3.253	0.761	-0.005	0.070	0.012	-0.024	0.113
		TEMP	2.586	3.076	-0.119	-0.101	-0.086	0.038	0.020	0.147
	22023	OTHR	-0.107	-1.767	0.024	0.006	0.018	-0.065	0.073	0.020
		TEMP	2.357	-5.300	-2.630	-0.374	0.466	-0.053	0.922	0.549
	32010	OTHR	-0.381	-2.072	0.000	-0.025	-0.085	0.000	0.001	-0.009
		TEMP	16.055	7.706	0.016	-3.506	-3.286	-0.003	-0.003	-0.226
	32020	OTHR	-0.049	-1.912	-0.003	-0.099	-0.076	-0.017	-0.039	0.020
		TEMP	0.404	5.236	2.974	-0.744	-2.379	-0.509	0.936	0.144
	42001	OTHR	-0.038	-2.000	-0.034	-0.085	-0.111	0.058	0.032	0.054
		TEMP	2.925	3.711	3.106	-0.956	-2.146	-0.063	-0.860	-0.349
	42011	OTHR	-0.559	-2.719	-0.051	-0.035	-0.167	0.003	0.006	0.024
		TEMP	13.976	5.189	0.082	-3.633	-3.196	0.101	0.088	-0.115
23 Exterior Wall @ EL22.50 to 24.60m	24211	OTHR	-0.233	-1.964	0.122	-0.078	-0.523	0.004	-0.004	-0.047
		TEMP	3.696	2.547	-0.486	-0.016	0.049	0.013	-0.150	2.136
	24224	OTHR	-0.025	-1.202	0.368	0.064	-0.039	-0.047	-0.089	-0.025
		TEMP	0.155	4.828	-4.303	0.833	-0.313	-0.715	-0.808	-0.293
	34210	OTHR	-0.027	-0.876	0.015	-0.003	-0.054	0.001	0.003	0.001
		TEMP	17.402	5.781	-0.557	-3.633	-3.490	0.035	-0.012	-0.199
	34220	OTHR	0.042	-0.946	-0.187	0.044	-0.032	-0.008	0.047	0.002
		TEMP	2.056	4.894	2.979	0.866	-2.104	-0.558	1.943	0.152
	44201	OTHR	0.037	-1.119	-0.345	0.048	-0.014	0.018	-0.042	-0.003
		TEMP	1.125	5.799	-0.132	0.393	-2.344	0.550	-2.362	0.138

**Table 3G.1-45 Combined Forces and Moments: RB, Selected Load Combination RB-4 (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
24 Basemat @ Wall Below RCCV	90140	OTHR	-4.104	-3.415	-0.092	-2.171	-1.139	2.657	-2.118	1.895
		TEMP	1.347	1.833	1.711	1.409	0.026	-1.327	-0.666	-0.175
	90182	OTHR	-3.771	-3.257	-0.029	0.477	-2.537	-0.110	0.012	0.534
		TEMP	1.856	0.556	0.778	-0.094	-4.006	0.225	-0.199	3.084
	90111	OTHR	-5.053	-3.293	0.000	-3.338	0.350	-0.364	0.094	0.137
		TEMP	0.687	3.065	-0.002	-4.393	-0.535	0.044	3.217	0.151
25 Slab EL4.65m @ RCCV	93140	OTHR	-0.520	-0.089	0.153	0.055	0.084	-0.060	0.132	-0.109
		TEMP	-0.966	2.070	3.424	-0.522	-0.407	0.286	-0.137	0.110
	93182	OTHR	-0.134	-0.248	0.040	0.007	0.001	0.002	-0.003	-0.051
		TEMP	3.050	-3.501	-1.013	-0.380	-1.928	-0.084	0.079	1.425
	93111	OTHR	-0.318	0.071	0.026	-0.068	-0.008	-0.003	0.012	-0.005
		TEMP	-3.104	3.895	-0.106	-1.892	-0.348	-0.048	1.246	0.002
26 Slab EL17.5m @ RCCV	96144	OTHR	-0.093	0.182	0.208	0.054	0.075	-0.058	0.129	-0.102
		TEMP	0.051	3.471	3.892	-0.198	-0.171	0.135	-0.037	0.056
	96186	OTHR	0.286	-0.076	0.012	-0.011	-0.044	-0.004	-0.001	-0.011
		TEMP	3.507	-2.461	-1.416	-0.131	-0.625	-0.042	0.023	0.503
	96113	OTHR	-0.058	0.660	-0.014	-0.274	-0.011	-0.013	0.300	0.036
		TEMP	-5.649	-4.999	-0.952	-4.725	-3.463	-0.182	0.956	-0.039
27 Slab EL27.0m @ RCCV	98472	OTHR	0.456	0.111	0.049	0.159	0.240	-0.199	0.229	-0.253
		TEMP	-0.639	-1.108	5.881	-0.552	-0.184	-0.203	0.423	-0.561
	98514	OTHR	0.049	0.183	0.074	0.024	0.057	0.025	-0.003	-0.136
		TEMP	-0.752	-3.184	-1.455	-0.689	-0.528	-0.028	0.049	-0.488
	98424	OTHR	-0.098	0.483	-0.015	1.858	0.440	0.008	-1.199	-0.094
		TEMP	-11.294	-12.507	-1.614	0.502	-0.662	0.174	-6.706	-0.088
28 Pool Girder @ Storage Pool	123054	OTHR	0.400	-2.583	-0.849	0.048	0.031	0.055	-0.011	-0.032
		TEMP	0.751	-3.964	1.802	2.885	2.797	0.041	-0.399	0.710
	123154	OTHR	1.277	-0.549	-0.660	0.078	0.032	0.101	0.018	0.011
		TEMP	1.146	0.864	-0.343	2.404	1.445	-0.430	-0.139	0.303
29 Pool Girder @ Well	123062	OTHR	0.465	0.628	0.344	-0.027	-0.178	0.030	0.002	-0.096
		TEMP	-3.702	-0.209	-0.675	0.125	0.180	0.046	-0.120	0.099
	123162	OTHR	-1.564	0.164	0.198	-0.079	-0.064	0.025	0.095	0.042
		TEMP	-3.313	-0.169	-0.673	0.094	-0.259	0.073	-0.235	0.126
30 Pool Girder @ Buffer Pool	123067	OTHR	0.510	-2.451	1.525	0.019	-0.049	-0.077	-0.126	-0.061
		TEMP	-3.957	-6.147	-2.164	0.701	0.523	-0.099	-0.149	0.671
	123167	OTHR	0.520	-0.620	1.330	0.043	0.025	0.019	-0.034	0.011
		TEMP	-3.687	-3.040	-2.757	0.227	-0.680	-0.298	0.028	0.199
31 MS Tunnel Wall and Slab	150122	OTHR	-0.024	0.030	0.299	0.026	0.060	0.018	-0.011	-0.040
		TEMP	0.347	-0.696	2.372	1.402	4.093	-0.043	-0.760	0.539
	96611	OTHR	-0.008	0.285	-0.012	0.078	-0.047	-0.051	-0.081	0.016
		TEMP	-0.316	3.589	-0.223	-1.462	-8.773	-0.478	0.477	0.241
	98614	OTHR	-0.022	-0.160	-0.020	0.019	-0.556	-0.067	-0.059	0.031
		TEMP	-0.229	2.949	-0.177	-0.935	-13.249	0.048	0.556	0.370

OTHR: Loads other than thermal loads

TEMP: Thermal loads

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.1-46 Combined Forces and Moments: RB, Selected Load Combination RB-8a**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
18 Wall Below RCCV Bottom	6	OTHR	-1.541	-5.995	-0.270	0.038	-0.070	-0.006	0.004	0.093
		TEMP	1.177	-0.473	-0.669	0.101	1.063	-0.040	0.024	0.044
		HYDR	1.039	2.403	0.505	0.296	1.689	0.004	0.014	0.592
	13	OTHR	-1.447	-4.554	-0.005	-0.261	-1.275	0.006	-0.005	-0.316
		TEMP	0.307	-3.027	-0.689	0.408	2.284	-0.002	0.019	0.475
		HYDR	0.829	2.427	0.515	0.223	1.312	0.006	0.011	0.454
	24	OTHR	-1.294	-4.939	-0.149	-0.302	-1.843	-0.002	0.003	-0.634
		TEMP	0.412	-3.041	0.146	0.425	2.350	-0.005	-0.002	0.516
		HYDR	0.902	2.658	0.484	0.159	1.002	0.005	0.010	0.355
19 Wall Below RCCV Mid-Height	806	OTHR	-1.097	-4.803	-0.222	0.011	0.064	-0.019	-0.014	-0.066
		TEMP	1.601	-1.332	0.182	0.235	1.292	0.083	-0.053	-0.063
		HYDR	0.305	2.384	0.674	0.023	0.125	0.031	0.004	0.037
	813	OTHR	-1.488	-4.507	0.140	-0.014	0.141	-0.005	0.004	-0.021
		TEMP	1.036	-2.990	-0.508	0.175	1.290	-0.027	0.006	0.450
		HYDR	0.236	2.472	0.691	0.032	0.124	0.010	0.003	0.108
	824	OTHR	-1.773	-4.807	-0.044	0.110	0.418	0.009	-0.001	0.111
		TEMP	0.890	-3.046	0.126	0.176	1.306	0.019	0.010	0.396
		HYDR	0.259	2.709	0.633	0.018	0.131	0.014	0.002	0.067
20 Wall Below RCCV Top	1606	OTHR	-0.020	-4.191	-0.098	-0.227	-1.320	0.024	0.005	0.308
		TEMP	11.606	-2.042	0.301	-0.668	-3.250	0.099	0.085	2.306
		HYDR	0.777	2.430	0.657	0.469	2.639	0.013	0.006	0.763
	1613	OTHR	-0.209	-4.449	0.240	-0.255	-1.334	-0.003	-0.003	0.337
		TEMP	11.229	-3.474	-0.425	-0.785	-4.386	-0.008	-0.014	2.714
		HYDR	0.778	2.470	0.668	0.471	2.727	0.006	0.008	0.829
	1624	OTHR	0.194	-4.340	-0.003	-0.290	-1.766	0.006	-0.006	0.516
		TEMP	12.187	-3.970	-0.124	-0.867	-4.480	-0.001	-0.082	2.817
		HYDR	0.851	2.674	0.650	0.462	2.630	0.005	0.011	0.811
21 Exterior Wall @ EL-11.50 to -10.50m	20011	OTHR	-1.786	-3.310	-0.710	0.179	0.942	0.018	0.034	0.304
		TEMP	3.023	3.384	0.790	0.274	1.136	0.041	-0.173	0.330
		HYDR	0.191	0.270	0.760	0.386	1.573	0.014	0.039	0.580
	20023	OTHR	-1.159	-1.475	-0.593	-0.019	-0.237	0.012	-0.056	-0.136
		TEMP	-1.459	-1.215	1.590	1.936	3.930	0.184	0.310	0.647
		HYDR	0.020	0.657	0.152	0.101	0.146	0.015	0.119	0.091
	30010	OTHR	-1.174	-2.306	-0.176	-0.180	-1.014	0.008	0.001	0.837
		TEMP	0.421	2.641	-0.135	1.081	3.585	-0.018	-0.024	-0.601
		HYDR	0.586	0.260	0.326	0.183	0.969	0.003	0.007	0.246
	30020	OTHR	-0.955	-1.661	-0.238	-0.553	-0.771	0.023	-0.150	0.328
		TEMP	-0.090	-1.196	-0.238	0.081	1.104	0.123	-0.022	-0.270
		HYDR	0.044	0.862	0.222	0.037	0.180	0.008	0.062	0.056
	40001	OTHR	-0.752	-1.827	0.378	-0.339	-1.072	-0.200	0.069	0.624
		TEMP	-0.154	-0.831	0.014	0.123	1.237	-0.081	0.114	-0.310
		HYDR	0.044	0.888	0.191	0.062	0.164	0.008	0.065	0.045
	40011	OTHR	-1.363	-3.011	-0.029	-0.221	-1.366	0.000	0.005	1.511
		TEMP	0.865	2.785	0.044	1.075	3.674	0.007	0.012	-0.638
		HYDR	0.433	0.497	0.386	0.121	0.626	0.007	0.011	0.150

**Table 3G.1-46 Combined Forces and Moments: RB, Selected Load Combination RB-8a (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
22 Exterior Wall @ EL4.65 to 6.60m	22011	OTHR	0.233	-2.716	0.620	-0.004	0.110	0.013	-0.025	0.152
		TEMP	3.577	2.789	-0.075	-0.128	-0.161	0.049	0.032	-0.031
		HYDR	0.300	1.068	0.853	0.018	0.123	0.027	0.004	0.227
	22023	OTHR	-0.055	-1.615	-0.034	0.086	0.042	-0.074	0.041	0.008
		TEMP	1.984	-3.558	-1.991	0.092	0.423	-0.047	0.570	0.405
		HYDR	0.070	0.603	0.422	0.133	0.046	0.037	0.042	0.015
	32010	OTHR	0.202	-1.854	0.031	-0.019	0.017	0.007	0.000	-0.100
		TEMP	14.408	6.124	0.009	-2.798	-2.759	0.004	-0.008	0.040
		HYDR	0.358	0.431	0.446	0.022	0.052	0.005	0.001	0.137
	32020	OTHR	0.003	-1.874	0.226	0.001	-0.029	-0.053	0.010	0.028
		TEMP	0.445	4.720	2.524	-0.285	-1.833	-0.377	0.922	0.167
		HYDR	0.038	0.558	0.293	0.087	0.009	0.016	0.066	0.007
	42001	OTHR	0.000	-1.916	0.109	0.026	-0.061	0.059	-0.009	0.049
		TEMP	2.451	3.607	2.534	-0.371	-1.611	-0.058	-0.794	-0.254
		HYDR	0.066	0.583	0.326	0.112	0.010	0.011	0.045	0.003
	42011	OTHR	-0.114	-2.144	-0.031	-0.040	-0.091	-0.005	0.004	-0.064
		TEMP	12.432	4.405	0.143	-2.975	-2.774	0.081	0.081	0.172
		HYDR	0.217	0.756	0.529	0.042	0.042	0.012	0.006	0.127
23 Exterior Wall @ EL22.50 to 24.60m	24211	OTHR	0.324	-1.466	0.070	0.004	-0.052	0.015	0.006	-0.290
		TEMP	4.177	2.901	-0.313	0.092	0.628	0.014	-0.122	1.431
		HYDR	0.203	0.688	0.418	0.044	0.187	0.021	0.003	0.217
	24224	OTHR	-0.016	-1.468	0.150	0.035	0.002	-0.018	-0.037	-0.012
		TEMP	0.340	4.642	-3.562	0.871	-0.344	-0.446	-0.824	-0.417
		HYDR	0.034	0.693	0.342	0.139	0.094	0.035	0.068	0.098
	34210	OTHR	0.601	-0.717	0.071	0.010	0.179	0.001	0.000	0.056
		TEMP	15.323	4.794	-0.317	-2.778	-2.409	0.015	-0.011	0.104
		HYDR	0.297	0.145	0.251	0.021	0.109	0.013	0.002	0.057
	34220	OTHR	0.081	-1.341	0.032	0.065	0.029	-0.010	0.043	-0.002
		TEMP	1.721	4.437	2.297	0.980	-1.464	-0.240	1.609	0.013
		HYDR	0.041	0.329	0.143	0.053	0.021	0.025	0.034	0.010
	44201	OTHR	0.037	-1.392	-0.034	0.071	0.029	0.005	-0.044	-0.009
		TEMP	1.001	5.209	0.300	0.668	-1.698	0.337	-1.911	0.044
		HYDR	0.037	0.398	0.239	0.049	0.008	0.005	0.035	0.006
24 Basemat @ Wall Below RCCV	90140	OTHR	-3.168	-2.596	0.278	-0.739	-0.164	1.099	-1.859	1.601
		TEMP	1.052	1.448	1.374	0.756	-0.217	-0.971	-0.682	-0.069
		HYDR	0.719	0.518	0.569	1.410	0.998	0.310	1.000	1.030
	90182	OTHR	-2.239	-2.512	-0.058	0.075	-0.489	0.035	0.037	0.409
		TEMP	1.619	0.481	0.610	-0.246	-3.861	0.184	-0.141	2.769
		HYDR	1.338	0.255	0.263	0.800	0.527	0.217	0.279	1.123
	90111	OTHR	-3.892	-2.310	-0.036	-1.081	0.058	-0.141	0.089	0.109
		TEMP	0.567	2.209	-0.001	-4.129	-0.522	0.050	2.860	0.127
		HYDR	0.202	1.158	0.073	0.385	0.640	0.171	1.039	0.271

**Table 3G.1-46 Combined Forces and Moments: RB, Selected Load Combination RB-8a (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
25 Slab EL4.65m @ RCCV	93140	OTHR	-0.327	0.108	0.280	0.113	0.122	-0.102	0.131	-0.111
		TEMP	-0.669	2.312	4.286	-0.515	-0.395	0.287	-0.135	0.111
		HYDR	0.264	0.274	0.326	0.053	0.039	0.052	0.015	0.018
	93182	OTHR	0.221	-0.129	0.016	0.007	0.086	0.007	-0.004	-0.041
		TEMP	4.229	-4.036	-1.098	-0.354	-1.829	-0.083	0.075	1.370
		HYDR	0.401	0.097	0.114	0.036	0.061	0.006	0.007	0.153
	93111	OTHR	-0.167	0.330	-0.029	0.044	-0.003	-0.001	-0.008	-0.006
		TEMP	-3.602	4.956	-0.257	-1.768	-0.316	-0.047	1.178	0.000
		HYDR	0.096	0.435	0.096	0.019	0.029	0.003	0.093	0.003
26 Slab EL17.5m @ RCCV	96144	OTHR	0.039	0.607	0.775	0.148	0.150	-0.116	0.140	-0.122
		TEMP	-0.269	4.712	6.965	-0.230	-0.125	0.167	-0.073	0.023
		HYDR	0.081	0.029	0.338	0.099	0.082	0.050	0.019	0.021
	96186	OTHR	1.005	-0.419	-0.109	0.008	0.091	0.001	-0.004	-0.109
		TEMP	6.688	-4.125	-1.418	-0.091	-0.316	-0.048	0.016	0.347
		HYDR	0.259	0.142	0.173	0.049	0.232	0.009	0.011	0.187
	96113	OTHR	-0.524	1.558	-0.150	0.293	0.072	-0.007	-0.066	0.008
		TEMP	-8.342	2.574	-1.682	-4.481	-2.783	-0.199	1.240	-0.059
		HYDR	0.076	0.484	0.282	0.349	0.083	0.012	0.268	0.029
27 Slab EL27.0m @ RCCV	98472	OTHR	0.517	0.595	-0.132	0.068	0.087	-0.045	0.237	-0.244
		TEMP	-0.778	-0.772	5.392	-0.313	0.031	-0.311	0.451	-0.561
		HYDR	0.140	0.069	0.211	0.086	0.112	0.056	0.069	0.071
	98514	OTHR	0.257	0.518	0.031	-0.012	-0.205	0.002	0.004	-0.135
		TEMP	0.436	-2.393	-1.392	-0.533	-0.070	-0.005	0.036	-0.726
		HYDR	0.250	0.113	0.251	0.039	0.185	0.005	0.003	0.158
	98424	OTHR	-0.262	1.552	-0.068	0.065	0.169	-0.132	-0.587	-0.047
		TEMP	-9.063	-6.855	-1.452	1.316	-0.418	0.194	-5.559	-0.101
		HYDR	0.068	0.218	0.135	0.326	0.135	0.021	0.220	0.014
28 Pool Girder @ Storage Pool	123054	OTHR	0.268	0.703	1.298	0.073	0.021	-0.126	-0.045	-0.065
		TEMP	1.314	-2.832	1.430	2.281	2.120	0.027	-0.232	0.482
		HYDR	0.169	0.213	0.180	0.014	0.011	0.008	0.016	0.018
	123154	OTHR	0.276	-0.021	1.151	0.087	0.039	-0.138	-0.070	0.025
		TEMP	1.031	0.747	-0.407	1.925	1.145	-0.338	-0.086	0.247
		HYDR	0.305	0.042	0.174	0.020	0.013	0.023	0.009	0.001
29 Pool Girder @ Well	123062	OTHR	0.376	-1.081	-1.271	-0.027	0.143	0.004	0.072	0.130
		TEMP	-1.254	-0.148	-0.719	0.101	0.323	0.027	0.057	0.172
		HYDR	0.185	0.022	0.140	0.013	0.016	0.006	0.007	0.004
	123162	OTHR	1.993	-0.346	-0.961	0.017	-0.013	-0.003	-0.004	-0.034
		TEMP	-1.691	-0.032	-0.470	0.128	-0.117	-0.003	-0.151	0.085
		HYDR	0.453	0.019	0.133	0.024	0.015	0.004	0.016	0.004
30 Pool Girder @ Buffer Pool	123067	OTHR	0.264	0.977	-1.244	-0.043	-0.084	0.012	-0.059	-0.050
		TEMP	-2.405	-6.001	-1.842	0.639	0.439	-0.117	-0.150	0.470
		HYDR	0.176	1.073	0.411	0.030	0.029	0.012	0.024	0.030
	123167	OTHR	-0.163	0.197	-1.252	-0.003	-0.053	0.030	-0.088	-0.002
		TEMP	-2.204	-2.669	-2.246	0.268	-0.449	-0.228	-0.011	0.180
		HYDR	0.478	0.311	0.449	0.019	0.008	0.008	0.012	0.005
31 MS Tunnel Wall and Slab	150122	OTHR	0.037	-0.290	0.365	0.020	0.098	0.014	-0.006	-0.067
		TEMP	0.224	-0.515	1.901	1.053	3.140	-0.007	-0.584	0.364
		HYDR	0.018	0.056	0.006	0.008	0.033	0.006	0.002	0.021
	96611	OTHR	-0.050	0.725	-0.045	0.053	-0.095	-0.054	-0.069	0.018
		TEMP	-0.447	4.103	-0.332	-1.287	-7.109	-0.423	0.426	0.209
		HYDR	0.009	0.075	0.012	0.044	0.101	0.018	0.015	0.008
	98614	OTHR	-0.010	-0.347	-0.011	-0.199	-1.002	-0.138	0.009	0.053
		TEMP	-0.187	1.989	-0.145	-0.861	-10.477	-0.011	0.470	0.303
		HYDR	0.006	0.115	0.007	0.005	0.056	0.009	0.001	0.010

OTHR: Loads other than thermal loads

TEMP: Thermal loads

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.1-47 Combined Forces and Moments: RB, Selected Load Combination RB-8b**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
18 Wall Below RCCV Bottom	6	OTHR	-1.631	-5.735	-0.321	0.092	0.247	-0.007	0.007	0.196
		TEMP	0.745	-0.977	-0.895	0.238	1.920	-0.053	0.044	0.293
		HYDR	0.772	1.667	0.389	0.220	1.254	0.003	0.011	0.440
	13	OTHR	-1.520	-4.338	-0.020	-0.201	-0.940	0.006	-0.005	-0.213
		TEMP	-0.174	-4.065	-0.782	0.604	3.357	-0.002	0.023	0.785
		HYDR	0.611	1.684	0.393	0.167	0.980	0.004	0.008	0.338
	24	OTHR	-1.401	-4.693	-0.140	-0.240	-1.491	-0.002	0.003	-0.524
		TEMP	0.101	-3.765	0.212	0.594	3.314	-0.007	-0.003	0.779
		HYDR	0.664	1.845	0.387	0.123	0.766	0.004	0.007	0.271
19 Wall Below RCCV Mid-Height	806	OTHR	-1.071	-4.540	-0.256	0.015	0.091	-0.017	-0.015	-0.060
		TEMP	1.907	-2.149	0.225	0.307	1.688	0.090	-0.068	-0.082
		HYDR	0.214	1.640	0.518	0.017	0.091	0.024	0.003	0.027
	813	OTHR	-1.453	-4.313	0.130	-0.007	0.170	-0.004	0.007	-0.004
		TEMP	1.360	-3.986	-0.566	0.221	1.702	-0.034	0.006	0.602
		HYDR	0.164	1.703	0.531	0.023	0.089	0.010	0.003	0.080
	824	OTHR	-1.751	-4.549	-0.033	0.117	0.442	0.010	-0.002	0.128
		TEMP	1.151	-3.732	0.198	0.224	1.729	0.027	0.015	0.502
		HYDR	0.175	1.868	0.508	0.012	0.095	0.013	0.001	0.050
20 Wall Below RCCV Top	1606	OTHR	0.209	-3.939	-0.136	-0.299	-1.735	0.024	0.006	0.436
		TEMP	15.858	-3.114	0.381	-0.839	-4.009	0.124	0.101	3.042
		HYDR	0.627	1.658	0.505	0.343	1.917	0.009	0.006	0.564
	1613	OTHR	0.015	-4.292	0.232	-0.329	-1.754	-0.004	-0.003	0.474
		TEMP	15.713	-4.649	-0.420	-1.005	-5.538	-0.011	-0.016	3.612
		HYDR	0.620	1.694	0.502	0.340	1.957	0.004	0.008	0.601
	1624	OTHR	0.444	-4.077	0.005	-0.366	-2.207	0.007	-0.006	0.660
		TEMP	16.688	-4.842	-0.107	-1.115	-5.549	0.001	-0.106	3.698
		HYDR	0.683	1.834	0.505	0.336	1.898	0.003	0.010	0.592
21 Exterior Wall @ EL-11.50 to -10.50m	20011	OTHR	-1.766	-3.208	-0.705	0.204	1.035	0.020	0.031	0.333
		TEMP	3.314	4.817	0.922	0.447	1.837	0.052	-0.225	0.576
		HYDR	0.135	0.207	0.589	0.279	1.135	0.010	0.029	0.418
	20023	OTHR	-1.158	-1.481	-0.603	-0.026	-0.230	0.012	-0.055	-0.133
		TEMP	-1.453	-1.169	1.549	1.890	4.020	0.180	0.322	0.683
		HYDR	0.016	0.467	0.114	0.074	0.109	0.011	0.091	0.068
	30010	OTHR	-1.132	-2.283	-0.179	-0.146	-0.849	0.007	0.001	0.801
		TEMP	0.688	3.733	-0.258	1.289	4.763	-0.022	-0.031	-0.865
		HYDR	0.416	0.191	0.261	0.135	0.710	0.003	0.006	0.180
	30020	OTHR	-0.944	-1.700	-0.244	-0.566	-0.765	0.026	-0.147	0.327
		TEMP	-0.058	-1.477	-0.392	0.021	1.209	0.144	-0.026	-0.282
		HYDR	0.034	0.601	0.161	0.028	0.126	0.006	0.045	0.038
	40001	OTHR	-0.747	-1.860	0.398	-0.351	-1.058	-0.203	0.069	0.622
		TEMP	-0.090	-1.141	0.056	0.039	1.330	-0.097	0.105	-0.322
		HYDR	0.034	0.620	0.140	0.046	0.114	0.006	0.047	0.031
	40011	OTHR	-1.362	-2.969	-0.028	-0.185	-1.183	0.002	0.005	1.471
		TEMP	1.295	3.630	0.051	1.243	4.654	0.011	0.015	-0.844
		HYDR	0.324	0.343	0.301	0.092	0.471	0.005	0.008	0.113

**Table 3G.1-47 Combined Forces and Moments: RB, Selected Load Combination RB-8b (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
22 Exterior Wall @ EL4.65 to 6.60m	22011	OTHR	0.340	-2.632	0.601	-0.004	0.124	0.014	-0.027	0.173
		TEMP	5.080	4.474	-0.209	-0.175	-0.228	0.067	0.045	0.074
		HYDR	0.227	0.763	0.623	0.012	0.082	0.020	0.003	0.156
	22023	OTHR	-0.043	-1.598	-0.021	0.116	0.050	-0.081	0.032	0.007
		TEMP	2.211	-3.114	-2.141	0.528	0.492	-0.052	0.386	0.393
		HYDR	0.050	0.414	0.306	0.106	0.032	0.026	0.029	0.011
	32010	OTHR	0.335	-1.829	0.025	-0.020	0.035	0.009	0.000	-0.128
		TEMP	16.739	7.724	-0.075	-2.893	-3.003	-0.001	-0.014	0.022
		HYDR	0.268	0.301	0.334	0.019	0.042	0.004	0.001	0.100
	32020	OTHR	0.015	-1.847	0.282	0.025	-0.021	-0.065	0.026	0.031
		TEMP	0.653	4.869	2.518	0.104	-1.860	-0.395	1.226	0.199
		HYDR	0.030	0.375	0.221	0.070	0.007	0.013	0.052	0.005
	42001	OTHR	0.014	-1.879	0.136	0.057	-0.054	0.063	-0.020	0.051
		TEMP	2.720	3.801	2.644	0.130	-1.563	-0.051	-0.998	-0.239
		HYDR	0.050	0.394	0.243	0.090	0.007	0.009	0.036	0.002
	42011	OTHR	-0.005	-2.050	-0.021	-0.044	-0.083	-0.007	0.004	-0.089
		TEMP	14.110	5.515	0.234	-3.164	-3.046	0.073	0.090	0.169
		HYDR	0.174	0.524	0.390	0.035	0.041	0.009	0.005	0.100
23 Exterior Wall @ EL22.50 to 24.60m	24211	OTHR	0.447	-1.379	0.064	0.021	0.047	0.017	0.008	-0.340
		TEMP	6.073	5.669	-0.239	0.176	0.982	0.008	-0.147	1.336
		HYDR	0.139	0.484	0.307	0.030	0.133	0.015	0.003	0.151
	24224	OTHR	-0.012	-1.537	0.106	0.031	0.010	-0.012	-0.028	-0.010
		TEMP	1.011	5.349	-3.664	1.966	0.071	-0.637	-1.563	-0.323
		HYDR	0.024	0.484	0.237	0.097	0.065	0.024	0.049	0.069
	34210	OTHR	0.731	-0.690	0.073	0.008	0.207	0.000	0.000	0.065
		TEMP	21.813	5.545	-0.581	-2.903	-2.819	0.035	-0.002	-0.128
		HYDR	0.213	0.101	0.181	0.014	0.075	0.009	0.001	0.040
	34220	OTHR	0.086	-1.422	0.070	0.066	0.041	-0.008	0.043	-0.004
		TEMP	2.794	5.432	4.414	2.629	-1.178	-0.711	2.571	0.094
		HYDR	0.028	0.230	0.103	0.036	0.015	0.017	0.022	0.007
	44201	OTHR	0.038	-1.448	0.031	0.076	0.038	0.002	-0.042	-0.011
		TEMP	1.793	6.586	0.562	2.230	-1.491	0.539	-2.967	0.044
		HYDR	0.026	0.278	0.167	0.034	0.005	0.003	0.024	0.004
24 Basemat @ Wall Below RCCV	90140	OTHR	-3.176	-2.551	0.358	-0.497	0.031	0.785	-1.841	1.550
		TEMP	0.838	1.691	1.751	-0.171	-1.046	-1.095	-1.135	0.139
		HYDR	0.511	0.380	0.435	1.016	0.711	0.265	0.709	0.729
	90182	OTHR	-2.073	-2.496	-0.063	-0.026	-0.141	0.077	0.030	0.391
		TEMP	1.908	0.687	0.488	-0.873	-5.527	0.260	-0.110	3.825
		HYDR	0.956	0.181	0.195	0.570	0.440	0.179	0.209	0.795
	90111	OTHR	-3.872	-2.223	-0.046	-0.736	-0.032	-0.093	0.071	0.105
		TEMP	0.733	2.908	-0.011	-5.322	-1.147	0.107	3.687	0.151
		HYDR	0.135	0.851	0.058	0.342	0.458	0.143	0.736	0.209



**Table 3G.1-47 Combined Forces and Moments: RB, Selected Load Combination RB-8b (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
25 Slab EL4.65m @ RCCV	93140	OTHR	-0.300	0.152	0.319	0.125	0.131	-0.112	0.132	-0.113
		TEMP	-0.383	3.018	5.804	-0.739	-0.564	0.413	-0.192	0.163
		HYDR	0.199	0.202	0.263	0.038	0.028	0.035	0.011	0.013
	93182	OTHR	0.300	-0.111	0.012	0.005	0.101	0.008	-0.003	-0.033
		TEMP	6.161	-5.154	-1.518	-0.481	-2.508	-0.114	0.105	1.903
		HYDR	0.304	0.089	0.090	0.026	0.045	0.004	0.005	0.109
	93111	OTHR	-0.149	0.400	-0.042	0.061	-0.004	-0.001	-0.005	-0.006
		TEMP	-4.494	6.820	-0.448	-2.369	-0.414	-0.066	1.594	0.001
		HYDR	0.094	0.336	0.073	0.014	0.021	0.002	0.067	0.002
26 Slab EL 17.5m @ RCCV	96144	OTHR	0.063	0.731	0.907	0.168	0.163	-0.128	0.144	-0.126
		TEMP	0.733	5.839	8.138	-0.232	-0.178	0.174	-0.043	0.066
		HYDR	0.059	0.024	0.247	0.068	0.056	0.034	0.013	0.015
	96186	OTHR	1.180	-0.491	-0.143	0.013	0.118	0.004	-0.005	-0.132
		TEMP	9.999	-4.559	-2.165	-0.150	-0.675	-0.057	0.023	0.638
		HYDR	0.185	0.103	0.126	0.034	0.159	0.006	0.008	0.128
	96113	OTHR	-0.634	1.795	-0.198	0.378	0.087	0.004	-0.133	0.003
		TEMP	-9.165	5.149	-1.811	-4.378	-2.755	-0.237	1.010	-0.100
		HYDR	0.059	0.334	0.201	0.240	0.058	0.009	0.185	0.020
27 Slab EL27.0m @ RCCV	98472	OTHR	See Tables 3G.5-13 to 3G.5-16							
		TEMP								
		HYDR								
	98514	OTHR								
		TEMP								
		HYDR								
	98424	OTHR								
		TEMP								
		HYDR								
28 Pool Girder @ Storage Pool	123054	OTHR								
		TEMP								
		HYDR								
	123154	OTHR								
		TEMP								
		HYDR								
29 Pool Girder @ Well	123062	OTHR								
		TEMP								
		HYDR								
	123162	OTHR								
		TEMP								
		HYDR								
30 Pool Girder @ Buffer Pool	123067	OTHR								
		TEMP								
		HYDR								
	123167	OTHR								
		TEMP								
		HYDR								
31 MS Tunnel Wall and Slab	150122	OTHR	0.049	-0.354	0.381	0.019	0.106	0.014	-0.005	-0.072
		TEMP	0.316	-0.711	1.797	0.940	3.101	0.011	-0.551	0.426
		HYDR	0.012	0.039	0.004	0.006	0.024	0.004	0.002	0.014
	96611	OTHR	-0.060	0.825	-0.053	0.048	-0.107	-0.055	-0.067	0.019
		TEMP	-0.557	4.662	-0.414	-1.254	-7.116	-0.406	0.420	0.206
		HYDR	0.007	0.052	0.008	0.031	0.072	0.013	0.011	0.005
	98614	OTHR	-0.008	-0.383	-0.010	-0.242	-1.096	-0.153	0.022	0.057
		TEMP	-0.043	0.725	-0.043	-0.850	-9.922	-0.018	0.459	0.307
		HYDR	0.004	0.081	0.005	0.004	0.040	0.006	0.001	0.007

OTHR: Loads other than thermal loads

TEMP: Thermal loads

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.1-48 Combined Forces and Moments: RB, Selected Load Combination RB-9a**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
18 Wall Below RCCV Bottom	6	OTHR	-1.406	-6.404	-0.192	-0.045	-0.553	-0.005	0.000	-0.066
		TEMP	1.177	-0.473	-0.669	0.101	1.063	-0.040	0.024	0.044
		SEIS	6.696	12.988	5.722	1.271	7.124	0.093	0.215	2.708
		HYDR	0.730	1.683	0.349	0.209	1.193	0.003	0.010	0.417
	13	OTHR	-1.338	-4.900	0.016	-0.351	-1.786	0.006	-0.005	-0.474
		TEMP	0.307	-3.027	-0.689	0.408	2.284	-0.002	0.019	0.475
		SEIS	5.186	11.839	4.076	0.918	5.398	0.059	0.107	2.066
		HYDR	0.582	1.701	0.362	0.158	0.930	0.004	0.008	0.321
	24	OTHR	-1.135	-5.340	-0.164	-0.396	-2.378	-0.001	0.002	-0.800
		TEMP	0.412	-3.041	0.146	0.425	2.350	-0.005	-0.002	0.516
		SEIS	3.487	9.762	6.470	0.650	3.735	0.101	0.148	1.099
		HYDR	0.638	1.871	0.334	0.114	0.717	0.003	0.007	0.254
19 Wall Below RCCV Mid-Height	806	OTHR	-1.130	-5.219	-0.166	0.007	0.032	-0.022	-0.013	-0.077
		TEMP	1.601	-1.332	0.182	0.235	1.292	0.083	-0.053	-0.063
		SEIS	3.208	10.327	6.462	0.129	0.397	0.170	0.078	0.256
		HYDR	0.209	1.673	0.467	0.016	0.090	0.022	0.003	0.026
	813	OTHR	-1.536	-4.820	0.155	-0.021	0.106	-0.007	0.001	-0.048
		TEMP	1.036	-2.990	-0.508	0.175	1.290	-0.027	0.006	0.450
		SEIS	3.060	10.805	4.961	0.145	0.684	0.059	0.026	0.379
		HYDR	0.162	1.735	0.485	0.023	0.089	0.007	0.002	0.076
	824	OTHR	-1.799	-5.229	-0.062	0.101	0.391	0.009	-0.001	0.085
		TEMP	0.890	-3.046	0.126	0.176	1.306	0.019	0.010	0.396
		SEIS	2.262	9.222	7.635	0.223	0.611	0.100	0.051	0.267
		HYDR	0.180	1.909	0.438	0.013	0.095	0.010	0.001	0.048
20 Wall Below RCCV Top	1606	OTHR	-0.316	-4.589	-0.035	-0.132	-0.772	0.024	0.005	0.141
		TEMP	11.606	-2.042	0.301	-0.668	-3.250	0.099	0.085	2.306
		SEIS	2.070	7.762	7.056	0.382	1.853	0.126	0.026	0.406
		HYDR	0.573	1.710	0.449	0.335	1.886	0.009	0.005	0.547
	1613	OTHR	-0.499	-4.706	0.251	-0.158	-0.779	-0.002	-0.003	0.157
		TEMP	11.229	-3.474	-0.425	-0.785	-4.386	-0.008	-0.014	2.714
		SEIS	1.432	8.968	5.015	0.385	2.293	0.041	0.017	0.757
		HYDR	0.570	1.738	0.465	0.336	1.944	0.004	0.006	0.592
	1624	OTHR	-0.128	-4.778	-0.015	-0.190	-1.182	0.006	-0.007	0.328
		TEMP	12.187	-3.970	-0.124	-0.867	-4.480	-0.001	-0.082	2.817
		SEIS	1.370	7.973	7.604	0.184	1.264	0.056	0.047	0.548
		HYDR	0.624	1.887	0.447	0.331	1.880	0.003	0.008	0.581

**Table 3G.1-48 Combined Forces and Moments: RB, Selected Load Combination RB-9a (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
21 Exterior Wall @ EL-11.50 to -10.50m	20011	OTHR	-1.813	-3.454	-0.718	0.142	0.806	0.015	0.039	0.262
		TEMP	3.023	3.384	0.790	0.274	1.136	0.041	-0.173	0.330
		SEIS	2.167	3.650	9.866	2.028	8.326	0.065	0.140	3.143
		HYDR	0.134	0.191	0.521	0.270	1.101	0.010	0.028	0.406
	20023	OTHR	-1.161	-1.464	-0.578	-0.009	-0.246	0.012	-0.058	-0.141
		TEMP	-1.459	-1.215	1.590	1.936	3.930	0.184	0.310	0.647
		SEIS	0.864	5.664	1.335	0.917	1.307	0.189	1.237	0.863
		HYDR	0.014	0.456	0.106	0.070	0.102	0.010	0.083	0.063
	30010	OTHR	-1.233	-2.332	-0.171	-0.229	-1.260	0.010	0.001	0.889
		TEMP	0.421	2.641	-0.135	1.081	3.585	-0.018	-0.024	-0.601
		SEIS	4.300	5.359	3.754	0.691	3.619	0.060	0.088	1.243
		HYDR	0.411	0.177	0.226	0.129	0.686	0.002	0.005	0.174
	30020	OTHR	-0.971	-1.605	-0.228	-0.535	-0.779	0.017	-0.154	0.328
		TEMP	-0.090	-1.196	-0.238	0.081	1.104	0.123	-0.022	-0.270
		SEIS	0.758	4.090	1.578	0.461	1.470	0.176	0.453	0.467
		HYDR	0.030	0.605	0.155	0.026	0.126	0.006	0.044	0.039
	40001	OTHR	-0.761	-1.778	0.348	-0.322	-1.092	-0.197	0.070	0.628
		TEMP	-0.154	-0.831	0.014	0.123	1.237	-0.081	0.114	-0.310
		SEIS	0.614	4.241	1.322	0.703	1.722	0.243	0.522	0.481
		HYDR	0.030	0.624	0.134	0.044	0.114	0.006	0.045	0.032
	40011	OTHR	-1.359	-3.062	-0.028	-0.275	-1.633	-0.001	0.005	1.569
		TEMP	0.865	2.785	0.044	1.075	3.674	0.007	0.012	-0.638
		SEIS	3.659	4.532	4.410	0.427	2.566	0.087	0.122	0.940
		HYDR	0.301	0.346	0.268	0.087	0.448	0.005	0.007	0.108
22 Exterior Wall @ EL4.65 to 6.60m	22011	OTHR	0.107	-2.840	0.646	-0.005	0.093	0.012	-0.024	0.132
		TEMP	3.577	2.789	-0.075	-0.128	-0.161	0.049	0.032	-0.031
		SEIS	1.395	8.082	7.242	0.140	0.949	0.161	0.051	0.897
		HYDR	0.217	0.746	0.584	0.012	0.084	0.019	0.003	0.159
	22023	OTHR	-0.068	-1.626	-0.045	0.050	0.031	-0.067	0.052	0.011
		TEMP	1.984	-3.558	-1.991	0.092	0.423	-0.047	0.570	0.405
		SEIS	0.390	7.366	4.135	0.400	0.178	0.169	0.414	0.150
		HYDR	0.049	0.415	0.288	0.097	0.032	0.026	0.029	0.010
	32010	OTHR	0.038	-1.894	0.039	-0.019	-0.007	0.004	0.000	-0.068
		TEMP	14.408	6.124	0.009	-2.798	-2.759	0.004	-0.008	0.040
		SEIS	1.427	4.890	4.400	0.041	0.275	0.024	0.002	0.240
		HYDR	0.256	0.299	0.303	0.016	0.039	0.004	0.001	0.099
	32020	OTHR	-0.012	-1.885	0.151	-0.027	-0.038	-0.040	-0.008	0.023
		TEMP	0.445	4.720	2.524	-0.285	-1.833	-0.377	0.922	0.167
		SEIS	0.263	5.284	3.554	0.361	0.151	0.135	0.240	0.042
		HYDR	0.028	0.390	0.200	0.064	0.007	0.011	0.048	0.005
	42001	OTHR	-0.015	-1.942	0.065	-0.011	-0.070	0.055	0.004	0.047
		TEMP	2.451	3.607	2.534	-0.371	-1.611	-0.058	-0.794	-0.254
		SEIS	0.225	5.235	3.697	0.356	0.123	0.163	0.227	0.046
		HYDR	0.048	0.408	0.224	0.083	0.007	0.008	0.033	0.002
	42011	OTHR	-0.243	-2.285	-0.042	-0.036	-0.102	-0.003	0.004	-0.039
		TEMP	12.432	4.405	0.143	-2.975	-2.774	0.081	0.081	0.172
		SEIS	0.943	3.822	5.968	0.064	0.220	0.032	0.046	0.091
		HYDR	0.159	0.532	0.361	0.031	0.033	0.008	0.004	0.093

**Table 3G.1-48 Combined Forces and Moments: RB, Selected Load Combination RB-9a (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
23 Exterior Wall @ EL22.50 to 24.60m	24211	OTHR	0.142	-1.583	0.082	-0.022	-0.203	0.012	0.003	-0.211
		TEMP	4.177	2.901	-0.313	0.092	0.628	0.014	-0.122	1.431
		SEIS	1.044	5.100	5.785	0.219	0.980	0.061	0.009	0.902
		HYDR	0.142	0.484	0.283	0.030	0.133	0.015	0.002	0.151
	24224	OTHR	-0.022	-1.342	0.214	0.037	-0.015	-0.027	-0.050	-0.020
		TEMP	0.340	4.642	-3.562	0.871	-0.344	-0.446	-0.824	-0.417
		SEIS	0.398	8.959	4.284	0.751	1.033	0.294	0.365	1.129
		HYDR	0.024	0.485	0.236	0.095	0.064	0.024	0.047	0.068
	34210	OTHR	0.396	-0.758	0.068	0.006	0.104	0.001	0.001	0.035
		TEMP	15.323	4.794	-0.317	-2.778	-2.409	0.015	-0.011	0.104
		SEIS	1.282	1.876	3.821	0.074	0.435	0.015	0.012	0.175
		HYDR	0.202	0.102	0.171	0.015	0.077	0.009	0.001	0.041
	34220	OTHR	0.071	-1.204	-0.033	0.060	0.010	-0.010	0.042	-0.001
		TEMP	1.721	4.437	2.297	0.980	-1.464	-0.240	1.609	0.013
		SEIS	0.161	2.508	2.967	0.161	0.147	0.023	0.056	0.028
		HYDR	0.028	0.231	0.098	0.036	0.015	0.017	0.023	0.007
	44201	OTHR	0.034	-1.296	-0.131	0.061	0.015	0.008	-0.045	-0.007
		TEMP	1.001	5.209	0.300	0.668	-1.698	0.337	-1.911	0.044
		SEIS	0.181	2.787	3.345	0.110	0.044	0.062	0.111	0.034
		HYDR	0.026	0.280	0.164	0.033	0.005	0.003	0.024	0.004
24 Basemat @ Wall Below RCCV	90140	OTHR	-3.152	-2.663	0.155	-1.123	-0.473	1.586	-1.890	1.682
		TEMP	1.052	1.448	1.374	0.756	-0.217	-0.971	-0.682	-0.069
		SEIS	0.987	5.106	3.764	7.300	3.575	4.121	4.750	6.017
		HYDR	0.511	0.359	0.401	0.987	0.702	0.218	0.702	0.721
	90182	OTHR	-2.490	-2.534	-0.046	0.224	-1.047	-0.030	0.047	0.448
		TEMP	1.619	0.481	0.610	-0.246	-3.861	0.184	-0.141	2.769
		SEIS	6.520	1.022	1.631	1.857	2.393	1.579	1.731	4.154
		HYDR	0.940	0.180	0.184	0.566	0.378	0.154	0.197	0.791
	90111	OTHR	-3.919	-2.439	-0.021	-1.644	0.188	-0.215	0.134	0.117
		TEMP	0.567	2.209	-0.001	-4.129	-0.522	0.050	2.860	0.127
		SEIS	1.210	6.067	0.979	2.069	1.701	1.400	2.440	2.861
		HYDR	0.141	0.811	0.051	0.274	0.454	0.121	0.736	0.189

**Table 3G.1-48 Combined Forces and Moments: RB, Selected Load Combination RB-9a (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
25 Slab EL4.65m @ RCCV	93140	OTHR	-0.355	0.055	0.232	0.096	0.110	-0.088	0.129	-0.109
		TEMP	-0.669	2.312	4.286	-0.515	-0.395	0.287	-0.135	0.111
		SEIS	2.338	0.441	0.249	0.456	0.313	0.222	0.173	0.171
		HYDR	0.182	0.196	0.238	0.036	0.027	0.036	0.010	0.012
	93182	OTHR	0.124	-0.146	0.021	0.009	0.067	0.006	-0.004	-0.052
		TEMP	4.229	-4.036	-1.098	-0.354	-1.829	-0.083	0.075	1.370
		SEIS	0.581	0.171	0.500	0.148	0.714	0.027	0.037	0.681
		HYDR	0.290	0.073	0.082	0.025	0.042	0.004	0.005	0.108
	93111	OTHR	-0.186	0.248	-0.015	0.020	-0.002	-0.001	-0.011	-0.005
		TEMP	-3.602	4.956	-0.257	-1.768	-0.316	-0.047	1.178	0.000
		SEIS	0.171	0.160	0.219	0.268	0.045	0.030	0.247	0.006
		HYDR	0.073	0.316	0.068	0.013	0.021	0.002	0.066	0.002
26 Slab EL17.5m @ RCCV	96144	OTHR	-0.007	0.453	0.581	0.117	0.124	-0.096	0.133	-0.113
		TEMP	-0.269	4.712	6.965	-0.230	-0.125	0.167	-0.073	0.023
		SEIS	0.573	0.343	0.278	0.356	0.288	0.199	0.127	0.109
		HYDR	0.056	0.021	0.228	0.068	0.057	0.034	0.013	0.015
	96186	OTHR	0.763	-0.307	-0.073	0.003	0.050	0.000	-0.003	-0.079
		TEMP	6.688	-4.125	-1.418	-0.091	-0.316	-0.048	0.016	0.347
		SEIS	0.771	0.257	0.280	0.142	0.750	0.027	0.044	0.601
		HYDR	0.176	0.097	0.118	0.035	0.162	0.006	0.008	0.130
	96113	OTHR	-0.370	1.242	-0.107	0.114	0.047	-0.008	0.046	0.016
		TEMP	-8.342	2.574	-1.682	-4.481	-2.783	-0.199	1.240	-0.059
		SEIS	0.238	1.114	0.628	0.581	0.080	0.022	0.522	0.084
		HYDR	0.054	0.335	0.192	0.246	0.059	0.009	0.189	0.020
27 Slab EL27.0m @ RCCV	98472	OTHR	0.484	0.424	-0.073	0.098	0.138	-0.095	0.233	-0.246
		TEMP	-0.778	-0.772	5.392	-0.313	0.031	-0.311	0.451	-0.561
		SEIS	1.074	1.032	0.499	0.268	0.372	0.232	0.252	0.290
		HYDR	0.100	0.049	0.146	0.061	0.079	0.039	0.048	0.051
	98514	OTHR	0.185	0.394	0.040	0.000	-0.117	0.009	0.002	-0.136
		TEMP	0.436	-2.393	-1.392	-0.533	-0.070	-0.005	0.036	-0.726
		SEIS	0.496	0.238	0.444	0.105	0.573	0.025	0.015	0.463
		HYDR	0.171	0.078	0.171	0.028	0.131	0.004	0.002	0.112
	98424	OTHR	-0.206	1.190	-0.051	0.658	0.260	-0.086	-0.781	-0.062
		TEMP	-9.063	-6.855	-1.452	1.316	-0.418	0.194	-5.559	-0.101
		SEIS	1.239	1.405	6.000	2.252	0.701	0.250	1.676	0.132
		HYDR	0.047	0.148	0.092	0.231	0.096	0.014	0.157	0.010

**Table 3G.1-48 Combined Forces and Moments: RB, Selected Load Combination RB-9a (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
28 Pool Girder @ Storage Pool	123054	OTHR	0.320	-0.358	0.590	0.065	0.025	-0.066	-0.034	-0.052
		TEMP	1.314	-2.832	1.430	2.281	2.120	0.027	-0.232	0.482
		SEIS	0.567	2.862	0.901	0.349	0.164	0.091	0.029	0.214
		HYDR	0.118	0.151	0.128	0.010	0.008	0.005	0.012	0.012
	123154	OTHR	0.636	-0.183	0.550	0.085	0.036	-0.059	-0.040	0.019
		TEMP	1.031	0.747	-0.407	1.925	1.145	-0.338	-0.086	0.247
		SEIS	1.903	0.756	0.974	0.239	0.083	0.131	0.056	0.012
		HYDR	0.215	0.029	0.123	0.014	0.009	0.016	0.006	0.001
29 Pool Girder @ Well	123062	OTHR	0.409	-0.519	-0.742	-0.026	0.039	0.012	0.048	0.056
		TEMP	-1.254	-0.148	-0.719	0.101	0.323	0.027	0.057	0.172
		SEIS	0.682	1.107	0.498	0.107	0.171	0.057	0.065	0.107
		HYDR	0.126	0.015	0.096	0.008	0.011	0.004	0.005	0.003
	123162	OTHR	0.850	-0.177	-0.579	-0.013	-0.028	0.006	0.027	-0.010
		TEMP	-1.691	-0.032	-0.470	0.128	-0.117	-0.003	-0.151	0.085
		SEIS	1.683	0.934	0.368	0.199	0.073	0.035	0.159	0.044
		HYDR	0.318	0.014	0.091	0.016	0.010	0.003	0.011	0.003
30 Pool Girder @ Buffer Pool	123067	OTHR	0.342	-0.154	-0.357	-0.023	-0.071	-0.017	-0.079	-0.053
		TEMP	-2.405	-6.001	-1.842	0.639	0.439	-0.117	-0.150	0.470
		SEIS	0.865	3.317	1.559	0.199	0.172	0.105	0.128	0.274
		HYDR	0.124	0.755	0.287	0.021	0.020	0.008	0.017	0.021
	123167	OTHR	0.062	-0.073	-0.424	0.011	-0.028	0.025	-0.069	0.002
		TEMP	-2.204	-2.669	-2.246	0.268	-0.449	-0.228	-0.011	0.180
		SEIS	1.426	0.863	1.646	0.073	0.126	0.070	0.060	0.020
		HYDR	0.336	0.219	0.315	0.014	0.006	0.005	0.008	0.003
31 MS Tunnel Wall and Slab	150122	OTHR	0.017	-0.186	0.340	0.022	0.085	0.015	-0.008	-0.058
		TEMP	0.224	-0.515	1.901	1.053	3.140	-0.007	-0.584	0.364
		SEIS	0.028	0.234	0.256	0.054	0.188	0.053	0.015	0.271
		HYDR	0.013	0.039	0.004	0.006	0.024	0.004	0.002	0.014
	96611	OTHR	-0.037	0.580	-0.034	0.060	-0.078	-0.053	-0.072	0.017
		TEMP	-0.447	4.103	-0.332	-1.287	-7.109	-0.423	0.426	0.209
		SEIS	0.059	0.477	0.078	0.112	0.436	0.132	0.083	0.082
		HYDR	0.007	0.053	0.008	0.031	0.072	0.013	0.011	0.006
	98614	OTHR	-0.014	-0.283	-0.014	-0.130	-0.852	-0.114	-0.011	0.046
		TEMP	-0.187	1.989	-0.145	-0.861	-10.477	-0.011	0.470	0.303
		SEIS	0.047	0.309	0.039	0.134	0.654	0.371	0.066	0.049
		HYDR	0.004	0.081	0.005	0.004	0.040	0.006	0.001	0.007

OTHR: Loads other than thermal, seismic and hydrodynamic loads

TEMP: Thermal loads

SEIS: Seismic loads

HYDR: Hydrodynamic loads

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.1-49 Combined Forces and Moments: RB, Selected Load Combination RB-9b**

	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
18 Wall Below RCCV Bottom	6	OTHR	-1.466	-6.231	-0.226	-0.009	-0.342	-0.005	0.002	0.003
		TEMP	0.745	-0.977	-0.895	0.238	1.920	-0.053	0.044	0.293
		SEIS	6.696	12.988	5.722	1.271	7.124	0.093	0.215	2.708
		HYDR	0.564	1.225	0.276	0.162	0.924	0.002	0.008	0.323
	13	OTHR	-1.386	-4.756	0.006	-0.311	-1.562	0.006	-0.005	-0.405
		TEMP	-0.174	-4.065	-0.782	0.604	3.357	-0.002	0.023	0.785
		SEIS	5.186	11.839	4.076	0.918	5.398	0.059	0.107	2.066
		HYDR	0.446	1.240	0.285	0.124	0.725	0.003	0.006	0.250
	24	OTHR	-1.206	-5.176	-0.157	-0.355	-2.143	-0.001	0.003	-0.727
		TEMP	0.101	-3.765	0.212	0.594	3.314	-0.007	-0.003	0.779
		SEIS	3.487	9.762	6.470	0.650	3.735	0.101	0.148	1.099
		HYDR	0.491	1.370	0.273	0.092	0.573	0.003	0.005	0.203
19 Wall Below RCCV Mid-Height	806	OTHR	-1.113	-5.043	-0.189	0.009	0.050	-0.021	-0.013	-0.073
		TEMP	1.907	-2.149	0.225	0.307	1.688	0.090	-0.068	-0.082
		SEIS	3.208	10.327	6.462	0.129	0.397	0.170	0.078	0.256
		HYDR	0.151	1.212	0.367	0.012	0.070	0.018	0.002	0.020
	813	OTHR	-1.512	-4.691	0.148	-0.017	0.125	-0.006	0.002	-0.037
		TEMP	1.360	-3.986	-0.566	0.221	1.702	-0.034	0.006	0.602
		SEIS	3.060	10.805	4.961	0.145	0.684	0.059	0.026	0.379
		HYDR	0.116	1.258	0.385	0.017	0.068	0.007	0.002	0.059
	824	OTHR	-1.785	-5.057	-0.054	0.106	0.407	0.009	-0.001	0.097
		TEMP	1.151	-3.732	0.198	0.224	1.729	0.027	0.015	0.502
		SEIS	2.262	9.222	7.635	0.223	0.611	0.100	0.051	0.267
		HYDR	0.127	1.390	0.359	0.009	0.073	0.009	0.001	0.038
20 Wall Below RCCV Top	1606	OTHR	-0.164	-4.421	-0.060	-0.180	-1.048	0.024	0.005	0.226
		TEMP	15.858	-3.114	0.381	-0.839	-4.009	0.124	0.101	3.042
		SEIS	2.070	7.762	7.056	0.382	1.853	0.126	0.026	0.406
		HYDR	0.485	1.233	0.351	0.259	1.447	0.006	0.005	0.427
	1613	OTHR	-0.350	-4.601	0.245	-0.207	-1.059	-0.003	-0.003	0.249
		TEMP	15.713	-4.649	-0.420	-1.005	-5.538	-0.011	-0.016	3.612
		SEIS	1.432	8.968	5.015	0.385	2.293	0.041	0.017	0.757
		HYDR	0.476	1.260	0.360	0.256	1.476	0.003	0.006	0.454
	1624	OTHR	0.039	-4.603	-0.010	-0.241	-1.476	0.006	-0.007	0.424
		TEMP	16.688	-4.842	-0.107	-1.115	-5.549	0.001	-0.106	3.698
		SEIS	1.370	7.973	7.604	0.184	1.264	0.056	0.047	0.548
		HYDR	0.524	1.371	0.354	0.254	1.436	0.003	0.008	0.449

**Table 3G.1-49 Combined Forces and Moments: RB, Selected Load Combination RB-9b (Continued)**

	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
21 Exterior Wall @ EL-11.50 to -10.50m	20011	OTHR	-1.800	-3.386	-0.714	0.158	0.867	0.016	0.037	0.281
		TEMP	3.314	4.817	0.922	0.447	1.837	0.052	-0.225	0.576
		SEIS	2.167	3.650	9.866	2.028	8.326	0.065	0.140	3.143
		HYDR	0.099	0.152	0.412	0.204	0.828	0.007	0.021	0.305
	20023	OTHR	-1.160	-1.469	-0.585	-0.014	-0.242	0.012	-0.057	-0.139
		TEMP	-1.453	-1.169	1.549	1.890	4.020	0.180	0.322	0.683
		SEIS	0.864	5.664	1.335	0.917	1.307	0.189	1.237	0.863
		HYDR	0.011	0.336	0.082	0.053	0.078	0.008	0.064	0.048
	30010	OTHR	-1.205	-2.316	-0.173	-0.207	-1.150	0.009	0.001	0.865
		TEMP	0.688	3.733	-0.258	1.289	4.763	-0.022	-0.031	-0.865
		SEIS	4.300	5.359	3.754	0.691	3.619	0.060	0.088	1.243
		HYDR	0.304	0.132	0.184	0.100	0.526	0.002	0.004	0.133
	30020	OTHR	-0.963	-1.631	-0.232	-0.544	-0.775	0.020	-0.152	0.328
		TEMP	-0.058	-1.477	-0.392	0.021	1.209	0.144	-0.026	-0.282
		SEIS	0.758	4.090	1.578	0.461	1.470	0.176	0.453	0.467
		HYDR	0.024	0.444	0.117	0.021	0.092	0.004	0.033	0.028
	40001	OTHR	-0.757	-1.800	0.361	-0.330	-1.083	-0.199	0.070	0.626
		TEMP	-0.090	-1.141	0.056	0.039	1.330	-0.097	0.105	-0.322
		SEIS	0.614	4.241	1.322	0.703	1.722	0.243	0.522	0.481
		HYDR	0.024	0.458	0.102	0.034	0.083	0.005	0.034	0.022
	40011	OTHR	-1.359	-3.034	-0.028	-0.251	-1.512	-0.001	0.005	1.542
		TEMP	1.295	3.630	0.051	1.243	4.654	0.011	0.015	-0.844
		SEIS	3.659	4.532	4.410	0.427	2.566	0.087	0.122	0.940
		HYDR	0.232	0.250	0.214	0.069	0.354	0.003	0.006	0.085
22 Exterior Wall @ EL4.65 to 6.60m	22011	OTHR	0.178	-2.784	0.633	-0.005	0.103	0.012	-0.025	0.146
		TEMP	5.080	4.474	-0.209	-0.175	-0.228	0.067	0.045	0.074
		SEIS	1.395	8.082	7.242	0.140	0.949	0.161	0.051	0.897
		HYDR	0.173	0.555	0.436	0.009	0.057	0.014	0.002	0.115
	22023	OTHR	-0.060	-1.615	-0.037	0.071	0.037	-0.071	0.046	0.010
		TEMP	2.211	-3.114	-2.141	0.528	0.492	-0.052	0.386	0.393
		SEIS	0.390	7.366	4.135	0.400	0.178	0.169	0.414	0.150
		HYDR	0.037	0.295	0.213	0.080	0.023	0.019	0.022	0.008
	32010	OTHR	0.127	-1.877	0.035	-0.019	0.005	0.006	0.000	-0.087
		TEMP	16.739	7.724	-0.075	-2.893	-3.003	-0.001	-0.014	0.022
		SEIS	1.427	4.890	4.400	0.041	0.275	0.024	0.002	0.240
		HYDR	0.201	0.217	0.231	0.014	0.033	0.003	0.001	0.076
	32020	OTHR	-0.004	-1.867	0.188	-0.011	-0.033	-0.047	0.002	0.025
		TEMP	0.653	4.869	2.518	0.104	-1.860	-0.395	1.226	0.199
		SEIS	0.263	5.284	3.554	0.361	0.151	0.135	0.240	0.042
		HYDR	0.023	0.275	0.154	0.054	0.005	0.010	0.040	0.004
	42001	OTHR	-0.006	-1.917	0.083	0.010	-0.065	0.058	-0.004	0.048
		TEMP	2.720	3.801	2.644	0.130	-1.563	-0.051	-0.998	-0.239
		SEIS	0.225	5.235	3.697	0.356	0.123	0.163	0.227	0.046
		HYDR	0.039	0.291	0.171	0.069	0.005	0.006	0.028	0.002
	42011	OTHR	-0.170	-2.222	-0.035	-0.039	-0.096	-0.004	0.004	-0.055
		TEMP	14.110	5.515	0.234	-3.164	-3.046	0.073	0.090	0.169
		SEIS	0.943	3.822	5.968	0.064	0.220	0.032	0.046	0.091
		HYDR	0.134	0.389	0.271	0.027	0.032	0.007	0.004	0.077



**Table 3G.1-49 Combined Forces and Moments: RB, Selected Load Combination RB-9b (Continued)**

	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
23 Exterior Wall @ EL22.50 to 24.60m	24211	OTHR	0.224	-1.526	0.077	-0.011	-0.136	0.013	0.004	-0.244
		TEMP	6.073	5.669	-0.239	0.176	0.982	0.008	-0.147	1.336
		SEIS	1.044	5.100	5.785	0.219	0.980	0.061	0.009	0.902
		HYDR	0.102	0.359	0.211	0.022	0.100	0.011	0.002	0.109
	24224	OTHR	-0.019	-1.388	0.185	0.035	-0.010	-0.023	-0.044	-0.018
		TEMP	1.011	5.349	-3.664	1.966	0.071	-0.637	-1.563	-0.323
		SEIS	0.398	8.959	4.284	0.751	1.033	0.294	0.365	1.129
		HYDR	0.017	0.354	0.169	0.068	0.046	0.018	0.034	0.049
	34210	OTHR	0.482	-0.741	0.070	0.005	0.122	0.001	0.001	0.041
		TEMP	21.813	5.545	-0.581	-2.903	-2.819	0.035	-0.002	-0.128
		SEIS	1.282	1.876	3.821	0.074	0.435	0.015	0.012	0.175
		HYDR	0.147	0.074	0.125	0.010	0.055	0.006	0.001	0.030
	34220	OTHR	0.074	-1.259	-0.008	0.061	0.018	-0.009	0.042	-0.002
		TEMP	2.794	5.432	4.414	2.629	-1.178	-0.711	2.571	0.094
		SEIS	0.161	2.508	2.967	0.161	0.147	0.023	0.056	0.028
		HYDR	0.020	0.170	0.072	0.025	0.010	0.012	0.016	0.005
	44201	OTHR	0.035	-1.333	-0.088	0.064	0.020	0.006	-0.044	-0.008
		TEMP	1.793	6.586	0.562	2.230	-1.491	0.539	-2.967	0.044
		SEIS	0.181	2.787	3.345	0.110	0.044	0.062	0.111	0.034
		HYDR	0.018	0.206	0.118	0.023	0.004	0.003	0.017	0.003
24 Basemat @ Wall Below RCCV	90140	OTHR	-3.157	-2.633	0.208	-0.962	-0.343	1.376	-1.878	1.649
		TEMP	0.838	1.691	1.751	-0.171	-1.046	-1.095	-1.135	0.139
		SEIS	0.987	5.106	3.764	7.300	3.575	4.121	4.750	6.017
		HYDR	0.384	0.272	0.318	0.741	0.524	0.189	0.522	0.533
	90182	OTHR	-2.379	-2.523	-0.050	0.157	-0.815	-0.002	0.042	0.436
		TEMP	1.908	0.687	0.488	-0.873	-5.527	0.260	-0.110	3.825
		SEIS	6.520	1.022	1.631	1.857	2.393	1.579	1.731	4.154
		HYDR	0.703	0.135	0.141	0.425	0.324	0.130	0.153	0.588
	90111	OTHR	-3.906	-2.382	-0.027	-1.414	0.129	-0.183	0.121	0.114
		TEMP	0.733	2.908	-0.011	-5.322	-1.147	0.107	3.687	0.151
		SEIS	1.210	6.067	0.979	2.069	1.701	1.400	2.440	2.861
		HYDR	0.099	0.619	0.041	0.248	0.342	0.104	0.550	0.150

**Table 3G.1-49 Combined Forces and Moments: RB, Selected Load Combination RB-9b (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
25 Slab EL4.65m @ RCCV	93140	OTHR	-0.338	0.084	0.258	0.104	0.116	-0.095	0.130	-0.110
		TEMP	-0.383	3.018	5.804	-0.739	-0.564	0.413	-0.192	0.163
		SEIS	2.338	0.441	0.249	0.456	0.313	0.222	0.173	0.171
		HYDR	0.141	0.153	0.201	0.027	0.019	0.026	0.008	0.009
	93182	OTHR	0.177	-0.134	0.018	0.008	0.077	0.007	-0.004	-0.047
		TEMP	6.161	-5.154	-1.518	-0.481	-2.508	-0.114	0.105	1.903
		SEIS	0.581	0.171	0.500	0.148	0.714	0.027	0.037	0.681
		HYDR	0.232	0.069	0.068	0.019	0.031	0.003	0.004	0.080
	93111	OTHR	-0.174	0.295	-0.024	0.031	-0.003	-0.001	-0.009	-0.005
		TEMP	-4.494	6.820	-0.448	-2.369	-0.414	-0.066	1.594	0.001
		SEIS	0.171	0.160	0.219	0.268	0.045	0.030	0.247	0.006
		HYDR	0.073	0.256	0.054	0.010	0.016	0.001	0.051	0.002
26 Slab EL17.5m @ RCCV	96144	OTHR	0.009	0.536	0.669	0.130	0.133	-0.103	0.136	-0.116
		TEMP	0.733	5.839	8.138	-0.232	-0.178	0.174	-0.043	0.066
		SEIS	0.573	0.343	0.278	0.356	0.288	0.199	0.127	0.109
		HYDR	0.042	0.018	0.169	0.049	0.040	0.024	0.009	0.010
	96186	OTHR	0.880	-0.355	-0.096	0.006	0.068	0.002	-0.004	-0.094
		TEMP	9.999	-4.559	-2.165	-0.150	-0.675	-0.057	0.023	0.638
		SEIS	0.771	0.257	0.280	0.142	0.750	0.027	0.044	0.601
		HYDR	0.127	0.072	0.088	0.025	0.116	0.004	0.006	0.093
	96113	OTHR	-0.443	1.400	-0.139	0.171	0.057	0.000	0.001	0.013
		TEMP	-9.165	5.149	-1.811	-4.378	-2.755	-0.237	1.010	-0.100
		SEIS	0.238	1.114	0.628	0.581	0.080	0.022	0.522	0.084
		HYDR	0.043	0.239	0.139	0.179	0.044	0.006	0.138	0.015
27 Slab EL27.0m @ RCCV	98472	OTHR	See Tables 3G.5-17 to 3G.5-20							
		TEMP								
		SEIS								
		HYDR								
	98514	OTHR								
		TEMP								
		SEIS								
		HYDR								
	98424	OTHR								
		TEMP								
		SEIS								
		HYDR								

**Table 3G.1-49 Combined Forces and Moments: RB, Selected Load Combination RB-9b (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
28 Pool Girder @ Storage Pool	123054	OTHR	See Tables 3G.5-17 to 3G.5-20							
		TEMP								
		SEIS								
		HYDR								
	123154	OTHR								
		TEMP								
		SEIS								
		HYDR								
29 Pool Girder @ Well	123062	OTHR								
		TEMP								
		SEIS								
		HYDR								
	123162	OTHR								
		TEMP								
		SEIS								
		HYDR								
30 Pool Girder @ Buffer Pool	123067	OTHR								
		TEMP								
		SEIS								
		HYDR								
	123167	OTHR								
		TEMP								
		SEIS								
		HYDR								
31 MS Tunnel Wall and Slab	150122	OTHR	0.025	-0.229	0.350	0.021	0.090	0.015	-0.007	-0.062
		TEMP	0.316	-0.711	1.797	0.940	3.101	0.011	-0.551	0.426
		SEIS	0.028	0.234	0.256	0.054	0.188	0.053	0.015	0.271
		HYDR	0.009	0.029	0.003	0.004	0.018	0.003	0.001	0.010
	96611	OTHR	-0.043	0.647	-0.039	0.057	-0.086	-0.053	-0.070	0.018
		TEMP	-0.557	4.662	-0.414	-1.254	-7.116	-0.406	0.420	0.206
		SEIS	0.059	0.477	0.078	0.112	0.436	0.132	0.083	0.082
		HYDR	0.005	0.039	0.006	0.023	0.054	0.009	0.008	0.004
	98614	OTHR	-0.013	-0.307	-0.014	-0.159	-0.916	-0.124	-0.003	0.049
		TEMP	-0.043	0.725	-0.043	-0.850	-9.922	-0.018	0.459	0.307
		SEIS	0.047	0.309	0.039	0.134	0.654	0.371	0.066	0.049
		HYDR	0.003	0.061	0.003	0.003	0.030	0.004	0.001	0.005

OTHR: Loads other than thermal, seismic and hydrodynamic loads

TEMP: Thermal loads

SEIS: Seismic loads

HYDR: Hydrodynamic loads

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.1-50      Sectional Thicknesses and Rebar Ratios of RB Used in the Evaluation**

Location	Element ID	Thickness (m)	Primary Reinforcement					Shear Tie	
			Position	Direction 1**		Direction 2**			
				Arrangement*2	Ratio (%)	Arrangement*2	Ratio (%)	Arrangement	Ratio (%)
18 Wall Below RCCV Bottom	61324	2.0	Inside	2-#18@300	0.860	3-#18@0.9°	1.297	#9@0.9°x300	0.721
			Outside	3-#18@300	1.290	3-#18@0.9° +1-#18@0.9°	1.729		
19 Wall Below RCCV Mid-Height	806813824	2.0	Inside	2-#18@300	0.860	3-#18@0.9°	1.297	#9@1.2°x600	0.270
			Outside	3-#18@300	1.290	3-#18@0.9°	1.297		
20 Wall Below RCCV Top	160616131624	2.0	Inside	2-#18@300	0.860	3-#18@0.9°	1.297	#9@1.2°x300	0.540
			Outside	3-#18@300	1.290	3-#18@0.9° +1-#18@1.8°	1.513		
21 Exterior Wall @ EL-11.50 to -10.50m	20011	2.0	Inside	4-#11@200 +1-#11@400	1.132	5-#11@200 (+1-#11@200)	1.510	#7@400x200	0.484
			Outside	4-#11@200 +1-#11@400	1.132	5-#11@200 (+2-#11@200)	1.761		
	20023	2.0	Inside	4-#11@200 +1-#11@400	1.132	5-#11@200 (+1-#11@200)	1.510	#7@400x200	0.484
			Outside	4-#11@200 +1-#11@400	1.132	5-#11@200	1.258		
	3001030020	2.0	Inside	1-#11@100 +3-#11@200	1.258	2-#11@100 +2-#11@200	1.510	6@200x200	0.710
			Outside	2-#11@100 +2-#11@200	1.510	3-#11@100 +1-#11@200	1.761		
	4000140011	2.0	Inside	1-#11@100 +3-#11@200	1.258	2-#11@100 +2-#11@200	1.510	6@200x200	0.710
			Outside	2-#11@100 +2-#11@200	1.510	2-#11@100 +2-#11@200	1.510		

**Table 3G.1-50 Sectional Thicknesses and Rebar Ratios of RB Used in the Evaluation (Continued)**

Location	Element ID	Thickness (m)	Primary Reinforcement				Shear Tie		
			Position	Direction 1**		Direction 2**			
				Arrangement*2	Ratio (%)	Arrangement*2	Ratio (%)	Arrangement	Ratio (%)
22 Exterior Wall @ EL4.65 to 6.60m	22011	1.5	Inside	3-#11@200 +1-#11@400	1.174	4-#11@200 (+1-#11@200)	1.677	#7@400x200	0.484
			Outside	3-#11@200 +1-#11@400	1.174	4-#11@200 (+1-#11@200)	1.677		
	22023	1.5	Inside	3-#11@200 +1-#11@400	1.174	4-#11@200	1.342	#7@400x200	0.484
			Outside	3-#11@200 +1-#11@400	1.174	4-#11@200	1.342		
	32010	1.5	Inside	3-#11@200	1.006	3-#11@200	1.006	#6@400x400	0.177
			Outside	3-#11@200 (+2-#11@200)	1.677	3-#11@200 (+2-#11@200)	1.677		
	32020	1.5	Inside	3-#11@200	1.006	3-#11@200	1.006	#6@400x400	0.177
			Outside	3-#11@200	1.006	3-#11@200	1.006		
	42001	1.5	Inside	3-#11@200	1.006	3-#11@200	1.006	#7@400x400	0.242
			Outside	4-#11@200	1.342	4-#11@200	1.342		
22 Exterior Wall @ EL4.65 to 6.60m	42011	1.5	Inside	3-#11@200	1.006	3-#11@200	1.006	#7@400x400	0.242
			Outside	4-#11@200 (+1-#11@200)	1.677	4-#11@200 (+1-#11@200)	1.677		
23 Exterior Wall @ EL22.50 to 24.60m	24211	1.5	Inside	3-#11@200 +1-#11@400	1.174	4-#11@200 (+1-#11@200)	1.677	#7@400x200	0.484
			Outside	3-#11@200 +1-#11@400	1.174	4-#11@200	1.342		
	24224	1.5	Inside	3-#11@200 +1-#11@400	1.174	4-#11@200 (+1-#11@200)	1.677	#7@200x200	0.968
			Outside	3-#11@200 +1-#11@400	1.174	4-#11@200 (+1-#11@200)	1.677		
	34210	1.5	Inside	3-#11@200	1.006	3-#11@200	1.006	#6@400x400	0.177
			Outside	3-#11@200 (+2-#11@200)	1.677	3-#11@200 (+2-#11@200)	1.677		
	34220	1.5	Inside	3-#11@200	1.006	3-#11@200	1.006	#6@200x200	0.710
			Outside	3-#11@200	1.006	3-#11@200	1.006		
	44201	1.5	Inside	3-#11@200	1.006	3-#11@200	1.006	#7@200x200	0.968
			Outside	4-#11@200	1.342	4-#11@200	1.342		

**Table 3G.1-50 Sectional Thicknesses and Rebar Ratios of RB Used in the Evaluation (Continued)**

Location	Element ID	Thickness (m)	Primary Reinforcement					Shear Tie	
			Position	Direction 1**		Direction 2**			
				Arrangement*2	Ratio (%)	Arrangement*2	Ratio (%)	Arrangement	Ratio (%)
24 Basemat @ Wall Below RCCV	90140 90182 90111	4.0	Top	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21
			Bottom	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21
25 Slab EL4.65m @ RCCV	93140 93182 93111	1.0	Top	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21
			Bottom	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21
26 Slab EL17.5m @ RCCV	96144 96186	1.0	Top	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21
			Bottom	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21
	96113	1.6	Top	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21
			Bottom	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21
27 Slab EL27.0m @ RCCV	98472 98514	See Table 3G.4-21	Top	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21
			Bottom	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21
	98424	2.4	Top	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21
			Bottom	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21
28 Pool Girder @ Storage Pool	123054 123154	1.6	Inside	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21
			Outside	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21
29 Pool Girder @ Well	123062 123162	1.6	Inside	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21
			Outside	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21
30 Pool Girder @ Buffer Pool	123067	1.6	Inside	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21
			Outside	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21	See Table 3G.5-21
31 MS Tunnel Wall and Slab	150122	1.3	Inside	2-#11@200	0.774	2-#11@200	0.774	#6@400x400	0.177
			Outside	2-#11@200 +1-#11@400	0.968	2-#11@200 +1-#11@400	0.968		
	96611	1.6	Top	2-#11@200	0.629	2-#11@200	0.629	#5@200x200	0.500
			Bottom	3-#11@200	0.944	3-#11@200	0.944		
	98614	2.4	Top	4-#11@200	0.839	4-#11@200	0.839	#5@200x200	0.500
			Bottom	3-#11@200	0.629	3-#11@200	0.629		

Note \*1    Wall Below RCCV                      Direction 1: Hoop                      Direction 2: Vertical  
                  Exterior Wall                      Direction 1: Horizontal                      Direction 2: Vertical  
                  Slab/MS Tunnel Slab                      Direction 1: N-S                      Direction 2: E-W  
                  Pool Girder                      Direction 1: Horizontal                      Direction 2: Vertical  
                  MS Tunnel Wall                      Direction 1: Horizontal                      Direction 2: Vertical  
                  Basemat                      Direction 1: Top; Radial; Bottom; N-S                      Direction 2: Top; Circumferential; Bottom; E-W

Note \*2    Rebar in parenthesis indicates additional bars locally required.  
 SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):  
 1m=3.28ft

**Table 3G.1-51      Rebar and Concrete Stresses of RB: Selected Load Combination RB-4**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				
		Calculated	Allowable	Calculated				Allowable
				Direction 1*		Direction 2*		
				In/Top	Out/Bottom	In/Top	Out/Bottom	
18 Wall	6	-3.5	-29.3	2.6	3.4	-23.8	-21.1	372.2
Below RCCV	13	-4.0	-29.3	0.4	0.9	-26.7	-24.5	372.2
Bottom	24	-5.1	-29.3	3.2	3.1	-32.8	-22.8	372.2
19 Wall Below	806	-4.5	-29.3	2.6	3.3	-17.7	-27.5	372.2
Below RCCV	813	-5.2	-29.3	-0.7	0.7	-20.4	-31.5	372.2
Mid-Height	824	-6.1	-29.3	-1.1	-1.0	-21.1	-35.9	372.2
20 Wall	1606	-5.8	-29.3	16.8	18.4	-33.5	-12.6	372.2
Below RCCV	1613	-8.2	-29.3	13.5	16.9	-45.6	-8.6	372.2
Top	1624	-9.3	-29.3	13.7	22.0	-51.3	-11.1	372.2
21 Exterior Wall	20011	-1.6	-29.3	4.2	0.6	6.0	-7.4	372.2
@ EL-11.50	20023	-5.9	-29.3	14.8	-16.8	23.7	-20.6	372.2
to -10.50m	30010	-1.6	-29.3	0.4	-9.1	1.9	-1.2	372.2
	30020	-1.9	-29.3	-7.1	1.1	-4.5	-11.1	372.2
	40001	-1.7	-29.3	-4.0	-0.9	-5.9	-9.0	372.2
	40011	-0.9	-29.3	0.0	-3.9	1.5	-4.2	372.2
22 Exterior Wall	22011	-1.3	-29.3	37.0	32.6	10.4	3.4	372.2
@ EL4.65	22023	-5.0	-29.3	13.0	13.2	-13.1	-38.2	372.2
to 6.60m	32010	-3.3	-29.3	19.4	97.5	-7.6	35.1	372.2
	32020	-3.6	-29.3	5.7	46.1	-5.4	54.3	372.2
	42001	-3.3	-29.3	7.8	32.4	-10.3	27.0	372.2
	42011	-4.1	-29.3	27.3	89.4	-12.8	20.1	372.2
23 Exterior Wall	24211	-1.9	-29.3	5.9	14.7	-6.4	10.0	372.2
@ EL22.50	24224	-2.5	-29.3	31.1	-0.3	9.1	8.9	372.2
to 24.60m	34210	-4.7	-29.3	53.2	184.5	7.9	152.8	372.2
	34220	-4.0	-29.3	26.6	4.5	-13.2	51.7	372.2
	44201	-0.6	-29.3	53.4	34.5	6.3	72.2	372.2
24 Basemat	90140	-1.7	-23.5	-11.3	-3.3	1.6	-0.1	372.2
@ Wall	90182	-2.4	-23.5	-12.6	-4.6	-0.9	9.0	372.2
Below RCCV	90111	-3.1	-23.5	-18.5	6.5	3.0	-0.9	372.2
25 Slab	93140	-7.0	-29.3	26.5	70.5	62.5	87.5	372.2
EL4.65m	93182	-11.1	-29.3	19.2	19.6	-48.7	40.5	372.2
@ RCCV	93111	-11.0	-29.3	-47.1	47.9	33.3	37.3	372.2
26 Slab	96144	-4.3	-29.3	68.6	82.2	90.5	96.5	372.2
EL17.5m	96186	-5.5	-29.3	31.4	59.6	-36.3	28.1	372.2
@ RCCV	96113	-11.1	-29.3	-46.8	77.0	-30.2	57.0	372.2
27 Slab	98472	-10.1	-29.3	146.5	121.9	139.3	94.8	372.2
EL27.0m	98514	-5.9	-29.3	7.5	38.2	-13.5	13.1	372.2
@ RCCV	98424	-6.7	-29.3	-16.0	-36.3	-30.0	-24.6	372.2
28 Pool Girder	123054	-8.8	-29.3	14.1	69.2	-43.6	-2.8	372.2
@ Storage Pool	123154	-3.5	-29.3	28.6	120.8	5.1	68.3	372.2
29 Pool Girder	123062	-1.9	-29.3	-13.3	-11.1	33.1	10.9	372.2
@ Well	123162	-2.7	-29.3	-19.4	-19.0	15.4	3.3	372.2
30 Pool Girder	123067	-5.8	-29.3	-13.6	-3.5	-34.9	-28.9	372.2
@ Buffer Pool	123167	-4.2	-29.3	-13.2	-7.5	-6.7	-18.4	372.2
31 MS Tunnel	150122	-13.6	-29.3	13.9	169.6	-22.8	220.5	372.2
Wall and Slab	96611	-8.6	-29.3	1.4	5.1	-21.2	193.7	372.2
	98614	-6.3	-29.3	2.8	2.6	-3.7	151.3	372.2

Note:      Negative value means compression.

Note \*:      Wall Below RCCV      Direction 1: Hoop,      Direction 2: Vertical  
                  Exterior Wall      Direction 1: Horizontal,      Direction 2: Vertical  
                  Slab/MS Tunnel Slab      Direction 1: N-S,      Direction 2: E-W  
                  Pool Girder      Direction 1: Horizontal,      Direction 2: Vertical  
                  MS Tunnel Wall      Direction 1: Horizontal,      Direction 2: Vertical  
                  Basemat      Direction 1: Top; Radial, Bottom; N-S,      Direction 2: Top; Circumferential, Bottom; E-W

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):  
 1 MPa = 145.038 psi

**Table 3G.1-52 Rebar and Concrete Stresses of RB: Selected Load Combination RB-8a**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				
		Calculated	Allowable	Calculated				Allowable
				Direction 1 <sup>*</sup>		Direction 2 <sup>*</sup>		
				In/Top	Out/Bottom	In/Top	Out/Bottom	
18 Wall Below RCCV Bottom	6	-6.9	-29.3	7.8	20.4	-15.3	-38.2	372.2
	13	-6.9	-29.3	-1.6	-2.1	-16.1	-39.4	372.2
	24	-6.1	-29.3	2.5	2.4	-21.9	-37.3	372.2
19 Wall Below Below RCCV Mid-Height	806	-5.6	-29.3	13.8	6.5	-17.8	-33.0	372.2
	813	-6.3	-29.3	2.0	2.7	-21.7	-37.5	372.2
	824	-6.9	-29.3	1.2	1.2	-21.8	-40.5	372.2
20 Wall Below RCCV Top	1606	-15.9	-29.3	34.2	81.9	-63.2	41.7	372.2
	1613	-17.0	-29.3	31.7	78.5	-72.9	45.1	372.2
	1624	-16.6	-29.3	41.3	91.6	-80.9	45.6	372.2
21 Exterior Wall @ EL-11.50 to -10.50m	20011	-5.3	-29.3	32.8	21.0	52.0	-16.6	372.2
	20023	-4.9	-28.9	10.3	-13.6	16.0	-19.6	368.9
	30010	-2.9	-29.3	6.2	-7.2	26.5	-9.9	372.2
	30020	-2.2	-29.3	-5.6	3.0	-7.2	-13.2	372.2
	40001	-2.1	-29.3	-3.6	1.1	-8.0	-12.1	372.2
	40011	-2.4	-29.3	7.1	-4.5	10.7	-10.8	372.2
22 Exterior Wall @ EL4.65 to 6.60m	22011	-2.6	-29.3	78.5	65.3	25.0	20.3	372.2
	22023	-5.0	-29.3	43.7	11.2	-9.6	-25.2	372.2
	32010	-0.7	-29.3	99.7	128.5	53.6	88.2	372.2
	32020	-3.4	-29.3	9.5	40.6	-9.3	44.7	372.2
	42001	-2.8	-29.3	10.9	31.0	-12.3	35.0	372.2
	42011	-4.8	-29.3	34.4	92.9	-13.8	48.0	372.2
23 Exterior Wall @ EL22.50 to 24.60m	24211	-0.8	-29.3	62.4	42.0	44.7	10.5	372.2
	24224	-1.9	-29.3	27.3	13.8	4.1	21.2	372.2
	34210	-0.4	-29.3	84.1	140.0	26.6	88.9	372.2
	34220	-3.0	-29.3	33.9	-6.5	-12.1	29.0	372.2
	44201	-3.2	-29.3	51.8	7.5	-10.2	57.2	372.2
24 Basemat @ Wall Below RCCV	90140	-1.8	-23.5	-11.7	-5.7	10.2	6.3	372.2
	90182	-1.8	-23.5	-9.5	23.1	5.8	5.1	372.2
	90111	-2.4	-23.5	-13.7	3.7	31.8	10.8	372.2
25 Slab EL4.65m @ RCCV	93140	-8.7	-29.3	81.5	120.6	124.1	151.8	372.2
	93182	-11.9	-29.3	60.5	72.8	-57.6	28.9	372.2
	93111	-11.0	-29.3	-52.6	28.7	72.6	84.1	372.2
26 Slab EL17.5m @ RCCV	96144	-9.9	-29.3	199.3	217.4	267.3	210.2	372.2
	96186	-7.1	-29.3	114.3	132.1	-27.3	-23.0	372.2
	96113	-13.6	-28.8	-87.8	28.4	83.9	115.3	368.2
27 Slab EL27.0m @ RCCV	98472	-9.8	-29.1	140.2	117.5	149.6	114.6	370.3
	98514	-6.0	-29.1	38.4	86.8	-3.7	53.1	370.3
	98424	-5.2	-28.1	-18.5	-30.7	-13.6	-8.5	363.0
28 Pool Girder @ Storage Pool	123054	-6.8	-29.0	35.9	158.0	2.2	119.9	369.8
	123154	-3.0	-29.0	40.9	89.8	48.7	60.5	369.8
29 Pool Girder @ Well	123062	-2.8	-28.4	36.1	49.4	17.1	51.3	365.0
	123162	-2.1	-28.4	95.4	103.3	60.5	52.6	365.0
30 Pool Girder @ Buffer Pool	123067	-5.2	-28.4	2.4	28.5	-16.7	20.0	365.0
	123167	-5.6	-28.4	32.0	42.2	46.6	28.7	365.0
31 MS Tunnel Wall and Slab	150122	-11.4	-29.3	14.7	142.1	-21.5	174.5	372.2
	96611	-6.7	-29.3	-1.9	6.3	-9.3	189.5	372.2
	98614	-6.4	-29.3	2.2	11.6	-7.0	137.5	372.2

Note: Negative value means compression.

Note \*: Wall Below RCCV Direction 1: Hoop, Direction 2: Vertical  
 Exterior Wall Direction 1: Horizontal, Direction 2: Vertical  
 Slab/MS Tunnel Slab Direction 1: N-S, Direction 2: E-W  
 Pool Girder Direction 1: Horizontal, Direction 2: Vertical  
 MS Tunnel Wall Direction 1: Horizontal, Direction 2: Vertical  
 Basemat Direction 1: Top; Radial, Bottom; N-S, Direction 2: Top; Circumferential, Bottom; E-W

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MPa = 145.038 psi



**Table 3G.1-53 Rebar and Concrete Stresses of RB: Selected Load Combination RB-8b**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				Allowable
		Calculated	Allowable	Calculated		Allowable		
				Direction 1 <sup>*</sup>			Direction 2 <sup>*</sup>	
				In/Top	Out/Bottom	In/Top	Out/Bottom	
18 Wall	6	-7.7	-29.3	0.4	2.7	-9.6	-40.7	372.2
Below RCCV	13	-8.2	-29.3	-2.1	-3.1	-11.4	-44.7	372.2
Bottom	24	-7.3	-29.3	1.3	-2.3	-15.4	-41.5	372.2
19 Wall Below	806	-6.0	-29.3	12.4	6.6	-14.3	-34.5	372.2
Below RCCV	813	-6.8	-29.3	2.5	4.6	-19.8	-39.8	372.2
Mid-Height	824	-7.3	-29.3	1.6	2.7	-18.5	-41.5	372.2
20 Wall	1606	-14.2	-29.3	52.6	97.4	-68.0	48.3	372.2
Below RCCV	1613	-16.7	-29.3	46.5	94.5	-81.0	52.0	372.2
Top	1624	-17.9	-29.3	62.3	108.0	-82.1	55.4	372.2
21 Exterior Wall	20011	-4.7	-29.3	37.4	7.9	55.3	-13.0	372.2
@ EL-11.50	20023	-4.7	-28.9	8.5	-13.4	14.4	-18.8	368.9
to -10.50m	30010	-3.3	-29.3	7.7	-6.0	37.2	-10.2	372.2
	30020	-2.4	-29.3	-5.8	4.2	-7.1	-13.5	372.2
	40001	-2.2	-29.3	-3.9	2.6	-7.9	-12.4	372.2
	40011	-2.2	-29.3	7.8	-2.5	15.8	-9.1	372.2
22 Exterior Wall	22011	-1.9	-29.3	105.6	88.2	59.7	59.7	372.2
@ EL4.65	22023	-4.6	-29.3	45.1	9.5	-6.4	-22.2	372.2
to 6.60m	32010	-0.5	-29.3	98.6	162.4	13.6	114.7	372.2
	32020	-4.1	-29.3	18.6	18.1	-14.7	42.6	372.2
	42001	-1.8	-29.3	32.6	13.0	-4.0	22.5	372.2
	42011	-4.4	-29.3	36.4	99.8	-11.2	46.8	372.2
23 Exterior Wall	24211	-0.6	-29.3	83.4	53.2	62.5	17.9	372.2
@ EL22.50	24224	-3.0	-29.3	54.8	-5.3	22.1	14.9	372.2
to 24.60m	34210	-0.3	-29.3	147.3	238.5	46.4	176.2	372.2
	34220	-2.4	-29.3	76.3	-20.0	-18.3	39.6	372.2
	44201	-2.8	-29.3	82.0	-8.1	19.4	40.0	372.2
24 Basemat	90140	-1.8	-23.5	-11.9	-4.4	1.0	7.5	372.2
@ Wall	90182	-1.9	-23.5	-9.0	6.8	18.5	6.0	372.2
Below RCCV	90111	-2.4	-23.5	-13.8	4.6	18.1	9.8	372.2
25 Slab	93140	-11.1	-29.3	114.9	175.0	150.2	198.1	372.2
EL4.65m	93182	-15.5	-29.3	75.9	85.8	-73.2	42.6	372.2
@ RCCV	93111	-14.1	-29.3	-65.6	43.0	86.9	95.8	372.2
26 Slab	96144	-9.8	-29.3	206.8	216.8	271.2	267.5	372.2
EL17.5m	96186	-8.9	-29.3	143.4	165.8	-34.0	16.1	372.2
@ RCCV	96113	-13.9	-28.8	-88.4	19.7	103.3	128.7	368.2
27 Slab	98472	See Tables 3G.5-22 to 3G.5-25						
EL27.0m	98514							
@ RCCV	98424							
28 Pool Girder	123054							
@ Storage Pool	123154							
29 Pool Girder	123062							
@ Well	123162							
30 Pool Girder	123067							
@ Buffer Pool	123167							
31 MS Tunnel	150122	-11.7	-29.3	16.5	133.9	-25.7	166.0	372.2
Wall and Slab	96611	-6.4	-29.3	-2.2	3.2	-6.8	192.5	372.2
	98614	-6.7	-29.3	2.4	5.9	-10.5	125.5	372.2

Note: Negative value means compression.

Note *:	Wall Below RCCV	Direction 1: Hoop,	Direction 2: Vertical
	Exterior Wall	Direction 1: Horizontal,	Direction 2: Vertical
	Slab/MS Tunnel Slab	Direction 1: N-S,	Direction 2: E-W
	Pool Girder	Direction 1: Horizontal,	Direction 2: Vertical
	MS Tunnel Wall	Direction 1: Horizontal,	Direction 2: Vertical
	Basemat	Direction 1: Top; Radial; Bottom; N-S,	Direction 2: Top; Circumferential; Bottom; E-W

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MPa = 145.038 psi

**Table 3G.1-54 Rebar and Concrete Stresses of RB: Selected Load Combination RB-9a**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				
		Calculated	Allowable	Calculated				Allowable
				Direction 1 <sup>+</sup>		Direction 2 <sup>+</sup>		
				In/Top	Out/Bottom	In/Top	Out/Bottom	
18 Wall	6	-19.3	-29.3	217.6	230.5	11.2	331.3	372.2
Below RCCV Bottom	13	-15.8	-29.3	142.1	158.4	-22.7	235.2	372.2
	24	-12.8	-29.3	193.3	164.1	216.3	42.3	372.2
19 Wall Below	806	-10.4	-29.3	193.7	95.0	208.1	145.8	372.2
Below RCCV Mid-Height	813	-11.4	-29.3	213.7	132.7	171.2	129.2	372.2
	824	-12.7	-29.3	272.4	163.0	202.5	132.7	372.2
20 Wall	1606	-13.2	-29.3	204.2	177.3	120.2	159.5	372.2
Below RCCV	1613	-23.9	-29.3	139.0	129.0	-104.9	138.3	372.2
	1624	-15.3	-29.3	188.2	173.0	-112.3	191.2	372.2
21 Exterior Wall @ EL-11.50 to -10.50m	20011	-20.2	-29.3	252.9	309.2	305.3	355.6	372.2
	20023	-8.8	-28.9	26.3	-23.3	72.0	-39.7	368.9
	30010	-9.1	-29.3	130.5	119.8	60.0	187.7	372.2
	30020	-5.3	-29.3	19.1	20.4	-8.8	56.3	372.2
	40001	-5.6	-29.3	33.2	10.1	-8.5	76.1	372.2
	40011	-7.9	-29.3	143.4	130.4	82.0	184.2	372.2
22 Exterior Wall @ EL4.65 to 6.60m	22011	-13.2	-29.3	250.8	199.6	327.7	210.7	372.2
	22023	-10.1	-29.3	126.1	93.6	132.8	95.1	372.2
	32010	-6.2	-29.3	285.5	258.4	306.2	283.4	372.2
	32020	-7.2	-29.3	143.4	123.8	193.3	274.8	372.2
	42001	-7.5	-29.3	148.3	100.0	213.2	230.4	372.2
	42011	-8.6	-29.3	207.7	178.9	269.2	206.0	372.2
23 Exterior Wall @ EL22.50 to 24.60m	24211	-8.3	-29.3	228.3	206.3	272.1	215.0	372.2
	24224	-10.7	-29.3	150.0	149.1	297.3	185.6	372.2
	34210	-5.2	-29.3	234.8	224.0	174.4	196.8	372.2
	34220	-4.5	-29.3	120.7	90.4	146.8	174.5	372.2
	44201	-5.1	-29.3	156.3	112.0	148.8	192.3	372.2
24 Basemat @ Wall Below RCCV	90140	-6.9	-23.5	327.4	57.6	88.0	42.9	372.2
	90182	-3.6	-23.5	72.2	131.5	135.6	15.4	372.2
	90111	-3.4	-23.5	58.7	-11.7	129.4	133.6	372.2
25 Slab EL4.65m @ RCCV	93140	-11.9	-29.3	172.5	162.7	94.7	164.6	372.2
	93182	-16.2	-29.3	52.0	104.4	-82.5	114.5	372.2
	93111	-13.4	-29.3	-60.7	55.6	62.2	79.8	372.2
26 Slab EL17.5m @ RCCV	96144	-11.7	-29.3	212.7	203.6	211.5	237.0	372.2
	96186	-9.8	-29.3	111.5	168.1	-46.2	-38.0	372.2
	96113	-14.1	-28.8	-94.5	49.0	101.8	133.6	368.2
27 Slab EL27.0m @ RCCV	98472	-13.3	-29.1	144.3	144.3	136.6	150.0	370.3
	98514	-9.5	-29.1	50.2	114.2	12.8	84.5	370.3
	98424	-10.4	-28.1	23.7	-50.6	-17.9	-10.8	363.0
28 Pool Girder @ Storage Pool	123054	-8.9	-29.0	30.4	149.3	-28.1	108.7	369.8
	123154	-3.0	-29.0	83.7	184.9	70.1	103.8	369.8
29 Pool Girder @ Well	123062	-2.9	-28.4	40.2	37.6	40.9	47.0	365.0
	123162	-2.1	-28.4	88.2	63.8	45.2	50.6	365.0
30 Pool Girder @ Buffer Pool	123067	-7.5	-28.4	-4.3	29.2	-38.4	-19.7	365.0
	123167	-6.6	-28.4	7.9	40.2	32.9	14.8	365.0
31 MS Tunnel Wall and Slab	150122	-12.4	-29.3	16.7	159.7	-22.0	194.2	372.2
	96611	-8.2	-29.3	-2.1	18.2	-11.1	216.4	372.2
	98614	-7.6	-29.3	4.7	30.7	-6.2	165.1	372.2

Note: Negative value means compression.

Note \*: Wall Below RCCV Direction 1: Hoop, Direction 2: Vertical  
 Exterior Wall Direction 1: Horizontal, Direction 2: Vertical  
 Slab/MS Tunnel Slab Direction 1: N-S, Direction 2: E-W  
 Pool Girder Direction 1: Horizontal, Direction 2: Vertical  
 MS Tunnel Wall Direction 1: Horizontal, Direction 2: Vertical  
 Basemat Direction 1: Top; Radial; Bottom; N-S, Direction 2: Top; Circumferential; Bottom; E-W

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MPa = 145.038 psi

**Table 3G.1-55 Rebar and Concrete Stresses of RB: Selected Load Combination RB-9b**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				
		Calculated	Allowable	Calculated				Allowable
				Direction 1 <sup>+</sup>		Direction 2 <sup>+</sup>		
				In/Top	Out/Bottom	In/Top	Out/Bottom	
18 Wall	6	-21.1	-29.3	203.9	213.6	28.6	295.0	372.2
Below RCCV	13	-17.8	-29.3	137.0	139.3	-16.5	189.3	372.2
	24	-15.2	-29.3	182.9	159.3	51.2	184.3	372.2
19 Wall Below	806	-10.9	-29.3	194.4	93.1	205.7	114.1	372.2
Below RCCV	813	-12.2	-29.3	213.0	134.5	172.2	98.8	372.2
	824	-13.6	-29.3	269.2	161.1	210.4	110.0	372.2
20 Wall	1606	-14.2	-29.3	201.0	193.5	-98.0	187.6	372.2
Below RCCV	1613	-17.1	-29.3	138.7	146.2	-126.0	170.0	372.2
	1624	-16.3	-29.3	185.8	189.9	-118.2	218.0	372.2
21 Exterior Wall	20011	-20.3	-29.3	333.7	240.6	335.8	339.9	372.2
@ EL-11.50 to -10.50m	20023	-8.7	-28.9	24.9	-18.6	75.8	-39.6	368.9
	30010	-9.6	-29.3	133.4	121.1	71.0	182.7	372.2
	30020	-5.6	-29.3	15.3	17.6	-9.0	47.3	372.2
	40001	-5.9	-29.3	30.5	13.0	-8.8	67.2	372.2
	40011	-7.8	-29.3	146.1	137.6	88.1	188.6	372.2
22 Exterior Wall	22011	-11.5	-29.3	352.0	272.6	313.2	356.7	372.2
@ EL4.65 to 6.60m	22023	-10.0	-29.3	135.4	93.8	143.5	105.1	372.2
	32010	-6.3	-29.3	302.1	268.8	310.7	277.2	372.2
	32020	-6.4	-29.3	109.7	161.6	195.9	274.2	372.2
	42001	-7.8	-29.3	127.9	128.4	194.9	225.9	372.2
	42011	-8.5	-29.3	212.6	187.7	276.7	212.7	372.2
23 Exterior Wall	24211	-8.1	-29.3	293.3	195.1	304.3	228.9	372.2
@ EL22.50 to 24.60m	24224	-8.3	-29.3	252.4	50.2	255.1	292.4	372.2
	34210	-5.2	-29.3	298.3	333.3	193.2	300.3	372.2
	34220	-6.7	-29.3	161.3	67.2	161.1	122.2	372.2
	44201	-5.0	-29.3	209.1	79.4	198.3	196.7	372.2
24 Basemat	90140	-7.2	-23.5	303.4	57.4	87.0	41.3	372.2
@ Wall	90182	-4.1	-23.5	47.2	91.2	198.5	17.9	372.2
	90111	-4.0	-23.5	66.7	11.8	181.0	89.8	372.2
25 Slab	93140	-14.3	-29.3	188.3	201.0	156.2	212.5	372.2
EL4.65m	93182	-20.2	-29.3	68.4	120.7	-97.3	130.3	372.2
	93111	-16.6	-29.3	-74.0	71.0	76.8	93.6	372.2
26 Slab	96144	-11.7	-29.3	195.6	254.3	257.4	274.0	372.2
EL17.5m	96186	-11.8	-29.3	137.9	206.5	-58.6	52.9	372.2
	96113	-15.0	-28.8	-97.7	39.0	122.4	150.2	368.2
27 Slab	98472	See Tables 3G.5-26 to 3G.5-29						
EL27.0m	98514							
@ RCCV	98424							
28 Pool Girder	123054							
@ Storage Pool	123154							
29 Pool Girder	123062							
@ Well	123162							
30 Pool Girder	123067							
@ Buffer Pool	123167							
31 MS Tunnel	150122	-12.7	-29.3	18.3	151.6	-26.1	185.7	372.2
Wall and Slab	96611	-8.0	-29.3	-2.3	16.2	-8.9	220.3	372.2
	98614	-7.6	-29.3	5.1	18.4	-12.2	136.9	372.2

Note: Negative value means compression.

Note \*: Wall Below RCCV Direction 1: Hoop, Direction 2: Vertical  
Exterior Wall Direction 1: Horizontal, Direction 2: Vertical  
Slab/MS Tunnel Slab Direction 1: N-S, Direction 2: E-W  
Pool Girder Direction 1: Horizontal, Direction 2: Vertical  
MS Tunnel Wall Direction 1: Horizontal, Direction 2: Vertical  
Basemat Direction 1: Top; Radial; Bottom; N-S, Direction 2: Top; Circumferential; Bottom; E-W  
SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):  
1 MPa = 145.038 psi

**Table 3G.1-56 Transverse Shear of RB**

Location	Element ID	Load ID	d (m)	pv (%)	Shear Force (MN/m)				Vu/φVn
					Vu	Vc	Vs	φVn	
18 Wall Below RCCV Bottom	6	RB-9a	1.59	0.721	2.73	0.30	4.73	4.28	0.637
	13	RB-9a	1.59	0.721	2.09	0.57	4.73	4.51	0.464
	24	RB-9b	1.59	0.721	1.08	0.94	4.74	4.83	0.223
19 Wall Below Below RCCV Mid-Height	806	RB-9a	1.57	0.270	0.12	0.14	1.75	1.61	0.075
	813	RB-9b	1.57	0.270	0.18	0.22	1.75	1.67	0.109
	824	RB-9a	1.57	0.270	0.22	0.25	1.75	1.71	0.126
20 Wall Below RCCV Top	1606	RB-9b	1.57	0.540	2.68	1.46	3.50	4.21	0.636
	1613	RB-8b	1.57	0.540	4.69	4.26	3.50	6.59	0.711
	1624	RB-9b	1.57	0.540	3.41	2.34	3.50	4.96	0.689
21 Exterior Wall @ EL-11.50 to -10.50m	20011	RB-9b	1.63	0.484	3.81	1.96	3.27	4.44	0.856
	20023	RB-9b	1.59	0.484	2.06	3.31	3.18	5.52	0.373
	30010	RB-9b	1.68	0.710	0.88	0.57	4.93	4.67	0.187
	30020	RB-9a	1.71	0.710	0.82	3.30	5.02	7.07	0.116
	40001	RB-9a	1.71	0.710	1.07	3.47	5.02	7.21	0.148
	40011	RB-9a	1.72	0.710	0.14	0.17	5.04	4.43	0.032
22 Exterior Wall @ EL4.65 to 6.60m	22011	RB-9b	1.19	0.484	1.11	0.00	2.38	2.02	0.549
	22023	RB-9a	1.18	0.484	0.75	3.71	2.36	5.16	0.146
	32010	RB-9b	1.24	0.177	0.33	0.00	0.91	0.77	0.424
	32020	RB-8a	1.24	0.177	0.11	0.13	0.90	0.88	0.123
	42001	RB-4	1.19	0.242	0.18	0.21	1.19	1.19	0.150
	42011	RB-4	1.22	0.242	0.03	0.04	1.22	1.07	0.031
23 Exterior Wall @ EL22.50 to 24.60m	24211	RB-9a	1.15	0.484	1.50	0.00	2.30	1.96	0.769
	24224	RB-9b	1.19	0.968	1.30	0.02	4.65	3.97	0.327
	34210	RB-9b	1.24	0.177	0.26	0.00	0.91	0.77	0.340
	34220	RB-8a	1.26	0.710	0.24	0.28	3.69	3.37	0.070
	44201	RB-4	1.26	0.968	2.41	0.95	4.89	4.96	0.485
24 Basemat @ Wall Below RCCV	90140	RB-9b	3.53	0.801	10.74	7.16	11.69	16.03	0.670
	90182	RB-9b	3.51	0.801	7.41	6.13	11.64	15.10	0.491
	90111	RB-9b	3.37	0.801	2.64	1.67	11.15	10.90	0.242
25 Slab EL4.65m @ RCCV	93140	RB-9b	0.80	0.500	0.37	0.22	1.65	1.58	0.231
	93182	RB-9b	0.80	0.500	2.35	1.50	1.65	2.68	0.877
	93111	RB-9b	0.80	0.500	1.68	2.05	1.65	3.14	0.533
26 Slab EL17.5m @ RCCV	96144	RB-9a	0.80	0.500	0.07	0.08	1.65	1.47	0.046
	96186	RB-9b	0.80	0.500	1.15	2.13	1.65	3.21	0.359
	96113	RB-4	1.34	0.500	0.82	1.54	2.76	3.66	0.225
27 Slab EL27.0m @ RCCV	98472	RB-9a	0.63	0.500	1.45	1.69	1.29	2.53	0.572
	98514	See Table 3G.5-31							
	98424								
28 Pool Girder @ Storage Pool	123054	See Table 3G.5-31							
	123154								
29 Pool Girder @ Well	123062	RB-9a	1.25	0.242	0.12	0.15	1.25	1.19	0.105
	123162	RB-8a	1.23	0.242	0.09	0.11	1.23	1.13	0.081
30 Pool Girder @ Buffer Pool	123067	RB-9b	1.25	0.484	1.10	3.75	2.49	5.31	0.207
	123167	RB-8a	1.24	0.484	0.21	0.25	2.48	2.32	0.092
31 MS Tunnel Wall and Slab	150122	RB-9a	1.04	0.177	0.04	0.04	0.76	0.68	0.053
	96611	RB-9a	1.34	0.500	0.47	1.60	2.76	3.70	0.126
	98614	RB-9b	2.14	0.500	0.23	0.27	4.42	3.99	0.058

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):  
1 MN/m = 6.852x10<sup>4</sup> lbf/ft  
1 m = 3.28 ft

**Table 3G.1-57      Factors of Safety for Foundation Stability**

Load Combination	Overturning		Sliding		Floatation	
	Required	Actual	Required	Actual	Required	Actual
D + H + E'	1.1	111.1	1.1	1.10	--	--
D + F'	--	--	--	--	1.1	3.48

Where,

*D* = Dead Load

*H* = Lateral soil pressure

*E'* = Safe Shutdown Earthquake

*F'* = Buoyant forces of design basis flood

**Table 3G.1-57a      Stresses of RB External Walls against Wall Capacity Passive Pressure: Selected Load Combination RB-9a**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				
		Calculated	Allowable	Calculated				Allowable
				Direction 1 <sup>*</sup>		Direction 2 <sup>*</sup>		
				In/Top	Out/Bottom	In/Top	Out/Bottom	
21 Exterior Wall @ EL-11.50 to -10.50m	30010	-7.6	-29.3	147.4	128.8	282.1	90.1	372.2
	30020	-5.6	-29.3	15.6	60.2	-9.0	74.5	372.2
	40001	-6.8	-29.3	36.8	40.2	22.5	82.5	372.2
	40011	-9.0	-29.3	124.1	125.5	291.7	104.1	372.2

Note: Negative value means compression.

Note\*: Direction 1 is horizontal. Direction 2 is vertical.

**Table 3G.1-57b      Stresses of RB External Walls against Wall Capacity Passive Pressure: Selected Load Combination RB-9b**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				
		Calculated	Allowable	Calculated				Allowable
				Direction 1*		Direction 2*		
				In/Top	Out/Bottom	In/Top	Out/Bottom	
21 Exterior Wall @ EL-11.50 to -10.50m	30010	-5.5	-29.3	250.9	117.9	365.7	14.4	372.2
	30020	-5.8	-29.3	11.1	58.2	-9.1	65.3	372.2
	40001	-6.5	-29.3	8.3	64.8	6.5	93.3	372.2
	40011	-7.1	-29.3	235.7	112.3	362.7	59.8	372.2

Note: Negative value means compression.

Note\*: Direction 1 is horizontal. Direction 2 is vertical.

**Table 3G.1-57c      Transverse Shear of RB External Walls**

Location	Element ID	Load ID	d (m)	pv (%)	Shear Force (MN/m)				Vu/φVn
					Vu	Vc	Vs	φVn	
21 Exterior Wall @ EL-11.50 to -10.50m	30010	RB-9a	1.69	0.710	2.29	0.07	4.97	4.29	0.533
	30020	RB-9a	1.71	0.710	0.76	1.08	5.02	5.18	0.146
	40001	RB-9a	1.71	0.710	1.19	1.03	5.03	5.15	0.230
	40011	RB-9a	1.69	0.710	2.98	0.29	4.97	4.47	0.667



**Table 3G.1-57d      Stresses of FB External Walls against Wall Capacity Passive Pressure: Selected Load Combination FB-9**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				
		Calculated	Allowable	Calculated				Allowable
				Direction 1*		Direction 2*		
				In/Top	Out/Bottom	In/Top	Out/Bottom	
1 Exterior Wall and Pool Wall Bottom	60011	-12.8	-29.3	264.4	158.3	303.6	96.4	372.2
	60219	-27.8	-28.5	-36.7	319.5	-96.6	263.1	366.4
	70201	-22.7	-28.3	-21.3	341.8	-41.6	295.7	364.6
	70204	-20.5	-28.3	-34.2	354.5	-56.4	363.9	364.6
4 Spent Fuel Pool Wall @ EL-5.10 to -3.30m	60819	-16.1	-28.5	-47.4	169.0	-53.7	179.8	366.4
	70801	-19.6	-28.3	-15.5	329.6	-36.0	250.0	364.6
	70804	-20.6	-28.3	-46.5	216.9	-57.8	215.5	364.6

Note:    Negative value means compression.

Note\*: Direction 1 is horizontal. Direction 2 is vertical.

**Table 3G.1-57e      Transverse Shear of FB External Walls**

Location	Element ID	Load ID	d (m)	pv (%)	Shear Force (MN/m)				Vu/φVn
					Vu	Vc	Vs	φVn	
1 Exterior Wall and Pool Wall Bottom	60011	FB-9	1.69	0.710	1.66	1.00	4.97	5.07	0.328
	60219	FB-9	3.05	0.710	7.51	3.93	8.96	10.95	0.686
	70201	FB-9	1.62	0.710	1.37	0.00	4.75	4.04	0.339
	70204	FB-9	1.59	0.710	2.04	0.09	4.68	4.05	0.504
4 Spent Fuel Pool Wall @ EL-5.10 to -3.30r	60819	FB-8	3.05	0.710	2.07	3.26	8.96	10.39	0.199
	70801	FB-9	1.71	0.710	2.12	1.45	5.03	5.51	0.385
	70804	FB-9	1.61	0.710	0.65	2.09	4.72	5.79	0.112

**Table 3G.1-58      Maximum Dynamic Soil Bearing Pressure Involving SSE + Static**

	Site Condition <sup>(1)</sup>		
	Soft ( $V_s = 300$ m/sec)	Medium ( $V_s = 800$ m/sec)	Hard ( $V_s \geq 1700$ m/sec)
Bearing Stress (MPa)	1.1	2.7	1.1

<sup>(1)</sup> See Table 3A.3-1 for site properties. For site specific application, use the larger value or a linearly interpolated value of the applicable range of shear wave velocities at the foundation level.

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MPa = 145.038 psi

1 m/sec = 3.28 ft/sec

**Table 3G.1-59 Stress Calculation Results for Basemat Uplift Analysis**

Seismic Force Direction	Soil Condition	Element ID	Load	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				
				Calculated	Allowable	Radial		Circumferential		Allowable
						Top	Bottom	Top	Bottom	
S to N	Soft	80275	SSE+LOCA 6min	-7.8	-23.5	-45.2	8.6	-7.2	17.2	372.2
			SSE+LOCA 72h	-8.8	-23.5	-49.8	15.4	-8.2	28.1	372.2
		90402	SSE+LOCA 6min	-5.0	-23.5	-27.0	17.7	54.5	42.9	372.2
			SSE+LOCA 72h	-4.0	-23.5	-18.9	10.1	58.3	40.2	372.2
		90408	SSE+LOCA 6min	-3.0	-23.5	19.0	-10.3	51.6	-3.2	372.2
			SSE+LOCA 72h	-3.0	-23.5	17.5	-10.5	51.7	-3.0	372.2

Seismic Force Direction	Soil Condition	Element ID	Load	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				
				Calculated	Allowable	Radial		Circumferential		Allowable
						Top	Bottom	Top	Bottom	
W to E	Soft	80262	SSE+LOCA 6min	-17.9	-23.5	-58.7	175.6	-20.4	191.1	372.2
			SSE+LOCA 72h	-18.4	-23.5	-60.8	183.5	-20.2	193.4	372.2
		80462	SSE+LOCA 6min	-12.0	-23.5	227.7	-9.8	11.5	-48.2	372.2
			SSE+LOCA 72h	-11.5	-23.5	225.6	-8.4	-11.5	-47.2	372.2
E to W	Soft	80287	SSE+LOCA 6min	-14.6	-23.5	-49.1	140.8	-14.6	149.7	372.2
			SSE+LOCA 72h	-15.3	-23.5	-52.1	147.2	-15.4	150.4	372.2
		80462	SSE+LOCA 6min	-8.5	-23.5	-43.9	166.6	71.4	113.5	372.2
			SSE+LOCA 72h	-9.0	-23.5	-43.9	175.4	64.9	123.6	372.2

*Note: Because the seismic force in N to S direction does not cause the basemat uplift, its calculation result is not included in this table. Refer to Figure 3G.1-60.*

*SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):  
1 MPa = 145.038 psi*

*Table 3G.1-60 (Deleted)*

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**Figure 3G.1-1. RB and FB Concrete Outline Plan at EL -11500**  
{{{Security-Related Information - Withheld Under 10 CFR Part 2.390}}}

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**Figure 3G.1-2. RB and FB Concrete Outline Plan at EL 4650**  
*{{Security-Related Information - Withhold Under 10 CFR 2.390}}*

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**Figure 3G.1-3. RB and FB Concrete Outline Plan at EL 17500**

{{Security-Related Information - Withhold Under 10 CFR 2.390}}



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**Figure 3G.1-4. RB and FB Concrete Outline Plan at EL 27000**  
*{{Security-Related Information - Withhold Under 10 CFR 2.390}}*

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**Figure 3G.1-5. RB Concrete Outline Plan at EL 34000**

{{Security-Related Information - Withhold Under 10 CFR 2.390}}

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**Figure 3G.1-6. RB and FB Concrete Outline N-S Section**

{{Security-Related Information - Withhold Under 10 CFR 2.390}}

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**Figure 3G.1-7. RB and FB Concrete Outline E-W Section**

{{Security-Related Information - Withhold Under 10 CFR 2.390}}

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**Figure 3G.1-8. Finite Element Model of RB/FB (Isometric View)**

{{Security-Related Information - Withhold Under 10 CFR 2.390}}

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**Figure 3G.1-9. Finite Element Model of RB/FB (Foundation Mat)**  
{{{Security-Related Information - Withhold Under 10 CFR 2.390}}}

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**Figure 3G.1-10. Finite Element Model of RB/FB (RCCV Wall)**

{{Security-Related Information - Withhold Under 10 CFR 2.390}}

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**Figure 3G.1-11. Finite Element Model of RB/FB (RPV Pedestal)**  
{{{Security-Related Information - Withhold Under 10 CFR 2.390}}}



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**Figure 3G.1-12. Finite Element Model of RB/FB (Top Slab)**

{{Security-Related Information - Withhold Under 10 CFR 2.390}}

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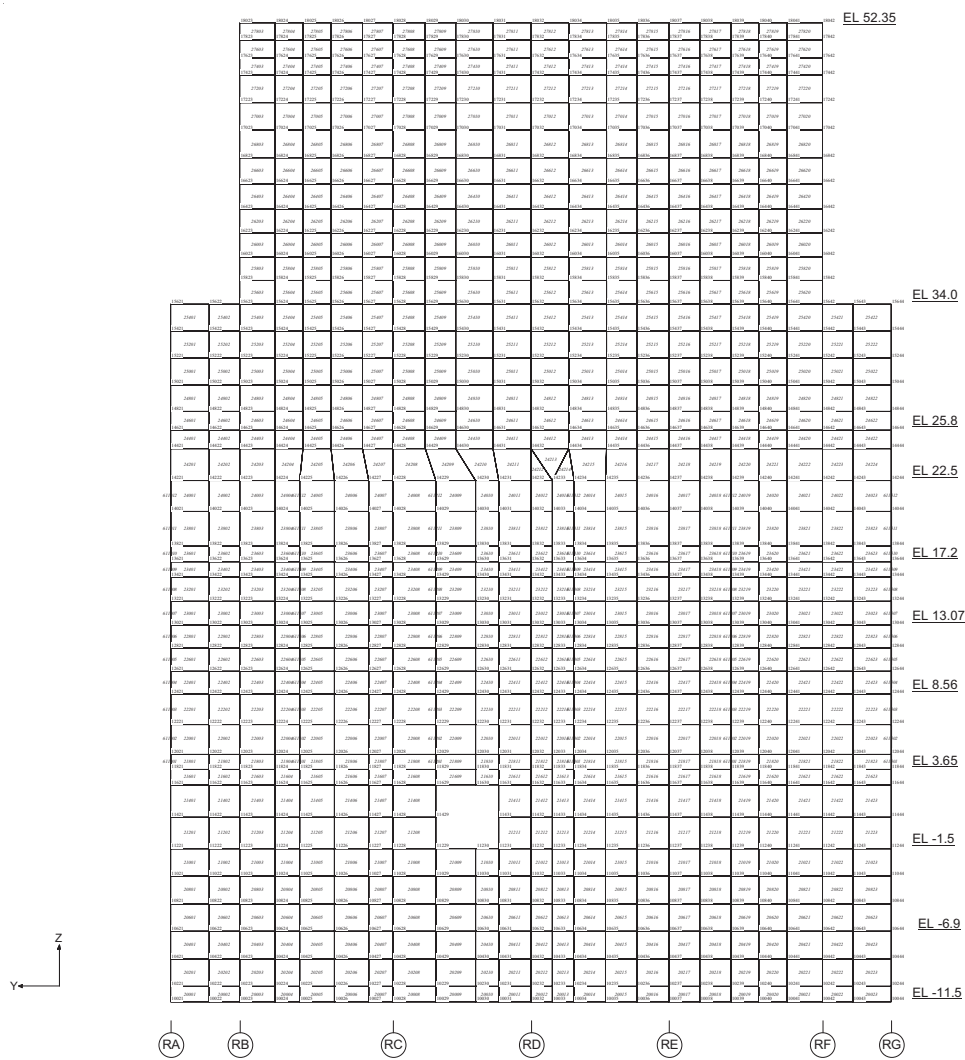
**Figure 3G.1-13. Finite Element Model of RB/FB (Suppression Pool Slab)**

{{Security-Related Information - Withhold Under 10 CFR 2.390}}

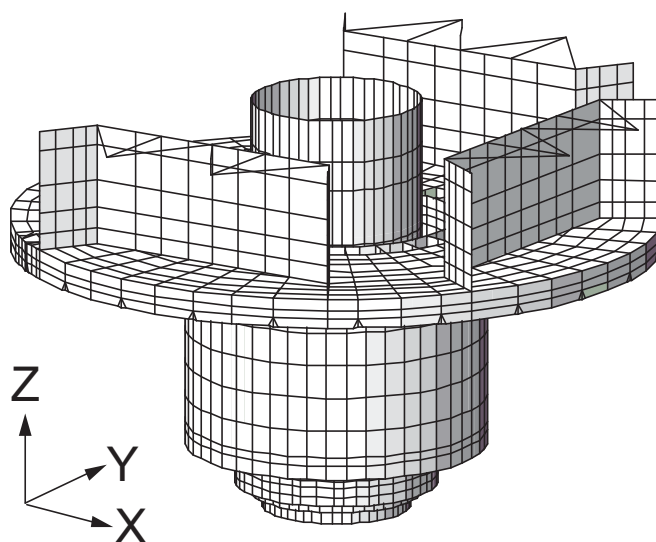
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**Figure 3G.1-14. Finite Element Model of RB/FB (External Wall: North Side)**  
{{{Security-Related Information - Withhold Under 10 CFR 2.390}}}

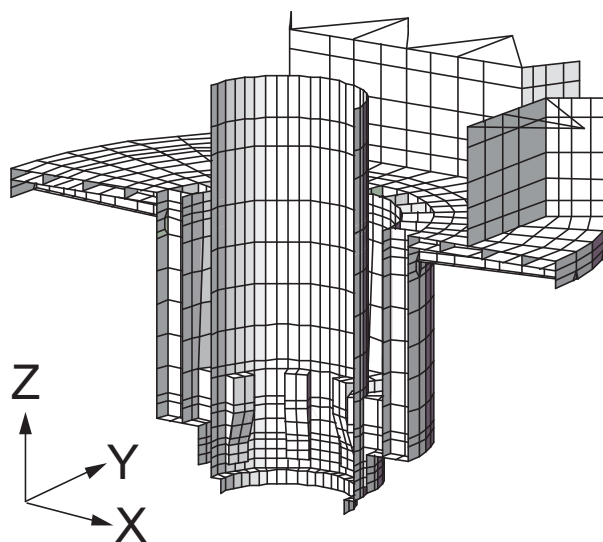




**Figure 3G.1-16. Finite Element Model of RB/FB (Internal Wall on R7/F1 Column Line)**

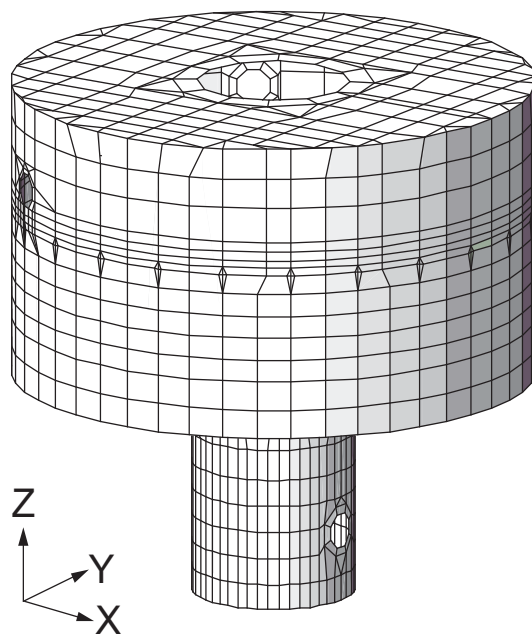


*Whole View*

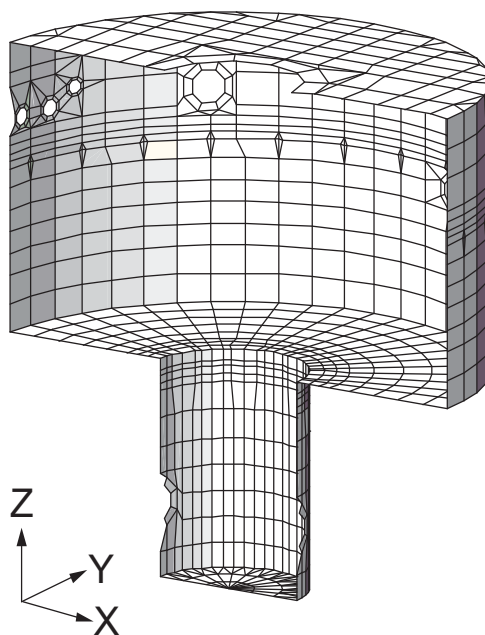


*Cut View*

**Figure 3G.1-17. Finite Element Model of RB/FB (RCCV Internals)**

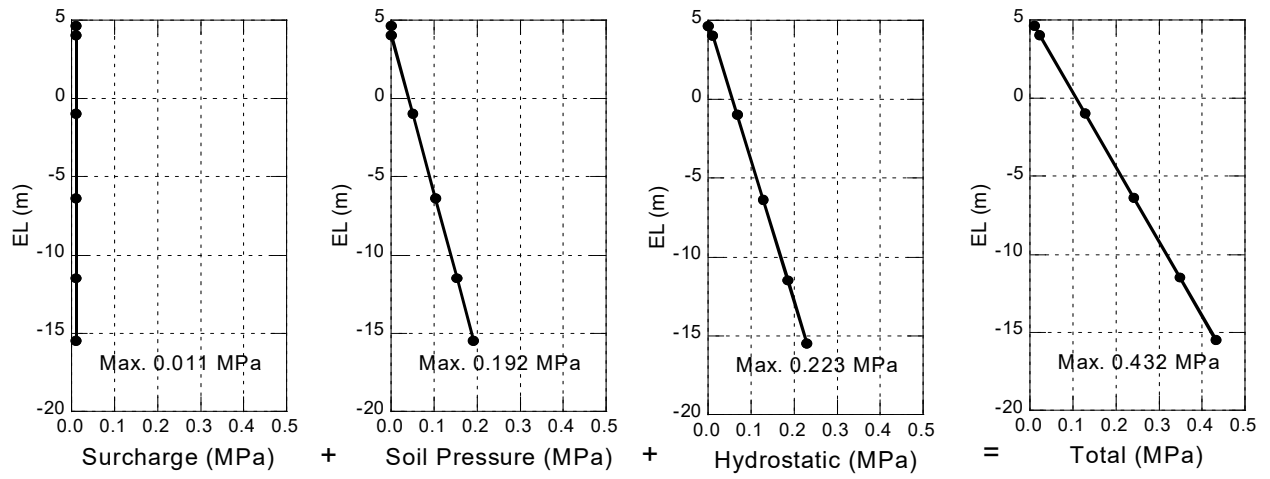


*Whole View*



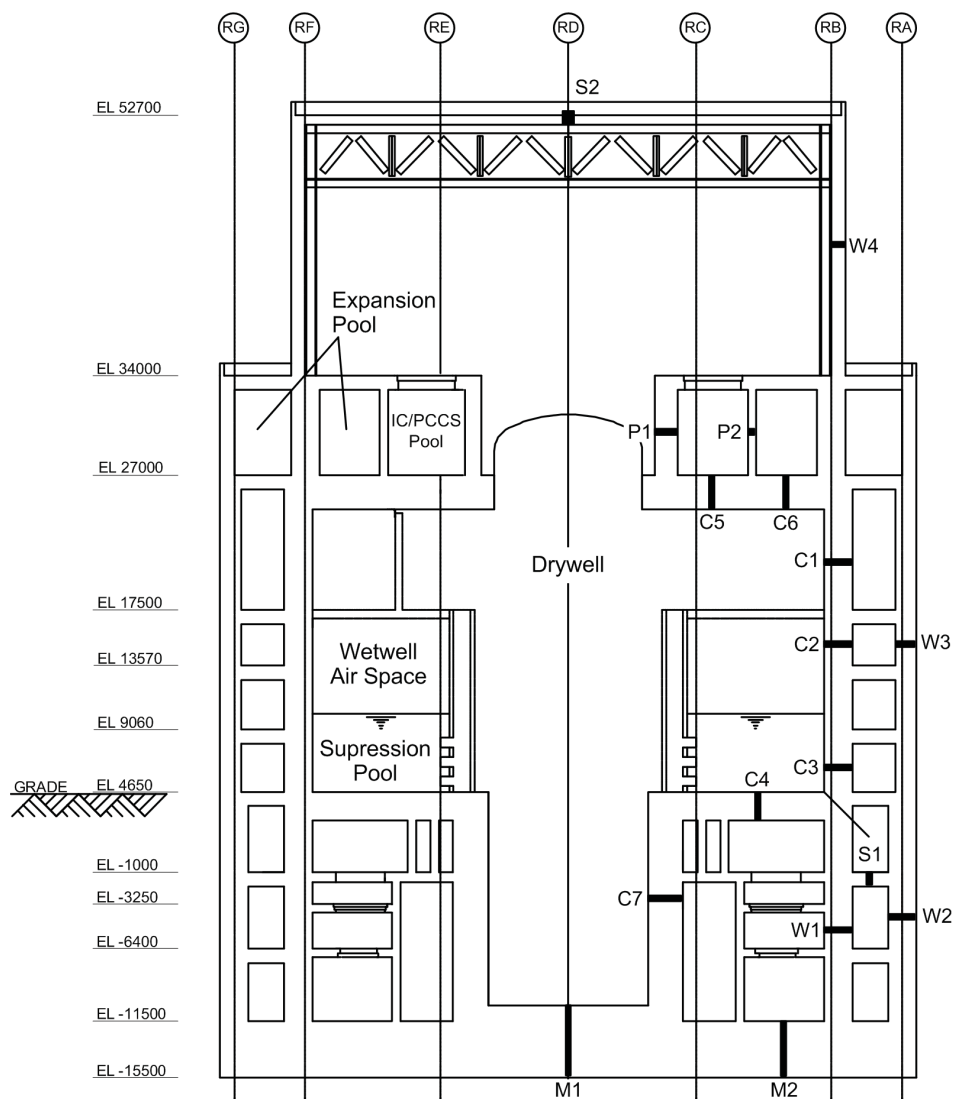
*Cut View*

**Figure 3G.1-18. Finite Element Model of RB/FB (RCCV Liner)**

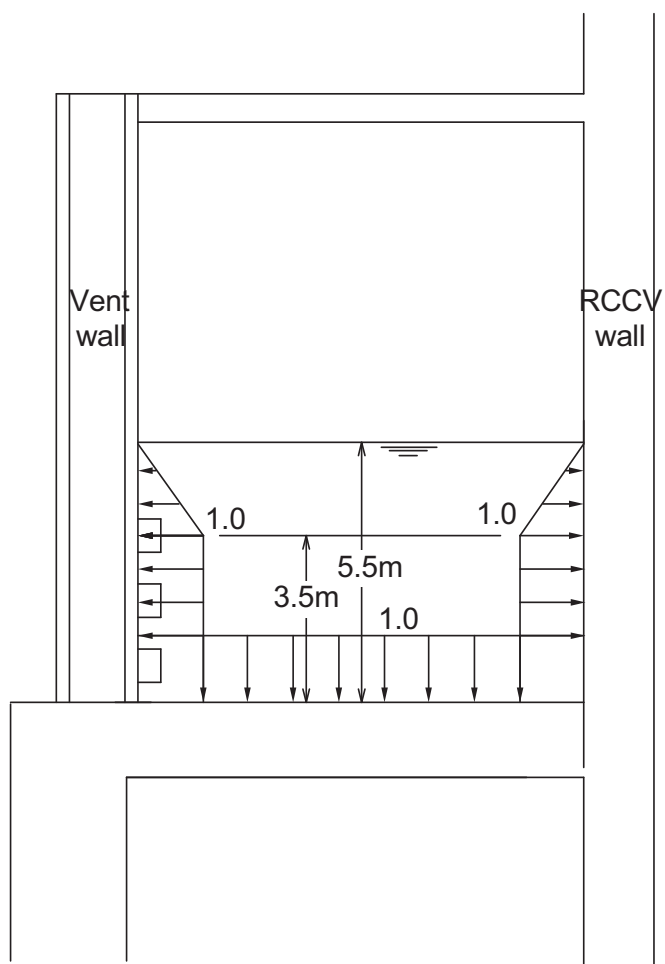


**Figure 3G.1-19. Soil Pressure at Rest**



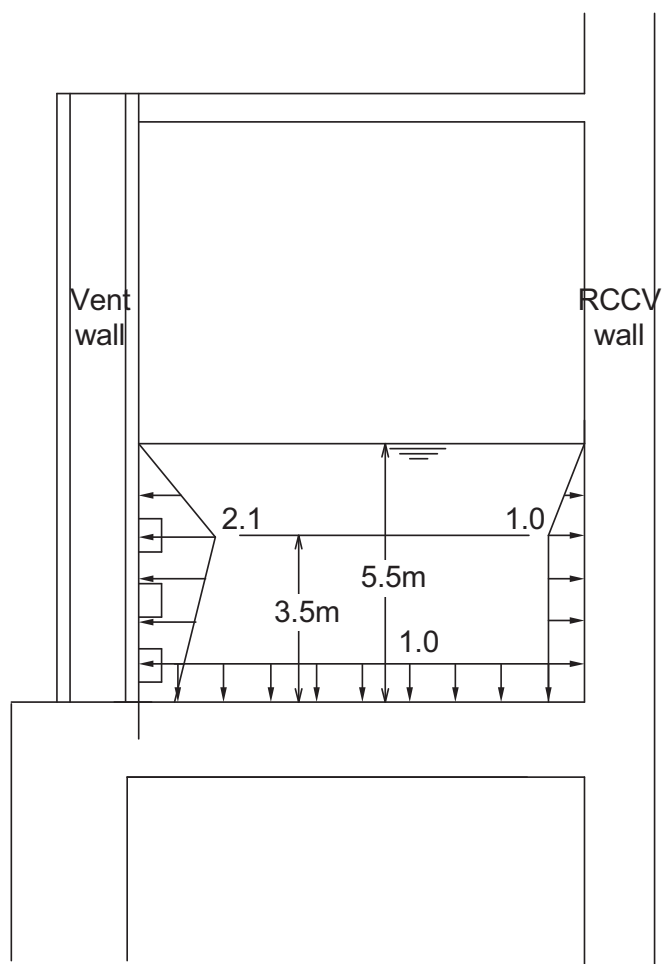


**Figure 3G.1-20. Sections Where Thermal Loads Are Defined**



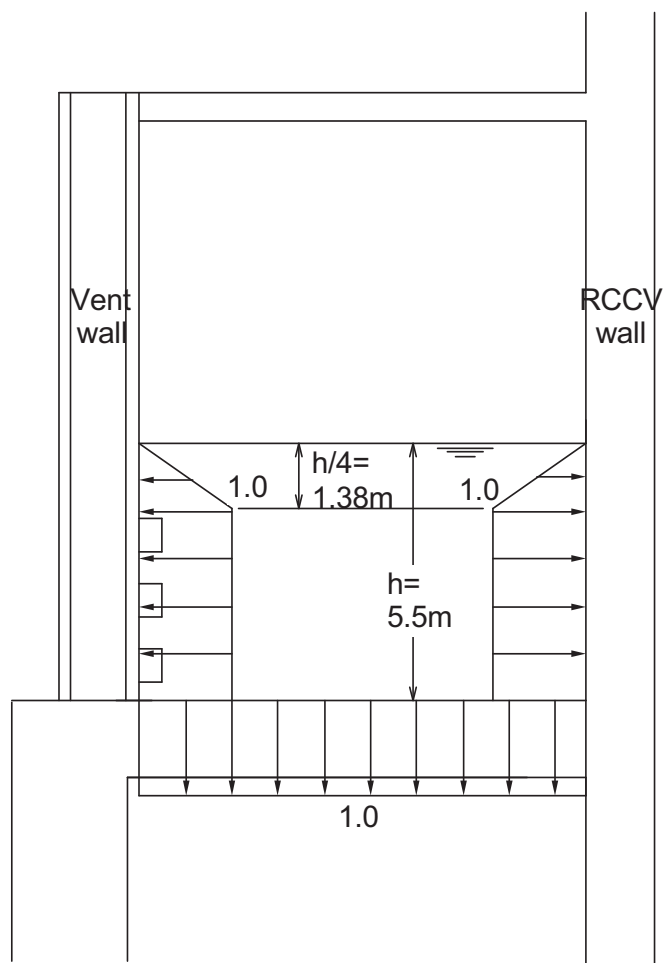
*CO Peak Positive Pressure = 186 kPaG*  
*CO Peak Negative Pressure = -186 kPaG*  
*Dynamic Load Factor (DLF) = 2.0*

**Figure 3G.1-21. Condensation Oscillation (CO) Pressure Loads**



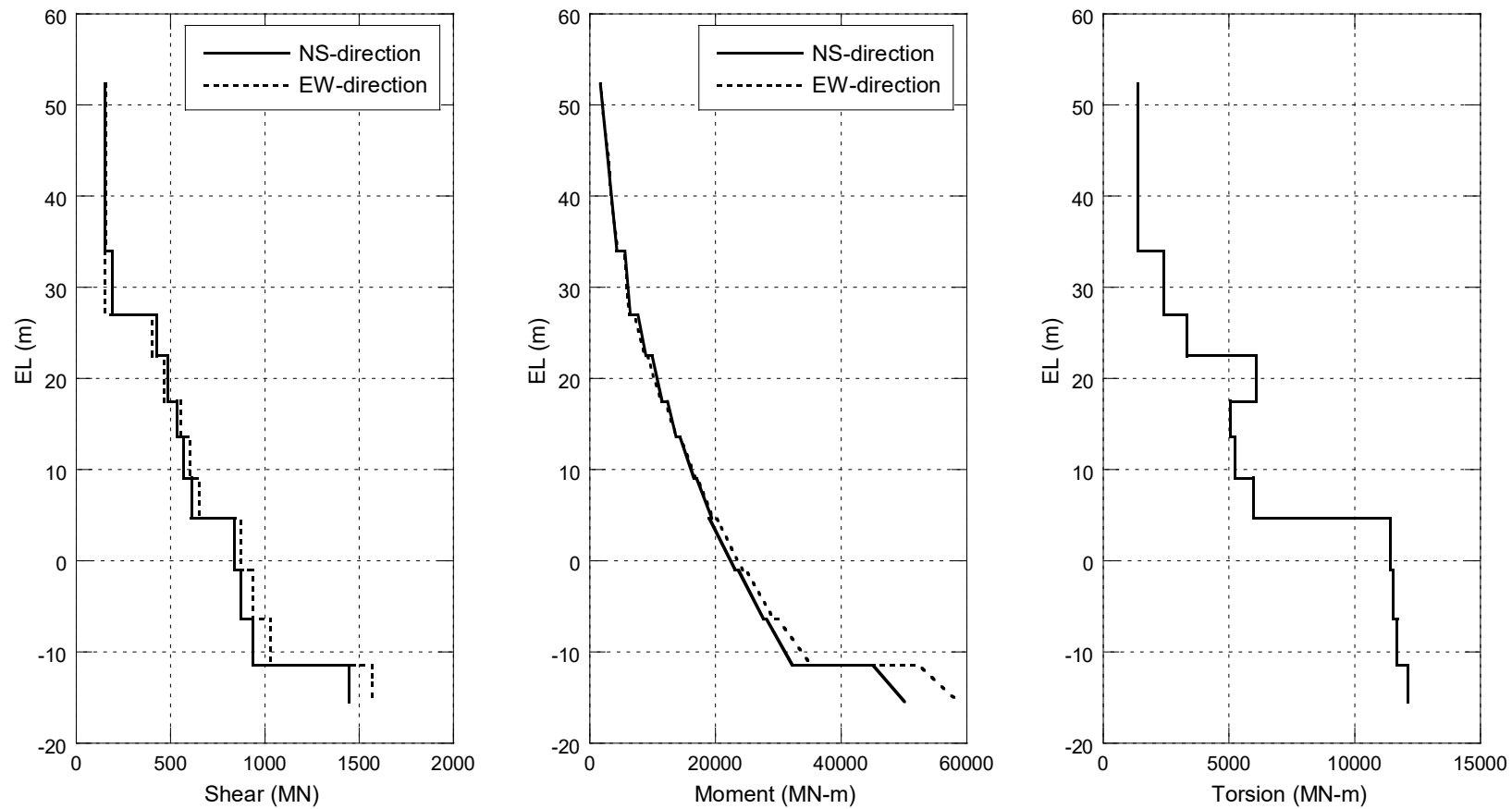
*CHUG Peak Positive Pressure = 91 kPaG*  
*CHUG Peak Negative Pressure = -66 kPaG*  
*Dynamic Load Factor (DLF) = 2.0*

**Figure 3G.1-22. Chugging (CHUG) Pressure Loads**

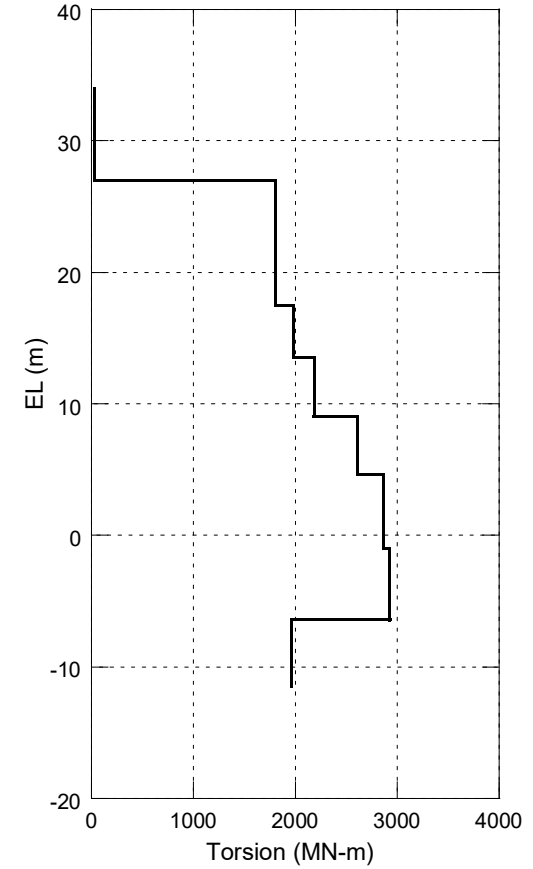
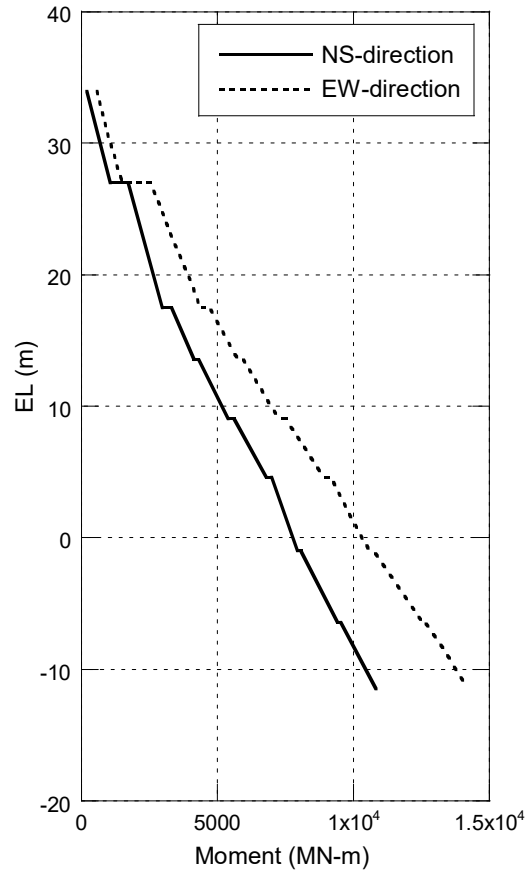
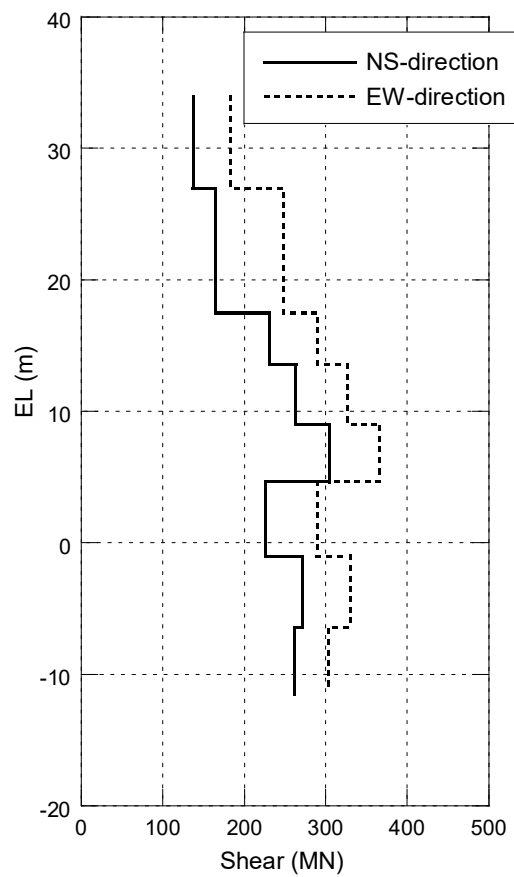


*SRV Peak Positive Pressure = 152 kPaG*  
*SRV Peak Negative Pressure = -63 kPaG*  
*Dynamic Load Factor (DLF) = 2.0*

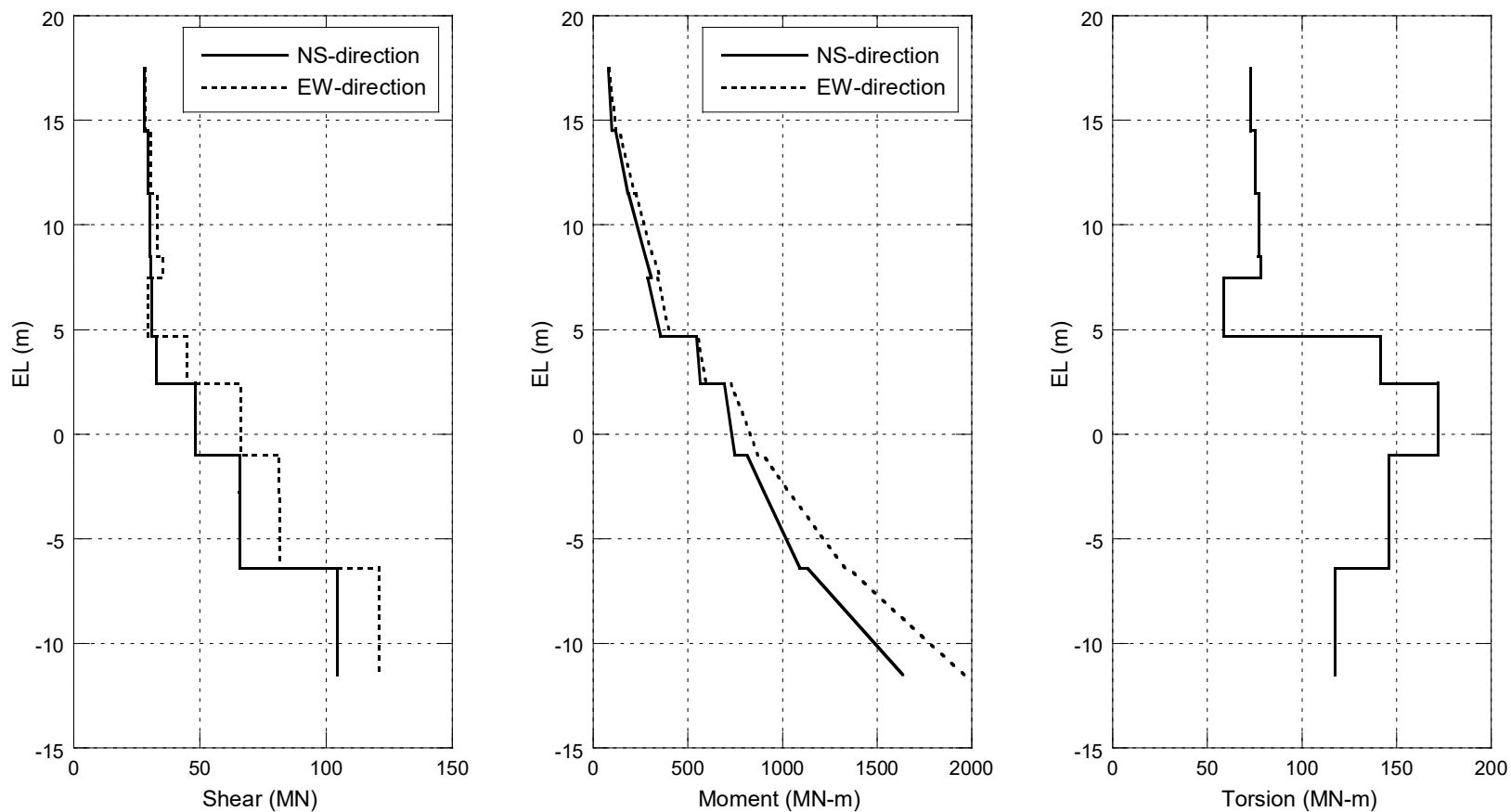
**Figure 3G.1-23. SRV Pressure Loads**



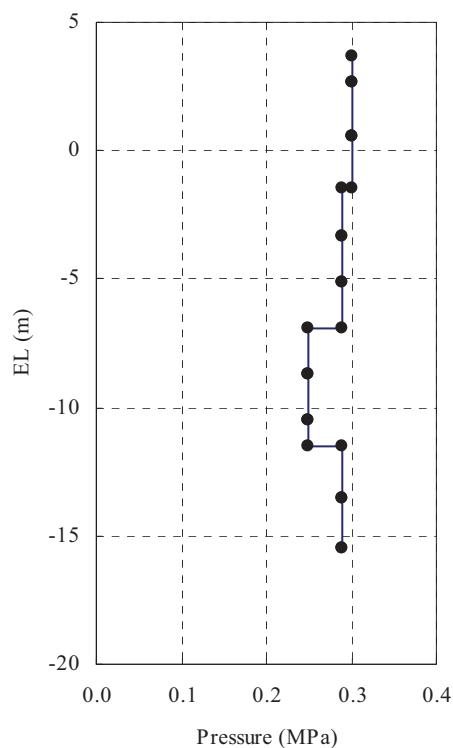
**Figure 3G.1-24. Design Seismic Shears and Moments for RB and FB Walls**



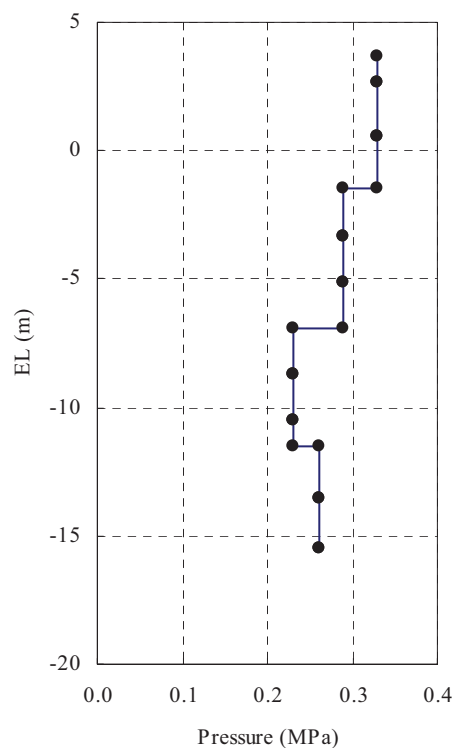
**Figure 3G.1-25. Design Seismic Shears and Moments for RCCV**



**Figure 3G.1-26. Design Seismic Shears and Moments for RPV Pedestal and Vent Wall**



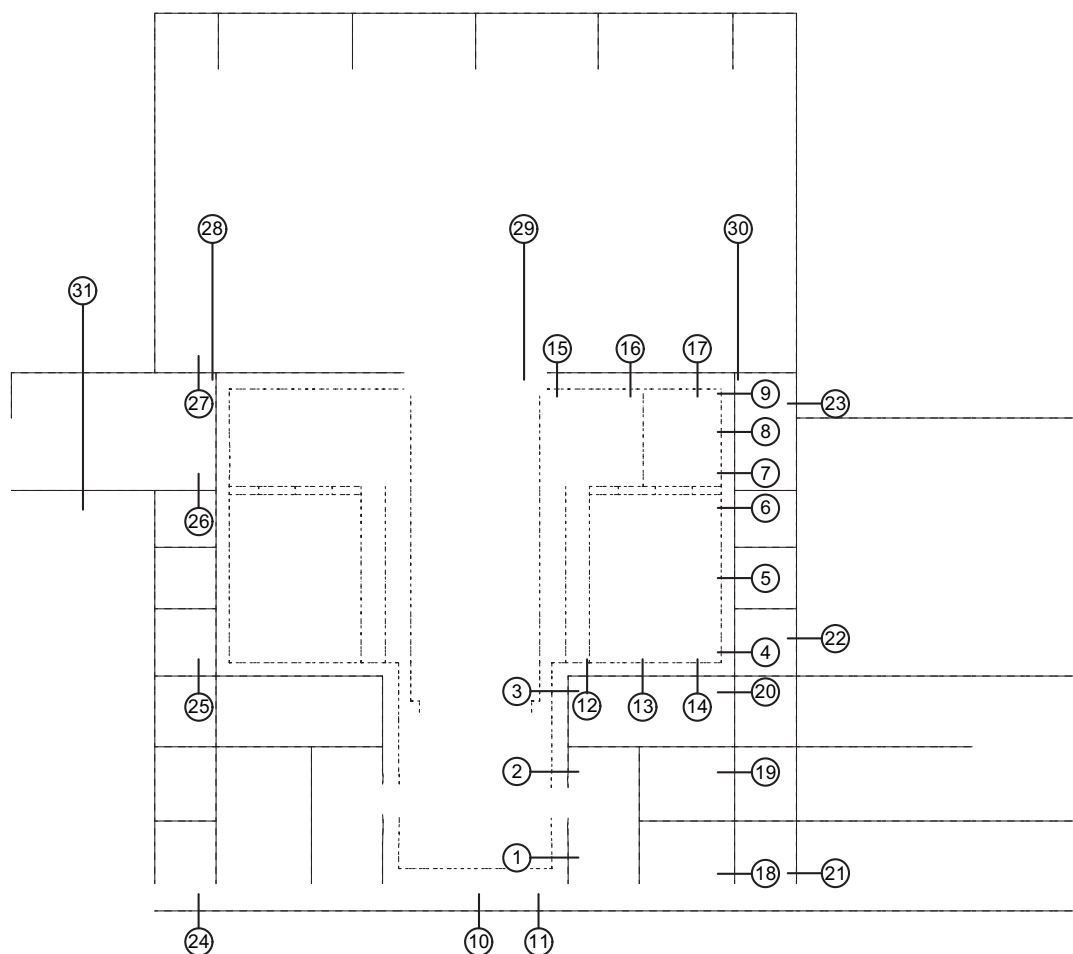
*R1 Wall and F3 Wall*



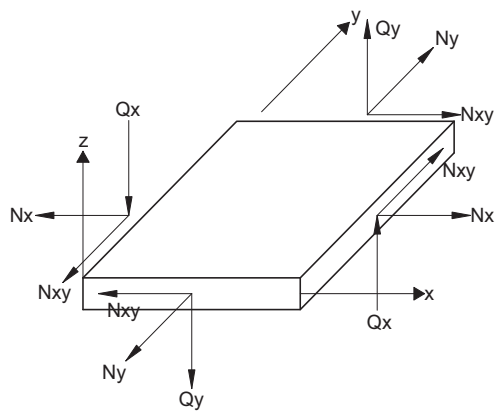
*RA Wall and RG Wall*

**Figure 3G.1-27. Seismic Lateral Soil Pressure**

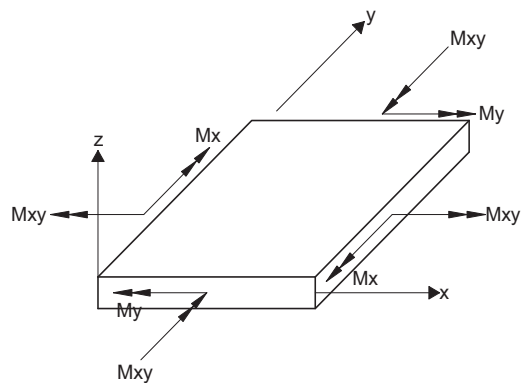




**Figure 3G.1-28. Sections Considered for Analysis**



Membrane and Shear Forces

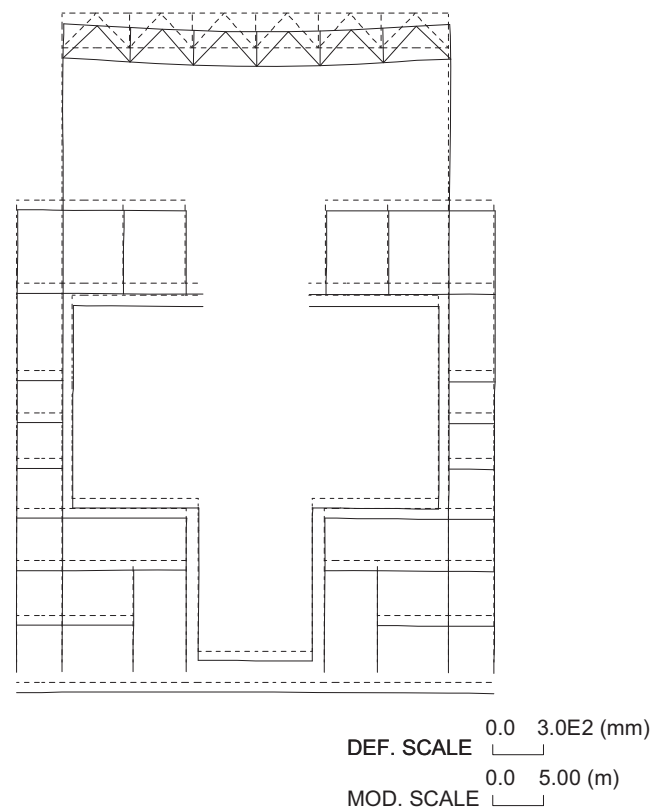
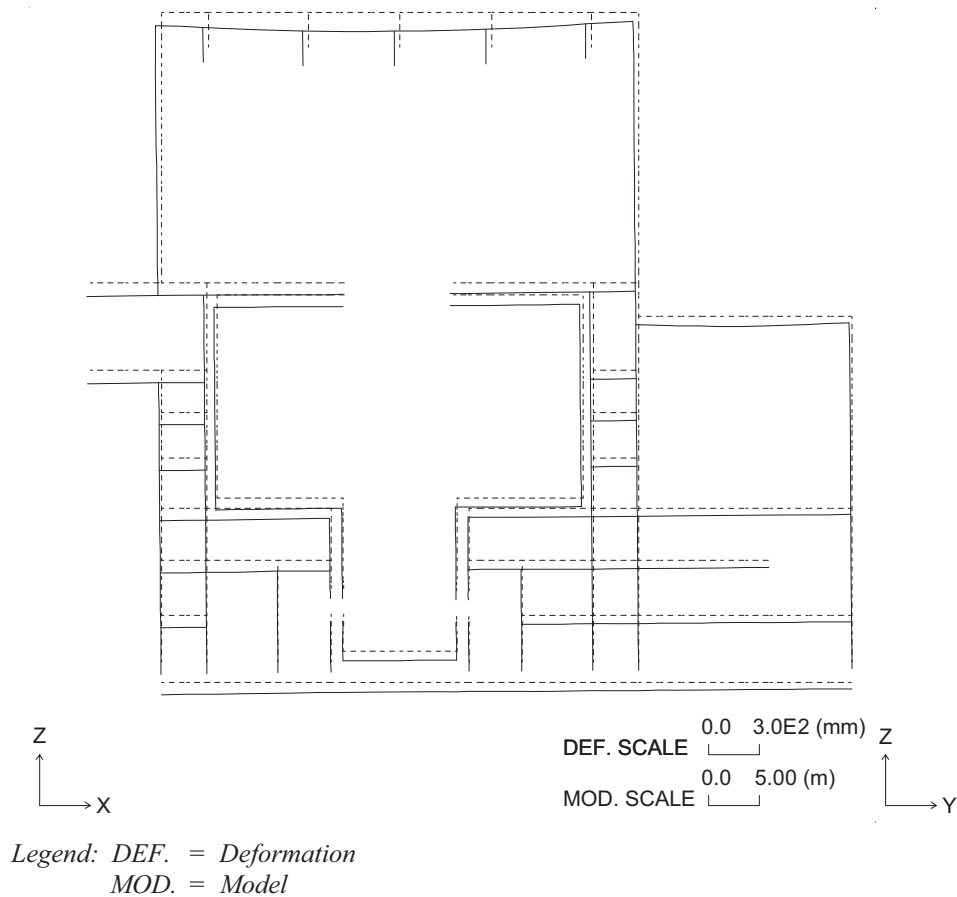


Moments

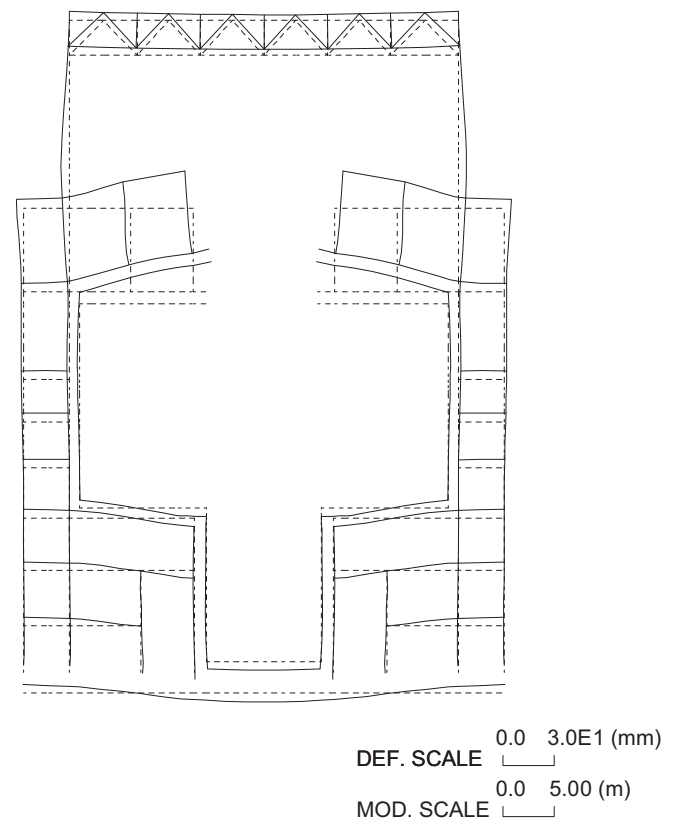
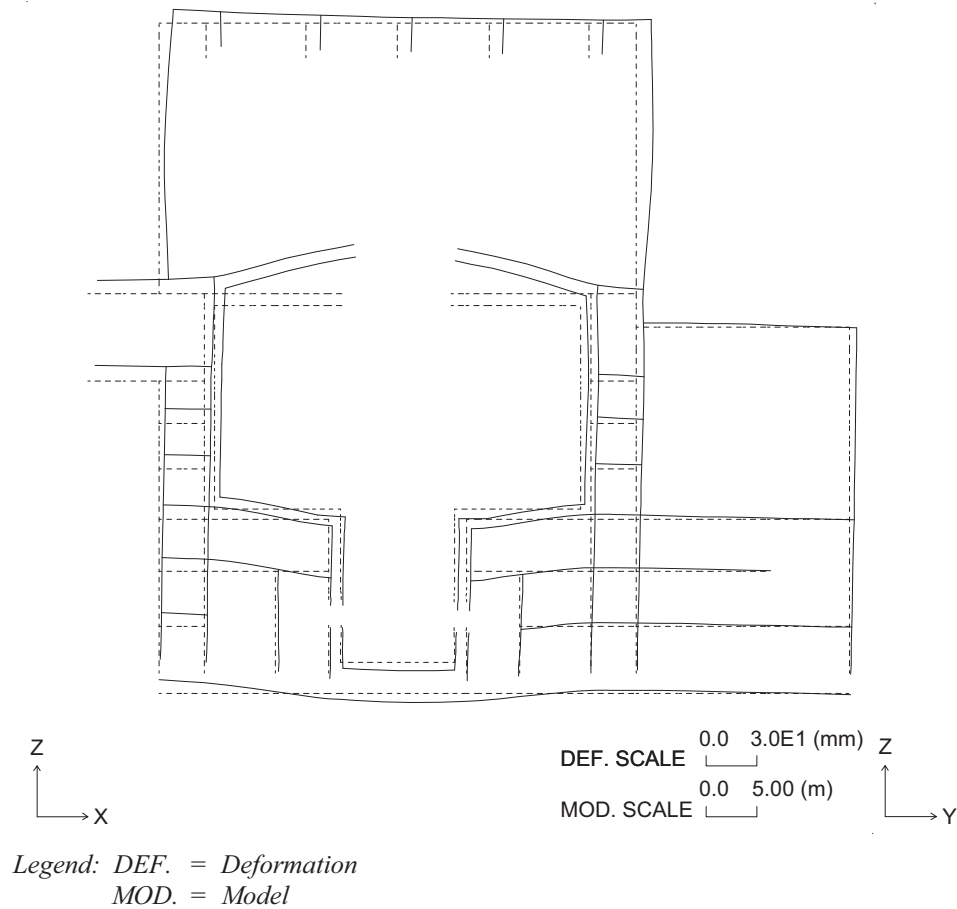
Definition of Element Coordinate System

Structure	x	y	z
RCCV Wall RPV Pedestal External Wall	horizontal	vertical	outward
Wall in N-S Direction	horizontal	vertical	toward West
Wall in E-W Direction	horizontal	vertical	toward South
Foundation Mat Floor Slab Top Slab	toward South	toward West	downward
Suppression Pool Slab	radial	circumferential	downward

**Figure 3G.1-29. Force and Moment in Shell Element**



**Figure 3G.1-30. Section Deformation for Dead Load**



**Figure 3G.1-31. Section Deformation for Drywell Unit Pressure (1 MPa)**

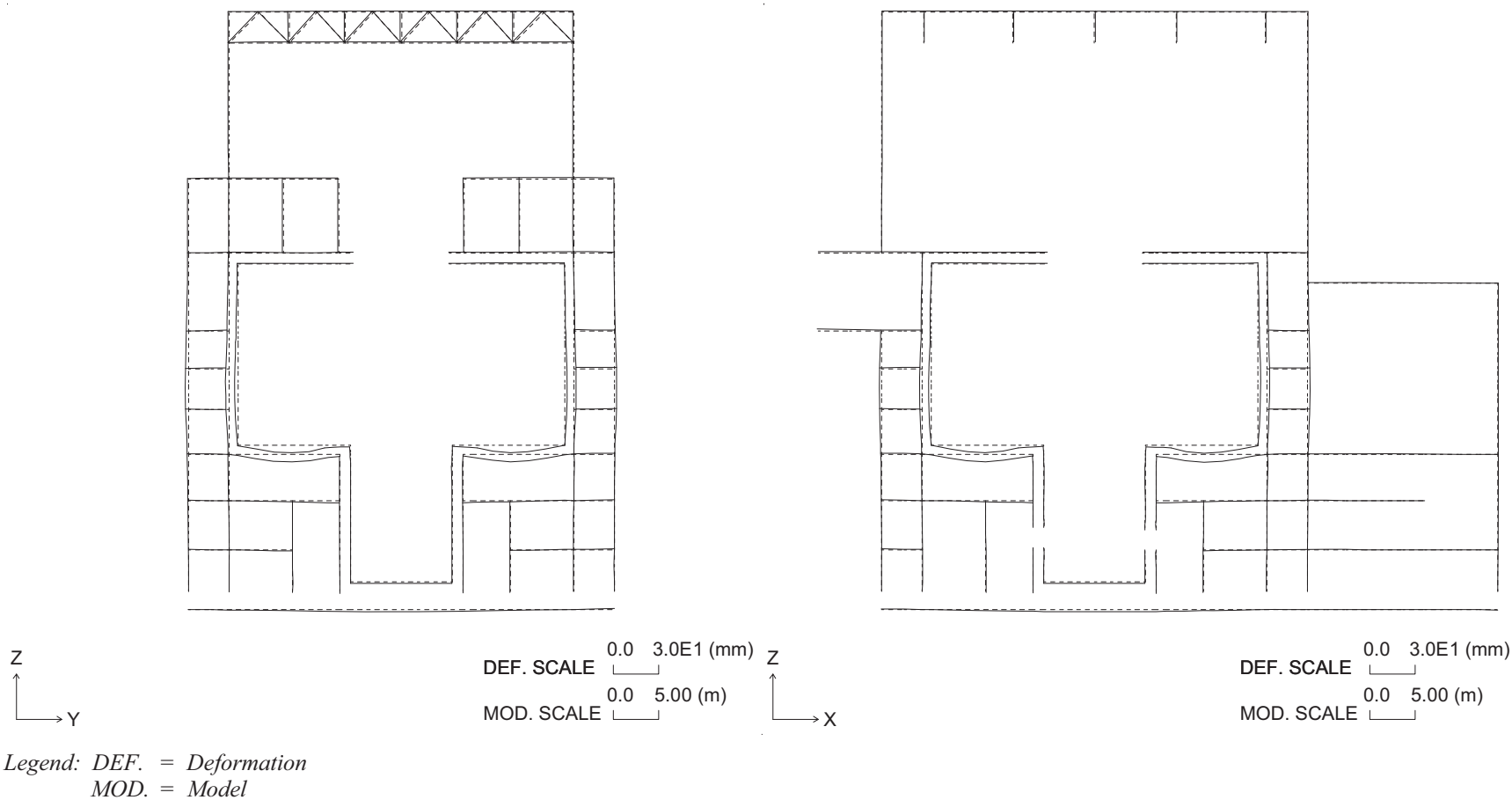
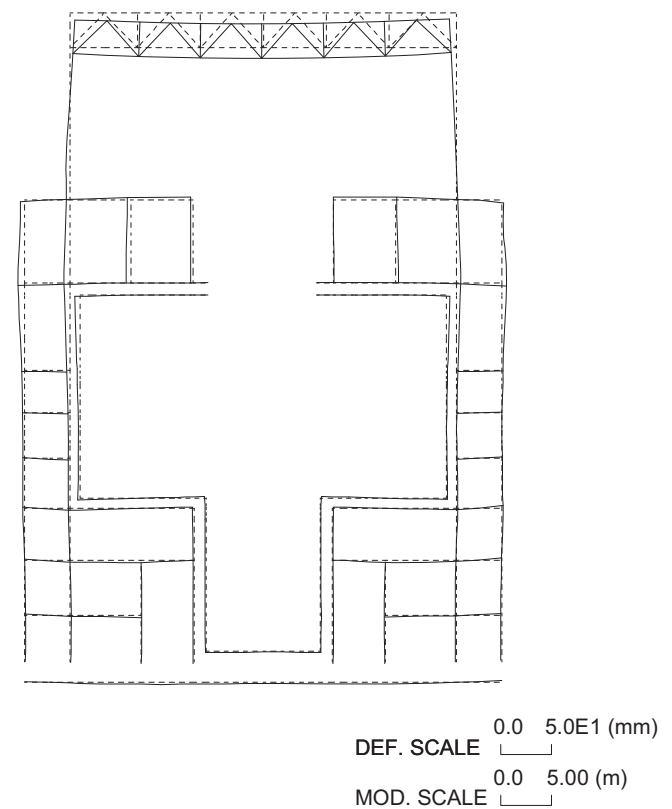
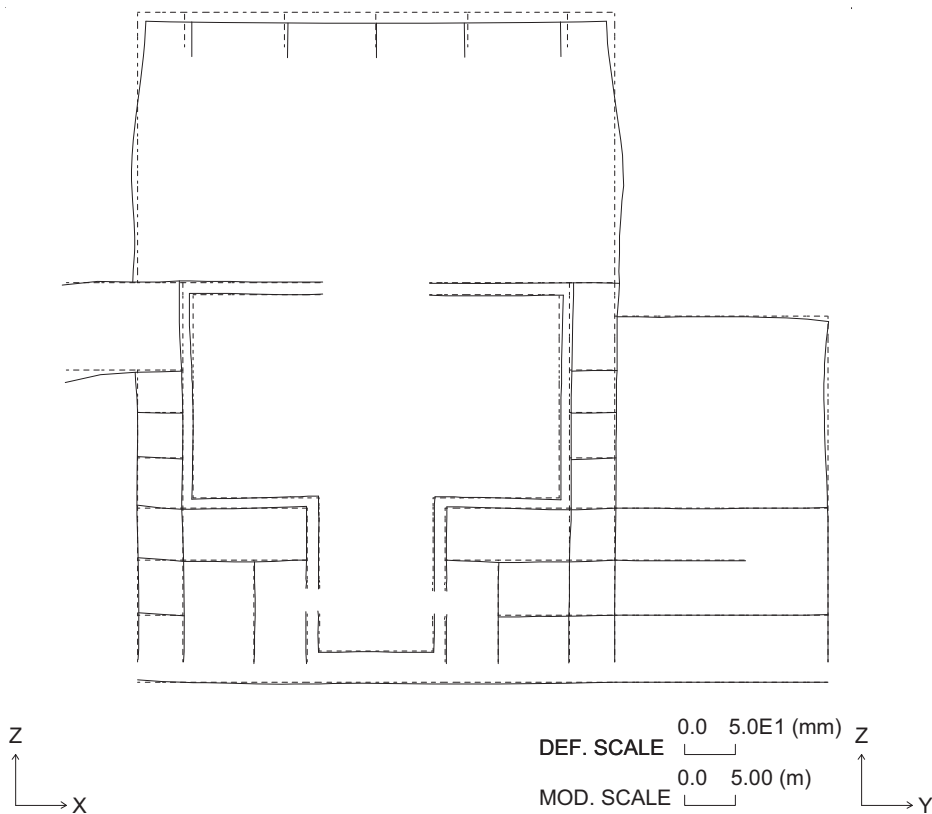
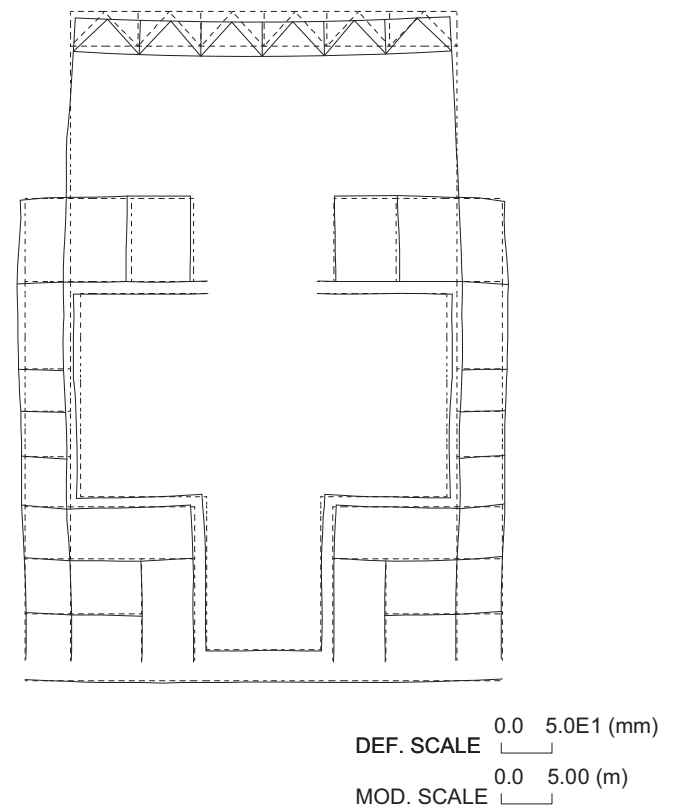
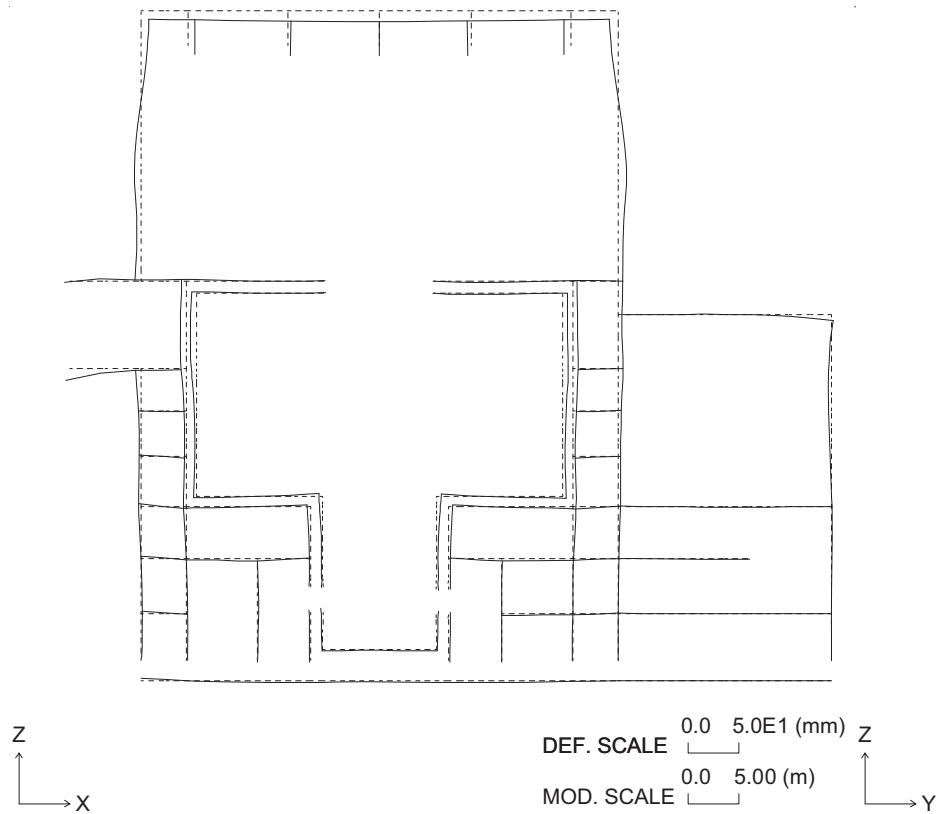


Figure 3G.1-32. Section Deformation for Wetwell Unit Pressure (1 MPa)



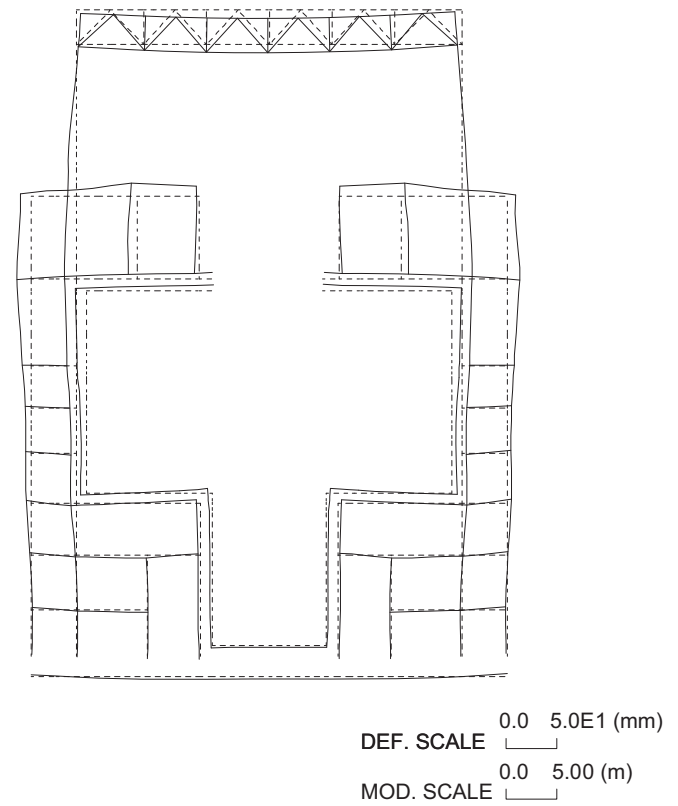
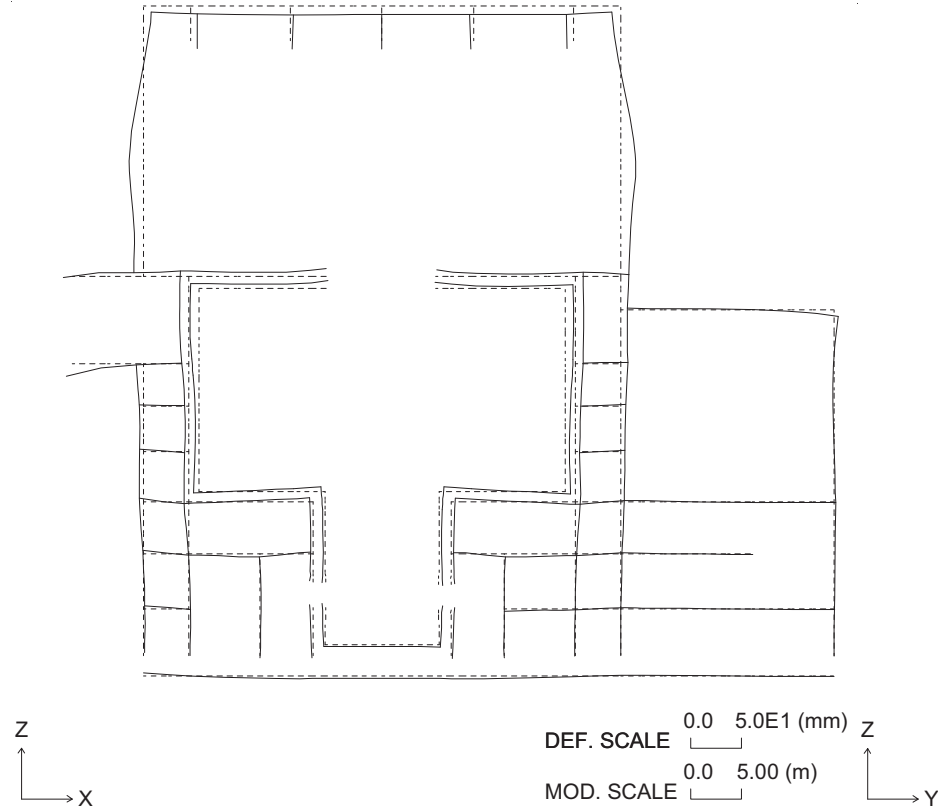
Legend: DEF. = Deformation  
MOD. = Model

**Figure 3G.1-33. Section Deformation for Thermal Load (Normal Operation: Winter)**



Legend: DEF. = Deformation  
MOD. = Model

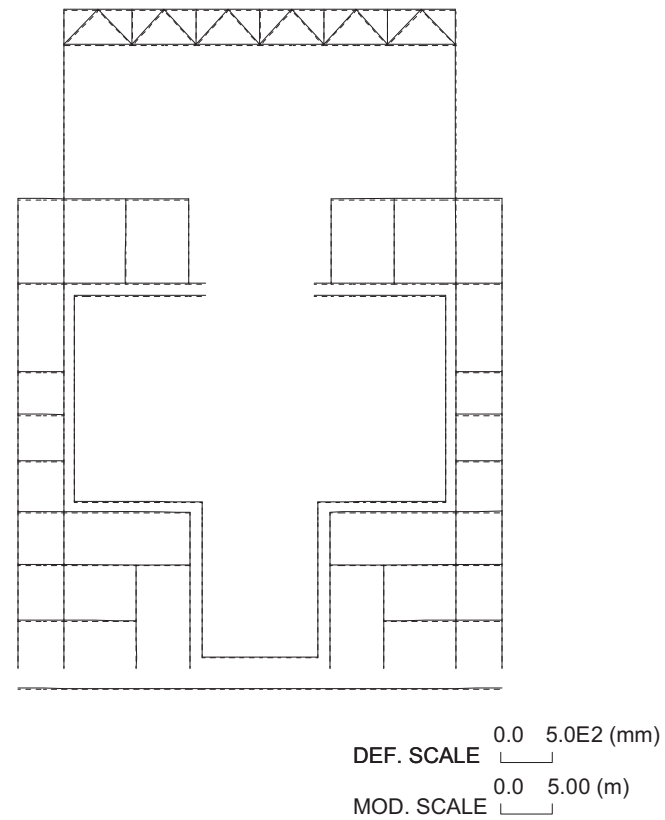
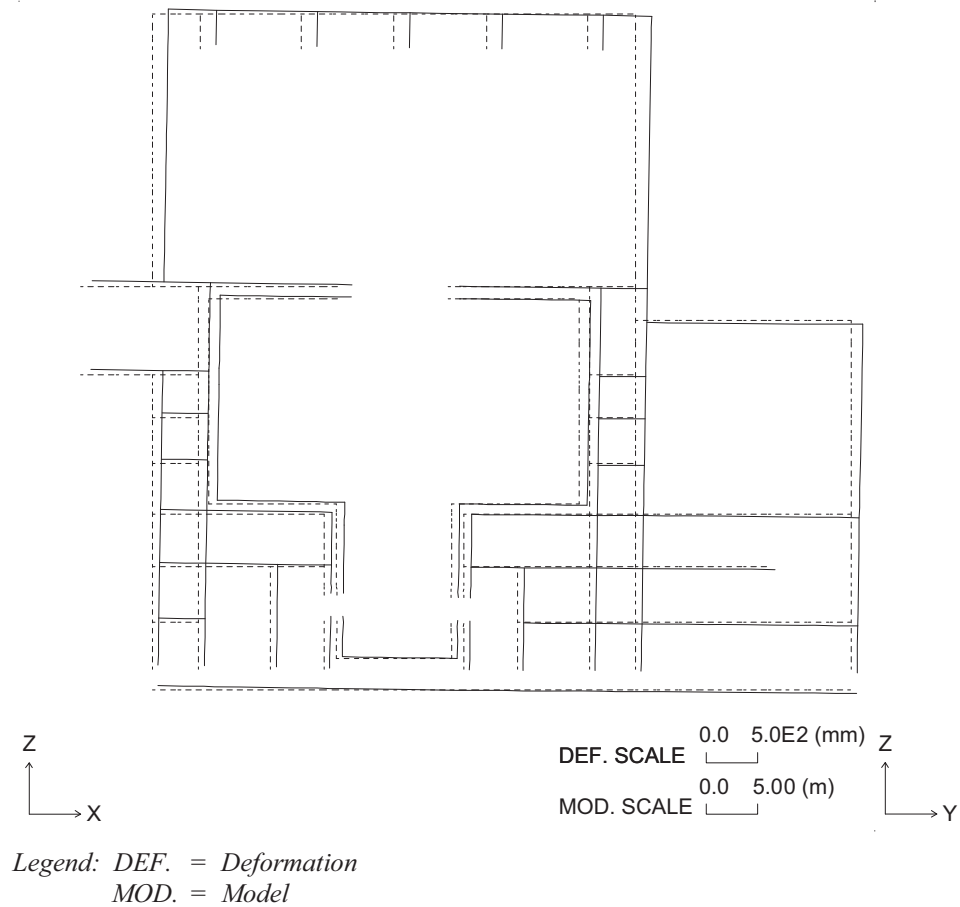
**Figure 3G.1-34. Section Deformation for Thermal Load (LOCA After 6 min.: Winter)**



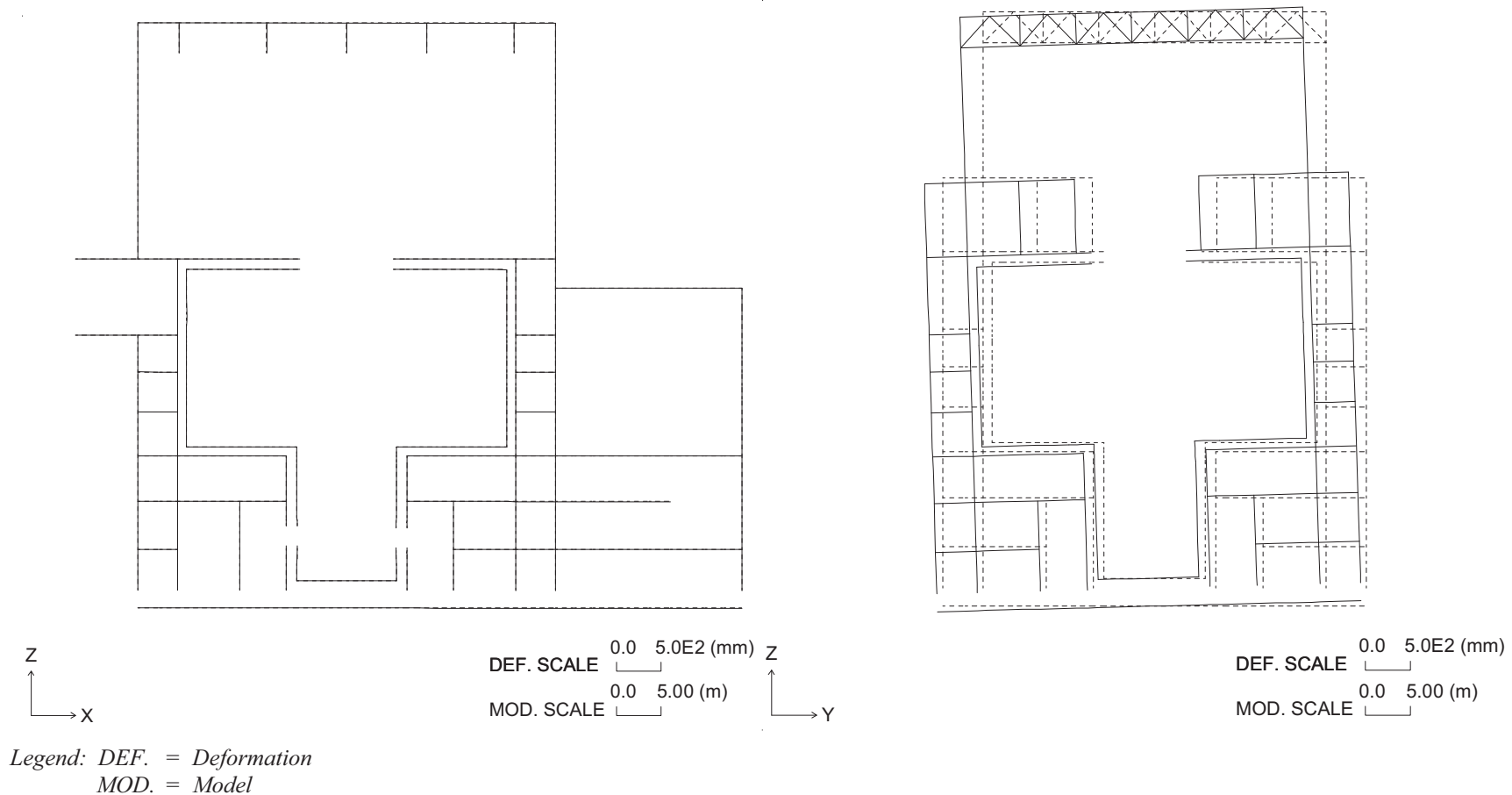
Legend: DEF. = Deformation  
MOD. = Model

**Figure 3G.1-35. Section Deformation for Thermal Load (LOCA After 72 hr.: Winter)**

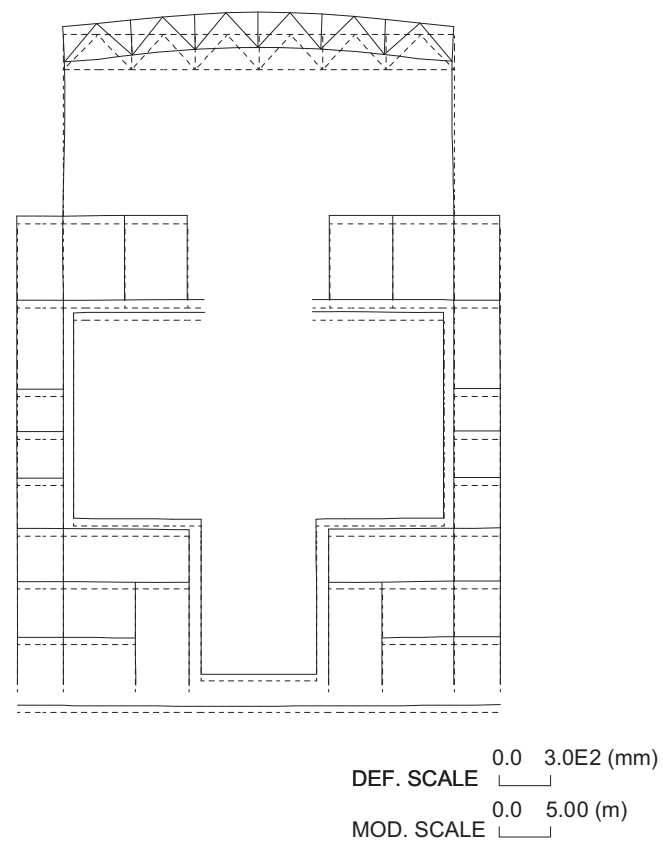
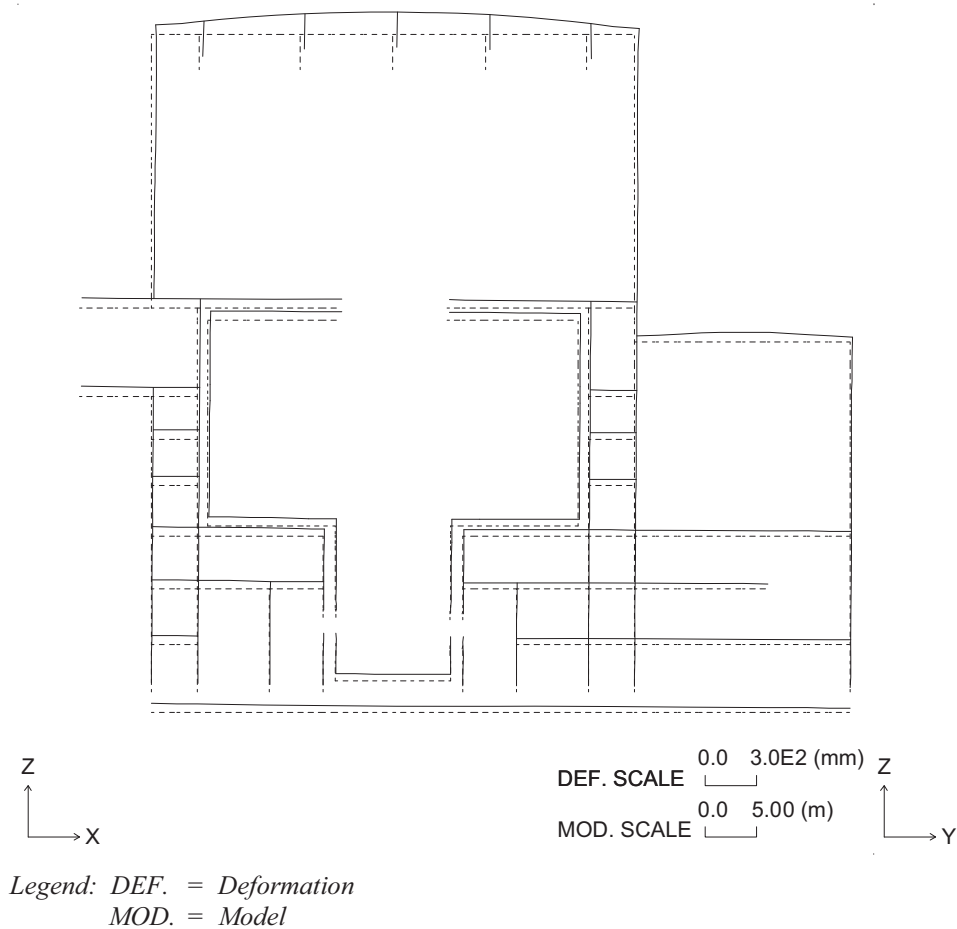




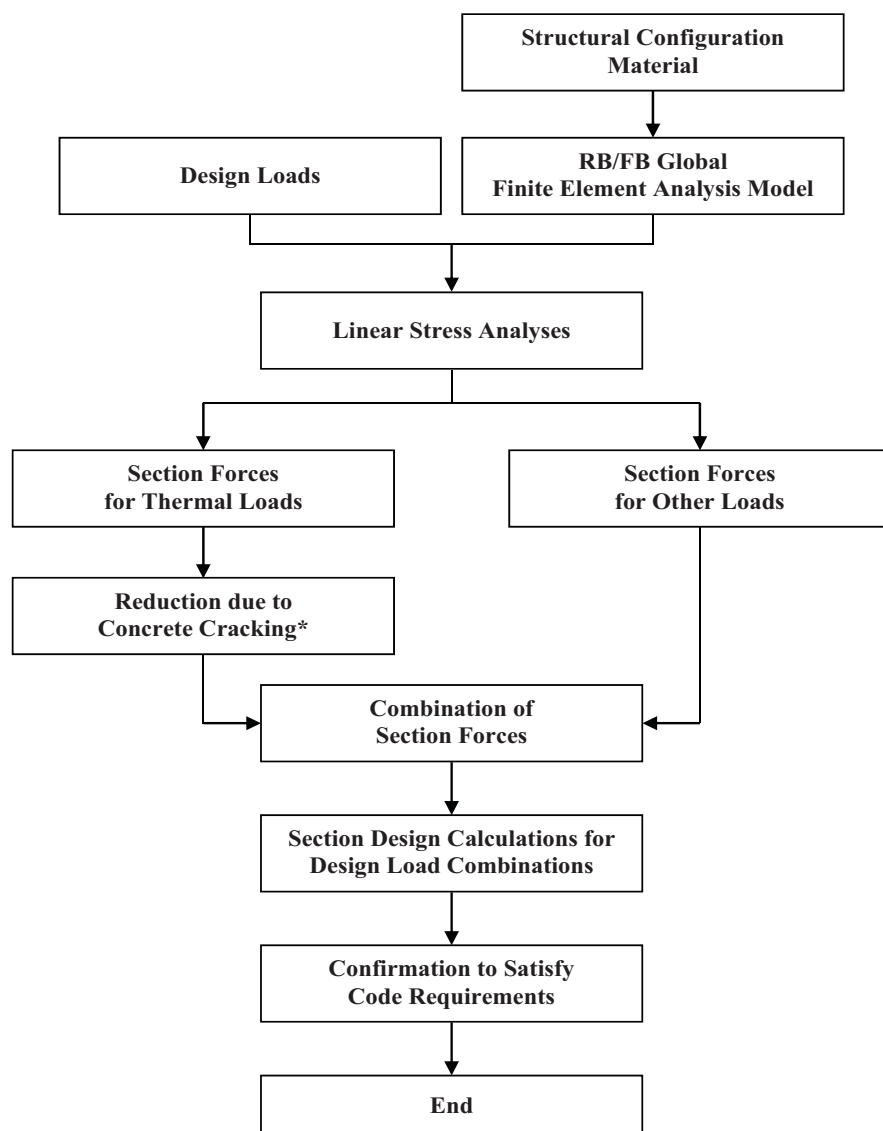
**Figure 3G.1-36. Section Deformation for Seismic Load (Horizontal: North to South)**



**Figure 3G.1-37. Section Deformation for Seismic Load (Horizontal: East to West)**

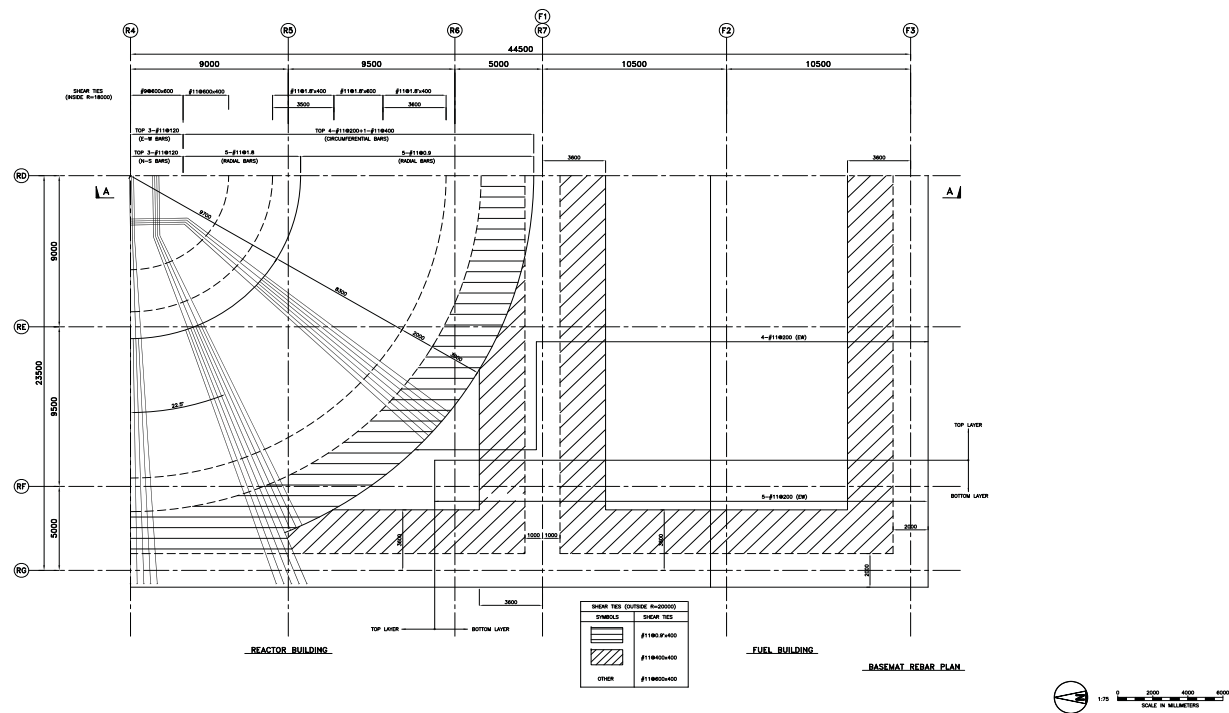


**Figure 3G.1-38. Section Deformation for Seismic Load (Vertical: Upward)**



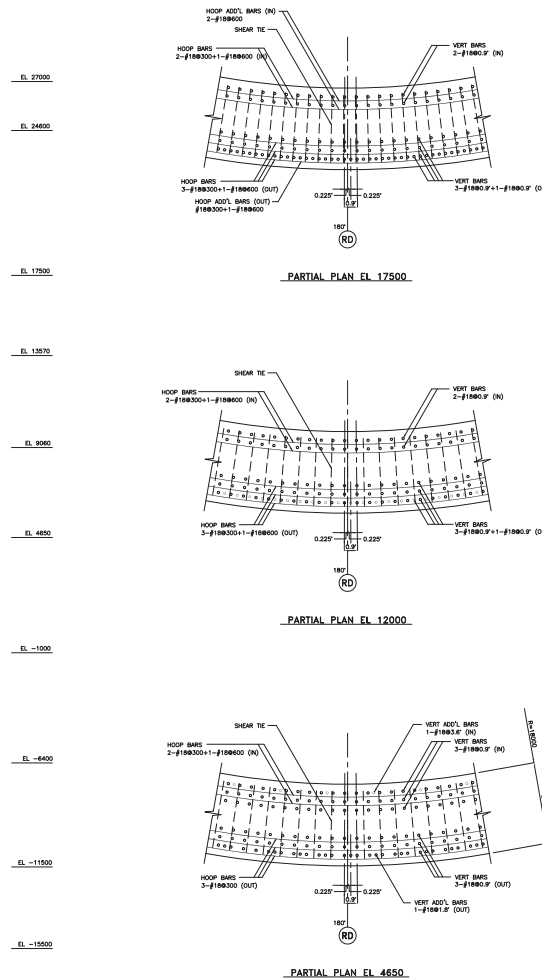
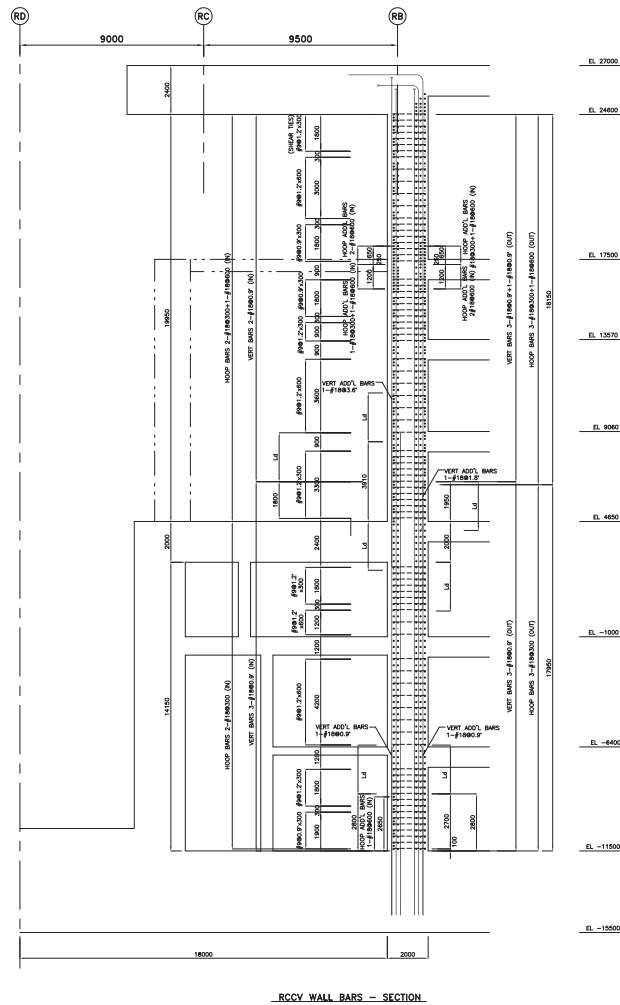
\*: Thermal section forces are reduced using the section design calculation program, SSDP-2D, with thermal cracking option selected.  
However, for the LOCA thermal loads, "thermal ratios" obtained by 3D nonlinear analyses are multiplied to the section forces obtained by linear stress analyses.  
The section forces from the non-linear analyses can also be used directly.  
Thermal cracking option of SSDP-2D is not used together with 3D nonlinear analyses.  
(Refer to Subsections 3.8.1.4.1.2 and 3.8.1.4.1.3.)

**Figure 3G.1-39. Flow Chart for Structural Analysis and Design**

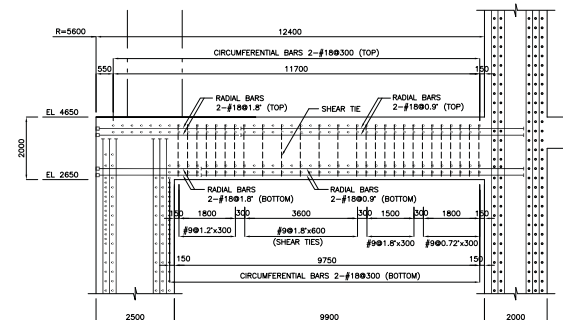
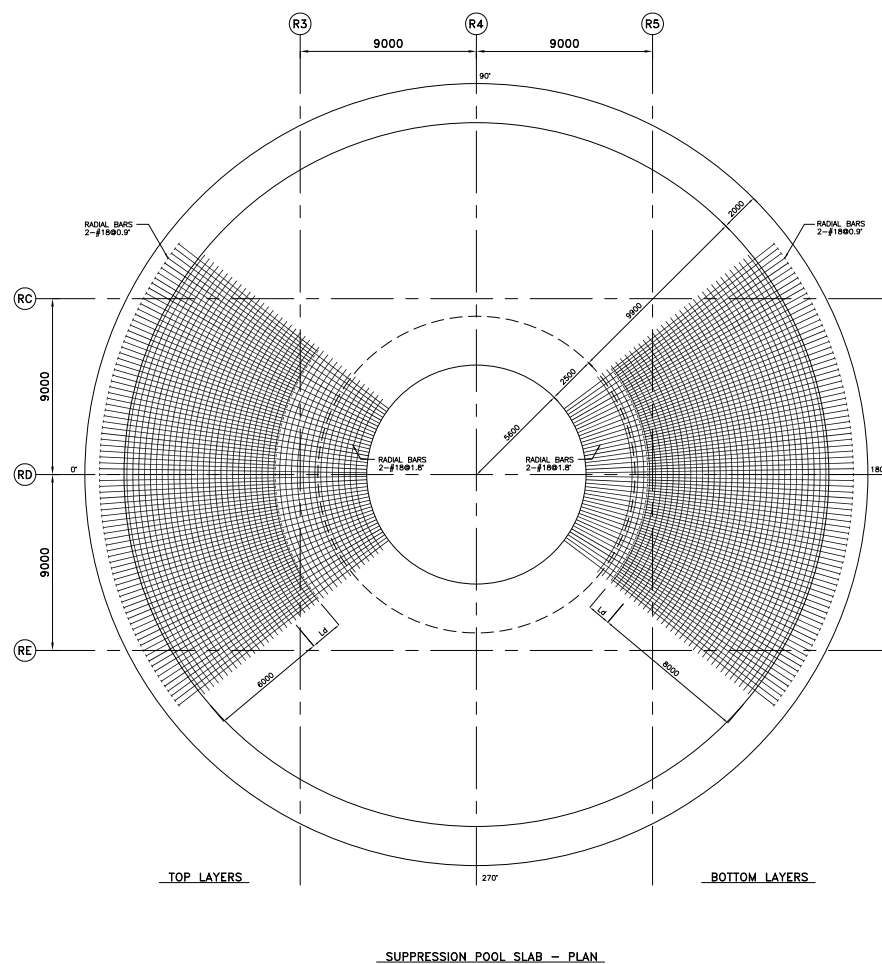


**Figure 3G.1-40. Reinforcing Steel of Foundation Mat: Plan**  
 Note: All dimensions are in mm unless otherwise noted





**Figure 3G.1-42. Reinforcing Steel of RCCV Wall**  
 Global Note for Figure: Evaluation results of Subsection 3G.5.3 included.  
 Note: All dimensions are in mm unless otherwise noted



#### LEGEND

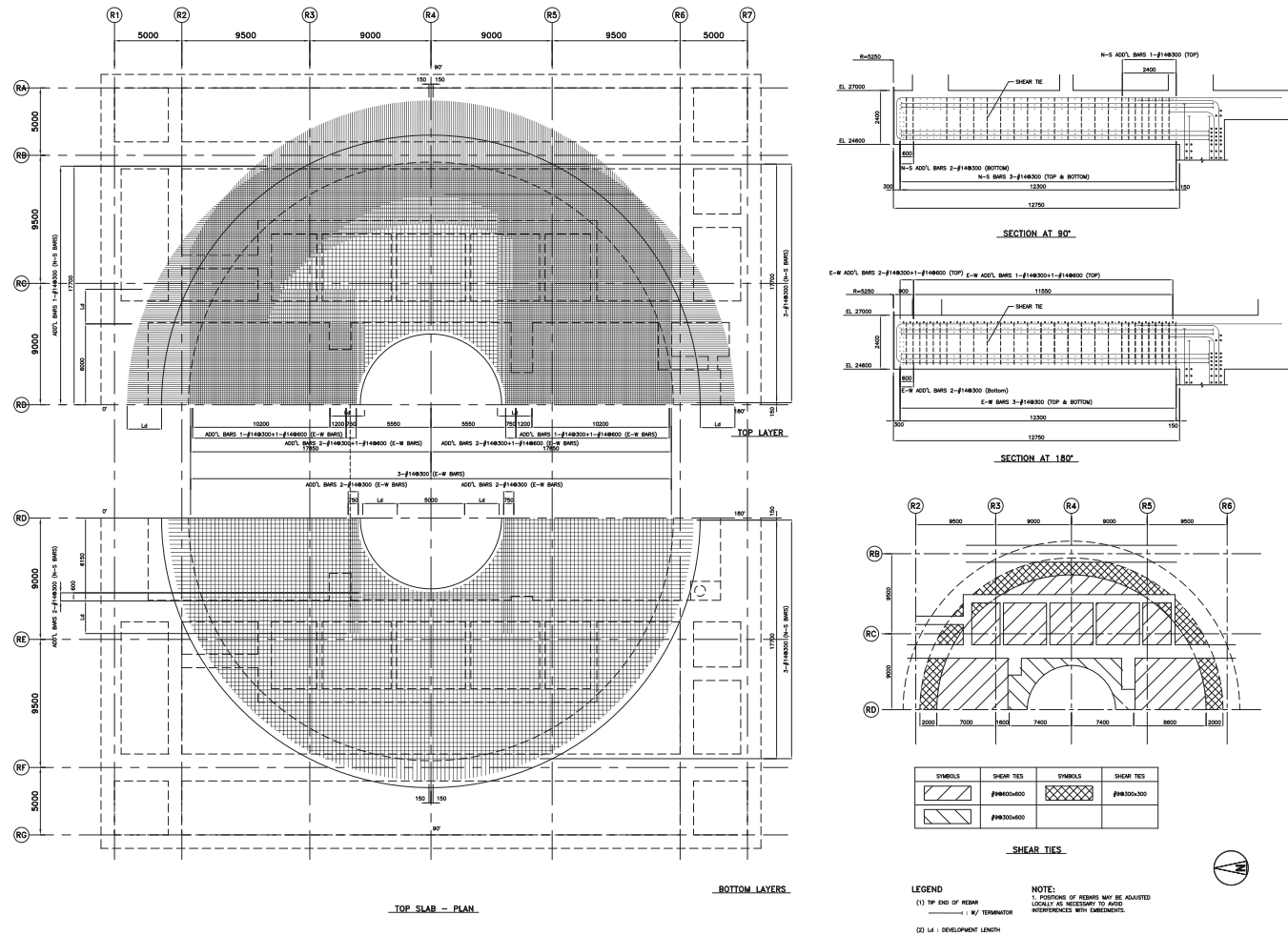
- (1) TIP END OF REBAR
- (2) Ld : DEVELOPMENT LENGTH

NOTE:  
1. POSITIONS OF REBARS MAY BE ADJUSTED  
LOCALLY AS NECESSARY TO AVOID  
INTERFERENCES WITH EMBEDMENTS.

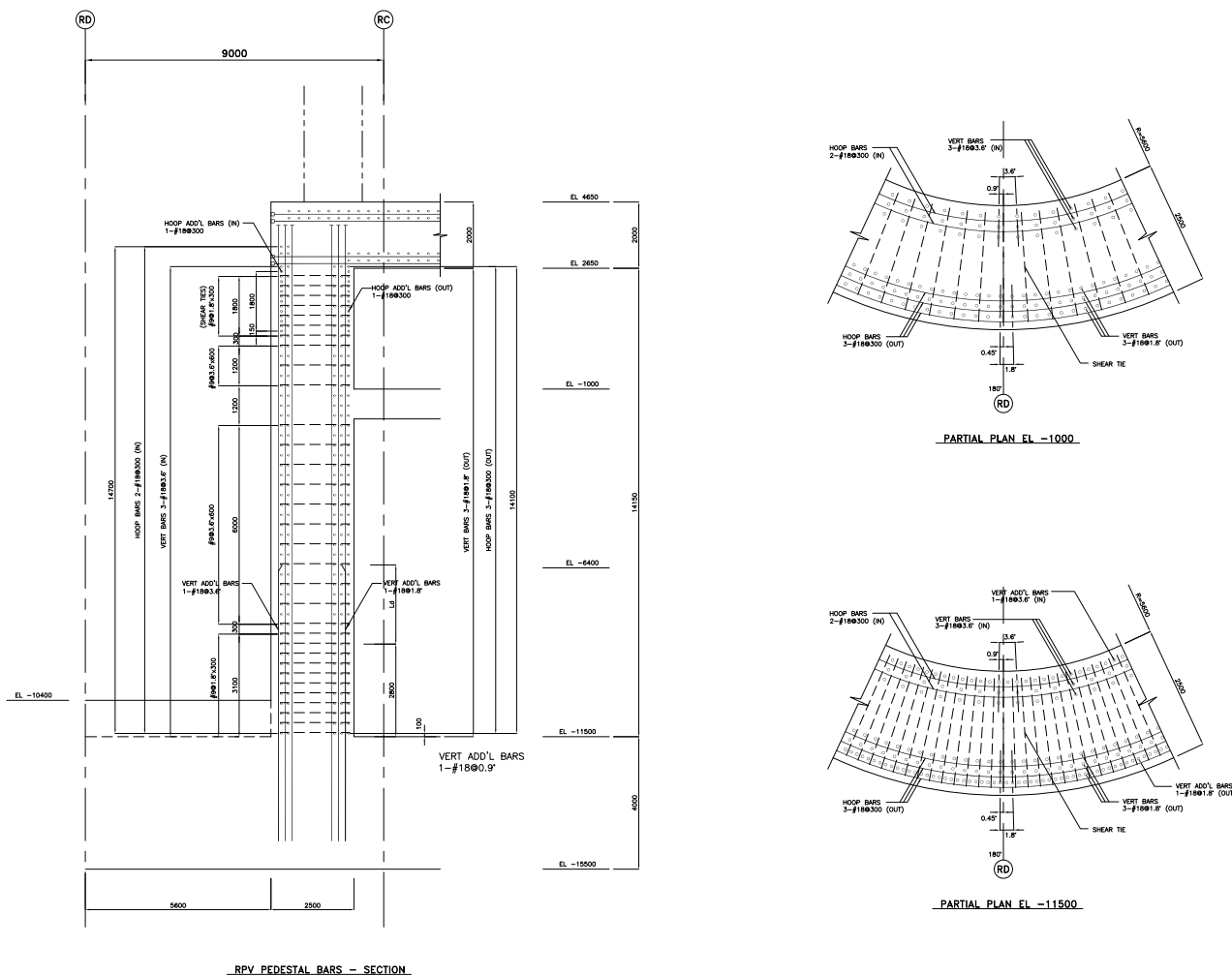
**Figure 3G.1-43. Reinforcing Steel of Suppression Pool Slab**

*Note: All dimensions are in mm unless otherwise noted*

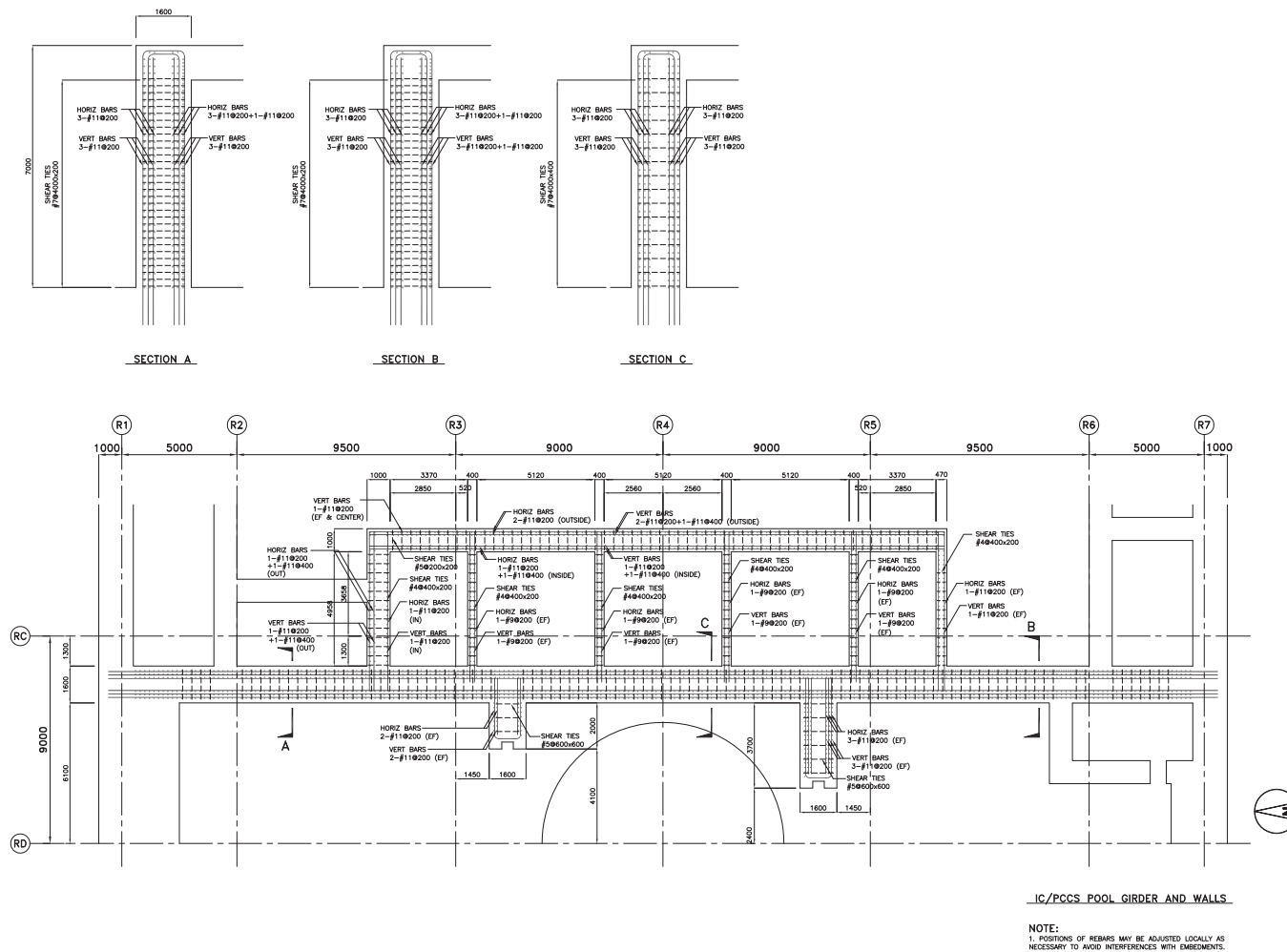




**Figure 3G.1-44. Reinforcing Steel of Top Slab**  
 Global Note for Figure: Evaluation results of Subsection 3G.5.3 included.  
 Note: All dimensions are in mm unless otherwise noted



**Figure 3G.1-45. Reinforcing Steel of RPV Pedestal**  
*Note: All dimensions are in mm unless otherwise noted*



**Figure 3G.1-46. Reinforcing Steel of IC/PCCS Pool Girder**  
 Global Note for Figure: Evaluation results of Subsection 3G.5.3 included.  
 Note: All dimensions are in mm unless otherwise noted

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**Figure 3G.1-47. List of RB Wall and Slab Reinforcement**

*Global Note for Figure: Evaluation results of Subsection 3G.5.3 included.*

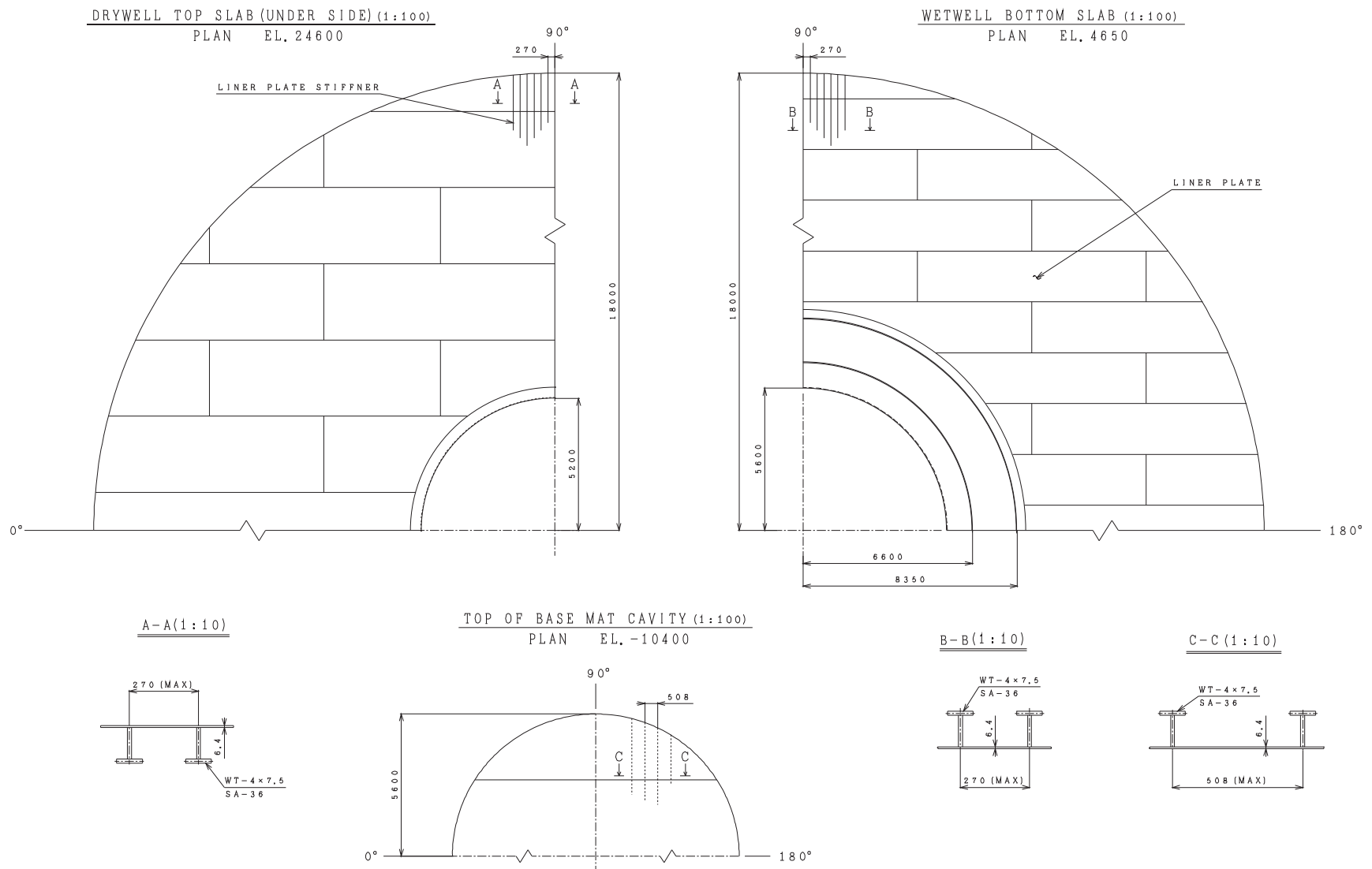
*Note: All dimensions are in mm unless otherwise noted*

*{{{Security-Related Information - Withhold Under 10 CFR 2.390}}}*

[illegible]

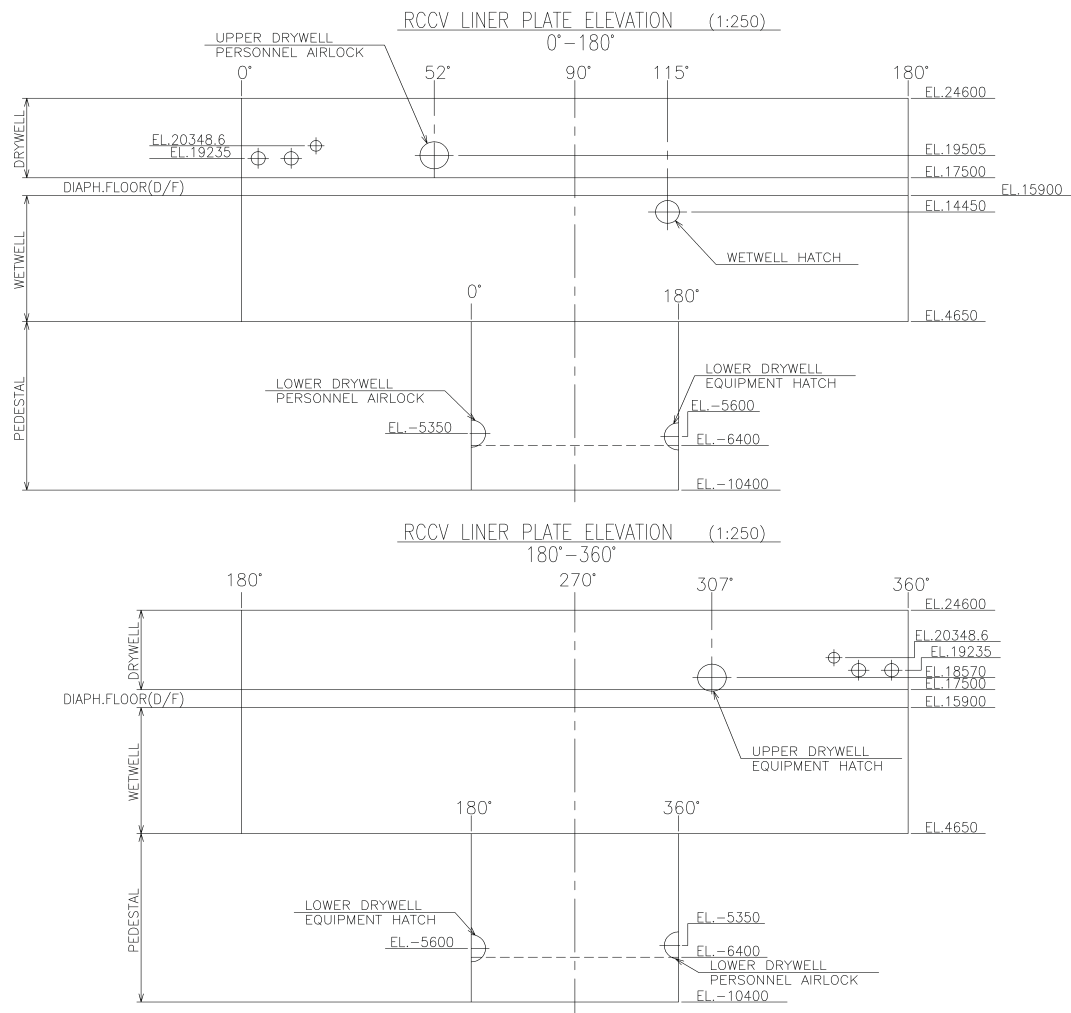
**Figure 3G.1-48. Liner Anchor**

*Note: All dimensions are in mm unless otherwise noted*



**Figure 3G.1-49. Liner Plate Plans**

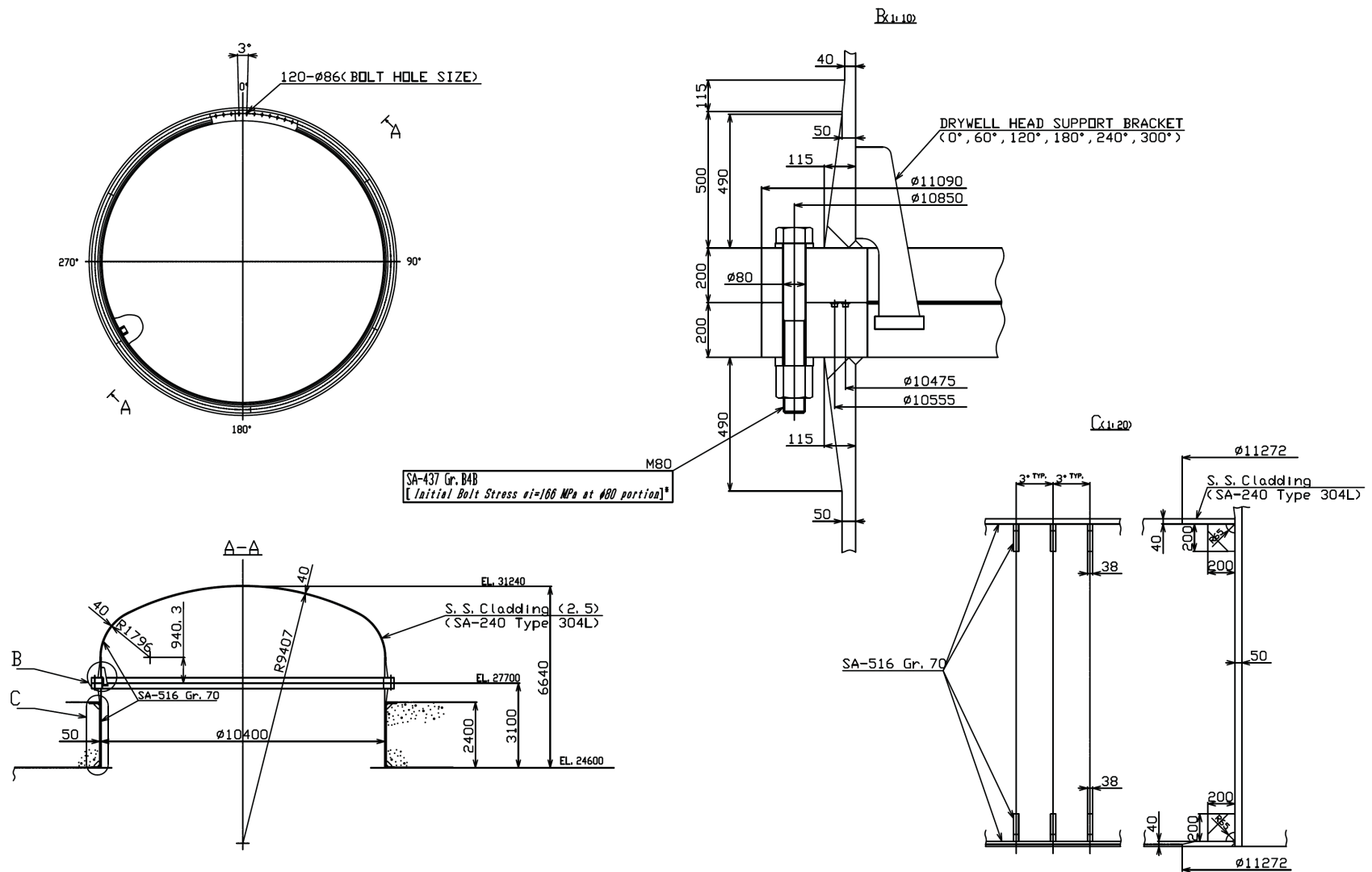
*Note: All dimensions are in mm unless otherwise noted*



Note: These are "major" penetrations only.

**Figure 3G.1-50. Liner Plate Development Elevation**

*Note: All dimensions are in mm unless otherwise noted*



**Figure 3G.1-51. Drywell Head**  
 Note: All dimensions are in mm unless otherwise noted



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**Figure 3G.1-52. Equipment Hatch**

*Note: All dimensions are in mm unless otherwise noted*

{{{Security-Related Information - Withhold Under 10 CFR 2.390}}}

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**Figure 3G.1-53. Wetwell Hatch**

*Note: All dimensions are in mm unless otherwise noted*

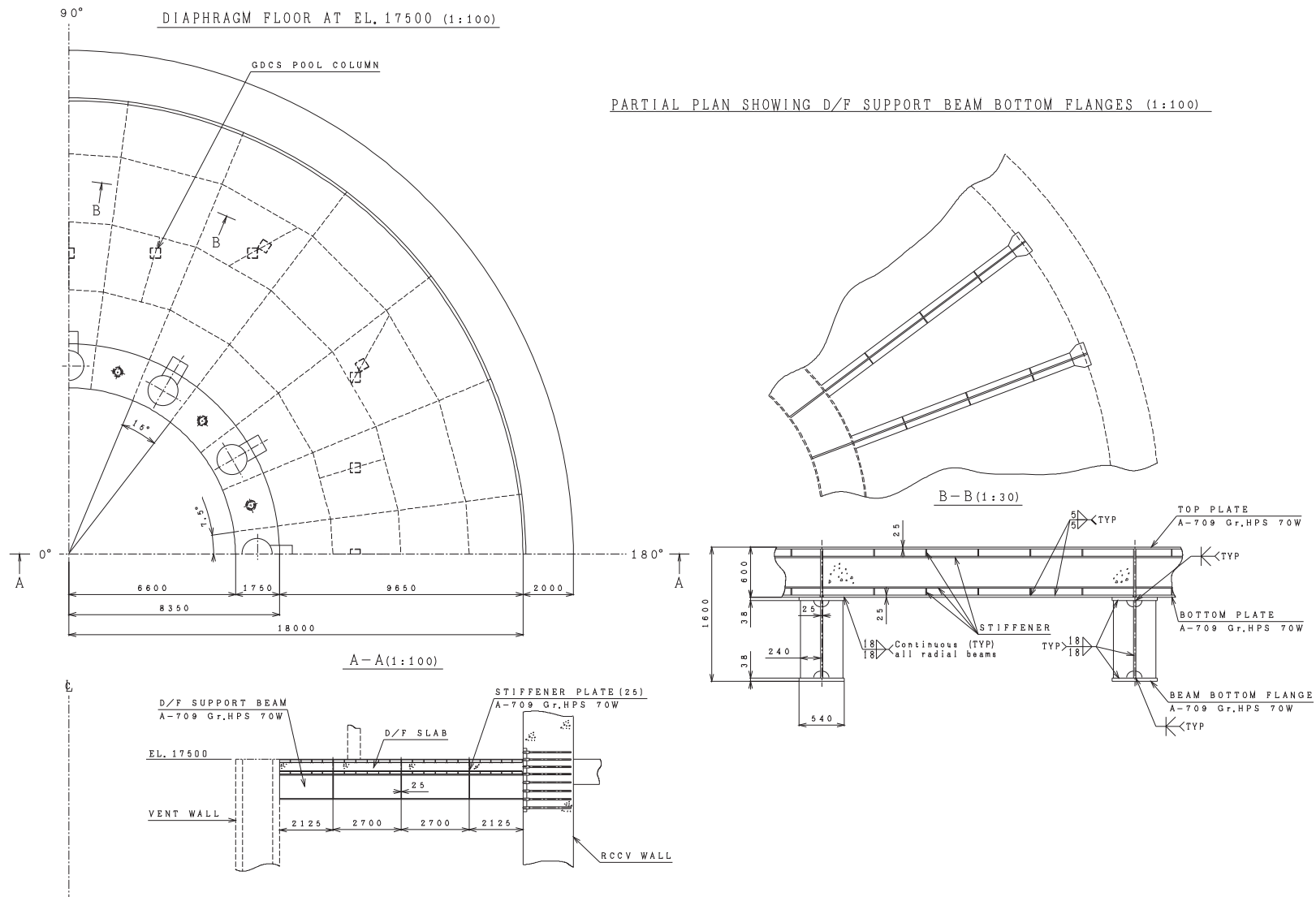
{{{Security-Related Information - Withhold Under 10 CFR 2.390}}}

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**Figure 3G.1-54. Personnel Airlock**

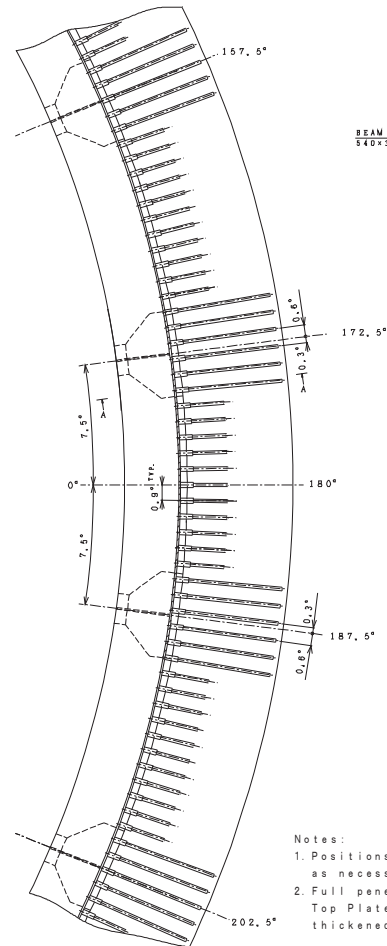
*Note: All dimensions are in mm unless otherwise noted*

{{{Security-Related Information - Withhold Under 10 CFR 2.390}}}

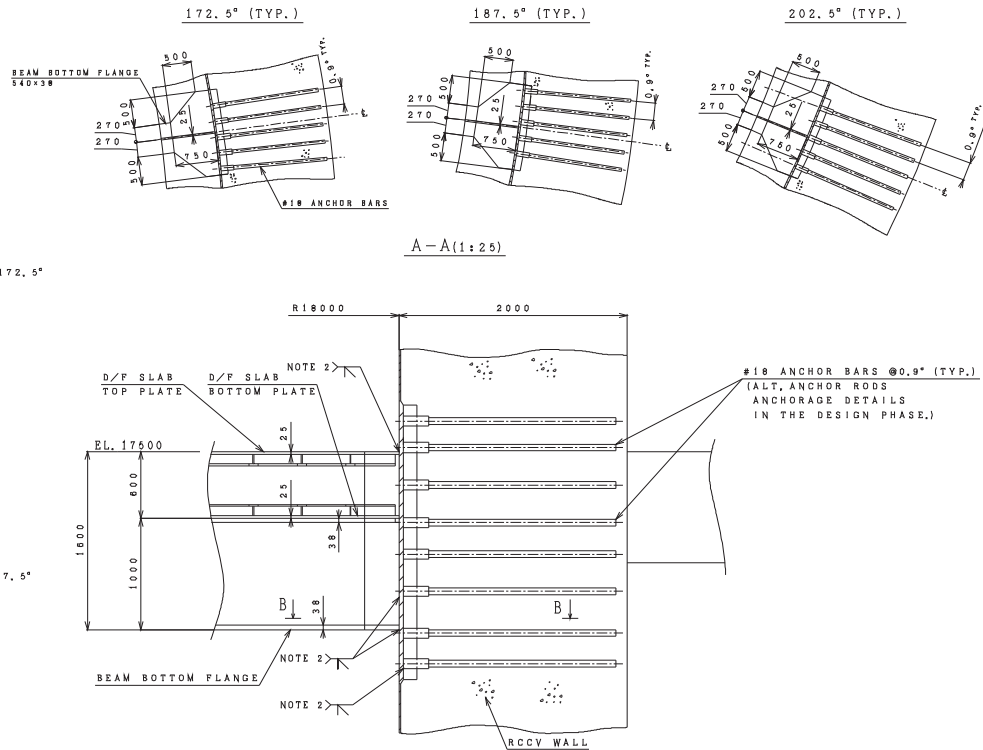


**Figure 3G.1-55. Diaphragm Floor**  
*Note: All dimensions are in mm unless otherwise noted*

D/F SLAB ANCHORS AT TOP PLATE AS SHOWN  
D/F SLAB ANCHORS AT BOTTOM PLATE SIMILAR PLAN  
(TYPICAL 45° SECTION FROM 157.5° TO 202.5°) (1:50)



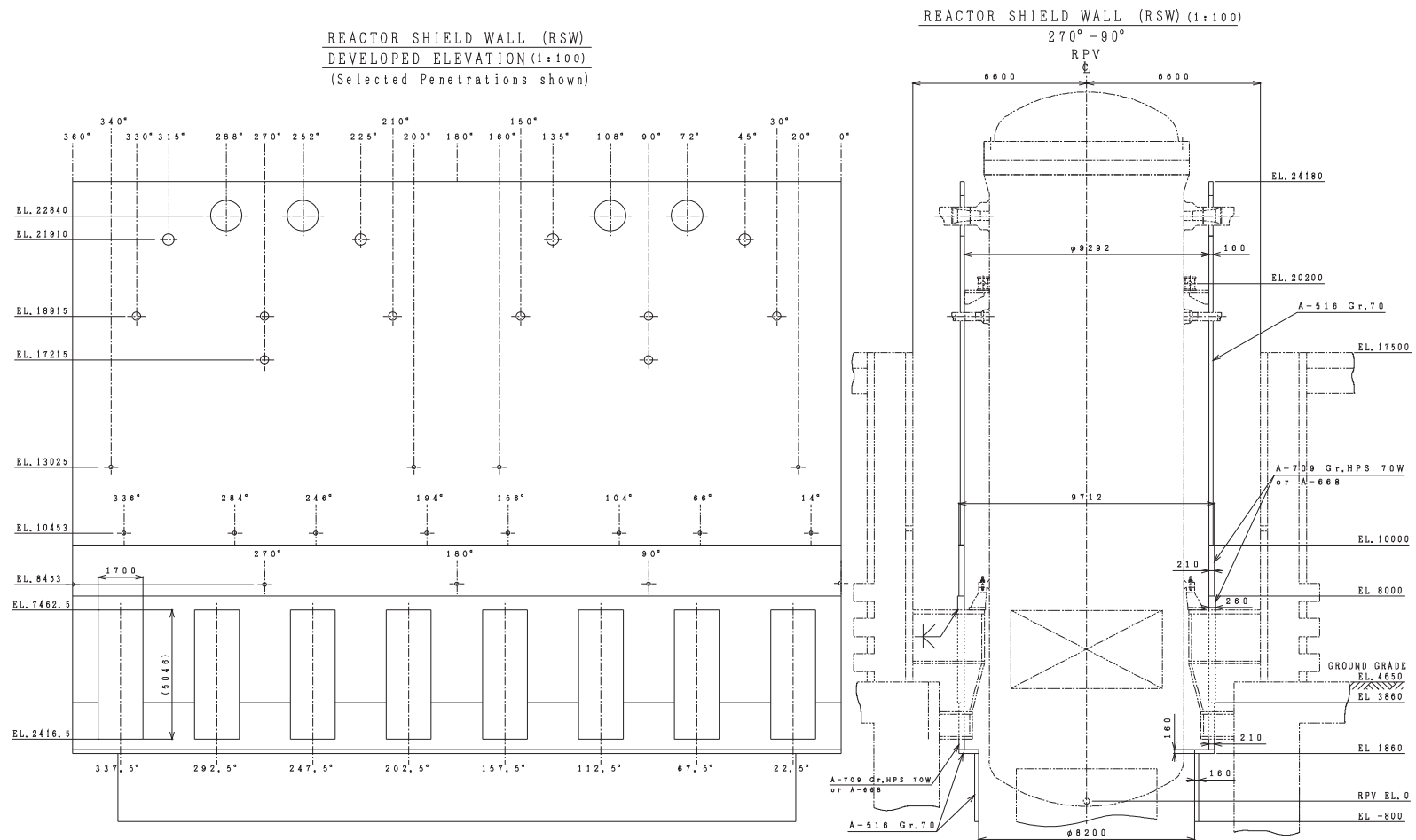
D/F SLAB ANCHORS AT BEAM BOTTOM FLANGES PLAN (B-B) (1:50)



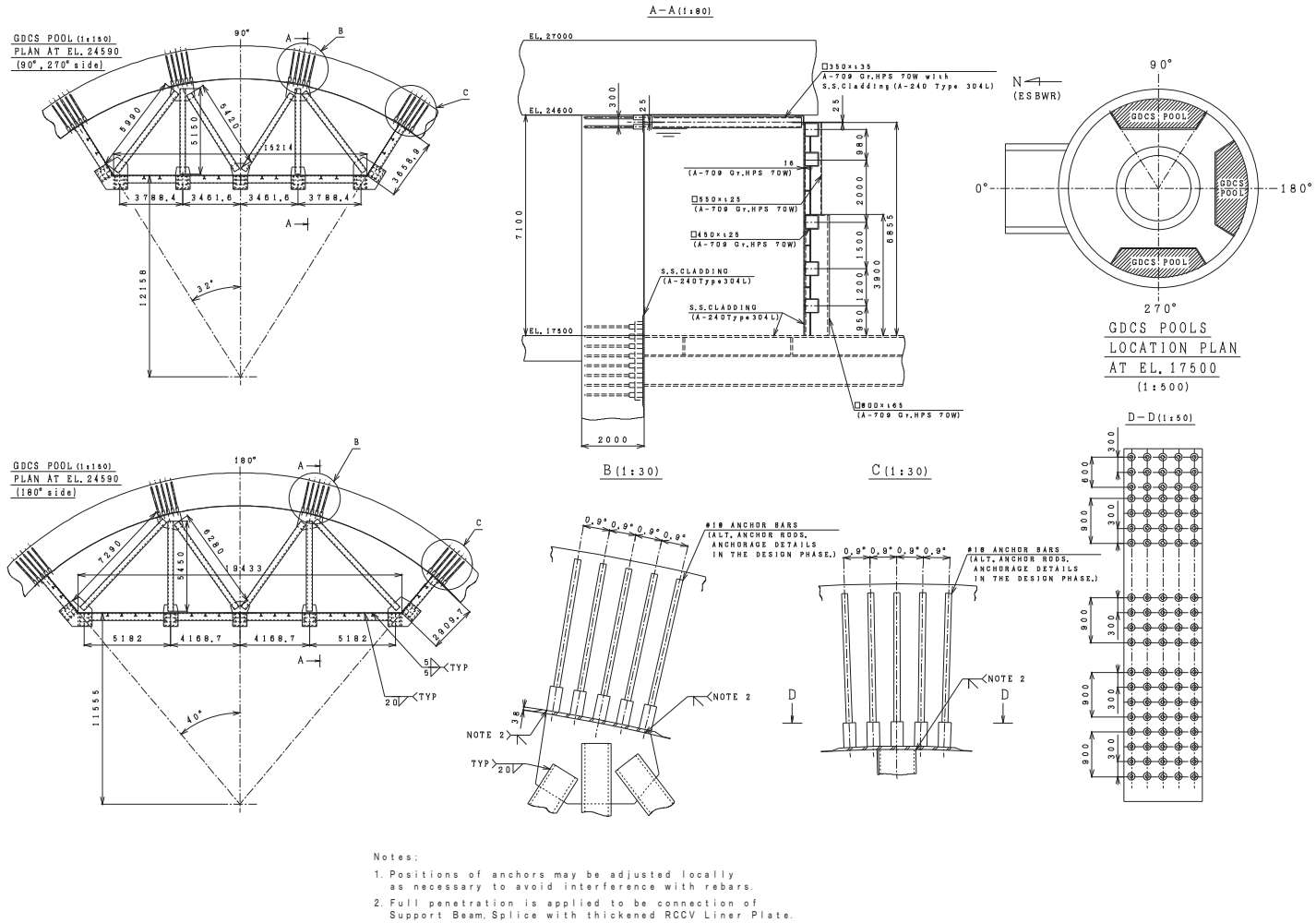
- Notes:
1. Positions of anchors may be adjusted locally as necessary to avoid interference with rebars.
  2. Full penetration is applied to connection of Top Plate, Bottom Plate, Support Beam, Splice with thickened RCCV Liner Plate.

**Figure 3G.1-56. Diaphragm Floor Slab Anchor**  
Note: All dimensions are in mm unless otherwise noted



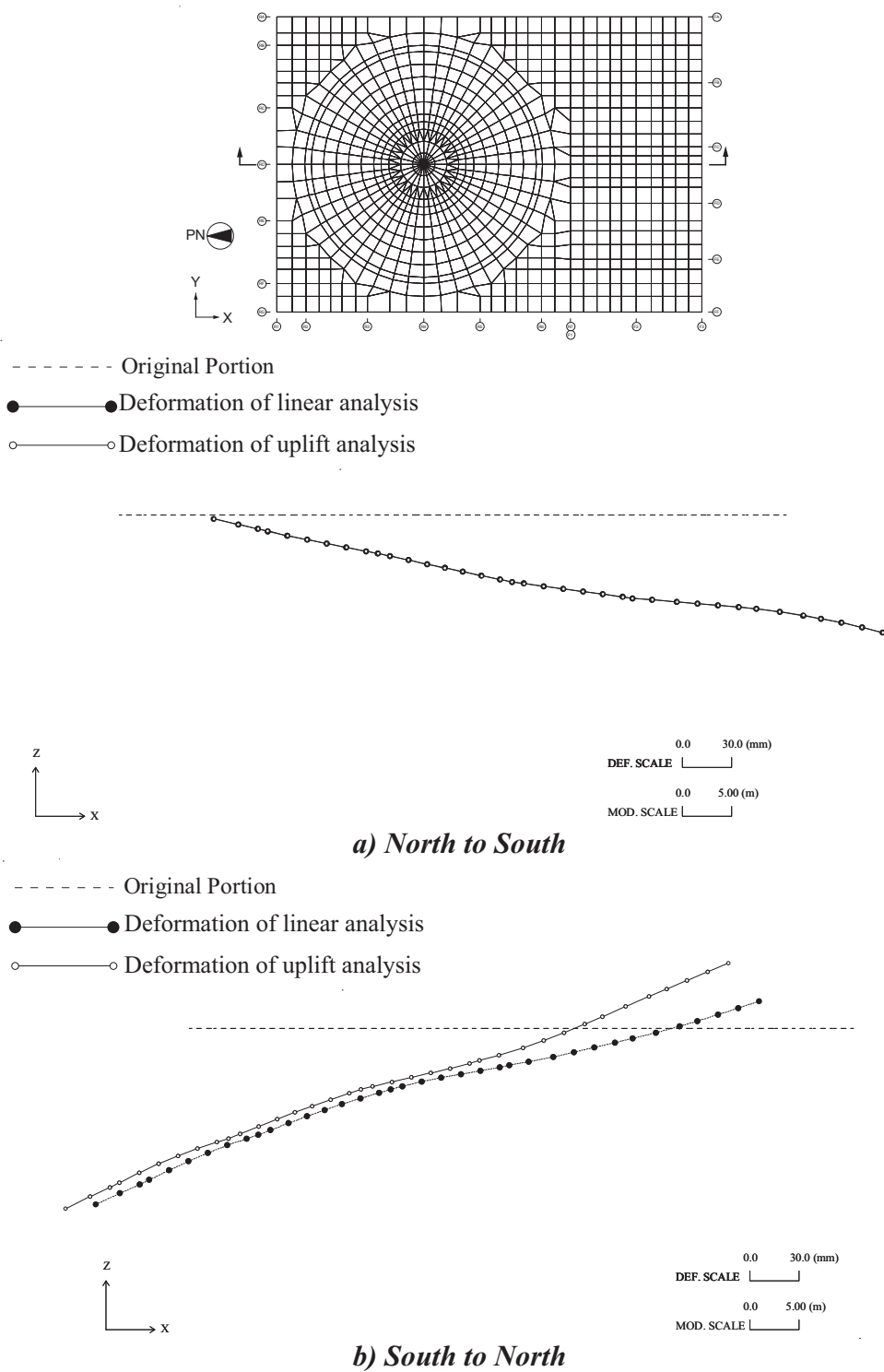


**Figure 3G.1-58. Reactor Shield Wall**  
Note: All dimensions are in mm unless otherwise noted

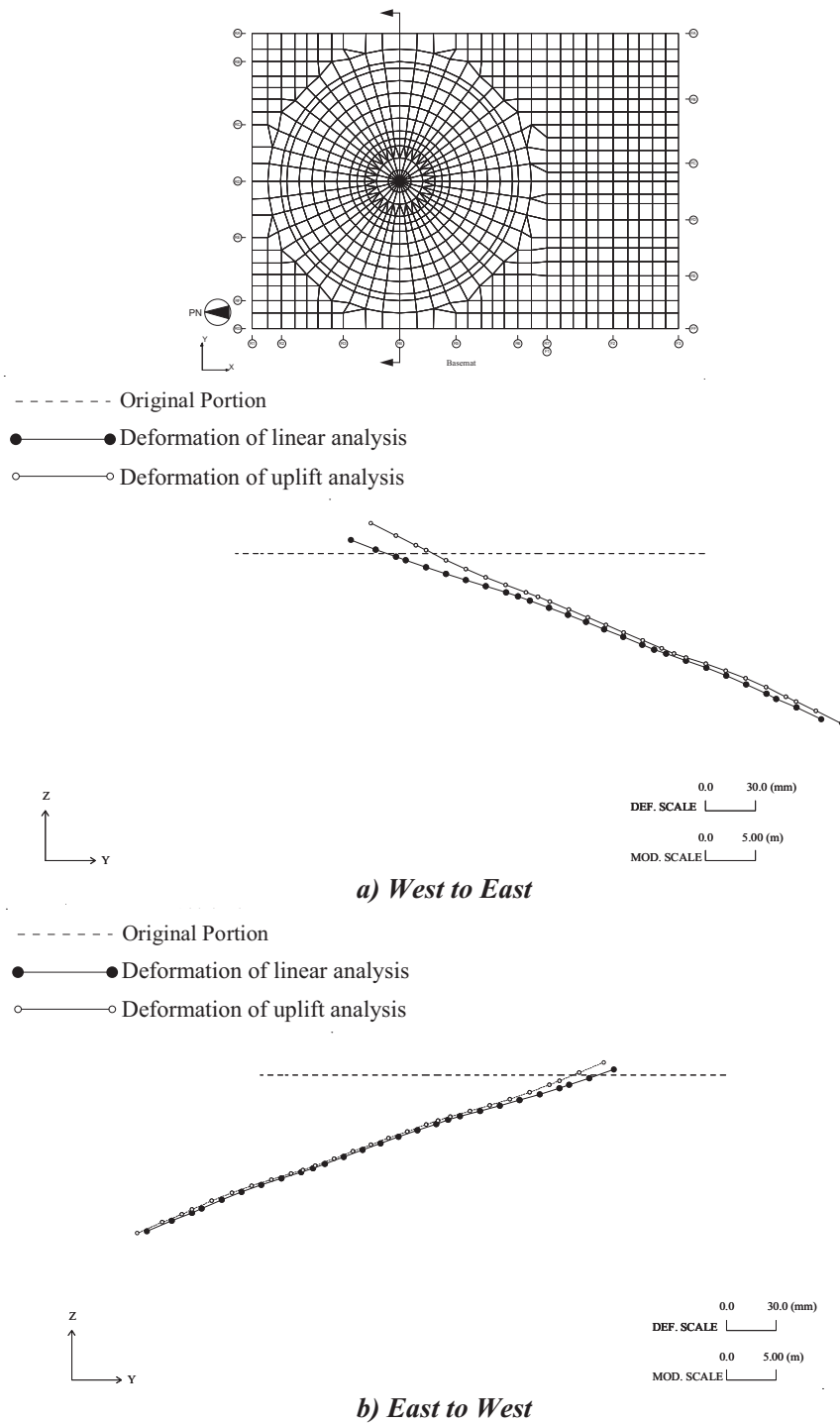


**Figure 3G.1-59. GDSC Pool**  
Note: All dimensions are in mm unless otherwise noted

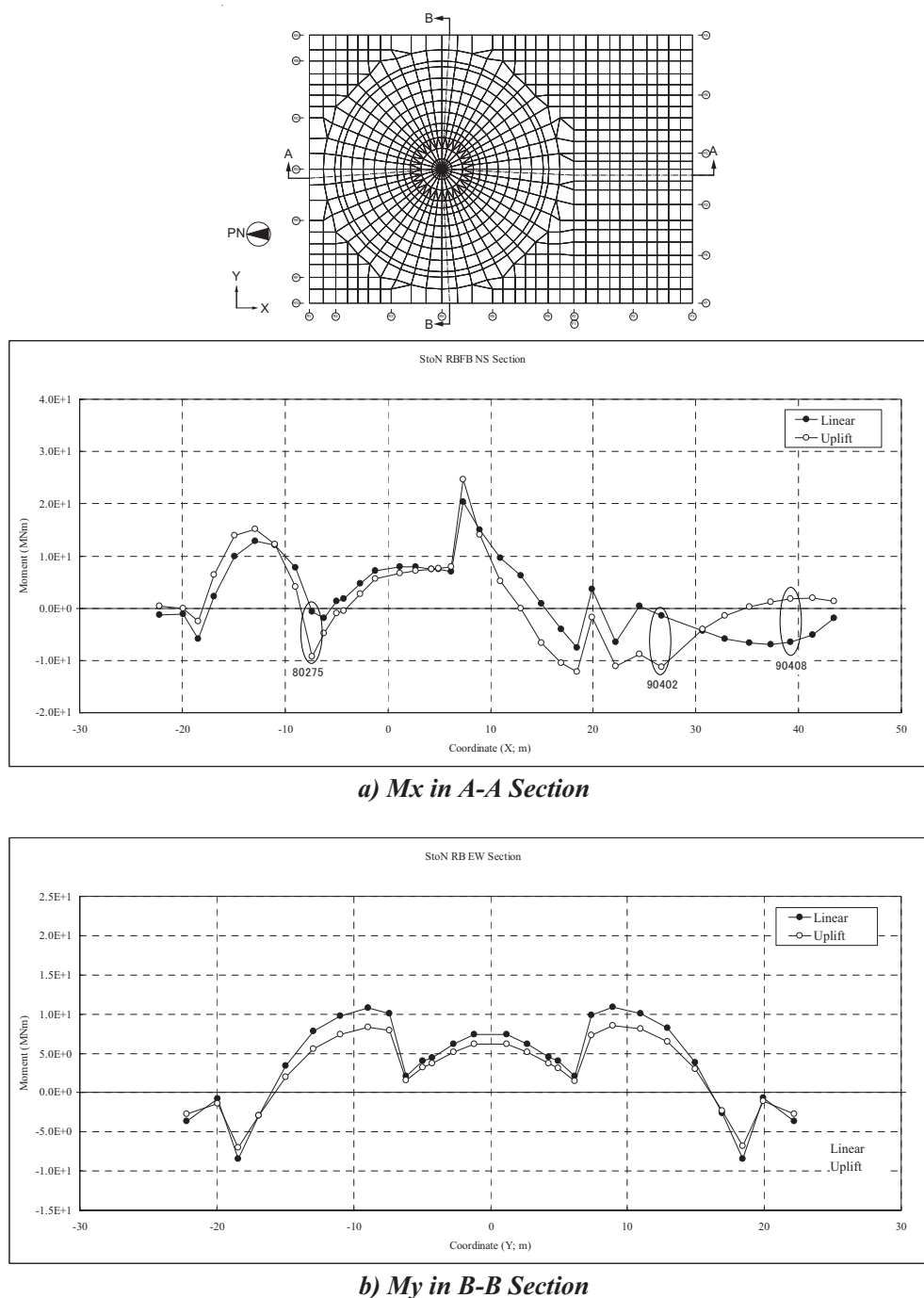




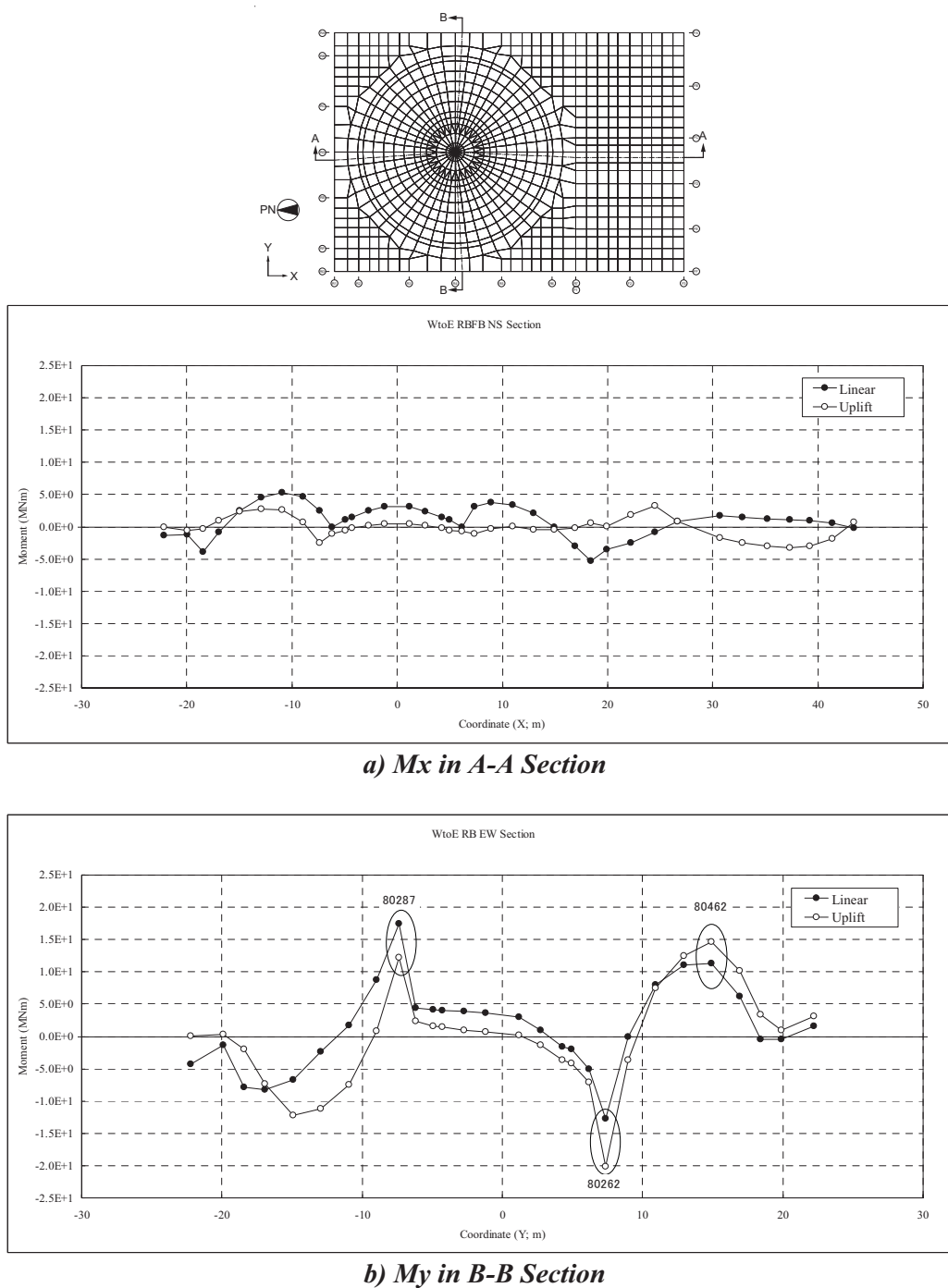
**Figure 3G.1-60. Comparison of Basemat Deformation without Tension Springs (NS Direction SSE)**



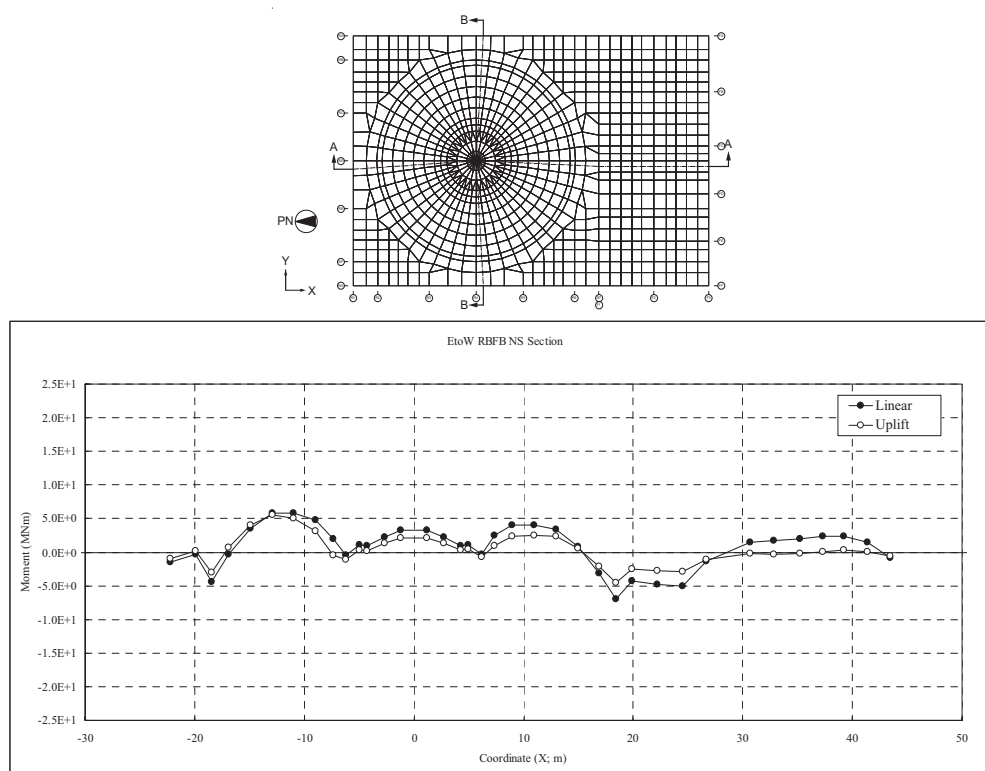
**Figure 3G.1-61. Comparison of Basemat Deformation without Tension Springs (EW Direction SSE)**



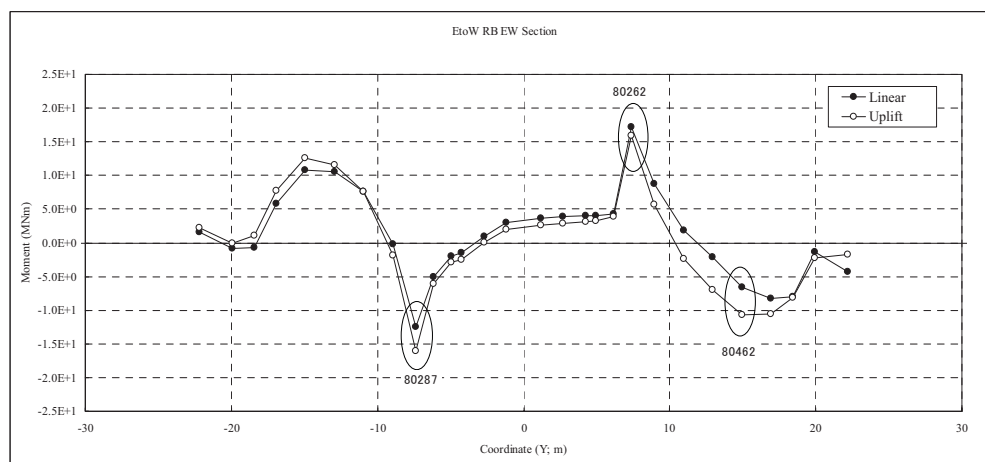
**Figure 3G.1-62. Comparison of Basemat Sectional Moments (S to N SSE)**



**Figure 3G.1-63. Comparison of Basemat Sectional Moments (W to E SSE)**



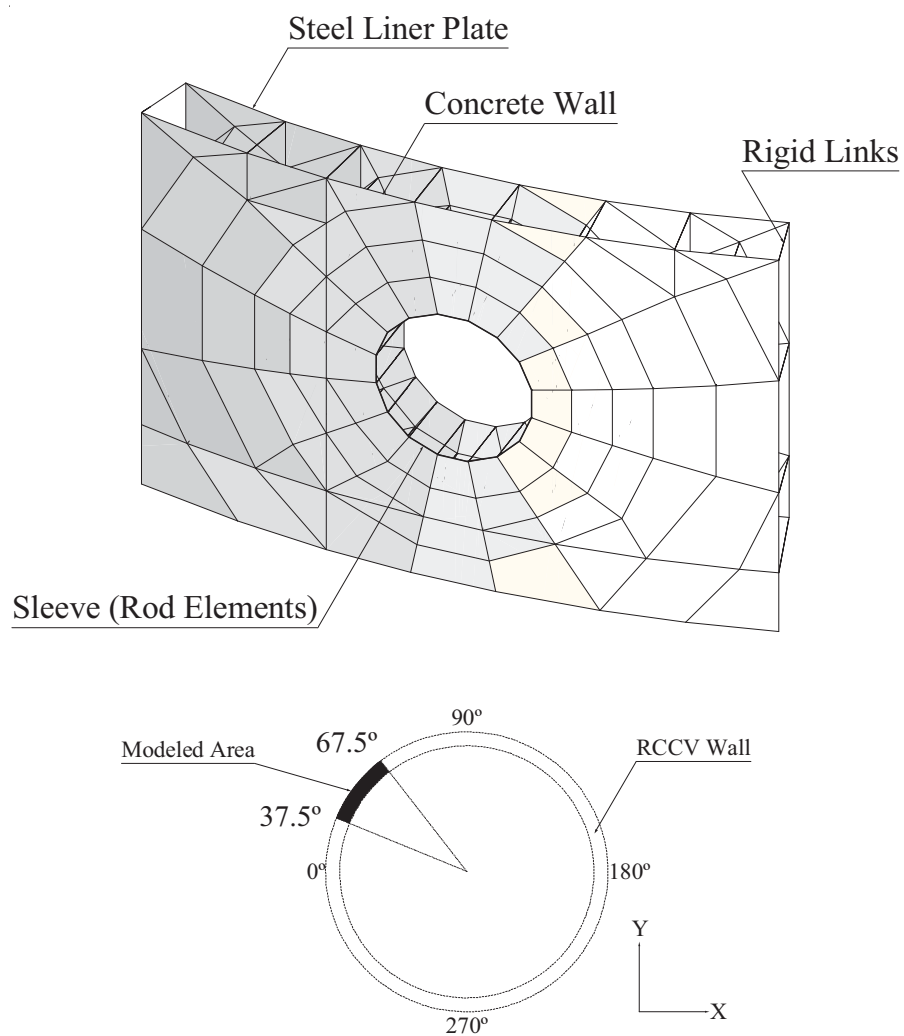
**a)  $M_x$  in A-A Section**



**b)  $M_y$  in B-B Section**

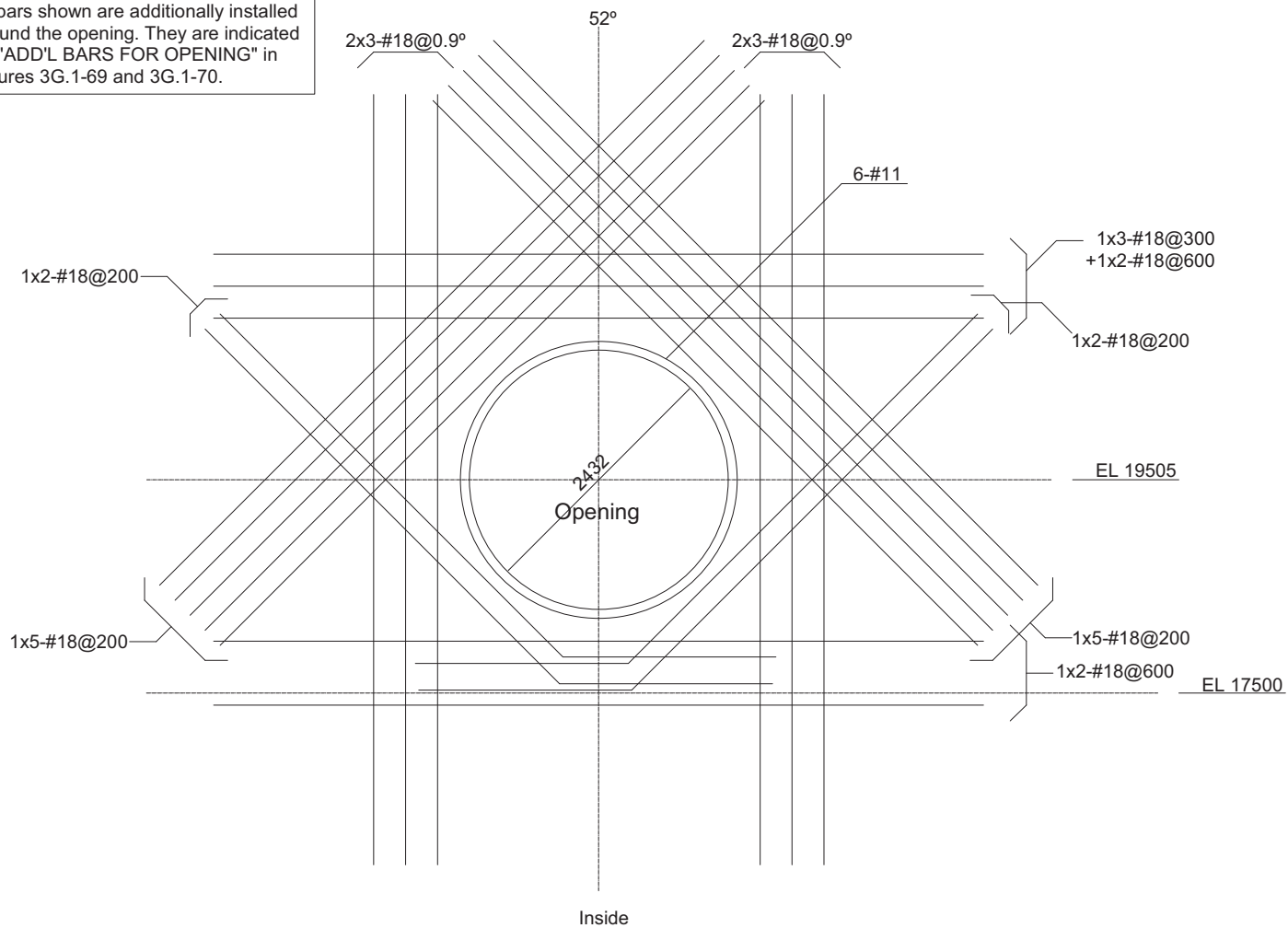
**Figure 3G.1-64. Comparison of Basemat Sectional Moments (E to W SSE)**

**Figure 3G.1-65. Deleted**



**Figure 3G.1-66. Detail Local Finite Element Model of RCCV Wall Around Upper Drywell Personnel Airlock Opening**

Note:  
 (1) Rebars shown are additionally installed around the opening. They are indicated as "ADD'L BARS FOR OPENING" in Figures 3G.1-69 and 3G.1-70.

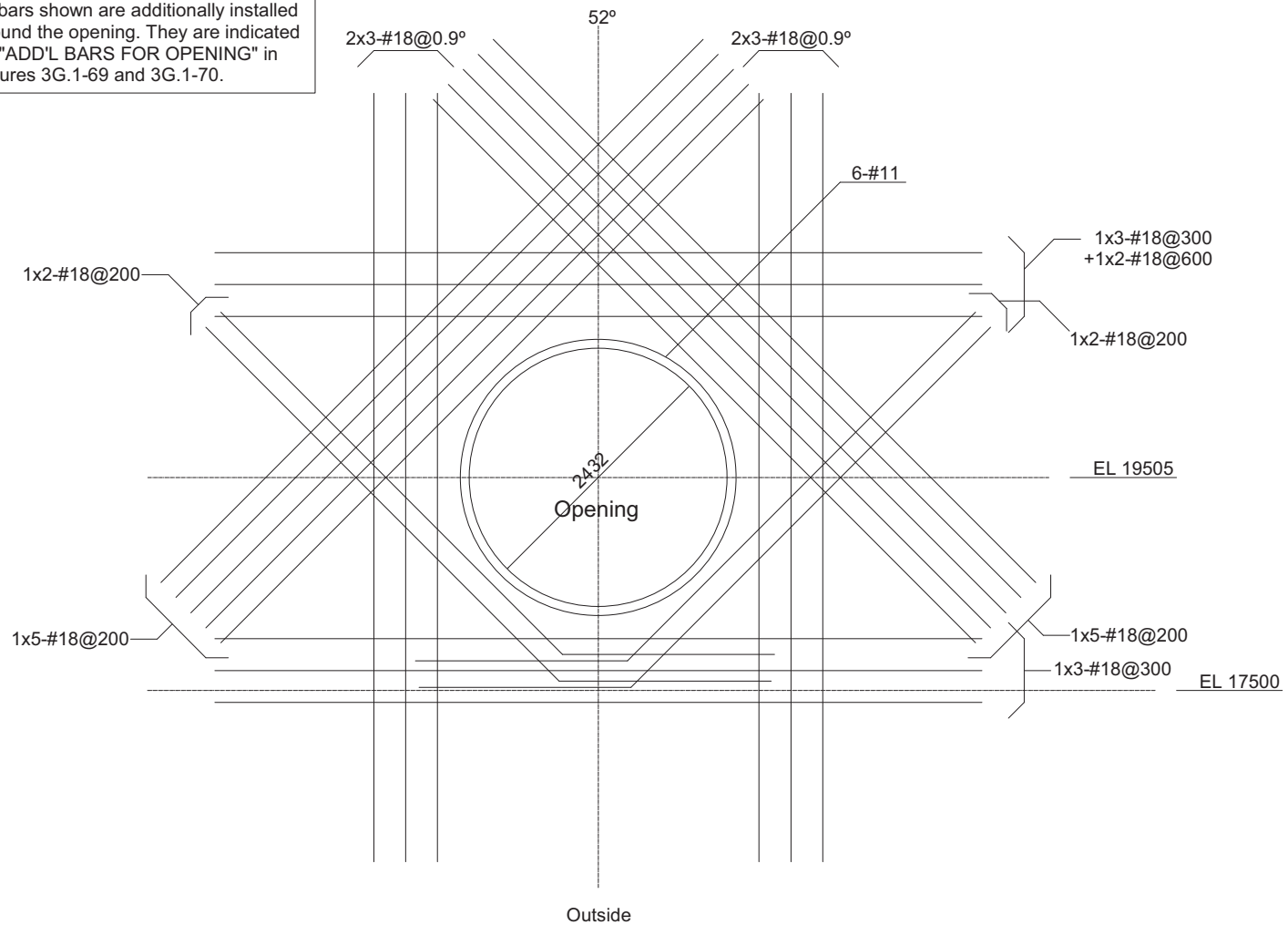


**Figure 3G.1-67. Additional Reinforcements in RCCV Wall Around Upper Drywell Personnel Airlock Opening (Inside Face)**

*Note: All dimensions are in mm unless otherwise noted*

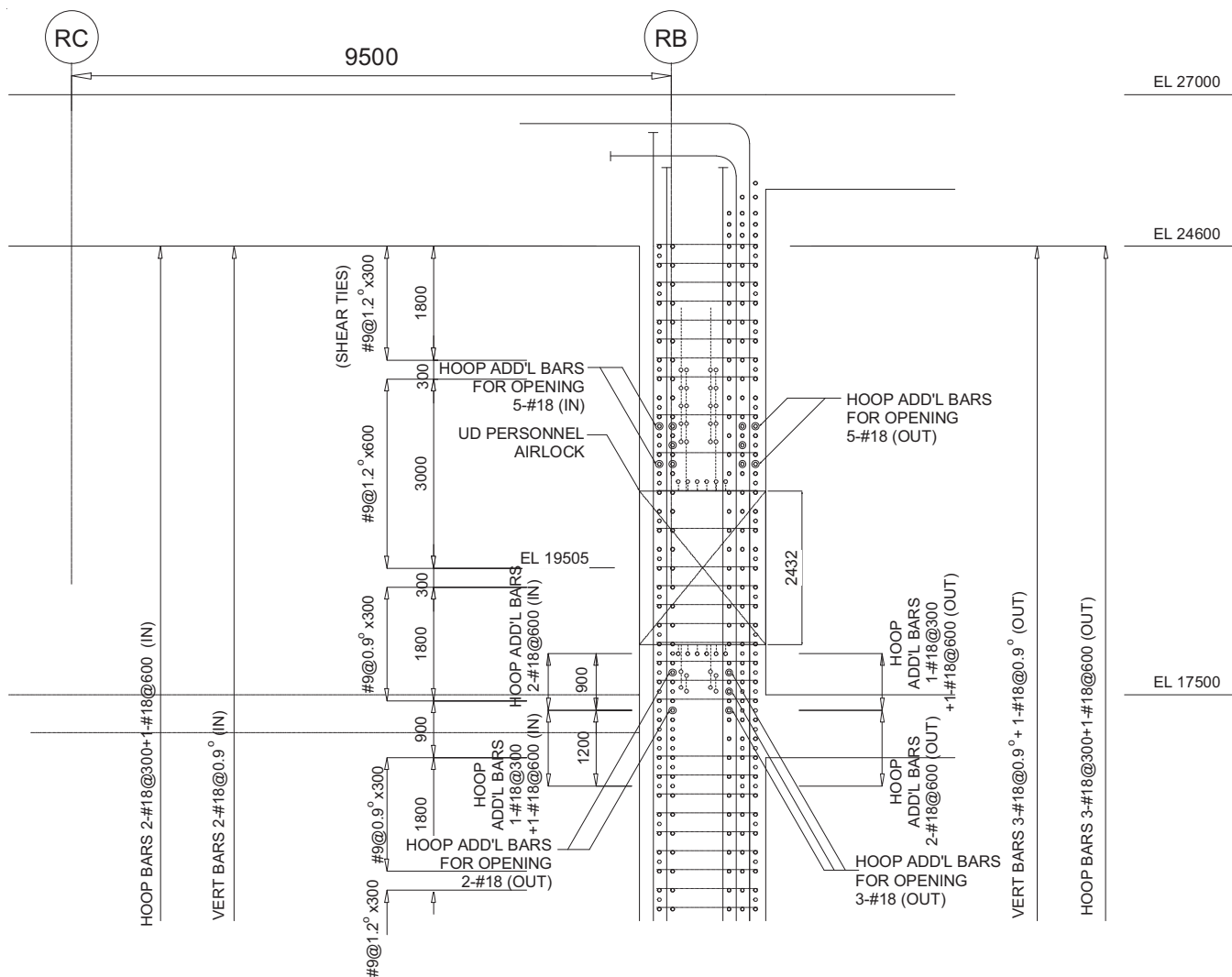


Note:  
 (1) Rebars shown are additionally installed around the opening. They are indicated as "ADD'L BARS FOR OPENING" in Figures 3G.1-69 and 3G.1-70.



**Figure 3G.1-68. Additional Reinforcements in RCCV Wall Around Upper Drywell Personnel Airlock Opening (Outside Face)**

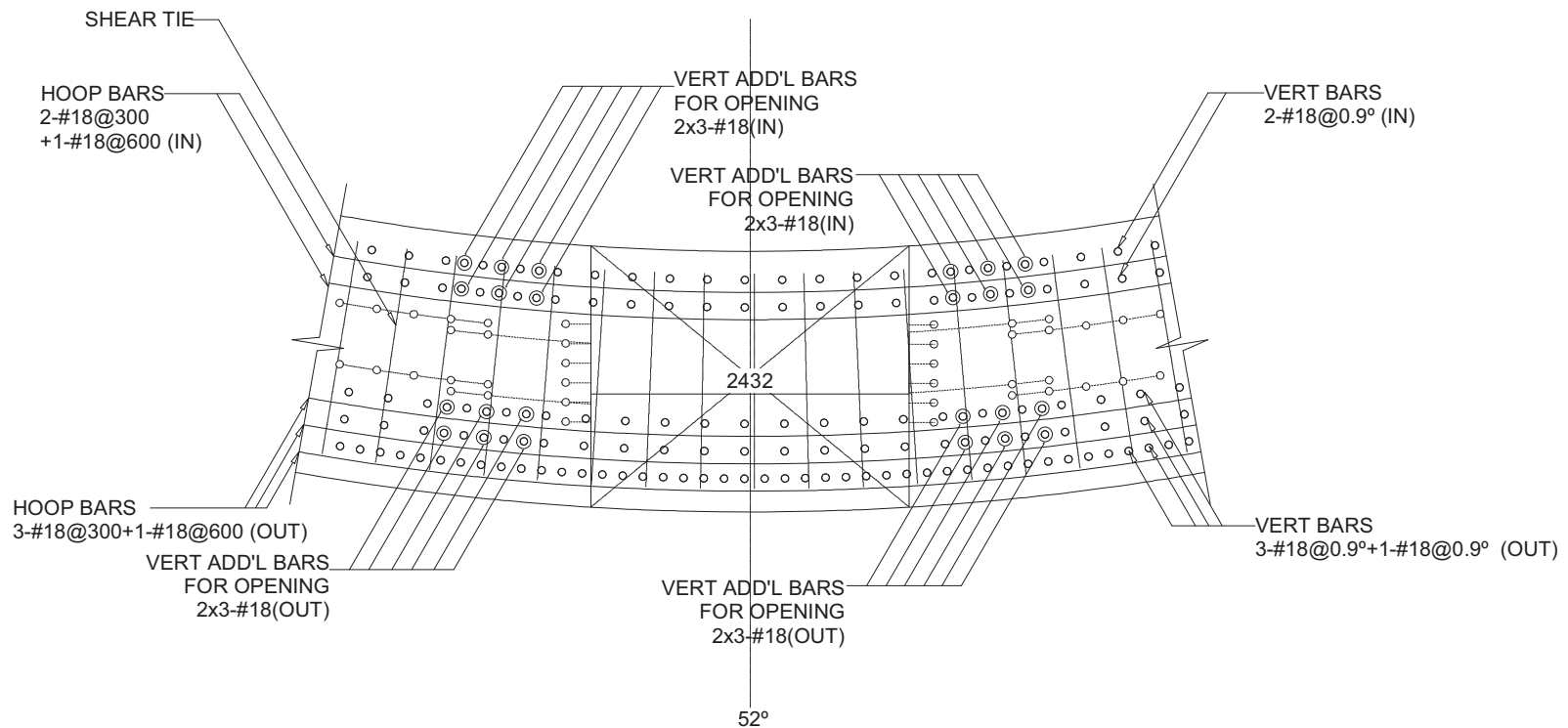
*Note: All dimensions are in mm unless otherwise noted*



**Figure 3G.1-69. Reinforcements in RCCV Wall Around Upper Drywell Personal Airlock Opening (Section)**

*Global Note for Figure: Evaluation results of Subsection 3G.5.3 included.*

*Note: All dimensions are in mm unless otherwise noted*



**Figure 3G.1-70. Reinforcements in RCCV Wall Around Upper Drywell Personnel Airlock Opening (Plan)**

*Figure 3G.1-71a. (Deleted)*

*Figure 3G.1-71b. (Deleted)*

**Figure 3G.1-72. (Deleted)**

## 3G.2 CONTROL BUILDING

### 3G.2.1 Objective and Scope

The objective of this subsection is to document the structural design details, inputs and analytical results from the analysis of the CB of the standard ESBWR plant. The scope includes the design and analysis of the structure for normal, severe environmental, extreme environmental, and construction loads.

### 3G.2.2 Conclusions

The following are the major summary conclusions on the design and analysis of the CB.

- Based on the results of finite element analyses performed in accordance with the design conditions identified in [Subsection 3G.2.3](#), stresses in concrete and reinforcement are less than the allowable stresses per the applicable regulations, codes or standards listed in [Section 3.8](#).
- The factors of safety against floatation, sliding, and overturning of the structure under various loading combinations are higher than the required minimum.
- The thickness of the roof slabs and exterior walls are more than the minimum required to preclude penetration, perforation or spalling resulting from impact of design basis tornado missiles.

### 3G.2.3 Structural Description

The CB houses the safety-related electrical, control and instrumentation equipment, the main control room for the Reactor and Turbine Buildings, and the CB heating, ventilation and air conditioning (HVAC) equipment. The CB is a Seismic Category I structure that houses control equipment and operation personnel.

The CB is a reinforced concrete box type shear wall structure consisting of walls and slabs and is supported by a foundation mat. Steel framing is composite with concrete slab and used to support the slabs for vertical loads. The CB is a shear wall structure designed to accommodate all seismic loads with its walls and the connected floors. Therefore, frame members such as beams or columns are designed to accommodate deformations of the walls in case of earthquake conditions. The CB is adjacent to but structurally independent of the RB (see [Figures 1.2-2 through 1.2-5](#) and [Figure 1.2-11](#)).

The key dimensions of the CB are summarized in [Table 3.8-8](#). [Figures 3G.2-1 through 3G.2-3](#) show the outline drawings of the CB.

### 3G.2.4 Analytical Models

#### 3G.2.4.1 Structural Model

The CB is analyzed utilizing the finite element computer program NASTRAN. The finite element model consists of quadrilateral and beam elements. The quadrilateral elements are used to

represent the slabs and walls. Beam elements are used to represent columns and beams. The model is shown in [Figures 3G.2-4 to 3G.2-11](#). The model includes the whole (360°) portion of the CB taking the application of nonaxisymmetrical loads into consideration.

The nodal points are defined by a right hand Cartesian coordinate system X, Y, Z. This system, called the global coordinate system, has its origin located at the north-west corner of the CB at EL 0 mm. The positive X axis is in the south direction; the Y axis is in the east direction; the Z axis is vertical upward. This coordinate system is shown in [Figure 3G.2-4](#).

#### 3G.2.4.2 Foundation Models

The foundation soil is represented by soil springs. The spring constants for rocking and translations are determined based on the following soil parameters which correspond to the Soft Site conditions described in [Appendix 3A](#):

- Shear wave velocity: 300 m/s (1000 ft/s)
- Unit weight: 19.6 kN/m<sup>3</sup> (125 lbf/ft<sup>3</sup>)
- Shear modulus: 180 MN/m<sup>2</sup> (26110 psi)
- Poisson's Ratio: 0.478

Soil springs are attached to the bottom of the foundation mat, and the constraints by side soil are not included in the model. The values of the soil springs used in the analysis are shown in [Table 3G.2-1](#). The springs have perfectly elastic stiffness.

These spring values are multiplied by the foundation mat nodal point tributary areas to compute the spring constants assigned to the base slab nodal points.

#### 3G.2.5 Structural Analysis and Design

##### 3G.2.5.1 Site Design Parameters

The key site design parameters are described in [Table 3G.1-2](#).

##### 3G.2.5.2 Design Loads, Load Combinations, and Material Properties

###### 3G.2.5.2.1 Design Loads

###### 3G.2.5.2.1.1 Dead Load (D) and Live Load (L and L<sub>o</sub>)

The weights of structures are evaluated using the following unit weights.

- reinforced concrete: 23.5 kN/m<sup>3</sup> (150 lbf/ft<sup>3</sup>)
- steel: 77.0 kN/m<sup>3</sup> (490 lbf/ft<sup>3</sup>)

Weights of major equipment, miscellaneous structures, piping, and commodities are summarized in [Tables 3G.2-2 and 3G.2-3](#).

Live loads on the CB floor and roof slabs are described in [Subsection 3.8.4.3.2](#).



#### 3G.2.5.2.1.2 Snow and Rain Load

The snow and rain load is applied to the roof slab and is taken as shown in Table 3G.1-2.

#### 3G.2.5.2.1.3 Lateral Soil Pressure at Rest

The lateral soil pressure at rest is applied to the external walls below grade and is based on soil property given in Table 3G.1-2. Pressures to be applied to the walls are provided in Figure 3G.2-12..

#### 3G.2.5.2.1.4 Wind Load ( $W$ )

Wind load is applied to the roof slab and external walls above grade and is based on basic wind speed given in Table 3G.1-2.

#### 3G.2.5.2.1.5 Tornado Load ( $W_t$ )

The tornado load is applied to the roof slab and external walls above grade and its characteristics are given in Table 3G.1-2. The tornado load,  $W_t$ , is further defined by the combinations described in Subsection 3G.1.5.2.1.5.

#### 3G.2.5.2.1.6 Thermal Load ( $T_o$ and $T_a$ )

Thermal loads for the CB are evaluated for the normal operating conditions and abnormal (LOCA in combination with a loss of external alternating current power) conditions. Figure 3G.2-13. shows the section location for temperature distributions for various structural elements of the CB, and Table 3G.2-4 shows the magnitude of equivalent linear temperature distribution.

Stress-free temperature is 15.5°C (60°F).

#### 3G.2.5.2.1.7 Design Seismic Loads

The design seismic loads are obtained by soil–structure interaction analyses, which are described in Appendix 3A. The seismic loads used for design are as follows:

- Figure 3G.2-14.: design seismic shears and moments
- Table 3G.2-5: maximum vertical acceleration

The seismic loads are composed of two perpendicular horizontal and one vertical components. The effects of the three components are combined based on the SRSS method as described in Subsection 3.8.1.3.6.

Seismic lateral soil pressure for wall design is provided in Figure 3G.2-15. using the enveloped pressure of the elastic procedure described in ASCE 4-98 Section 3.5.3.2 and SASSI results as described in Subsection 3A.8.8.

#### 3G.2.5.2.2 Load Combinations and Acceptance Criteria

Table 3.8-15 gives load combinations for the safety-related reinforced concrete structure. Based on previous experience, critical load combinations are selected for the CB design. They are mainly

combinations including design basis accident (DBA) loads and seismic loads as shown in Table 3G.2-6. The acceptance criteria for the selected combinations are also included in Table 3G.2-6.

#### 3G.2.5.2.3 Material Properties

Properties of the materials used for the CB design analyses are the same as those for the RB, and they are described in Subsection 3G.1.5.2.3.

#### 3G.2.5.3 Stability Requirements

The stability requirements for the CB foundation are same as those for the RB, and they are described in Subsection 3G.1.5.3.

#### 3G.2.5.4 Structural Design Evaluation

The evaluation of the Seismic Category I structures in the CB is performed using the same procedure as the RB, which is described in Subsection 3G.1.5.4.

The locations of the sections that are selected for evaluation are indicated in Figures 3G.2-5 through 11. They are selected, in principle, from the center and both ends of wall and slab, where it is reasonably expected that the critical stresses appear based on engineering experience and judgment. Tables 3G.2-7 through 3G.2-11 show the forces and moments at the selected sections from NASTRAN analysis. Element forces and moments listed in the tables are defined with relation to the element coordinate system shown in Figure 3G.2-16. Tables 3G.2-12 through 3G.2-15 show the combined forces and moments in accordance with the selected load combinations listed in Table 3G.2-6.

Table 3G.2-16 lists the sectional thicknesses and rebar ratios used in the evaluation. The values are retrieved from the outline drawings shown in Figures 3G.2-1 through 3G.2-3.

Tables 3G.2-17 through 3G.2-24 compares the rebar and concrete stresses at these sections for the representative elements with the allowable stresses, which are conservatively taken to be the more limiting of ACI 349-01 and ASME Section III Division 2. Table 3G.2-25 summarizes evaluation results for transverse shear in accordance with ACI 349, Chapter 11.

##### 3G.2.5.4.1 Shear Walls

The maximum rebar stress of 287.6 MPa (41.71 ksi) is found in the vertical rebar in the wall at EL -7400 due to the load combination CB-9 as shown in Table 3G.2-24. The maximum horizontal rebar stress is found to be 219.9 MPa (31.89 ksi) in the wall at EL 9060 due to the load combination CB-9. The maximum transverse shear force is found to be 0.791 MN/m (4.52 kips/in) against the shear strength of 2.235 MN/m (12.76 kips/in) in the wall at EL -2000 as shown in Table 3G.2-25.

#### 3G.2.5.4.2 Floor Slabs

The maximum rebar stress of 178.6 MPa (25.90 ksi) is found in the roof at EL 13800 due to the load combination CB-9 as shown in Table 3G.2-23. The maximum transverse shear force is found to be 0.318 MN/m (1.81 kips/in) against the shear strength of 0.354 MN/m (2.02 kips/in) at EL 4650 slab as shown in Table 3G.2-25.

#### 3G.2.5.4.3 Foundation Mat

The maximum rebar stress is found to be 265.0 MPa (38.44 ksi) due to the load combination CB-9 as shown in Table 3G.2-23. The maximum transverse shear force is found to be 3.159 MN/m (18.04 kips/in) against the shear strength of 4.943 MN/m (28.23 kips/in) as shown in Table 3G.2-25.

#### 3G.2.5.5 Foundation Stability

The stabilities of the CB foundation against overturning, sliding and floatation are evaluated. The energy approach is used in calculating the factor of safety against overturning.

The factors of safety against overturning, sliding and floatation are given in Table 3G.2-26. All of these meet the acceptance criteria given in Table 3.8-14. The factor of safety against sliding is obtained according to the procedure shown in Subsection 3.8.5.5. The stress check is performed for the exterior walls against the wall capacity passive pressure. The results are shown in Table 3G.2-26a and 3G.2-26b.

Maximum soil bearing stress is found to be 292 kPa (6100 psf) due to dead plus live loads. Maximum bearing stresses for load combinations involving SSE are shown in Table 3G.2-27 for various site conditions.

##### 3G.2.5.5.1 Foundation Settlement

The basemat design is checked against the normal and differential settlement of the CB. It is found that the basemat can resist the maximum settlement at mat foundation corner of 18 mm (0.7 in.) and the settlement averaged at four corners of 12 mm (0.5 in.). The relative displacement between two corners along the longest dimension of the building basemat calculated under linearly varying soil stiffness is 14 mm (0.6 in). The estimated differential settlement between buildings (RB/FB and CB) is 85 mm (3.3 in.). These values are specified as maximum settlements in Table 2.0-1.

#### 3G.2.5.6 Tornado Missile Evaluation

The CB is shown in Figure 3G.2-3. The minimum thickness required to prevent penetration, concrete spalling and scabbing is evaluated. The methods and procedures are shown in Subsection 3.5.3.1.1.

**Table 3G.2-1      Soil Spring Constants for the CB Analysis Model**

Direction of Spring		Loads	Stiffness (MN/m/m <sup>2</sup> )
Horizontal	X-direction	All	19.650
	Y-direction	All	20.378
Vertical		Horizontal Seismic Loads	79.174
		Other Loads	29.177

*SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):  
1 MN/m/m<sup>2</sup> = 6.366x10<sup>3</sup> lbf/ft/ft<sup>2</sup>*

**Table 3G.2-2      Equipment Load of CB**

Description	Weight	Remarks
Division Distributed Control and Information System (DCIS) Room	216 kN	per one room
Main Control Room Display Consoles	230 kN	
Nonsafety-related DCIS Room	490 kN	per one room
HVAC Units	1489 kN	total

*SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):  
1 MN/m/m<sup>2</sup> = 6.366x10<sup>3</sup> lbf/ft/ft<sup>2</sup>*

**Table 3G.2-3      Miscellaneous Structures, Piping, and Commodity Load of CB**

Elevation (mm)	Area Load
13,800	2.4 kN/m <sup>2</sup> (50psf)
9,060	2.4 kN/m <sup>2</sup> (50psf)
4,650	2.4 kN/m <sup>2</sup> (50psf)
-2,000	2.4 kN/m <sup>2</sup> (50psf)
-7,400	2.4 kN/m <sup>2</sup> (50psf)

*SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):*  
 $1 \text{ MN/m}^2 = 6.366 \times 10^3 \text{ lbf/ft}^2$

**Table 3G.2-4      Equivalent Linear Temperature Distributions at Various Sections**

Section <sup>(1)</sup>	Side <sup>(2)</sup>		Equivalent Linear Temperature <sup>(3)</sup> (°C)			
			Normal Operation Winter		DBA Winter	
	1	2	T <sub>d</sub>	T <sub>g</sub>	T <sub>d</sub>	T <sub>g</sub>
M1	DCIS	GR	18.1	5.1	31.5	32.0
W1	DCIS	GR	17.7	4.4	29.2	27.4
W2	MCR	GR	17.7	4.4	21.3	11.5
W3	DCIS	AT	-14.5	46.8	-2.4	69.0
W4	HVAC	AT	-20.0	36.0	-7.9	57.5
S1	MCR	DCIS	21.0	0.0	40.0	-10.3
S2	DCIS	MCR	21.0	0.0	40.0	10.3
S3	HVAC	DCIS	15.5	-5.7	45.0	-5.2
S4	AT	HVAC	-20.0	-36.0	-7.9	-57.5

(1) See Figure 3G.2-13. for the location of sections.

(2) MCR: Main Control Room  
DCIS: Distributed Control and Information System  
HVAC: Heating, Ventilation and Air Conditioning  
AT: Air  
GR: Ground

(3) T<sub>d</sub>: Average Temperature  
T<sub>g</sub>: Surface Temperature Difference (positive when temperature at Side 1 is higher)

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):  
1 MN/m/m<sup>2</sup> = 6.366x10<sup>3</sup> lbf/ft/ft<sup>2</sup>

**Table 3G.2-5                      Maximum Vertical Acceleration**

Walls			Slabs		
Elev. (m)	Node No.	Max. Vertical Acceleration (g)	Elev. (m)	Node No.	Max. Vertical Acceleration (g)
13.80	6	1.00	13.80	9001	2.19
9.06	5	0.86		9002	1.34
4.65	4	0.74		9003	1.43
-2.00	3	0.56	9.06	9101	2.00
-7.40	2	0.51		9102	1.26
-10.40	1	0.51		9103	1.43
			4.65	9201	1.30
				92.02	1.43
			-2.00	9301	1.39

See Figure 3A.7-6 for the node numbers.

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):  
1m=3.28ft

**Table 3G.2-6          Selected Load Combinations for the CB**

Category	Load Combination								Acceptance Criteria <sup>(1)</sup>
	No. <sup>*2</sup>	D	L	T <sub>o</sub>	T <sub>a</sub>	E'	W	W <sub>t</sub>	
Severe	CB-3	1.4	1.7				1.7		U
Environmental	CB-4	1.05	1.3	1.3			1.3		U
Tornado	CB-7	1.0	1.0	1.0				1.0	U
LOCA + SSE	CB-9	1.0	1.0		1.0	1.0			U

(1) *U = Conservatively taken as envelope of "Allowable Stress as in ASME Section III, Div. 2, Subsection CC-3420 for Factored Load Combination" and "Required section strength based on the strength design method per ACI 349-01."*

(2) *Based on Table 3.8-15.*



**Table 3G.2-7 Results of NASTRAN Analysis: Dead Load**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
Basemat EL-7.4m	67	0.026	-0.709	0.027	-0.987	-1.078	0.088	0.195	-0.160
	72	-0.050	0.071	0.010	-0.469	-0.218	-0.025	-0.623	0.037
	115	-0.729	-0.274	0.309	-0.219	-0.213	-0.371	-0.027	-0.660
	120	-0.058	-0.027	-0.157	-0.110	-0.173	0.675	-0.033	-0.021
Slab B1F EL-2.0m	567	-0.004	0.729	-0.044	-0.049	-0.023	-0.009	-0.077	0.022
	572	0.080	0.122	-0.012	-0.021	-0.017	0.008	0.100	-0.006
	615	0.167	0.128	-0.255	-0.034	-0.006	0.026	-0.042	0.004
	620	0.040	0.042	0.056	-0.024	-0.024	-0.029	0.034	0.039
Slab 1F EL4.65m	1067	0.071	0.031	-0.002	0.168	0.058	-0.011	0.030	0.025
	1072	-0.013	0.032	0.002	-0.028	-0.009	0.000	0.073	0.005
	1115	0.110	0.008	0.010	-0.016	-0.152	-0.009	-0.001	0.144
	1120	0.020	0.015	0.055	-0.016	-0.015	-0.015	0.019	0.025
Slab 2F EL9.06m	1567	0.012	0.061	-0.002	0.081	0.002	-0.004	0.016	0.010
	1572	0.018	-0.006	0.001	-0.030	-0.012	0.000	0.061	0.001
	1615	0.136	0.114	-0.025	-0.007	-0.117	-0.007	0.007	0.128
	1620	0.015	0.009	0.018	-0.015	-0.015	-0.014	0.017	0.022
Roof EL13.8m	1867	-0.081	-0.055	0.003	0.152	0.050	-0.007	0.023	0.004
	1872	-0.033	-0.104	0.003	-0.029	-0.015	0.006	0.057	0.001
	1915	-0.074	-0.105	-0.001	-0.004	-0.122	-0.008	-0.004	0.136
	1920	-0.010	-0.043	0.012	-0.017	-0.015	-0.037	0.016	0.021
Wall EL-7.4m to EL-2.0m	6007	-0.263	-0.753	-0.224	-0.014	0.097	-0.006	-0.059	0.070
	4006	0.028	-0.925	0.015	-0.035	-0.188	0.001	-0.002	-0.045
	4010	0.070	-0.211	-0.113	0.016	-0.073	-0.007	-0.034	-0.042
Wall EL-2.0m to EL4.65m	6043	0.172	-1.275	-0.295	0.041	0.025	0.008	0.044	0.002
	4036	0.070	-0.620	-0.007	0.021	0.116	-0.002	-0.002	0.036
	4040	-0.018	-0.362	0.045	-0.005	0.028	0.014	0.019	0.021
Wall EL4.65m to EL9.06m	6081	0.006	-0.592	-0.031	-0.014	-0.116	-0.007	0.000	-0.062
	4066	-0.012	-0.338	0.004	0.005	0.022	-0.002	-0.002	0.018
	4070	-0.016	-0.263	0.095	-0.003	0.007	0.001	0.006	0.007
Wall EL9.06m to EL13.8m	6117	-0.003	-0.330	-0.053	-0.009	-0.060	0.005	0.005	-0.077
	4096	-0.067	-0.164	0.001	0.006	0.033	0.000	-0.002	0.038
	4100	-0.009	-0.113	0.083	0.003	0.009	-0.001	-0.001	0.010

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m =  $6.852 \times 10^4$  lbf/ft

1 MNm/m =  $2.248 \times 10^5$  lbf-ft/ft

**Table 3G.2-8 Results of NASTRAN Analysis: Thermal Load (LOCA: Winter)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
Basemat EL-7.4m	67	-0.409	-1.291	0.169	6.783	6.419	-0.132	0.291	-0.113
	72	-0.189	-0.279	0.059	1.916	5.868	-0.007	0.290	0.127
	115	-0.198	-0.082	0.185	6.662	2.336	-0.255	0.533	0.941
	120	-0.949	-1.034	-0.271	3.316	3.332	1.777	1.350	1.269
Slab B1F EL-2.0m	567	-0.720	0.380	0.045	-0.078	-0.091	0.002	-0.003	0.006
	572	0.331	-0.756	-0.056	-0.030	-0.063	0.003	-0.023	0.000
	615	-0.858	0.641	-0.723	-0.078	-0.033	0.006	-0.032	-0.073
	620	-0.970	-0.965	-1.402	-0.066	-0.065	0.009	0.007	0.005
Slab 1F EL4.65m	1067	-1.315	-0.447	-0.012	0.062	0.026	0.001	0.003	-0.003
	1072	-0.170	-1.780	-0.097	0.184	0.081	0.007	-0.061	-0.001
	1115	-1.419	0.046	0.018	0.065	0.113	0.002	-0.008	-0.017
	1120	-1.987	-1.963	-2.417	0.130	0.129	-0.007	-0.033	-0.031
Slab 2F EL9.06m	1567	-2.552	-1.076	0.015	-0.027	-0.087	0.002	0.004	0.000
	1572	-0.679	-3.420	-0.099	0.070	-0.022	0.008	-0.099	0.006
	1615	-2.425	0.082	-0.110	0.043	0.193	-0.031	0.036	-0.087
	1620	-3.153	-3.133	-4.149	-0.051	-0.057	0.025	0.020	0.029
Roof EL13.8m	1867	1.500	1.282	-0.012	-0.783	-1.023	0.001	0.015	-0.006
	1872	1.774	1.355	0.412	-0.232	-0.745	0.032	-0.330	0.023
	1915	1.949	1.114	0.485	-0.695	-0.400	0.008	0.017	-0.146
	1920	-0.003	-0.164	0.493	-0.634	-0.644	-0.022	-0.011	0.005
Wall EL-7.4m to EL-2.0m	6007	0.521	1.371	-0.057	0.642	0.904	0.004	-0.032	0.165
	4006	0.756	-0.069	0.091	-0.688	-1.068	-0.002	-0.001	-0.194
	4010	1.043	1.253	-0.324	-0.531	-0.881	-0.042	-0.156	-0.334
Wall EL-2.0m to EL4.65m	6043	2.535	-1.168	-0.671	0.378	0.483	-0.026	0.127	0.061
	4036	2.463	-0.411	-0.013	-0.289	-0.300	0.001	0.031	0.070
	4040	1.381	1.392	-0.606	-0.080	-0.300	-0.047	-0.217	-0.181
Wall EL4.65m to EL9.06m	6081	5.519	-0.786	0.338	1.391	1.000	0.007	-0.048	-0.161
	4066	6.358	-0.464	-0.042	-1.488	-1.021	0.000	-0.021	0.188
	4070	3.596	1.323	-1.489	-1.232	-1.167	-0.021	-0.332	-0.163
Wall EL9.06m to EL13.8m	6117	3.560	-0.619	-1.500	0.908	1.500	-0.022	-0.038	0.385
	4096	3.980	-0.285	-0.182	-0.936	-1.566	-0.001	0.034	-0.463
	4100	2.844	1.752	-1.526	-0.681	-1.227	-0.002	-0.347	-0.594

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m =  $6.852 \times 10^4$  lbf/ft

1 MNm/m =  $2.248 \times 10^5$  lbf-ft/ft

**Table 3G.2-9 Results of NASTRAN Analysis: Seismic Load (Horizontal: North to South Direction)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
Basemat EL-7.4m	67	-0.155	-0.143	0.233	-0.512	-0.370	-0.269	0.859	-0.028
	72	-0.182	-3.719	0.007	-2.010	-1.590	0.053	-1.588	0.017
	115	-0.170	-0.077	2.424	0.102	0.016	-2.587	1.271	-0.178
	120	0.089	-0.838	0.275	-0.843	-0.343	0.471	0.143	-0.893
Slab B1F EL-2.0m	567	0.031	-0.010	0.020	0.070	0.000	-0.014	0.023	-0.015
	572	0.279	0.227	-0.049	-0.007	-0.007	-0.001	-0.003	0.003
	615	-0.022	0.004	-0.302	0.041	0.001	0.010	0.039	0.009
	620	0.226	0.087	-0.196	-0.015	0.018	0.001	0.018	-0.021
Slab 1F EL4.65m	1067	0.030	-0.018	0.029	-0.005	-0.005	-0.003	0.008	-0.001
	1072	0.220	0.276	-0.047	0.017	-0.003	0.001	-0.012	0.001
	1115	0.018	-0.009	-0.262	-0.006	0.003	-0.004	0.002	-0.001
	1120	0.140	0.057	-0.076	-0.008	0.012	0.002	0.012	-0.014
Slab 2F EL9.06m	1567	0.029	-0.033	0.017	-0.005	-0.005	-0.003	0.010	0.000
	1572	0.160	0.325	-0.026	0.016	-0.003	0.001	-0.018	0.002
	1615	-0.326	-0.062	0.018	-0.011	0.002	-0.003	0.005	0.000
	1620	0.092	0.070	-0.097	-0.007	0.011	0.002	0.011	-0.012
Roof EL13.8m	1867	0.043	0.020	-0.008	-0.013	-0.012	-0.006	0.019	-0.001
	1872	0.339	0.742	0.021	0.030	-0.011	0.004	-0.033	0.003
	1915	0.097	0.019	-0.352	-0.009	0.005	-0.015	0.000	-0.002
	1920	0.131	0.164	0.003	-0.006	0.013	0.006	0.012	-0.011
Wall EL-7.4m to EL-2.0m	6007	0.128	-0.241	2.677	-0.072	0.043	-0.015	-0.090	0.039
	4006	-0.916	-2.387	-0.034	0.015	0.064	-0.002	0.001	0.048
	4010	-0.184	-0.785	-0.807	0.043	0.042	-0.025	0.017	0.014
Wall EL-2.0m to EL4.65m	6043	0.012	-0.043	1.834	-0.003	-0.015	0.012	0.006	-0.004
	4036	0.138	-1.780	-0.107	-0.025	-0.097	-0.001	-0.006	-0.027
	4040	0.035	-0.613	-1.095	0.003	-0.034	-0.013	-0.032	-0.033
Wall EL4.65m to EL9.06m	6081	0.432	-0.260	1.027	0.005	0.030	-0.003	0.000	0.017
	4066	0.440	-0.799	-0.108	-0.006	0.012	0.001	-0.003	0.005
	4070	0.077	-0.425	-0.869	0.002	0.005	-0.001	-0.010	-0.005
Wall EL9.06m to EL13.8m	6117	-0.267	0.067	0.567	0.000	0.006	0.001	-0.001	0.014
	4096	0.532	-0.335	-0.079	-0.008	-0.027	0.001	-0.002	-0.025
	4100	0.098	-0.254	-0.560	-0.002	-0.005	-0.002	-0.009	-0.007

*SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):*

*1 MN/m = 6.852x10<sup>4</sup> lbf/ft*

*1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft*

**Table 3G.2-10 Results of NASTRAN Analysis: Seismic Load (Horizontal: East to West Direction)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
Basemat EL-7.4m	67	-0.148	0.283	-0.555	-0.606	-2.018	-0.039	-0.694	2.653
	72	-0.033	0.005	2.068	-0.075	-0.214	-2.322	-0.154	0.942
	115	-3.312	-0.365	-0.115	-0.203	-0.850	-0.142	0.459	-0.754
	120	-0.807	0.212	0.188	-0.323	-0.775	0.190	-1.080	0.056
Slab B1F EL-2.0m	567	-0.010	-0.045	0.506	-0.029	-0.085	-0.019	-0.019	0.134
	572	0.012	0.011	0.297	0.002	0.000	-0.001	-0.001	-0.002
	615	-0.253	0.278	0.415	-0.008	-0.028	-0.001	0.002	0.016
	620	0.077	0.148	0.265	0.016	-0.020	-0.002	-0.023	0.022
Slab 1F EL4.65m	1067	0.005	0.021	-0.026	-0.002	-0.001	-0.002	-0.001	0.000
	1072	0.002	0.007	-0.282	0.001	0.000	-0.002	-0.001	-0.002
	1115	0.324	0.161	0.000	-0.014	-0.040	0.000	-0.002	0.015
	1120	0.057	0.121	-0.150	0.011	-0.019	0.000	-0.019	0.019
Slab 2F EL9.06m	1567	0.015	0.038	-0.040	-0.001	0.000	-0.001	0.000	0.000
	1572	0.004	0.004	-0.371	0.001	0.000	-0.002	-0.001	-0.001
	1615	0.728	0.223	0.036	-0.002	-0.015	0.001	0.005	0.005
	1620	0.082	0.118	-0.167	0.009	-0.013	-0.001	-0.015	0.014
Roof EL13.8m	1867	0.054	0.028	-0.056	-0.002	0.000	-0.001	0.000	0.002
	1872	0.005	-0.003	-0.478	0.001	0.000	-0.007	0.000	-0.004
	1915	1.145	0.271	-0.005	-0.009	-0.028	0.001	0.001	0.007
	1920	0.207	0.077	-0.038	0.008	-0.015	-0.004	-0.016	0.012
Wall EL-7.4m to EL-2.0m	6007	-1.288	-1.359	0.050	-0.025	-0.006	-0.006	-0.007	0.031
	4006	0.066	-0.181	2.155	-0.009	-0.028	0.018	0.010	-0.011
	4010	0.213	-1.042	0.804	-0.043	-0.132	0.007	-0.048	-0.058
Wall EL-2.0m to EL4.65m	6043	-0.618	-1.109	-0.069	-0.076	-0.155	0.010	-0.042	-0.073
	4036	0.025	-0.098	1.955	0.000	0.002	-0.006	-0.008	0.001
	4040	0.004	-0.933	1.376	-0.012	0.009	0.021	0.019	0.016
Wall EL4.65m to EL9.06m	6081	0.289	-0.800	-0.370	0.016	0.064	0.014	0.008	0.006
	4066	0.005	-0.045	1.307	0.000	-0.001	0.006	0.001	-0.001
	4070	0.047	-0.307	1.041	0.019	-0.009	0.008	-0.007	-0.014
Wall EL9.06m to EL13.8m	6117	0.652	-0.430	-0.426	0.005	0.001	0.000	0.002	-0.011
	4096	-0.005	-0.023	0.678	0.001	0.001	0.001	0.000	0.000
	4100	0.003	-0.173	0.559	0.012	-0.003	0.005	-0.001	-0.014

*SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):*

*1 MN/m = 6.852x10<sup>4</sup> lbf/ft*

*1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft*

**Table 3G.2-11 Results of NASTRAN Analysis: Seismic Load (Vertical: Upward Direction)**

Location	Element ID	Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
Basemat EL-7.4m	67	-0.025	0.587	-0.021	1.029	0.870	-0.083	-0.109	0.123
	72	0.038	-0.081	-0.011	0.395	0.125	0.038	0.492	-0.028
	115	0.617	0.235	-0.259	0.218	0.194	0.298	0.027	0.579
	120	0.048	0.025	0.126	0.091	0.157	-0.539	0.038	0.038
Slab B1F EL-2.0m	567	-0.002	-0.605	0.036	0.044	0.017	0.006	0.057	-0.016
	572	-0.066	-0.103	0.010	0.020	0.012	-0.005	-0.073	0.004
	615	-0.148	-0.114	0.212	0.025	0.003	-0.019	0.031	0.002
	620	-0.037	-0.037	-0.051	0.017	0.017	0.020	-0.023	-0.026
Slab 1F EL4.65m	1067	-0.076	-0.042	0.003	-0.151	-0.056	0.010	-0.027	-0.022
	1072	0.002	-0.039	-0.001	0.036	0.009	0.000	-0.072	-0.004
	1115	-0.111	-0.031	-0.012	0.016	0.145	0.008	0.001	-0.134
	1120	-0.021	-0.017	-0.052	0.016	0.015	0.014	-0.017	-0.022
Slab 2F EL9.06m	1567	-0.038	-0.072	0.003	-0.092	-0.007	0.005	-0.018	-0.011
	1572	-0.025	-0.009	0.001	0.044	0.014	0.001	-0.078	0.000
	1615	-0.142	-0.125	0.018	0.010	0.141	0.007	-0.007	-0.148
	1620	-0.020	-0.016	-0.006	0.019	0.018	0.016	-0.020	-0.025
Roof EL13.8m	1867	0.112	0.089	-0.003	-0.231	-0.074	0.011	-0.034	-0.006
	1872	0.045	0.111	-0.005	0.040	0.024	-0.008	-0.086	-0.001
	1915	0.120	0.149	0.002	0.007	0.180	0.012	0.006	-0.205
	1920	0.024	0.053	-0.016	0.026	0.022	0.056	-0.024	-0.030
Wall EL-7.4m to EL-2.0m	6007	0.216	0.666	0.192	0.011	-0.080	0.004	0.049	-0.060
	4006	-0.014	0.760	-0.017	0.027	0.146	-0.001	0.002	0.036
	4010	-0.057	0.200	0.094	-0.012	0.060	0.005	0.027	0.035
Wall EL-2.0m to EL4.65m	6043	-0.145	1.165	0.250	-0.034	-0.023	-0.006	-0.036	-0.001
	4036	-0.053	0.576	0.002	-0.017	-0.090	0.001	0.002	-0.030
	4040	0.016	0.354	-0.041	0.004	-0.021	-0.010	-0.015	-0.016
Wall EL4.65m to EL9.06m	6081	-0.002	0.648	-0.005	0.018	0.112	0.004	0.001	0.063
	4066	0.007	0.371	-0.006	-0.006	-0.033	0.002	0.003	-0.024
	4070	0.016	0.271	-0.087	0.002	-0.008	-0.001	-0.006	-0.008
Wall EL9.06m to EL13.8m	6117	0.016	0.398	0.040	0.012	0.080	-0.005	-0.005	0.113
	4096	0.062	0.204	0.000	-0.008	-0.043	0.000	0.003	-0.055
	4100	0.002	0.116	-0.082	-0.005	-0.011	0.003	0.003	-0.014

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):  
 1 MN/m =  $6.852 \times 10^4$  lbf/ft  
 1 MNm/m =  $2.248 \times 10^5$  lbf-ft/ft

**Table 3G.2-12 Combined Forces and Moments: Selected Load Combination CB-3**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
Basemat EL-7.4m	67	OTHR	-3.076	-3.299	-0.064	-1.214	-0.445	0.171	-0.029	-0.209
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	72	OTHR	-3.988	-0.998	-0.061	3.228	1.110	-0.064	-0.756	-0.033
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	115	OTHR	-3.867	-2.269	-0.933	-0.231	0.426	0.867	-0.626	-0.886
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	120	OTHR	-3.044	-1.664	-0.173	1.430	0.607	-0.028	-0.555	-0.039
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	567	OTHR	-1.677	-0.332	0.009	-0.116	-0.035	-0.006	-0.138	0.041
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Slab B1F EL-2.0m	572	OTHR	-2.586	-1.024	0.182	-0.014	-0.020	0.013	0.156	-0.010
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	615	OTHR	-0.867	-0.783	0.118	-0.069	-0.014	0.032	-0.078	0.010
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	620	OTHR	-1.208	-0.600	1.568	-0.031	-0.054	-0.048	0.041	0.077
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1067	OTHR	-0.567	-0.133	-0.024	0.271	0.103	-0.017	0.045	0.035
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1072	OTHR	-1.227	-0.485	0.096	-0.190	-0.034	-0.004	0.189	0.007
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Slab 1F EL4.65m	1115	OTHR	-0.354	-0.296	0.327	-0.034	-0.298	-0.010	0.001	0.261
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1120	OTHR	-0.445	-0.114	0.614	-0.059	-0.029	-0.010	0.054	0.031
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1567	OTHR	0.017	0.092	-0.028	0.140	0.010	-0.006	0.026	0.016
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1572	OTHR	0.140	-0.070	-0.022	-0.085	-0.023	-0.002	0.134	0.000
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1615	OTHR	0.022	0.199	-0.056	-0.016	-0.208	-0.010	0.011	0.224
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Slab 2F EL9.06m	1620	OTHR	0.054	0.027	-0.135	-0.030	-0.028	-0.027	0.030	0.037
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1867	OTHR	-0.111	-0.087	-0.006	0.220	0.103	-0.009	0.024	0.006
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1872	OTHR	-0.062	-0.136	-0.009	-0.084	-0.020	0.003	0.120	-0.002
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1915	OTHR	-0.110	-0.168	-0.028	-0.014	-0.205	-0.005	-0.004	0.207
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1920	OTHR	-0.010	-0.059	0.038	-0.028	-0.028	-0.062	0.019	0.026
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Roof EL13.8m	1872	OTHR	-0.062	-0.136	-0.009	-0.084	-0.020	0.003	0.120	-0.002
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1915	OTHR	-0.110	-0.168	-0.028	-0.014	-0.205	-0.005	-0.004	0.207
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1920	OTHR	-0.010	-0.059	0.038	-0.028	-0.028	-0.062	0.019	0.026
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

OTHR: Loads other than thermal and seismic loads

TEMP: Thermal loads

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.2-12 Combined Forces and Moments: Selected Load Combination CB-3 (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
Wall EL-7.4m to EL-2.0m	6007	OTHR	-1.370	-1.029	-1.442	0.093	0.134	0.050	0.104	0.321
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4006	OTHR	-0.630	-0.851	-0.047	-0.103	-0.605	0.002	-0.007	-1.197
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4010	OTHR	-0.498	-0.704	-0.037	-0.112	-0.242	0.133	0.136	-0.504
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Wall EL-2.0m to EL4.65m	6043	OTHR	-0.954	-1.472	-0.807	0.061	0.054	-0.019	0.064	0.359
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4036	OTHR	-1.175	-0.429	0.058	0.043	0.103	-0.007	0.037	-0.967
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4040	OTHR	-0.680	-1.387	0.649	-0.180	-0.008	0.168	0.356	-0.283
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Wall EL4.65m to EL9.06m	6081	OTHR	-0.538	-0.813	0.197	0.005	0.007	0.001	-0.001	-0.057
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4066	OTHR	-0.674	-0.365	0.092	-0.073	-0.509	-0.013	0.015	-0.096
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4070	OTHR	-0.153	-0.624	0.418	-0.041	-0.153	-0.125	0.005	-0.081
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Wall EL9.06m to EL13.8m	6117	OTHR	-0.097	-0.482	0.023	-0.020	-0.128	0.004	0.007	-0.141
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4096	OTHR	-0.220	-0.261	0.031	0.009	0.057	-0.002	-0.009	0.082
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4100	OTHR	0.000	-0.080	0.083	0.008	0.006	-0.001	-0.011	0.011
		TEMP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

OTHR: Loads other than thermal and seismic loads

TEMP: Thermal loads

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.2-13 Combined Forces and Moments: Selected Load Combination CB-4**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
Basemat EL-7.4m	67	OTHR	-2.353	-2.508	-0.049	-0.908	-0.318	0.129	-0.026	-0.156
		TEMP	0.245	0.128	0.024	1.598	1.437	-0.003	-0.013	0.008
	72	OTHR	-3.049	-0.765	-0.047	2.478	0.853	-0.048	-0.565	-0.026
		TEMP	0.067	0.300	0.066	0.289	1.406	-0.040	0.110	0.095
	115	OTHR	-2.942	-1.729	-0.720	-0.172	0.330	0.671	-0.478	-0.664
		TEMP	1.046	0.058	0.132	1.780	0.464	-0.083	0.263	0.175
	120	OTHR	-2.327	-1.272	-0.129	1.096	0.468	-0.035	-0.424	-0.029
		TEMP	-0.179	-0.321	0.371	0.667	0.679	-0.063	0.490	0.334
Slab B1F EL-2.0m	567	OTHR	-1.282	-0.269	0.008	-0.087	-0.027	-0.004	-0.104	0.031
		TEMP	-0.230	0.032	0.005	-0.007	-0.004	0.000	-0.004	0.002
	572	OTHR	-1.980	-0.786	0.139	-0.010	-0.015	0.009	0.117	-0.008
		TEMP	0.093	-0.254	-0.026	-0.017	0.001	0.000	0.007	0.000
	615	OTHR	-0.666	-0.601	0.095	-0.052	-0.010	0.024	-0.059	0.007
		TEMP	-0.428	0.121	-0.119	-0.001	0.000	0.001	-0.007	-0.012
	620	OTHR	-0.924	-0.460	1.198	-0.023	-0.041	-0.036	0.031	0.058
		TEMP	-0.347	-0.334	-0.506	-0.010	-0.007	0.006	0.006	0.001
Slab 1F EL4.65m	1067	OTHR	-0.435	-0.102	-0.018	0.204	0.077	-0.013	0.034	0.026
		TEMP	-1.179	-0.492	-0.005	0.003	-0.015	0.000	0.002	-0.001
	1072	OTHR	-0.938	-0.372	0.073	-0.145	-0.026	-0.003	0.143	0.005
		TEMP	-0.153	-1.626	-0.081	0.100	0.016	0.005	-0.045	-0.002
	1115	OTHR	-0.273	-0.226	0.250	-0.026	-0.225	-0.008	0.001	0.197
		TEMP	-1.366	0.033	-0.042	-0.004	0.028	0.003	-0.010	-0.005
	1120	OTHR	-0.340	-0.087	0.468	-0.045	-0.022	-0.008	0.041	0.023
		TEMP	-1.745	-1.712	-2.181	0.088	0.086	-0.008	-0.041	-0.038
Slab 2F EL9.06m	1567	OTHR	0.013	0.069	-0.021	0.105	0.008	-0.005	0.019	0.012
		TEMP	-2.057	-0.795	0.007	-0.039	-0.083	0.001	0.003	0.000
	1572	OTHR	0.107	-0.054	-0.017	-0.064	-0.017	-0.002	0.101	0.000
		TEMP	-0.490	-2.745	-0.073	0.027	-0.039	0.005	-0.070	0.005
	1615	OTHR	0.014	0.150	-0.042	-0.012	-0.157	-0.008	0.008	0.169
		TEMP	-1.573	0.168	-0.018	0.019	0.137	-0.025	0.031	-0.069
	1620	OTHR	0.041	0.021	-0.104	-0.023	-0.021	-0.020	0.023	0.028
		TEMP	-2.781	-2.761	-3.520	-0.067	-0.073	0.022	0.020	0.029
Roof EL13.8m	1867	OTHR	-0.084	-0.065	-0.005	0.165	0.078	-0.006	0.018	0.004
		TEMP	1.083	0.974	-0.007	-0.620	-0.784	0.001	0.011	-0.004
	1872	OTHR	-0.047	-0.102	-0.007	-0.064	-0.015	0.002	0.090	-0.001
		TEMP	1.288	0.870	0.299	-0.226	-0.592	0.022	-0.235	0.017
	1915	OTHR	-0.083	-0.126	-0.021	-0.010	-0.154	-0.004	-0.003	0.156
		TEMP	1.560	0.814	0.362	-0.557	-0.354	0.007	0.014	-0.103
	1920	OTHR	-0.007	-0.045	0.029	-0.021	-0.021	-0.047	0.014	0.020
		TEMP	-0.018	-0.182	0.316	-0.520	-0.530	-0.022	-0.009	0.007



**Table 3G.2-13 Combined Forces and Moments: Selected Load Combination CB-4 (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
Wall EL-7.4m to EL-2.0m	6007	OTHR	-1.042	-0.772	-1.098	0.071	0.100	0.038	0.081	0.244
		TEMP	0.343	0.087	0.124	0.139	0.187	0.000	-0.006	0.045
	4006	OTHR	-0.482	-0.632	-0.036	-0.078	-0.459	0.001	-0.005	-0.914
		TEMP	0.359	-0.212	0.108	-0.134	-0.142	0.000	-0.001	-0.023
	4010	OTHR	-0.382	-0.534	-0.026	-0.086	-0.183	0.102	0.105	-0.384
		TEMP	0.173	0.673	0.175	-0.115	-0.131	-0.010	-0.005	-0.031
Wall EL-2.0m to EL4.65m	6043	OTHR	-0.733	-1.099	-0.611	0.046	0.040	-0.015	0.048	0.275
		TEMP	-0.258	-0.852	-0.163	0.134	0.145	-0.008	0.011	-0.063
	4036	OTHR	-0.900	-0.315	0.045	0.033	0.076	-0.005	0.028	-0.740
		TEMP	0.077	-0.838	0.043	-0.138	-0.138	0.000	0.002	0.114
	4040	OTHR	-0.519	-1.053	0.496	-0.137	-0.007	0.128	0.272	-0.217
		TEMP	0.340	2.135	0.158	-0.047	-0.159	-0.042	-0.097	-0.035
Wall EL4.65m to EL9.06m	6081	OTHR	-0.412	-0.610	0.151	0.004	0.008	0.001	-0.001	-0.042
		TEMP	6.548	-1.010	0.131	1.243	0.955	0.018	-0.056	-0.077
	4066	OTHR	-0.515	-0.272	0.070	-0.056	-0.389	-0.010	0.011	-0.074
		TEMP	7.531	-0.836	-0.102	-1.322	-0.952	-0.001	0.000	0.110
	4070	OTHR	-0.116	-0.471	0.317	-0.031	-0.117	-0.096	0.004	-0.062
		TEMP	4.742	1.668	-2.190	-1.087	-0.988	-0.027	-0.303	-0.234
Wall EL9.06m to EL13.8m	6117	OTHR	-0.074	-0.362	0.019	-0.015	-0.097	0.003	0.005	-0.106
		TEMP	3.689	-0.604	-1.506	0.729	1.178	-0.018	-0.029	0.288
	4096	OTHR	-0.167	-0.196	0.024	0.007	0.043	-0.002	-0.007	0.062
		TEMP	4.099	-0.340	-0.173	-0.751	-1.226	0.000	0.023	-0.344
	4100	OTHR	0.000	-0.059	0.062	0.006	0.005	-0.001	-0.008	0.008
		TEMP	2.630	1.287	-1.234	-0.554	-0.993	-0.004	-0.282	-0.506

OTHR: Loads other than thermal and seismic loads

TEMP: Thermal loads

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.2-14 Combined Forces and Moments: Selected Load Combination CB-7**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
Basemat EL-7.4m	67	OTHR	-1.808	-2.051	-0.030	-0.844	-0.436	0.109	0.033	-0.149
		TEMP	0.189	0.099	0.018	1.230	1.105	-0.002	-0.010	0.006
	72	OTHR	-2.357	-0.633	-0.035	1.804	0.589	-0.038	-0.565	-0.014
		TEMP	0.052	0.231	0.051	0.223	1.082	-0.031	0.085	0.073
	115	OTHR	-2.387	-1.376	-0.471	-0.164	0.221	0.417	-0.356	-0.619
		TEMP	0.804	0.045	0.101	1.369	0.357	-0.064	0.202	0.135
Slab B1F EL-2.0m	120	OTHR	-1.798	-0.994	-0.125	0.815	0.329	0.097	-0.328	-0.035
		TEMP	-0.138	-0.247	0.285	0.513	0.522	-0.049	0.377	0.257
	567	OTHR	-0.986	-0.084	-0.001	-0.074	-0.025	-0.005	-0.094	0.028
		TEMP	-0.177	0.025	0.004	-0.005	-0.003	0.000	-0.003	0.002
	572	OTHR	-1.509	-0.582	0.106	-0.011	-0.015	0.009	0.109	-0.007
		TEMP	0.071	-0.195	-0.020	-0.013	0.001	0.000	0.005	0.000
Slab 1F EL4.65m	615	OTHR	-0.485	-0.442	0.032	-0.046	-0.010	0.024	-0.053	0.007
		TEMP	-0.329	0.093	-0.091	-0.001	0.000	0.001	-0.005	-0.009
	620	OTHR	-0.704	-0.346	0.932	-0.022	-0.036	-0.033	0.031	0.052
		TEMP	-0.267	-0.257	-0.389	-0.008	-0.005	0.004	0.005	0.001
	1067	OTHR	-0.325	-0.066	-0.014	0.189	0.070	-0.012	0.032	0.025
		TEMP	-0.907	-0.378	-0.004	0.003	-0.012	0.000	0.002	-0.001
Slab 2F EL9.06m	1072	OTHR	-0.720	-0.271	0.055	-0.115	-0.022	-0.002	0.123	0.005
		TEMP	-0.118	-1.251	-0.062	0.077	0.013	0.004	-0.035	-0.001
	1115	OTHR	-0.193	-0.164	0.188	-0.023	-0.202	-0.008	0.001	0.179
		TEMP	-1.051	0.025	-0.032	-0.003	0.021	0.002	-0.008	-0.004
	1120	OTHR	-0.256	-0.060	0.361	-0.038	-0.019	-0.008	0.035	0.023
		TEMP	-1.342	-1.317	-1.678	0.068	0.066	-0.006	-0.032	-0.030
Roof EL13.8m	1567	OTHR	-0.001	0.069	-0.016	0.097	0.005	-0.004	0.018	0.011
		TEMP	-1.582	-0.611	0.005	-0.030	-0.064	0.001	0.002	0.000
	1572	OTHR	0.092	-0.030	-0.015	-0.051	-0.016	-0.001	0.086	0.000
		TEMP	-0.377	-2.111	-0.056	0.021	-0.030	0.004	-0.054	0.003
	1615	OTHR	0.020	0.138	-0.044	-0.011	-0.139	-0.008	0.007	0.153
		TEMP	-1.210	0.130	-0.014	0.015	0.105	-0.019	0.024	-0.053
Roof EL13.8m	1620	OTHR	0.037	0.025	-0.088	-0.020	-0.019	-0.018	0.021	0.025
		TEMP	-2.139	-2.124	-2.708	-0.051	-0.056	0.017	0.015	0.022
	1867	OTHR	-0.071	-0.041	-0.003	0.120	0.060	-0.005	0.013	0.003
		TEMP	0.833	0.750	-0.005	-0.477	-0.603	0.001	0.008	-0.003
	1872	OTHR	-0.032	-0.070	-0.004	-0.050	-0.010	0.001	0.070	-0.001
		TEMP	0.990	0.669	0.230	-0.174	-0.455	0.017	-0.181	0.013
Roof EL13.8m	1915	OTHR	-0.063	-0.094	-0.024	-0.008	-0.117	-0.002	-0.002	0.115
		TEMP	1.200	0.626	0.278	-0.429	-0.272	0.005	0.011	-0.079
	1920	OTHR	-0.002	-0.030	0.022	-0.015	-0.016	-0.036	0.011	0.015
		TEMP	-0.014	-0.140	0.243	-0.400	-0.408	-0.017	-0.007	0.005

**Table 3G.2-14 Combined Forces and Moments: Selected Load Combination CB-7 (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
Wall EL-7.4m to EL-2.0m	6007	OTHR	-0.845	-0.717	-0.846	0.051	0.094	0.028	0.051	0.200
		TEMP	0.264	0.067	0.095	0.107	0.144	0.000	-0.005	0.034
	4006	OTHR	-0.378	-0.673	-0.027	-0.067	-0.387	0.001	-0.004	-0.711
		TEMP	0.276	-0.163	0.083	-0.103	-0.109	0.000	-0.001	-0.018
	4010	OTHR	-0.285	-0.453	-0.052	-0.062	-0.153	0.077	0.075	-0.303
		TEMP	0.133	0.518	0.135	-0.088	-0.101	-0.007	-0.004	-0.024
Wall EL-2.0m to EL4.65m	6043	OTHR	-0.536	-1.046	-0.483	0.042	0.034	-0.010	0.044	0.212
		TEMP	-0.199	-0.655	-0.125	0.103	0.111	-0.006	0.009	-0.048
	4036	OTHR	-0.677	-0.360	0.032	0.029	0.080	-0.004	0.021	-0.563
		TEMP	0.059	-0.645	0.033	-0.106	-0.106	0.000	0.001	0.088
	4040	OTHR	-0.403	-0.877	0.373	-0.107	0.000	0.101	0.212	-0.163
		TEMP	0.262	1.642	0.122	-0.036	-0.123	-0.033	-0.075	-0.027
Wall EL4.65m to EL9.06m	6081	OTHR	-0.305	-0.544	0.126	0.001	-0.013	0.000	0.000	-0.052
		TEMP	5.037	-0.777	0.101	0.957	0.735	0.014	-0.043	-0.060
	4066	OTHR	-0.381	-0.262	0.053	-0.043	-0.298	-0.008	0.008	-0.050
		TEMP	5.793	-0.643	-0.079	-1.017	-0.732	-0.001	0.000	0.085
	4070	OTHR	-0.085	-0.401	0.246	-0.023	-0.089	-0.074	0.002	-0.045
		TEMP	3.647	1.283	-1.685	-0.836	-0.760	-0.021	-0.233	-0.180
Wall EL9.06m to EL13.8m	6117	OTHR	-0.058	-0.297	0.011	-0.013	-0.083	0.002	0.005	-0.089
		TEMP	2.838	-0.465	-1.159	0.560	0.906	-0.014	-0.022	0.222
	4096	OTHR	-0.118	-0.166	0.017	0.006	0.037	-0.001	-0.005	0.053
		TEMP	3.153	-0.262	-0.133	-0.578	-0.943	0.000	0.018	-0.265
	4100	OTHR	0.005	-0.056	0.047	0.005	0.005	0.000	-0.007	0.008
		TEMP	2.023	0.990	-0.949	-0.426	-0.764	-0.003	-0.217	-0.390

OTHR: Loads other than thermal and seismic loads

TEMP: Thermal loads

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m =  $6.852 \times 10^4$  lbf/ft

1 MNm/m =  $2.248 \times 10^5$  lbf-ft/ft

**Table 3G.2-15 Combined Forces and Moments: Selected Load Combination CB-9**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
Basemat EL-7.4m	67	OTHR	-1.803	-2.073	-0.034	-0.908	-0.459	0.120	0.010	-0.152
		TEMP	-0.409	-1.291	0.169	6.783	6.419	-0.132	0.291	-0.113
		SEIS	0.216	0.667	0.611	1.621	2.914	0.310	1.266	2.739
	72	OTHR	-2.353	-0.545	-0.033	1.822	0.627	-0.044	-0.549	-0.012
		TEMP	-0.189	-0.279	0.059	1.916	5.868	-0.007	0.290	0.127
		SEIS	0.188	3.720	2.076	2.945	1.836	2.333	1.788	0.968
	115	OTHR	-2.411	-1.386	-0.507	-0.180	0.209	0.459	-0.382	-0.646
		TEMP	-0.198	-0.082	0.185	6.662	2.336	-0.255	0.533	0.941
		SEIS	3.373	0.441	2.448	0.412	1.284	2.666	1.372	0.988
	120	OTHR	-1.802	-0.979	-0.132	0.826	0.326	0.105	-0.334	-0.022
		TEMP	-0.949	-1.034	-0.271	3.316	3.332	1.777	1.350	1.269
		SEIS	0.816	0.866	0.356	1.269	1.199	0.883	1.160	0.929
Slab B1F EL-2.0m	567	OTHR	-0.988	-0.058	-0.003	-0.078	-0.025	-0.005	-0.095	0.028
		TEMP	-0.720	0.380	0.045	-0.078	-0.091	0.002	-0.003	0.006
		SEIS	0.033	0.607	0.508	0.089	0.087	0.025	0.064	0.142
	572	OTHR	-1.507	-0.581	0.105	-0.012	-0.015	0.009	0.110	-0.007
		TEMP	0.331	-0.756	-0.056	-0.030	-0.063	0.003	-0.023	0.000
		SEIS	0.287	0.250	0.301	0.049	0.017	0.006	0.075	0.006
	615	OTHR	-0.478	-0.436	0.021	-0.047	-0.009	0.024	-0.054	0.006
		TEMP	-0.858	0.641	-0.723	-0.078	-0.033	0.006	-0.032	-0.073
		SEIS	0.294	0.301	0.555	0.050	0.066	0.022	0.053	0.055
	620	OTHR	-0.703	-0.345	0.932	-0.022	-0.036	-0.034	0.030	0.052
		TEMP	-0.970	-0.965	-1.402	-0.066	-0.065	0.009	0.007	0.005
		SEIS	0.241	0.176	0.334	0.035	0.039	0.021	0.045	0.048
Slab 1F EL4.65m	1067	OTHR	-0.319	-0.076	-0.015	0.189	0.071	-0.012	0.032	0.025
		TEMP	-1.315	-0.447	-0.012	0.062	0.026	0.001	0.003	-0.003
		SEIS	0.081	0.051	0.040	0.151	0.059	0.011	0.028	0.022
	1072	OTHR	-0.727	-0.284	0.058	-0.117	-0.022	-0.002	0.124	0.005
		TEMP	-0.170	-1.780	-0.097	0.184	0.081	0.007	-0.061	-0.001
		SEIS	0.220	0.278	0.286	0.088	0.015	0.004	0.083	0.005
	1115	OTHR	-0.187	-0.177	0.197	-0.023	-0.202	-0.008	0.001	0.179
		TEMP	-1.419	0.046	0.018	0.065	0.113	0.002	-0.008	-0.017
		SEIS	0.343	0.164	0.262	0.031	0.175	0.009	0.004	0.139
	1120	OTHR	-0.260	-0.067	0.376	-0.038	-0.020	-0.009	0.035	0.023
		TEMP	-1.987	-1.963	-2.417	0.130	0.129	-0.007	-0.033	-0.031
		SEIS	0.152	0.135	0.176	0.036	0.043	0.018	0.045	0.049

**Table 3G.2-15 Combined Forces and Moments: Selected Load Combination CB-9 (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
Slab 2F EL9.06m	1567	OTHR	0.018	0.062	-0.017	0.097	0.007	-0.004	0.018	0.011
		TEMP	-2.552	-1.076	0.015	-0.027	-0.087	0.002	0.004	0.000
		SEIS	0.050	0.088	0.044	0.092	0.009	0.006	0.021	0.011
	1572	OTHR	0.081	-0.049	-0.011	-0.057	-0.016	-0.001	0.091	0.000
		TEMP	-0.679	-3.420	-0.099	0.070	-0.022	0.008	-0.099	0.006
		SEIS	0.162	0.325	0.372	0.049	0.015	0.003	0.081	0.002
	1615	OTHR	0.045	0.136	-0.034	-0.011	-0.145	-0.007	0.008	0.155
		TEMP	-2.425	0.082	-0.110	0.043	0.193	-0.031	0.036	-0.087
		SEIS	0.810	0.263	0.045	0.016	0.142	0.008	0.010	0.148
	1620	OTHR	0.033	0.014	-0.070	-0.021	-0.020	-0.018	0.021	0.026
		TEMP	-3.153	-3.133	-4.149	-0.051	-0.057	0.025	0.020	0.029
		SEIS	0.125	0.138	0.193	0.023	0.026	0.016	0.028	0.032
Roof EL13.8m	1867	OTHR	-0.084	-0.071	-0.003	0.173	0.074	-0.007	0.021	0.005
		TEMP	1.500	1.282	-0.012	-0.783	-1.023	0.001	0.015	-0.006
		SEIS	0.131	0.096	0.058	0.231	0.076	0.013	0.039	0.006
	1872	OTHR	-0.047	-0.113	-0.005	-0.057	-0.016	0.003	0.086	-0.001
		TEMP	1.774	1.355	0.412	-0.232	-0.745	0.032	-0.330	0.023
		SEIS	0.342	0.751	0.479	0.052	0.027	0.012	0.093	0.005
	1915	OTHR	-0.085	-0.129	-0.012	-0.009	-0.154	-0.005	-0.004	0.160
		TEMP	1.949	1.114	0.485	-0.695	-0.400	0.008	0.017	-0.146
		SEIS	1.155	0.310	0.353	0.016	0.183	0.019	0.006	0.205
	1920	OTHR	-0.011	-0.049	0.026	-0.022	-0.021	-0.046	0.015	0.021
		TEMP	-0.003	-0.164	0.493	-0.634	-0.644	-0.022	-0.011	0.005
		SEIS	0.247	0.189	0.042	0.028	0.030	0.057	0.032	0.034

**Table 3G.2-15 Combined Forces and Moments: Selected Load Combination CB-9 (Continued)**

Location	Element ID		Nx (MN/m)	Ny (MN/m)	Nxy (MN/m)	Mx (MNm/m)	My (MNm/m)	Mxy (MNm/m)	Qx (MN/m)	Qy (MN/m)
Wall EL-7.4m to EL-2.0m	6007	OTHR	-0.856	-0.748	-0.908	0.052	0.097	0.029	0.051	0.202
		TEMP	0.521	1.371	-0.057	0.642	0.904	0.004	-0.032	0.165
		SEIS	1.441	1.597	2.697	0.095	0.107	0.032	0.122	0.156
	4006	OTHR	-0.359	-0.658	-0.024	-0.067	-0.390	0.001	-0.004	-0.712
		TEMP	0.756	-0.069	0.091	-0.688	-1.068	-0.002	-0.001	-0.194
		SEIS	1.098	2.592	2.174	0.050	0.262	0.019	0.011	0.343
	4010	OTHR	-0.278	-0.450	-0.037	-0.063	-0.156	0.077	0.074	-0.304
		TEMP	1.043	1.253	-0.324	-0.531	-0.881	-0.042	-0.156	-0.334
		SEIS	0.498	1.401	1.234	0.097	0.181	0.072	0.098	0.164
Wall EL-2.0m to EL4.65m	6043	OTHR	-0.529	-1.111	-0.549	0.044	0.037	-0.010	0.046	0.212
		TEMP	2.535	-1.168	-0.671	0.378	0.483	-0.026	0.127	0.061
		SEIS	0.905	1.691	1.927	0.109	0.189	0.031	0.097	0.615
	4036	OTHR	-0.679	-0.361	0.034	0.029	0.082	-0.004	0.021	-0.562
		TEMP	2.463	-0.411	-0.013	-0.289	-0.300	0.001	0.031	0.070
		SEIS	0.653	1.919	1.969	0.036	0.137	0.008	0.026	0.542
	4040	OTHR	-0.403	-0.880	0.399	-0.107	0.000	0.101	0.213	-0.163
		TEMP	1.381	1.392	-0.606	-0.080	-0.300	-0.047	-0.217	-0.181
		SEIS	0.399	1.411	1.808	0.130	0.056	0.123	0.182	0.196
Wall EL4.65m to EL9.06m	6081	OTHR	-0.321	-0.600	0.102	0.000	-0.018	-0.001	-0.001	-0.041
		TEMP	5.519	-0.786	0.338	1.391	1.000	0.007	-0.048	-0.161
		SEIS	0.826	1.100	1.211	0.066	0.406	0.032	0.022	0.112
	4066	OTHR	-0.407	-0.280	0.056	-0.042	-0.294	-0.008	0.008	-0.055
		TEMP	6.358	-0.464	-0.042	-1.488	-1.021	0.000	-0.021	0.188
		SEIS	0.632	0.898	1.331	0.058	0.328	0.010	0.016	0.089
	4070	OTHR	-0.097	-0.419	0.271	-0.025	-0.089	-0.073	0.005	-0.047
		TEMP	3.596	1.323	-1.489	-1.232	-1.167	-0.021	-0.332	-0.163
		SEIS	0.153	0.669	1.509	0.041	0.101	0.085	0.022	0.064
Wall EL9.06m to EL13.8m	6117	OTHR	-0.057	-0.362	0.001	-0.013	-0.087	0.004	0.005	-0.100
		TEMP	3.560	-0.619	-1.500	0.908	1.500	-0.022	-0.038	0.385
		SEIS	0.749	0.605	0.767	0.013	0.082	0.006	0.006	0.115
	4096	OTHR	-0.154	-0.190	0.020	0.007	0.041	-0.001	-0.005	0.055
		TEMP	3.980	-0.285	-0.182	-0.936	-1.566	-0.001	0.034	-0.463
		SEIS	0.563	0.406	0.687	0.014	0.059	0.002	0.005	0.062
	4100	OTHR	-0.005	-0.072	0.071	0.005	0.006	-0.001	-0.006	0.008
		TEMP	2.844	1.752	-1.526	-0.681	-1.227	-0.002	-0.347	-0.594
		SEIS	0.112	0.380	0.846	0.015	0.016	0.008	0.015	0.023

OTHR: Loads other than thermal and seismic loads

TEMP: Thermal loads

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MN/m = 6.852x10<sup>4</sup> lbf/ft

1 MNm/m = 2.248x10<sup>5</sup> lbf-ft/ft

**Table 3G.2-16 Sectional Thicknesses and Rebar Ratios Used in the Evaluation**

Location	Element ID	Thickness (m)	Primary Reinforcement					Shear Tie	
			Position	Direction 1 <sup>1</sup>		Direction 2 <sup>1</sup>			
				Arrangement	Ratio (%)	Arrangement	Ratio (%)	Arrangement	Ratio (%)
Basemat EL-7.4	67 72	3.0	Top	2-#11@200	0.335	2-#11@200	0.335	#6@400x400	0.177
			Bottom	2-#11@200	0.335	2-#11@200	0.335		
	115 120	3.0	Top	2-#11@200	0.335	2-#11@200	0.335	#6@400x400	0.177
			Bottom	2-#11@200	0.335	2-#11@200	0.335		
Slab B1F EL-2.0	567	0.5	Top	1-#11@200	1.006	1-#11@200	1.006	-	-
			Bottom	1-#11@200	1.006	1-#11@200	1.006		
	572 615 620		Top	1-#11@200	1.006	1-#11@200	1.006	-	-
			Bottom	1-#11@200	1.006	1-#11@200	1.006		
Slab 1F EL4.65	1067 1072 1115 1120	0.5	Top	1-#11@200	1.006	1-#11@200	1.006	-	-
			Bottom	1-#11@200	1.006	1-#11@200	1.006		
Slab 2F EL9.06m	1567 1572 1620	0.5	Top	1-#11@200	1.006	1-#11@200	1.006	-	-
			Bottom	1-#11@200	1.006	1-#11@200	1.006		
	1615		Top	1-#11@200	1.006	1-#11@200	1.006	#4@400x400	0.081
			Bottom	1-#11@200	1.006	1-#11@200	1.006		
Roof EL13.8m	1867 1872 1915 1920	0.7	Top	1-#11@200 + 1-#11@400	1.078	1-#11@200 + 1-#11@400	1.078	-	-
			Bottom	1-#11@200 + 1-#11@400	1.078	1-#11@200 + 1-#11@400	1.078		

**Table 3G.2-16 Sectional Thicknesses and Rebar Ratios Used in the Evaluation (Continued)**

Location	Element ID	Thickness (m)	Primary Reinforcement					Shear Tie	
			Position	Direction 1 <sup>*1</sup>		Direction 2 <sup>*1</sup>			
				Arrangement	Ratio (%)	Arrangement	Ratio (%)	Arrangement	Ratio (%)
Wall EL-7.4m to EL-2.0m	6007	0.9	Inside	2-#11@200	1.118	2-#11@200	1.118	#6@200x400	0.355
			Outside	2-#11@200	1.118	2-#11@200	1.118		
	4006 4010	0.9	Inside	2-#11@200	1.118	2-#11@200	1.118	#6@200x400	0.355
			Outside	2-#11@200	1.118	2-#11@200	1.118		
Wall EL-2.0m to EL4.65m	6043 4040	0.9	Inside	2-#11@200	1.118	2-#11@200	1.118	#6@200x400	0.355
			Outside	2-#11@200	1.118	2-#11@200	1.118		
	4036	0.9	Inside	2-#11@200	1.118	2-#11@200	1.118	#6@200x200	0.710
			Outside	2-#11@200	1.118	2-#11@200	1.118		
Wall EL4.65m to EL9.06m	6081 4066 4070	0.9	Inside	2-#11@200	1.118	2-#11@200	1.118	-	-
			Outside	2-#11@200	1.118	2-#11@200	1.118		
Wall EL9.06m to EL13.8m	6117	0.7	Inside	1-#11@200	0.719	1-#11@200	0.719	-	-
			Outside	1-#11@200 + 1-#11@400	1.078	1-#11@200 + 1-#11@400	1.078		
	4096 4100	0.7	Inside	1-#11@200	0.719	1-#11@200	0.719	-	-
			Outside	1-#11@200 + 1-#11@400	1.078	1-#11@200 + 1-#11@400	1.078		

Note\*1:                      Wall                      Direction 1:Horizontal,                      Direction 2: Vertical  
   Basemat, Slab, Roof                      Direction 1:N-S,                      Direction 2:HE-W

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):  
1 m = 3.28 ft



**Table 3G.2-17 Rebar and Concrete Stresses (Basemat and Slabs): Selected Load Combination CB-3**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				
		Calculated	Allowable	Calculated				Allowable
				X-direction		Y-direction		
				Top	Bottom	Top	Bottom	
Basemat EL-7.4m	67	-1.7	-20.7	-1.7	-10.9	-6.0	-8.2	372.2
	72	-3.4		-23.3	5.2	-4.7	6.2	
	115	-1.9		-7.6	-10.1	-6.1	-2.3	
	120	-1.8		-12.5	-1.9	-4.6	-1.4	
Slab B1F EL-2.0m	567	-5.5	-25.9	-12.7	-28.1	0.8	-2.7	372.2
	572	-5.0		-29.7	-31.3	-6.3	-9.7	
	615	-3.6		-4.7	-14.1	-7.9	-8.5	
	620	-8.4		110.2	19.1	141.0	20.1	
Slab 1F EL4.65m	1067	-13.9	-25.9	-10.8	112.6	-2.4	46.4	372.2
	1072	-7.6		10.8	-27.5	-1.4	-4.3	
	1115	-11.9		37.1	8.4	155.5	-28.0	
	1120	-4.4		64.2	6.2	70.1	14.6	
Slab 2F EL9.06m	1567	-7.4	-25.9	4.1	90.5	7.2	24.8	372.2
	1572	-4.4		67.9	8.1	7.4	-0.7	
	1615	-7.5		14.0	6.0	133.3	-11.6	
	1620	-3.3		22.9	14.1	17.7	16.2	
Roof EL13.8m	1867	-5.6	-25.9	0.2	56.3	-2.2	20.9	372.2
	1872	-2.1		20.8	-0.9	-0.2	-1.3	
	1915	-4.1		-0.5	0.0	45.0	-9.8	
	1920	-2.9		25.2	5.9	23.5	1.1	

Note: Negative value means compression.

*SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):*  
1 MPa = 145.038 psi  
1 m = 3.28 ft

**Table 3G.2-18      Rebar and Concrete Stresses (Walls): Selected Load Combination CB-3**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)					
		Calculated	Allow able	Calculated				Allow able	
				Horizontal direction		Vertical direction			
				Inside	Outside	Inside	Outside		
Wall EL-7.4m to EL-2.0m	6007	-4.0	-25.9	0.7	19.6	-2.9	31.6	372.2	
	4006	-7.9		-3.6	-1.7	-16.1	58.8		
	4010	-5.0		-3.8	17.0	-8.3	23.0		
Wall EL-2.0m to EL4.65m	6043	-2.4	-25.9	-6.6	-2.5	-10.2	-7.2	372.2	
	4036	-1.5		-6.9	-8.4	1.3	-4.1		
	4040	-3.7		-8.1	1.7	-5.1	-9.5		
Wall EL4.65m to EL9.06m	6081	-1.0	-25.9	-3.0	-2.8	-5.2	-4.9	372.2	
	4066	-6.9		-3.7	-1.1	-8.2	67.7		
	4070	-4.3		5.0	35.6	-2.8	36.0		
Wall EL9.06m to EL13.8m	6117	-2.7	-25.9	-0.1	-0.2	10.0	-7.7	372.2	
	4096	-1.2		-1.6	-1.6	2.5	-3.8		
	4100	-0.3		9.1	2.0	4.8	1.0		

*Note: Negative value means compression*

*SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):*

*1 MPa = 145.038 psi*

*1 m = 3.28 ft*

**Table 3G.2-19      Rebar and Concrete Stresses (Basemat and Slabs): Selected Load Combination CB-4**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)					
		Calculated	Allowable	Calculated				Allowable	
				X-direction		Y-direction			
				Top	Bottom	Top	Bottom		
Basemat EL-7.4m	67	-1.5	-23.5	-6.5	-2.4	-9.4	-1.1	372.2	
	72	-2.7		-17.9	4.5	-5.4	14.1		
	115	-1.8		-8.6	0.0	-6.0	-1.0		
	120	-1.8		-11.8	0.2	-6.4	0.4		
Slab B1F EL-2.0m	567	-4.8	-29.3	-12.2	-24.8	1.5	-1.5	372.2	
	572	-4.1		-19.9	-23.4	-8.6	-10.4		
	615	-3.3		-9.2	-16.4	-3.7	-4.2		
	620	-5.4		67.1	7.1	88.9	7.0		
Slab 1F EL4.65m	1067	-8.4	-29.3	-28.9	13.8	-8.9	4.5	372.2	
	1072	-3.8		-6.7	-12.8	-22.8	-23.3		
	1115	-8.0		-13.9	-18.9	102.7	-18.2		
	1120	-6.9		-21.2	-23.0	-22.2	-14.5		
Slab 2F EL9.06m	1567	-5.1	-29.3	-29.6	-18.9	2.8	-13.3	372.2	
	1572	-6.3		33.7	4.2	-30.0	-39.1		
	1615	-4.2		-18.9	-19.6	82.2	1.3		
	1620	-14.2		74.8	38.5	75.9	37.3		
Roof EL13.8m	1867	-0.6	-29.3	-8.6	39.6	47.9	-15.9	372.2	
	1872	-4.4		65.8	15.4	79.2	-0.3		
	1915	-4.4		53.0	15.0	66.7	-4.6		
	1920	-10.6		104.4	13.3	111.8	-6.9		

Note:      Negative value means compression.

*SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):*  
*1 MPa = 145.038 psi*  
*1 m = 3.28 ft*

**Table 3G.2-20      Rebar and Concrete Stresses (Walls): Selected Load Combination CB-4**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)					
		Calculated	Allow able	Calculated				Allow able	
				Horizontal direction		Vertical direction			
				Inside	Outside	Inside	Outside		
Wall EL-7.4m to EL-2.0m	6007	-3.8	-29.3	-0.8	32.8	-0.7	40.4	372.2	
	4006	-6.8		-1.2	1.8	-14.3	49.2		
	4010	-4.4		-4.6	19.7	-1.9	29.0		
Wall EL-2.0m to EL4.65m	6043	-3.5	-29.3	-7.4	0.3	-15.9	-6.2	372.2	
	4036	-1.6		-7.1	-1.9	-8.2	-6.0		
	4040	-2.7		9.3	16.8	24.8	-2.7		
Wall EL4.65m to EL9.06m	6081	-6.9	-29.3	20.4	76.6	-21.7	24.4	372.2	
	4066	-11.6		34.6	99.3	-27.1	72.0		
	4070	-7.8		32.3	112.8	-4.5	91.6		
Wall EL9.06m to EL13.8m	6117	-11.5	-29.3	33.6	97.5	-21.4	86.8	372.2	
	4096	-7.6		15.7	57.8	-16.3	57.0		
	4100	-6.9		27.2	78.7	-0.3	95.5		

Note:      Negative value means compression.

*SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):*  
*1 MPa = 145.038 psi*  
*1 m = 3.28 ft*

**Table 3G.2-21 Rebar and Concrete Stresses (Basemat and Slabs): Selected Load Combination CB-7**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				
		Calculated	Allowable	Calculated				Allowable
				X-direction		Y-direction		
				Top	Bottom	Top	Bottom	
Basemat EL-7.4m	67	-1.0	-23.5	-4.5	-2.2	-6.9	-1.9	372.2
	72	-2.0		-13.2	2.4	-3.7	7.6	
	115	-1.3		-7.1	-0.1	-4.5	-1.1	
	120	-1.4		-9.1	0.3	-5.0	0.4	
Slab B1F EL-2.0m	567	-3.9	-29.3	-9.0	-19.7	7.6	-0.1	372.2
	572	-3.2		-15.0	-18.1	-6.1	-8.0	
	615	-2.6		-6.4	-12.7	-2.6	-3.1	
	620	-4.4		58.6	6.6	75.8	6.0	
Slab 1F EL4.65m	1067	-8.4	-29.3	-21.2	32.8	-6.8	8.9	372.2
	1072	-2.9		-4.9	-10.1	-17.2	-17.8	
	1115	-7.3		-9.7	-14.1	95.9	-16.0	
	1120	-5.4		-16.0	-17.8	-16.8	-11.3	
Slab 2F EL9.06m	1567	-4.3	-29.3	-24.0	-13.6	2.8	-10.4	372.2
	1572	-4.9		28.6	3.7	-22.7	-30.1	
	1615	-3.8		-14.4	-14.9	75.8	0.1	
	1620	-11.1		58.9	31.0	59.7	30.4	
Roof EL13.8m	1867	-0.2	-29.3	-6.5	27.2	37.9	-13.7	372.2
	1872	-3.4		43.1	10.5	49.6	-1.1	
	1915	-3.4		42.2	11.5	53.3	-3.3	
	1920	-8.2		80.3	10.3	86.1	-5.3	

Note: Negative value means compression.

*SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):*

*1 MPa = 145.038 psi*

*1 m = 3.28 ft*

**Table 3G.2-22      Rebar and Concrete Stresses (Walls): Selected Load Combination CB-7**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				
		Calculated	Allow able	Calculated				Allow able
				Horizontal direction		Vertical direction		
				Inside	Outside	Inside	Outside	
Wall EL-7.4m to EL-2.0m	6007	-3.1	-29.3	-1.5	21.7	-3.0	27.8	372.2
	4006	-5.5		-0.8	1.8	-13.8	34.5	
	4010	-3.6		-2.9	17.8	-1.7	25.9	
Wall EL-2.0m to EL4.65m	6043	-2.9	-29.3	-5.6	1.0	-13.9	-6.5	372.2
	4036	-1.2		-5.2	-1.3	-6.6	-5.9	
	4040	-2.0		5.3	13.3	18.0	-3.9	
Wall EL4.65m to EL9.06m	6081	-5.2	-29.3	16.0	59.4	-17.2	16.4	372.2
	4066	-8.6		24.7	76.4	-20.6	53.0	
	4070	-7.2		15.4	88.2	24.9	60.7	
Wall EL9.06m to EL13.8m	6117	-8.8	-29.3	25.8	74.9	-16.7	65.1	372.2
	4096	-5.8		12.2	45.2	-12.8	42.1	
	4100	-5.3		20.3	61.3	-0.2	72.8	

Note:      Negative value means compression.

*SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):*

*1 MPa = 145.038 psi*

*1 m = 3.28 ft*

**Table 3G.2-23 Rebar and Concrete Stresses (Basemat and Slabs): Selected Load Combination CB-9**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				
		Calculated	Allowable	Calculated				Allowable
				X-direction		Y-direction		
				Top	Bottom	Top	Bottom	
Basemat EL-7.4m	67	-6.8	-23.5	-20.9	49.9	-40.0	69.9	372.2
	72	-11.9		-52.9	235.8	150.3	265.0	
	115	-6.9		127.3	132.5	144.5	-28.6	
	120	-5.9		-24.6	26.6	-19.7	29.2	
Slab B1F EL-2.0m	567	-11.6	-29.3	38.7	-29.0	172.6	28.0	372.2
	572	-5.9		-10.1	-20.8	-9.6	-24.7	
	615	-10.8		74.5	-16.2	86.6	19.9	
	620	-8.6		-13.8	-28.4	-6.5	-26.4	
Slab 1F EL4.65m	1067	-19.6	-29.3	-27.7	128.3	-7.3	58.4	372.2
	1072	-6.8		-19.7	7.3	-32.0	-22.2	
	1115	-12.7		-17.3	-16.2	168.0	-30.8	
	1120	-9.6		-19.7	26.7	-26.6	42.0	
Slab 2F EL9.06m	1567	-8.1	-29.3	-42.5	-30.3	1.7	-19.7	372.2
	1572	-7.8		-7.3	2.4	-40.2	-51.9	
	1615	-8.2		-41.8	-36.8	169.7	32.3	
	1620	-17.6		89.8	57.2	91.5	56.0	
Roof EL13.8m	1867	-16.5	-29.3	73.6	127.6	80.7	-34.4	372.2
	1872	-3.9		144.2	48.7	178.6	39.3	
	1915	-8.0		174.4	74.3	170.0	2.8	
	1920	-15.0		136.6	20.8	150.5	-8.3	

Note: Negative value means compression.

*SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):*

*1 MPa = 145.038 psi*

*1 m = 3.28 ft*

**Table 3G.2-24      Rebar and Concrete Stresses (Walls): Selected Load Combination CB-9**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)					
		Calculated	Allow able	Calculated				Allow able	
				Horizontal direction		Vertical direction			
				Inside	Outside	Inside	Outside		
Wall EL-7.4m to EL-2.0m	6007	-11.5	-29.3	70.1	216.2	71.6	245.5	372.2	
	4006	-14.4		136.7	187.3	108.2	287.6		
	4010	-10.4		37.3	199.6	49.8	269.1		
Wall EL-2.0m to EL4.65m	6043	-8.6	-29.3	80.7	191.3	-30.8	116.3	372.2	
	4036	-5.7		91.8	96.4	147.3	153.2		
	4040	-7.1		98.9	109.4	152.8	114.4		
Wall EL4.65m to EL9.06m	6081	-11.6	-29.3	60.1	180.7	30.8	79.2	372.2	
	4066	-17.1		72.7	197.4	-16.4	183.9		
	4070	-6.5		112.3	183.6	52.7	211.8		
Wall EL9.06m to EL13.8m	6117	-17.7	-29.3	80.7	219.9	-34.5	140.2	372.2	
	4096	-14.2		61.6	161.8	-17.7	143.4		
	4100	-11.0		79.1	167.4	21.3	234.4		

Note:      Negative value means compression.

*SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):*

*1 MN/m=6.852x10<sup>4</sup> lbf/ft*

*1 m = 3.28 ft*



**Table 3G.2-25 Calculation Results for Transverse Shear**

Location	Element ID	Load ID	d (m)	$\rho_w$ (%)	$\rho_v$ (%)	Shear Forces (MN/m)				Vu/ $\phi$ Vn
						Vu	Vc	Vs	$\phi$ Vn	
Basemat EL-7.4m	67	CB-9	2.818	0.357	0.177	3.159	3.751	2.065	4.943	0.639
	72	CB-9	2.721	0.369	0.177	2.419	2.460	1.994	3.786	0.639
	115	CB-9	2.799	0.359	0.177	1.654	1.917	2.051	3.373	0.490
	120	CB-9	2.734	0.368	0.177	2.441	4.552	2.003	5.572	0.438
Slab B1F EL-2.0m	567	CB-9	0.407	1.242	0.000	0.118	0.236	0.000	0.200	0.587
	572	CB-9	0.360	1.402	0.000	0.185	0.884	0.000	0.752	0.246
	615	CB-9	0.368	1.373	0.000	0.152	0.438	0.000	0.372	0.409
	620	CB-9	0.392	1.288	0.000	0.125	0.262	0.000	0.223	0.559
Slab 1F EL4.65m	1067	CB-9	0.379	1.333	0.000	0.077	0.360	0.000	0.306	0.250
	1072	CB-9	0.360	1.402	0.000	0.207	0.688	0.000	0.584	0.355
	1115	CB-9	0.410	1.232	0.000	0.318	0.416	0.000	0.353	0.899
	1120	CB-9	0.382	1.321	0.000	0.108	0.323	0.000	0.275	0.394
Slab 2F EL9.06m	1567	CB-9	0.373	1.356	0.000	0.045	0.354	0.000	0.301	0.150
	1572	CB-9	0.360	1.403	0.000	0.172	0.300	0.000	0.255	0.676
	1615	CB-9	0.410	1.232	0.081	0.303	0.308	0.137	0.379	0.799
	1620	CB-9	0.389	1.297	0.000	0.076	0.405	0.000	0.345	0.220
Slab RF EL13.8m	1867	CB-9	0.511	1.479	0.000	0.065	0.411	0.000	0.350	0.186
	1872	CB-9	0.501	1.510	0.000	0.121	0.329	0.000	0.280	0.433
	1915	CB-9	0.550	1.375	0.000	0.317	0.411	0.000	0.350	0.908
	1920	CB-9	0.529	1.429	0.000	0.072	0.518	0.000	0.441	0.164
Wall EL-7.4m to EL-2.0m	6007	CB-9	0.677	1.489	0.355	0.464	1.722	0.995	2.309	0.201
	4006	CB-9	0.672	1.500	0.355	0.546	0.247	0.988	1.050	0.520
	4010	CB-9	0.673	1.497	0.355	0.629	0.427	0.989	1.203	0.523
Wall EL-2.0m to EL4.65m	6043	CB-9	0.673	1.499	0.355	0.407	0.461	0.989	1.233	0.330
	4036	CB-4	0.672	1.500	0.710	0.791	0.654	1.975	2.235	0.354
	4040	CB-9	0.683	1.476	0.355	0.635	0.873	1.004	1.595	0.398
Wall EL4.65m to EL9.06m	6081	CB-9	0.673	1.497	0.000	0.316	1.047	0.000	0.890	0.355
	4066	CB-9	0.672	1.499	0.000	0.222	0.679	0.000	0.577	0.384
	4070	CB-9	0.699	1.442	0.000	0.111	0.294	0.000	0.250	0.445
Wall EL9.06m to EL13.8m	6117	CB-9	0.493	1.533	0.000	0.401	0.564	0.000	0.480	0.835
	4096	CB-9	0.493	1.533	0.000	0.470	0.626	0.000	0.532	0.883
	4100	CB-9	0.507	1.490	0.000	0.139	0.309	0.000	0.262	0.529

*SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):*

*1 MN/m=6.852x10<sup>4</sup> lbf/ft*

*1 m = 3.28 ft*

**Table 3G.2-26      Factors of Safety for Foundation Stability**

Load Combination	Overturning		Sliding		Floatation	
	Required	Actual	Required	Actual	Required	Actual
D + H + E'	1.1	62.5	1.1	1.11	--	--
D + F'	--	--	--	--	1.1	1.85

Where,

*D* = Dead Load

*H* = Lateral soil pressure

*E'* = Safe Shutdown Earthquake

*F'* = Buoyant forces of design basis flood

**Table 3G.2-26a      Stresses of CB External Wall against Wall Capacity Passive Pressure: Selected Load Combination CB-9**

Location	Element ID	Concrete Stress (MPa)		Primary Reinforcement Stress (MPa)				
		Calculated	Allowable	Calculated				Allowable
				Horizontal direction		Vertical direction		
				Inside	Outside	Inside	Outside	
Wall EL-7.4m ~EL-2.0m	6007	-11.4	-29.3	148.9	252.2	105.4	277.3	372.2
	4006	-13.9		69.7	190.8	143.4	241.0	
	4010	-5.1		95.5	144.2	60.6	225.4	
Wall EL-2.0m ~EL4.65m	6043	-9.7	-29.3	119.7	202.1	-12.9	85.9	372.2
	4036	-6.3		95.0	131.5	154.3	147.7	
	4040	-6.6		129.7	159.5	190.7	190.1	

*Note:    Negative value means compression.*

**Table 3G.2-26b      Transverse Shear of CB External Walls**

Location	Element ID	Load ID	d (m)	$\rho_w$ (%)	$\rho_v$ (%)	Shear Forces (MN/m)				$V_u/\phi V_n$
						$V_u$	$V_c$	$V_s$	$\phi V_n$	
Wall EL-7.4m ~EL-2.0m	6007	CB-9	0.71	1.42	0.36	0.14	0.07	1.04	0.95	0.14
	4006	CB-9	0.67	1.50	0.36	0.57	0.20	0.99	1.01	0.56
	4010	CB-9	0.68	1.49	0.36	0.68	0.48	0.99	1.26	0.54
Wall EL-2.0m ~EL4.65m	6043	CB-9	0.67	1.50	0.36	0.22	0.51	0.99	1.27	0.17
	4036	CB-9	0.67	1.50	0.71	0.58	0.25	1.98	1.89	0.31
	4040	CB-9	0.69	1.46	0.36	0.28	0.12	1.01	0.96	0.29

**Table 3G.2-27      Maximum Dynamic Soil Bearing Pressure Involving SSE + Static**

	Site Condition <sup>(1)</sup>		
	Soft ( $V_s = 300$ m/sec)	Medium ( $V_s = 800$ m/sec)	Hard ( $V_s \geq 1700$ m/sec)
Bearing Stress (MPa)	0.50	2.2	0.42

<sup>(1)</sup> See [Table 3A.3-1](#) for site properties. For site specific application, use the larger value or a linearly interpolated value of the applicable range of shear wave velocities at the foundation level.

SI to U.S. Customary units conversion (SI units are the controlling units and U.S. Customary units are for reference only):

1 MPa = 145.038 psi

1 m = 3.28 ft

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**Figure 3G.2-1. CB Concrete Outline Plan at EL -7400 and Foundation Reinforcement**

{{{Security-Related Information - Withhold Under 10 CFR 2.390}}}

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*Note: All dimensions are in mm unless otherwise noted.*

**Figure 3G.2-2.      CB Concrete Outline Plant EL –2000/4650 and Section Details**  
{{{Security-Related Information - Withhold Under 10 CFR 2.390}}}

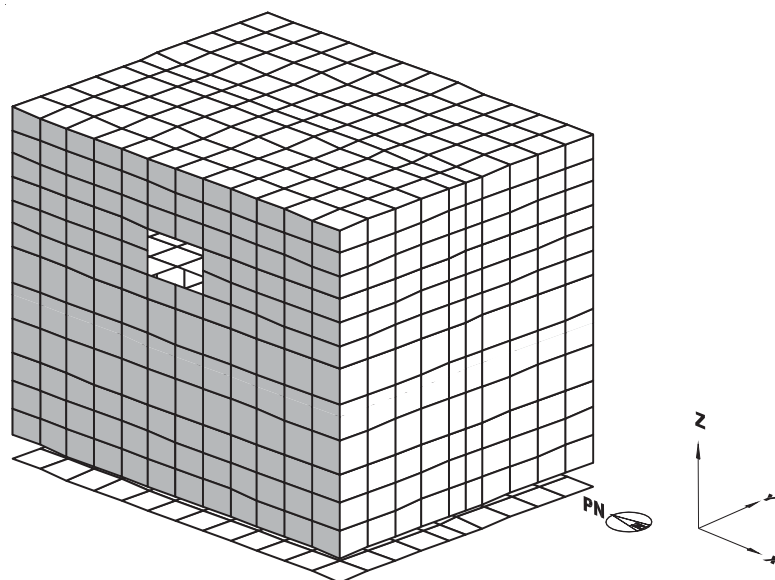
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**Figure 3G.2-3.      CB Concrete Outline Plan at EL 9060/13800, Section and Section Detail**

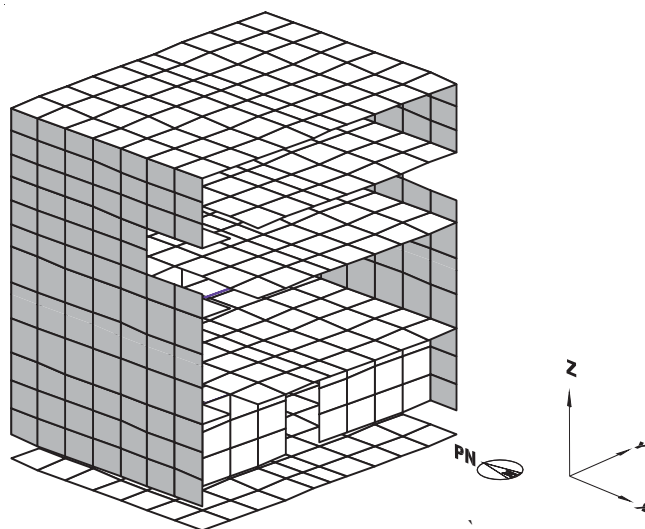
*Note: All dimensions are in mm unless otherwise noted.*

{{{Security-Related Information - Withhold Under 10 CFR 2.390}}}





*Whole View*



*Cut View*

**Figure 3G.2-4. Finite Element Model of CB (Isometric View)**

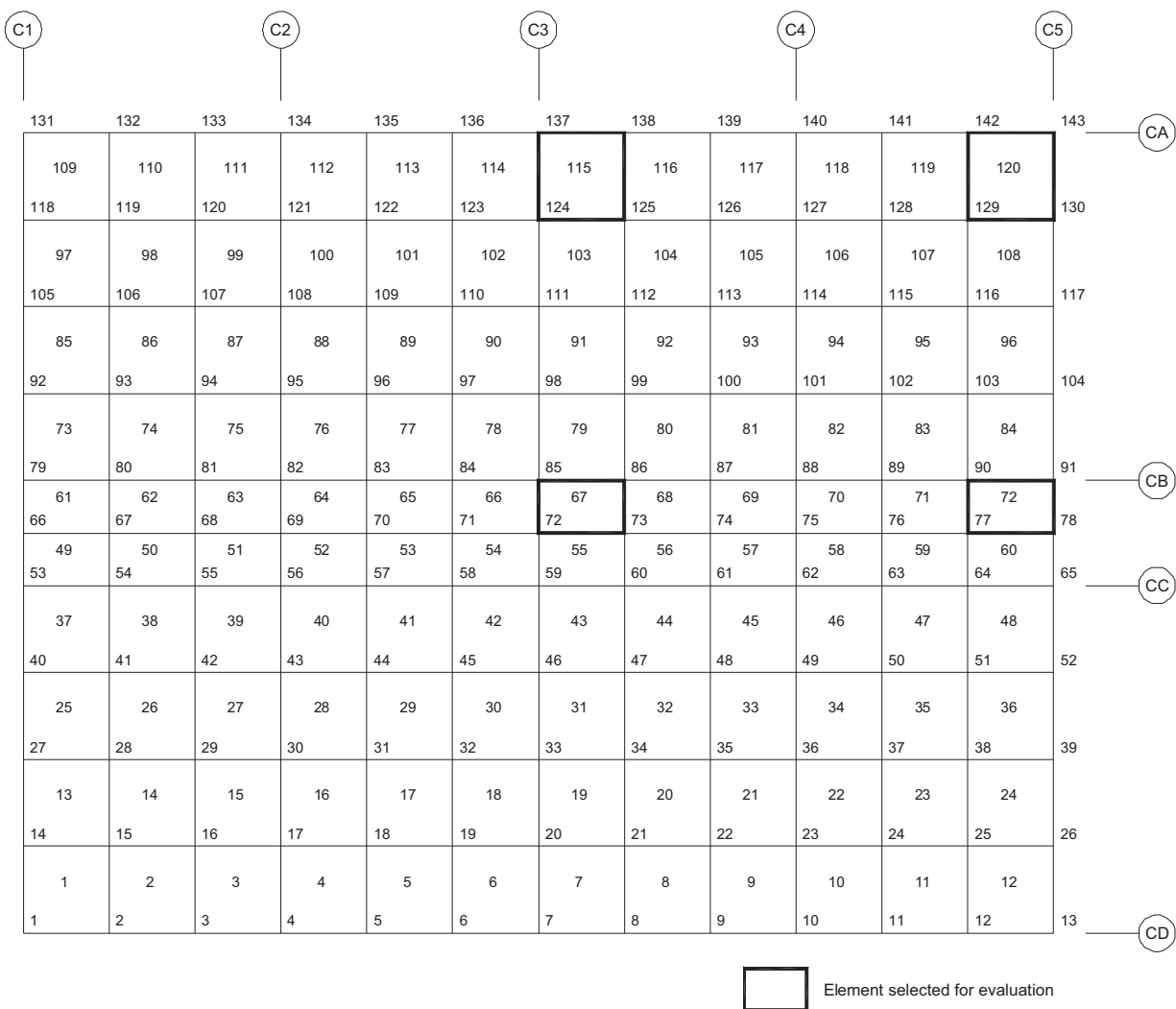
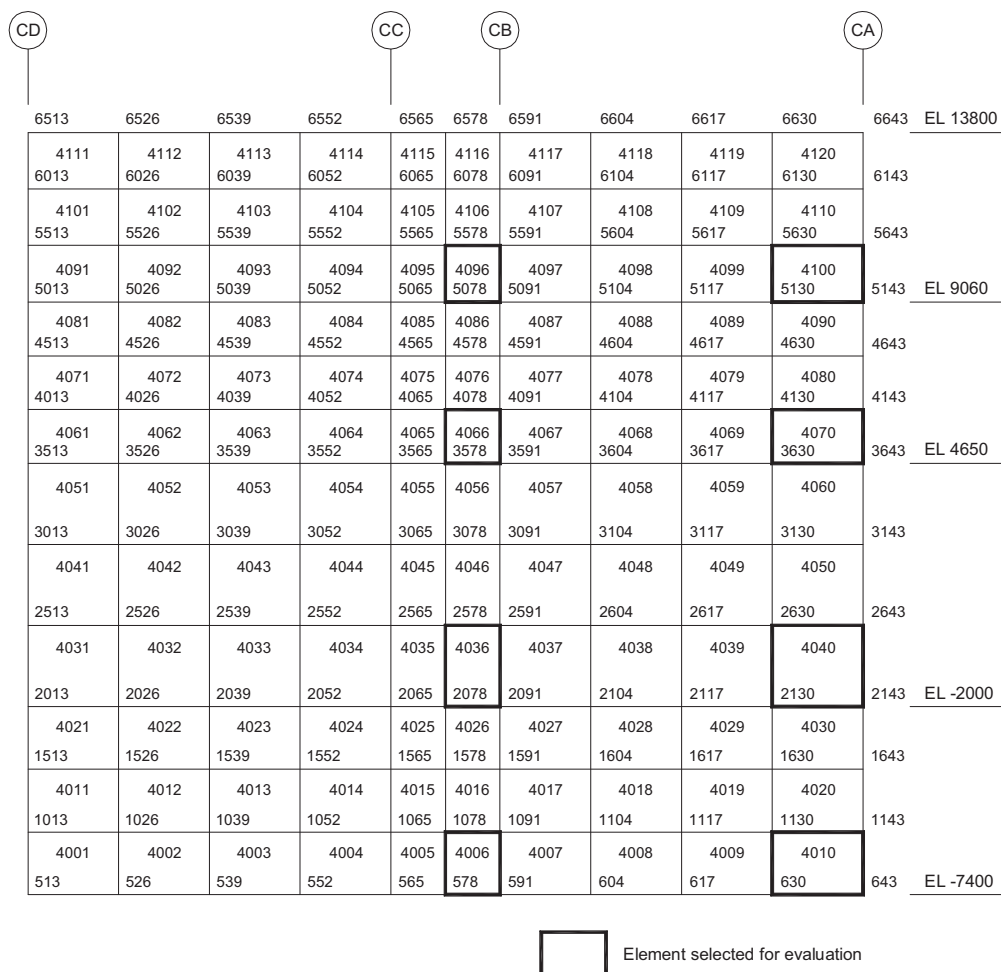


Figure 3G.2-5. Finite Element Model of CB (Foundation Mat)



**Figure 3G.2-6. Finite Element Model of CB (External Wall: South Side)**

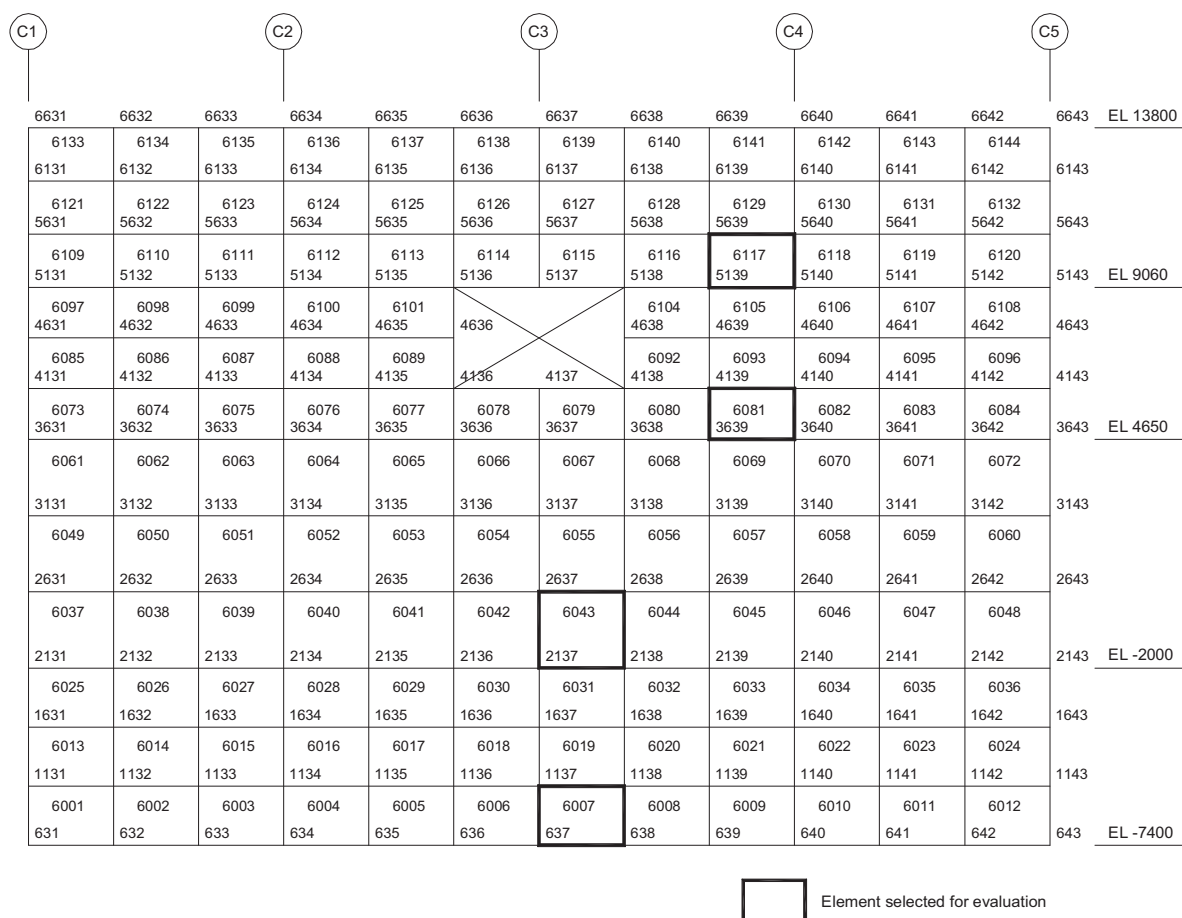
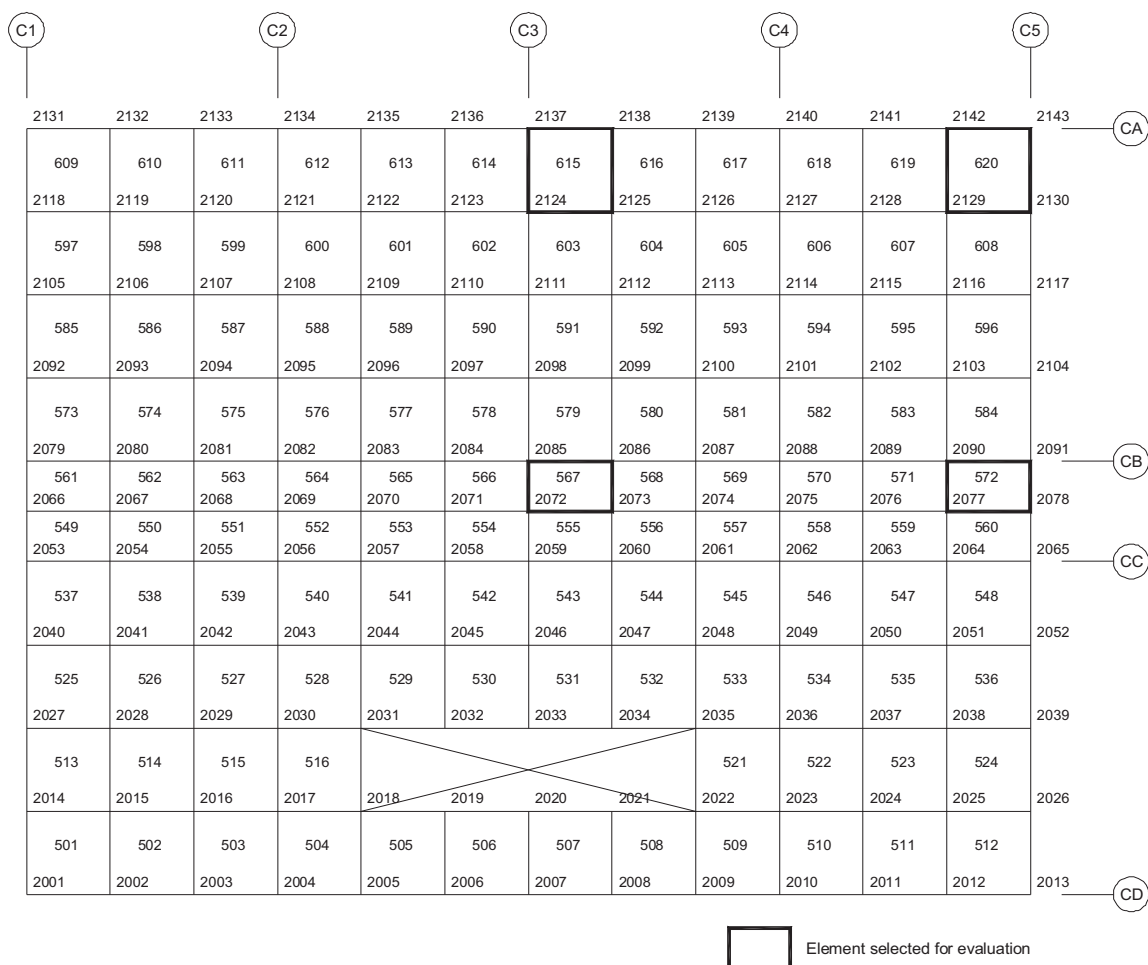
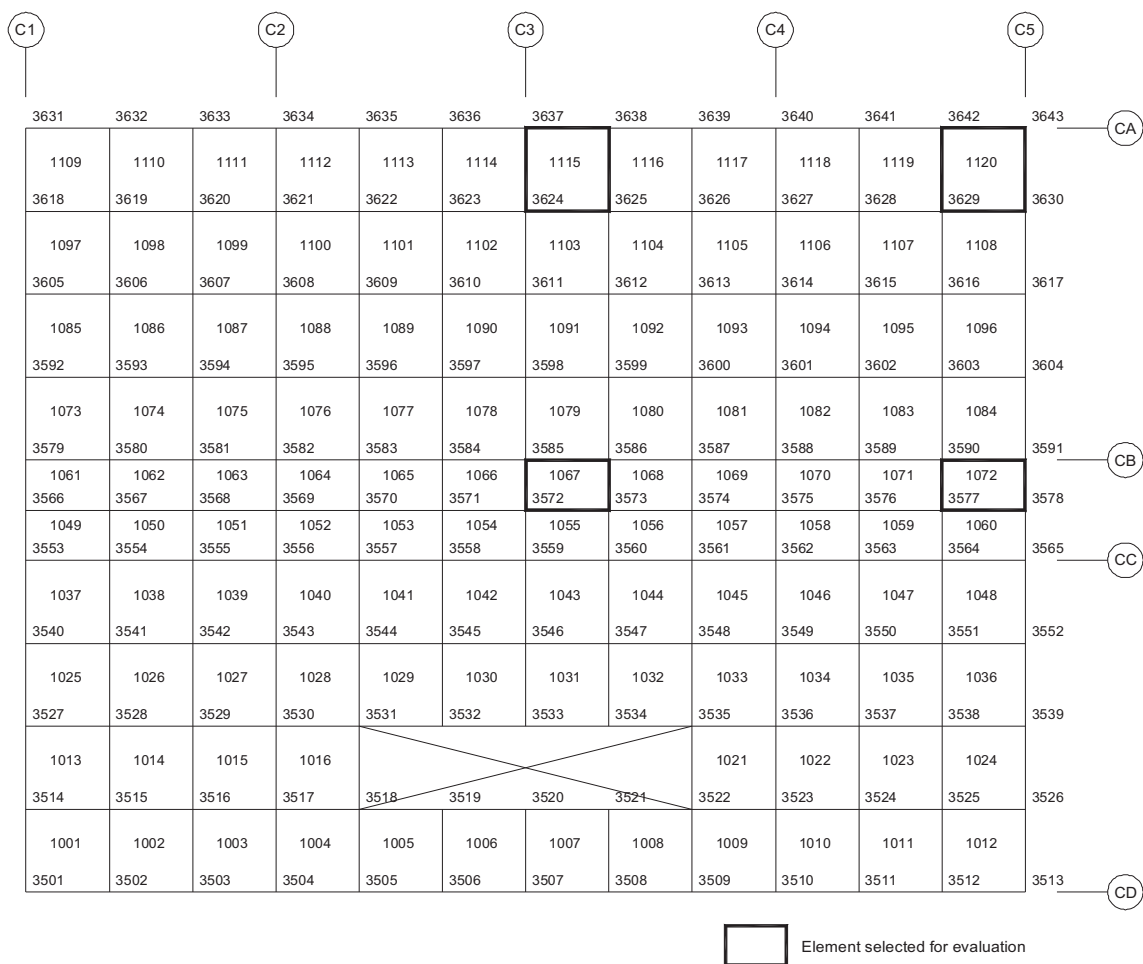


Figure 3G.2-7. Finite Element Model of CB (External Wall: East Side)



**Figure 3G.2-8. Finite Element Model of CB (Floor Slab: EL -2000)**



**Figure 3G.2-9. Finite Element Model of CB (Floor Slab: EL 4650)**

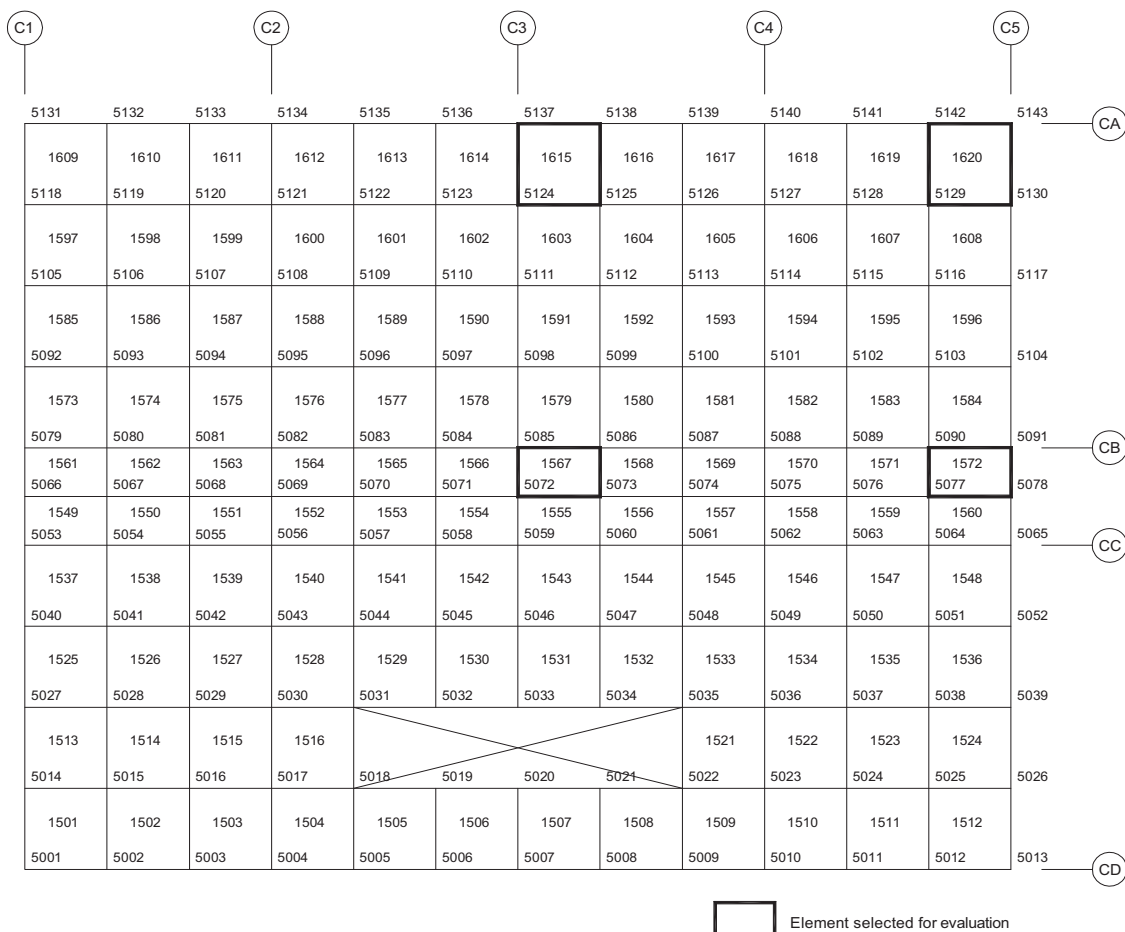
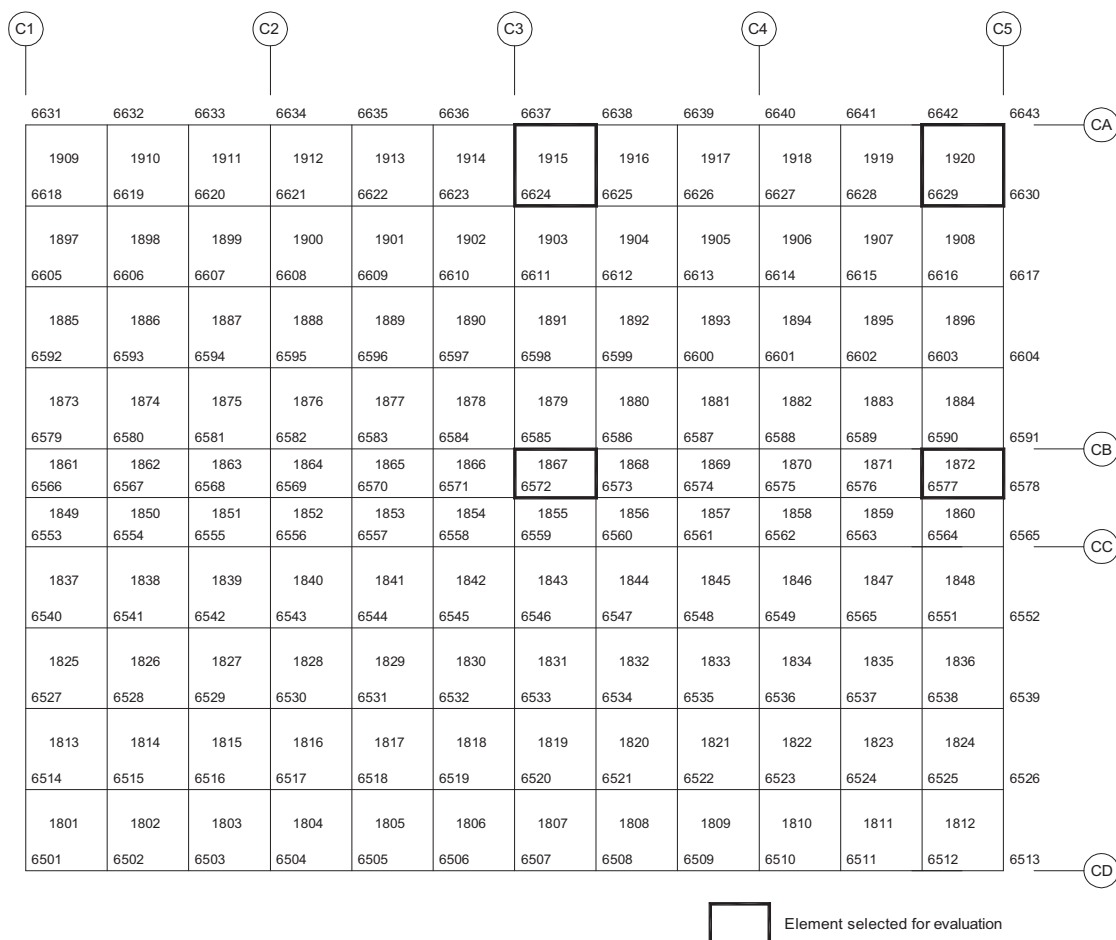
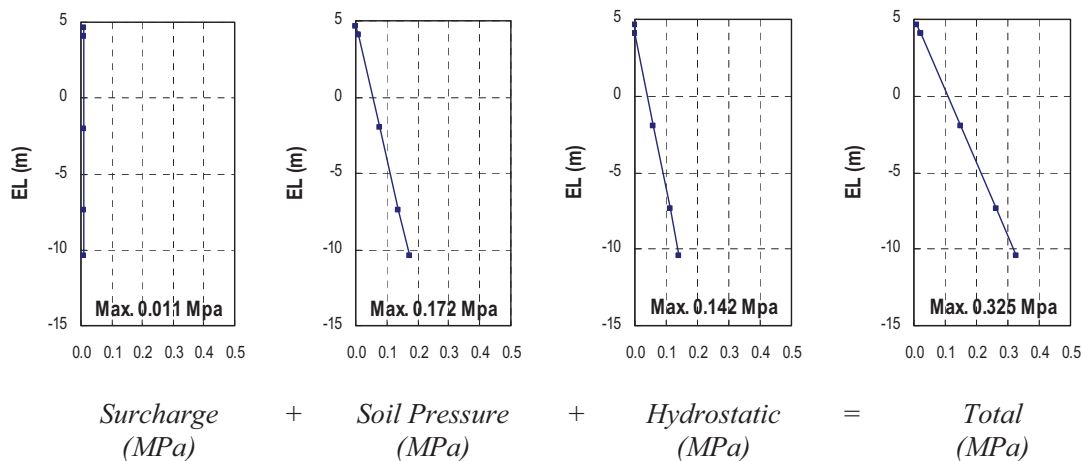


Figure 3G.2-10. Finite Element Model of CB (Floor Slab: EL 9060)

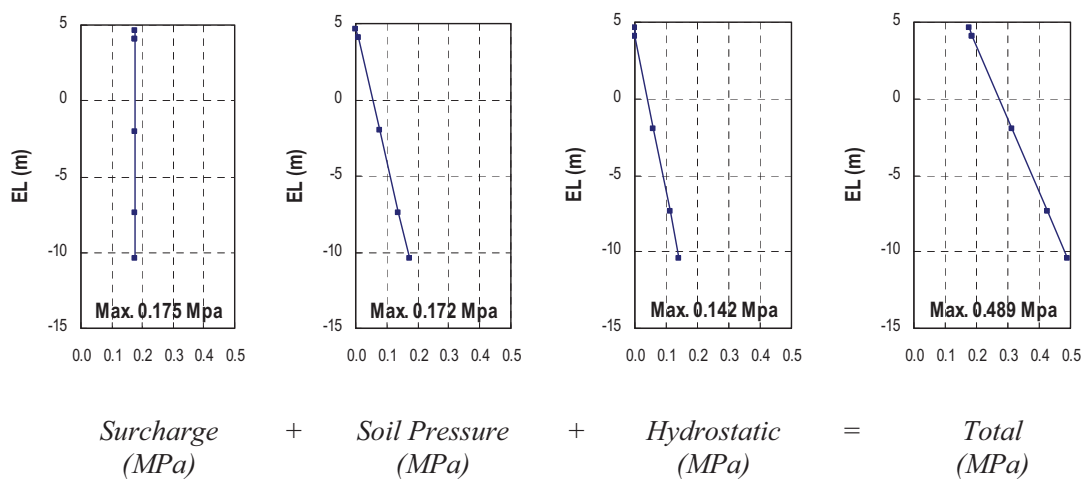


**Figure 3G.2-11. Finite Element Model of CB (Roof: EL 13800)**



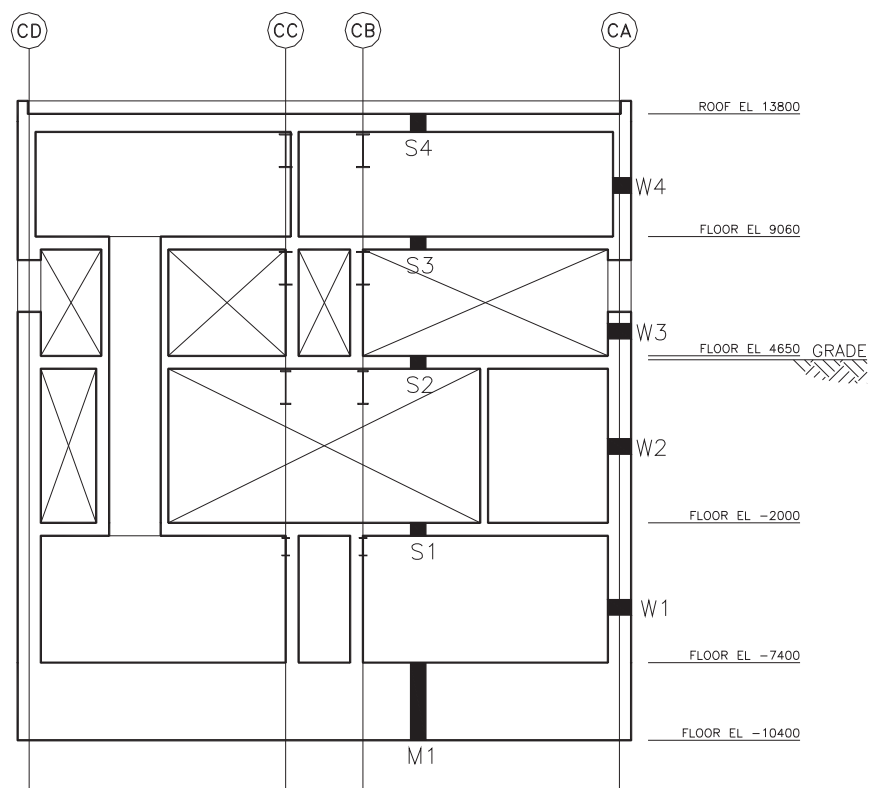


*Pressure on Walls CA, CD & C1*

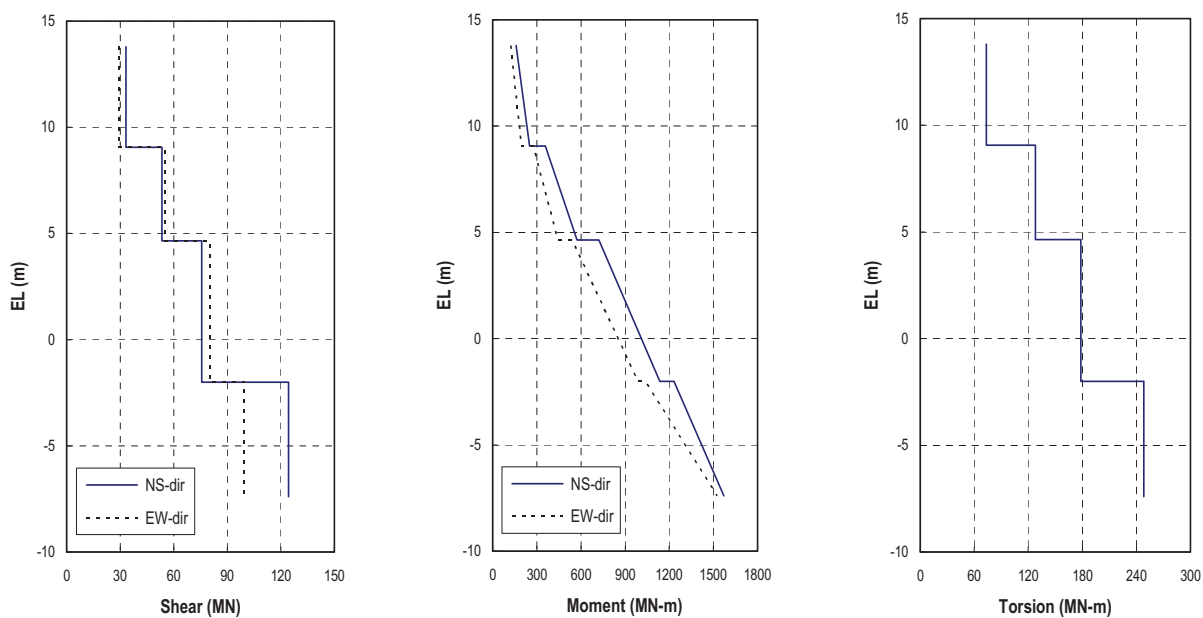


*Pressure on Wall C5*

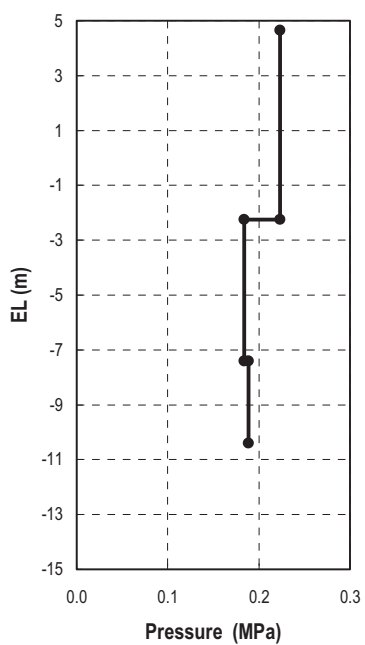
**Figure 3G.2-12. Soil Pressure at Rest**



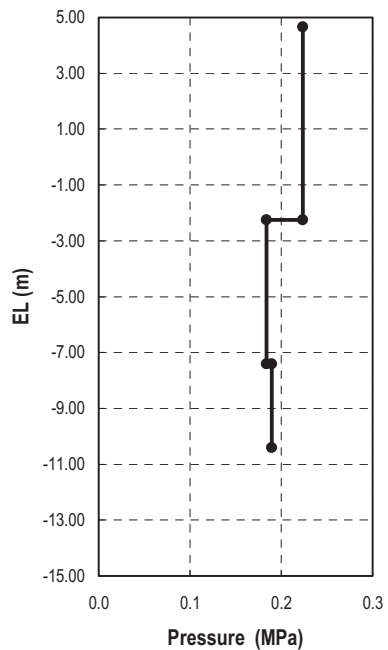
**Figure 3G.2-13. Sections Where Thermal Loads Are Defined**



**Figure 3G.2-14. Design Seismic Shears and Moments for CB**

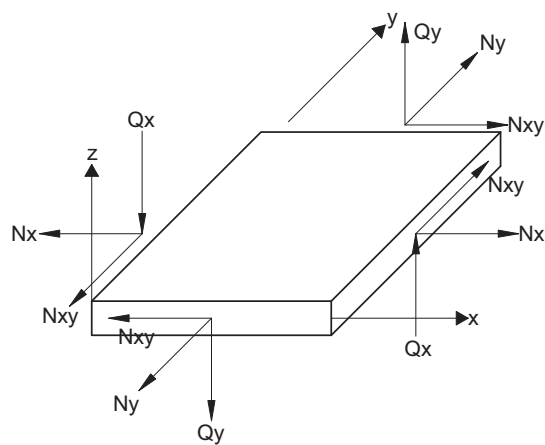


*C1 Wall and C5 Wall*

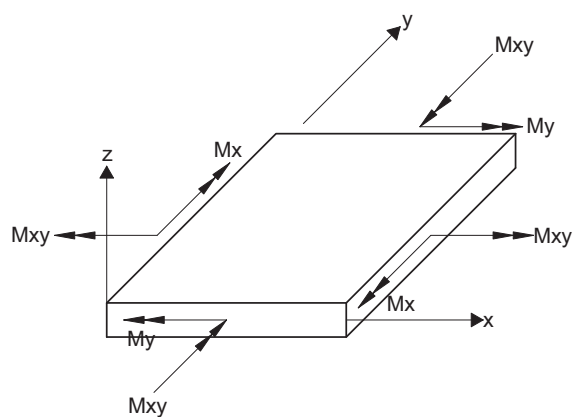


*CA Wall and CD Wall*

**Figure 3G.2-15. Seismic Lateral Soil Pressure**



Membrane and Shear Forces



Moments

Definition of Element Coordinate System

Structure	x	y	z
Wall in N-S Direction	horizontal	vertical	toward West
Wall in E-W Direction	horizontal	vertical	toward South
Foundation Mat Floor Slab	toward South	toward East	upward

**Figure 3G.2-16. Force and Moment in Shell Element**

**Figure 3G.2-17. Deleted**