

6.4 MECHANICAL, ELECTRICAL, AND PLUMBING COMPONENTS

6.4.8 ELECTRICAL AND COMMUNICATIONS DISTRIBUTION EQUIPMENT

6.4.8.2 ELECTRICAL DISTRIBUTION PANELS

This category includes electrical distribution panels, either recessed or surface-mounted. Wall-mounted electrical panels have generally performed well in past earthquakes, in part due to their weight (typically less than 200 pounds), the ductility of the sheet metal cabinets, and the strength of the interconnected conduit which can serve as unintended bracing.

TYPICAL CAUSES OF DAMAGE

- Panels may become dislodged and fall.
- Damage to distribution panels and the attached lines may create electrical hazards and fire hazards.

Damage Examples

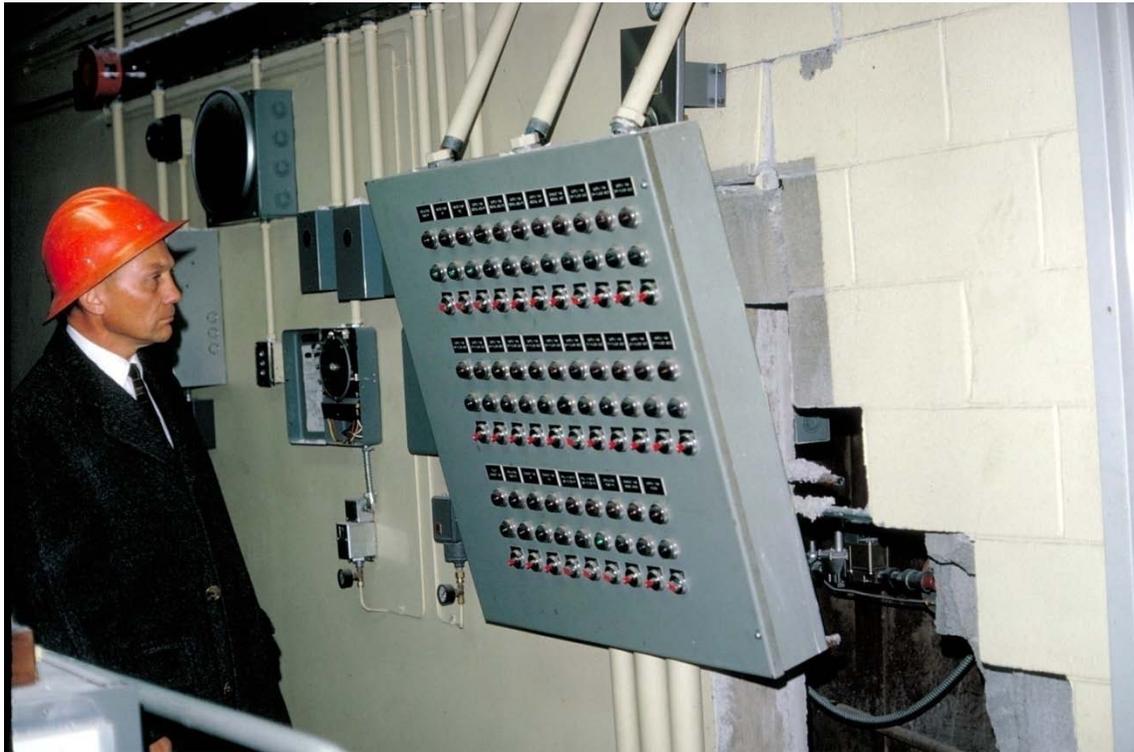


Figure 6.4.8.2-1 Dislodged panel board due to failure of hollow concrete block partition wall in the 1964 magnitude-9.2 Anchorage, Alaska earthquake (Photo courtesy of PEER Steinbrugge Collection, No. S2144).

SEISMIC MITIGATION CONSIDERATIONS

- Working around electrical equipment can be extremely hazardous. Read the Electrical Danger Warning and Guidelines in Section 6.6.8 of this document before proceeding with any work.
- This type of equipment can be supplied with shop welded brackets or predrilled holes for wall anchorage. For any new equipment, request items that can be supplied with seismic anchorage details.
- See Section 6.4.7.1 for additional details. The wall mount detail shown is for a concrete wall; refer to FEMA 413 *Installing Seismic Restraints for Electrical Equipment* (2004) for additional information about anchoring to masonry or drywall and for general information on seismic anchorage of electrical equipment.

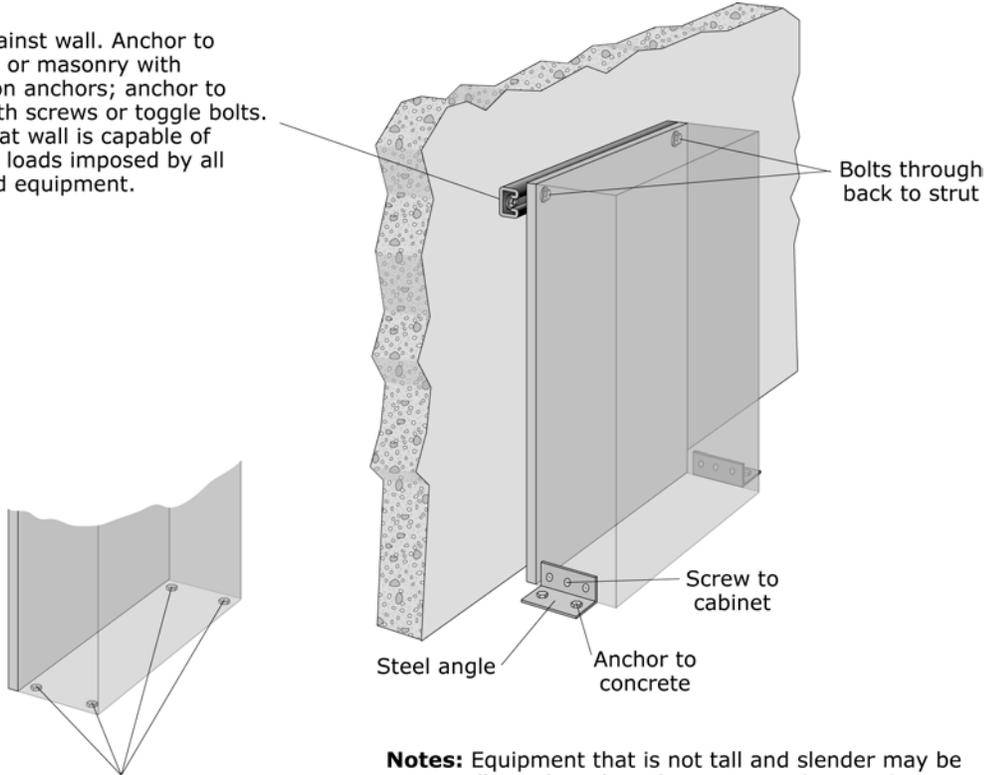
Mitigation Examples



Figure 6.4.8.2-2 Wall anchorage for electrical panel; standard strut anchored to wall studs and panel anchored to strut (Photo courtesy of Maryann Phipps, Estructure).

Mitigation Details

Strut against wall. Anchor to concrete or masonry with expansion anchors; anchor to studs with screws or toggle bolts. Verify that wall is capable of resisting loads imposed by all anchored equipment.



Alternate: anchor directly through base if unit is premanufactured for base anchorage and access is available

Notes: Equipment that is not tall and slender may be seismically anchored similar to Figure 6.4.1.1-6 or 6.4.1.1-7

Turn off all power to equipment before proceeding with any work

Figure 6.4.8.2-3 Free-standing electrical distribution panel (ER).