

**2.1.2 Emergency Power Generating Buildings**

**1.0 Description**

The Emergency Power Generating Buildings (EPGB) are safety-related, Seismic Category I, reinforced concrete structures supported by a reinforced concrete basemat. There are two essentially identical EPGBs (EPGB 1/2 and EPGB 3/4) located adjacent to the Nuclear Island (NI). To address aircraft and explosion pressure wave hazards, these structures are physically separated by the NI complex as illustrated on Figure 2.1.2-1. Information in tables and figures in this section is for information only with the exception of the specific features listed in the ITAAC for verification.

Each structure houses two diesel generators, two fuel oil tanks, two control rooms, heating ventilation and air conditioning (HVAC) equipment, electrical equipment, and miscellaneous equipment associated with the operation of each generator. The two diesel generators are separated by a reinforced concrete wall to protect against internal hazards. The two fuel oil tanks are separated from the diesel generators by a reinforced concrete wall to protect against internal hazards.

The EPGBs are Seismic Category I structures, which are capable of performing their safety-related function during and following a safe shutdown earthquake (SSE). These structures are designed for external hazards including rain and snow loads, flooding, wind loads, tornado loads, missile impact loads, SSE loads, and site-proximity hazards. The buildings are also designed for structure and component dead loads, live loads, pipe reactions, and thermal effects. There are no internally generated missile impact loads applicable to the design of these buildings.

Each EPGB provides the following safety-related functions:

- Supports the emergency diesel generators and associated mechanical, electrical, and instrumentation and control equipment required to function during and after a design basis event.
- Provides protection for safety-related equipment against external hazards.
- Provides separation between the main diesel generators and fuel oil tanks.

Each EPGB structure is approximately 95 feet by 178 feet by 68 feet high.

**2.0 Arrangement**

2.1 The as-installed location of the two EPGBs is as shown on Figure 2.1.2-1.

**3.0 Key Design Features**

3.1 Physical separation of the as-installed EPGBs by the NI complex is as shown on Figure 2.1.2-1.

3.2 The EPGBs site grade level is located between 12 inches and 18 inches below finish floor elevation at ground entrances.

- 3.3 The as-installed basic configuration of the EPGB structures contains an internal hazards separation barrier so that the impact of internal hazards, including fire, flood, high-energy line break and missile impact, is contained within the EPGB of hazard origination. Figure 2.1.2-4 identifies the internal hazards separation barrier.
- 3.4 The EPGB structures are Seismic Category I and are designed and constructed to withstand design basis loads, as specified below, without loss of structural integrity and safety-related functions.
- Normal plant operation (including dead loads, live loads, lateral earth pressure loads, hydrostatic loads, hydrodynamic loads, and temperature loads).
  - Internal Events (including internal flood loads, accident pressure loads, accident thermal loads, accident pipe reactions, and pipe break loads—including reaction loads, jet impingement loads, and missile impact loads).
  - External events (including rain, snow, flood, tornado, tornado-generated missiles, and earthquake).
- 3.5 Portions of EPGB structures located below grade elevation are protected from external flooding by waterstops, watertight seals, and waterproofing.
- 3.6 The EPGB structures have key design dimensions that are confirmed after construction.
- 4.0 Interface Requirements**
- There are no interface requirements for the EPGBs.
- 5.0 Inspections, Tests, Analyses, and Acceptance Criteria**
- Table 2.1.2–3 lists the EPGB ITAAC.

**Table 2.1.2-1—Key Dimensions of Emergency Power Generating Building Structure**

| Label | Section Descriptions            | Region                   | Floor Elevation or Elevation Range     | Key Dimensions <sup>(1)</sup> |
|-------|---------------------------------|--------------------------|--|-------------------------------|
| F4    | Foundation Basemat.             | Refer to Figure 2.1.2-3. | Nominal elevation 0 ft – 0 in.         | 6 ft – 0 in.                  |
| W11   | Typical Wall at Column Line 11. | Refer to Figure 2.1.2-2. | From nominal elevations 0 ft to 69 ft. | 1 ft – 11 5/8 in.             |
| S10   | Reinforced Concrete Slab.       | Refer to Figure 2.1.2-3. | Nominal elevation 51 ft – 6 in.        | 2 ft – 0 in.                  |

Notes:

- Concrete forming and placement tolerances shall conform to the requirements of ACI 349 and ACI 117.

**Table 2.1.2-2—Key Dimensions of Emergency Power Generating Building Foundation Footprint**

| Label | Section Descriptions  | Region                   | Key Dimension  | Tolerance  |
|-------|---|--------------------------|----------------|------------|
| D11   | Distance from North to South edge of EPGB foundation base slab. | Refer to Figure 2.1.2-1. | 178 ft – 0 in. | +/- 12 in. |
| D12   | Distance from East to West edge of EPGB foundation base slab.   | Refer to Figure 2.1.2-1. | 94 ft – 6 in.  | +/- 12 in. |
| D13   | Distance from top of EPGB foundation base slab to top of roof.  | Refer to Figure 2.1.2-3. | 68 ft – 0 in.  | +/- 12 in. |

**Table 2.1.2-3—Emergency Power Generating Building ITAAC (3 Sheets)**

|     | <b>Commitment Wording</b>  | <b>Inspections, Tests, Analyses</b>  | <b>Acceptance Criteria</b>   |
|-----|--|--|--|
| 2.1 | The as-installed location of the EPGBs is as shown on Figure 2.1.2-1.  | An inspection of the EPGBs will be performed.  | The as-installed location of the EPGBs is as shown on Figure 2.1.2-1.  |
| 3.1 | Physical separation of the as-installed EPGBs by the NI complex is as shown on Figure 2.1.2-1.   | An inspection of the EPGBs will be performed.  | The as-installed EPGBs are separated by the NI complex as shown on Figure 2.1.2-1.   |
| 3.2 | The EPGBs as-installed site grade level is located between 12 inches and 18 inches below finish floor elevation at ground entrances.   | An inspection of EPGBs site grade level will be performed.   | The as-installed EPGBs site grade level is located between 12 inches and 18 inches below finish floor elevation at ground entrances.   |
| 3.3 | The as-installed basic configuration of the EPGB structures contains an internal hazards separation barrier so that the impact of internal hazards, including fire, flood, high-energy line break and missile impact, is contained within the EPGB of hazard origination. Figure 2.1.2-4 identifies the internal hazards separation barrier. | <ul style="list-style-type: none"> <li>a. An inspection of the EPGBs will be performed.</li> <li>b. A fire protection analysis will be performed.</li> <li>c. Inspections of as-installed conditions of walls, doors, dampers and penetrations through the barriers identified on Figure 2.1.2-4 will be performed.</li> </ul> | <ul style="list-style-type: none"> <li>a. The as-installed configuration of the EPGBs provides internal hazards barriers as shown on Figure 2.1.2-4.</li> <li>b. Completion of analysis that indicates that barriers, doors, dampers and penetrations providing separation have a minimum 3-hour fire rating and mitigate propagation of smoke to the extent that safe shutdown is not adversely affected.</li> <li>c. The as-installed configuration of walls, doors, dampers and penetrations through the barriers listed on Figure 2.1.2-4 agrees with the associated construction drawings.</li> </ul> |
| 3.4 | The EPGB structures are Seismic Category I and are designed and constructed to withstand design basis loads, as specified below,   | <ul style="list-style-type: none"> <li>a. An analysis of the EPGB structures for the design basis loads will be performed.</li> </ul>  | <ul style="list-style-type: none"> <li>a. The design of the EPGB will withstand the design basis loads without loss of structural integrity and safety related functions.</li> </ul>   |

**Table 2.1.2-3—Emergency Power Generating Building ITAAC (3 Sheets)**

|     | <b>Commitment Wording</b>  | <b>Inspections, Tests, Analyses</b>   | <b>Acceptance Criteria</b>   |
|-----|--|---|--|
|     | <p>without loss of structural integrity and safety-related functions.</p> <ul style="list-style-type: none"> <li>• Normal plant operation (including dead loads, live loads, lateral earth pressure loads, hydrostatic loads, hydrodynamic loads, and temperature loads).</li> <li>• Internal Events (including internal flood loads, accident pressure loads, accident thermal loads, accident pipe reactions, and pipe break loads – including reaction loads, jet impingement loads, and missile impact loads).</li> <li>• External events (including rain, snow, flood, tornado, tornado-generated missiles, and earthquake).</li> </ul> | <p>b. During construction, deviations from the approved design will be analyzed for design basis loads.</p>   | <p>b. Deviations from the design during construction are reconciled.</p>   |
| 3.5 | <p>Portions of EPGB structures located below grade elevation are protected from external flooding by waterstops, watertight seals, and waterproofing.</p>  | <p>An inspection of the EPGB structures will be performed.</p>  | <p>Portions of EPGB structures located below grade elevation are protected from external flooding by waterstops, watertight seals, and waterproofing.</p>  |
| 3.6 | <p>The EPGB structures have key design dimensions that are confirmed after construction.</p>   | <p>An inspection of key dimensions of the as-installed EPGB structures will be performed. During construction, deviations from the approved design will be analyzed for design basis loads.</p> | <p>Deviations from the key dimensions and tolerances specified in Table 2.1.2-1 and Table 2.1.2-2 are reconciled and the as-installed EPGB structures will withstand the design basis loads without loss of structural integrity and safety related functions.</p> |