

## 6.5 FURNITURE, FIXTURES, EQUIPMENT AND CONTENTS

### 6.5.3 COMPUTER AND COMMUNICATION EQUIPMENT

#### 6.5.3.2 COMPUTER AND COMMUNICATION RACKS

Steel racks for servers or communications equipment may be open or closed, wall or floor mounted or portable. To prevent damage and loss of communication links, racks should be braced, anchored, or tethered with equipment firmly secured to the rack and cables arranged with adequate slack.

#### TYPICAL CAUSES OF DAMAGE

- Unbraced, unanchored, or poorly anchored racks can slide, tip, overturn or collapse. Equipment may slide, bang, or fall and suffer internal damage; cable connections may pull loose and get scrambled.

#### Damage Examples



Figure 6.5.3.2-1 Damage to communication and computer racks (Photo courtesy of Degenkolb Engineers).



Figure 6.5.3.2-2 Damage to communication and computer racks (Photo courtesy of Degenkolb Engineers).

### SEISMIC MITIGATION CONSIDERATIONS

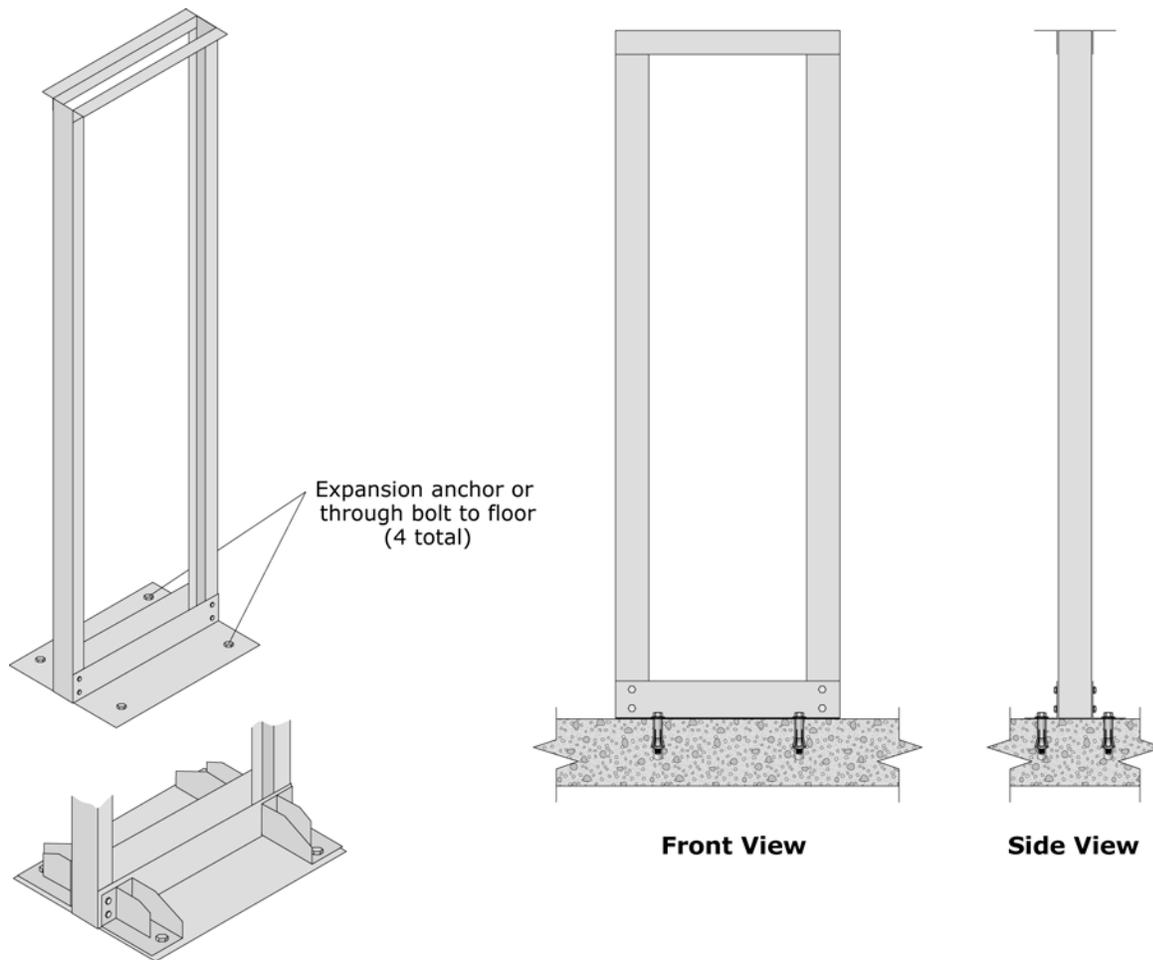
- Check suppliers for seismic rated cabinet racks or server racks that come with predrilled holes and hardware for floor or wall anchorage. Where items are anchored to a partition wall, make sure that the wall and wall anchorage or bracing to the structure above are adequate to resist the imposed loads. Cables and wiring should be installed with sufficient slack to allow for some seismic deformations.
- See also Section 6.5.3.1 for equipment on access floors; see Section 6.4.7.1 for details for anchorage of electrical cabinets. Also refer to FEMA 413, *Installing Seismic Restraints for Electrical Equipment* (2005), for general guidelines for anchorage of electrical items.
- Develop a backup and recovery plan for all electronic data including offsite backup to a location not likely to be affected by the same earthquake.

## Mitigation Examples



Figure 6.5.3.2-3 Base anchorage details for data cabinets; top photos shows internal anchorage, bottom photo shows external anchorage (Photos courtesy of Maryann Phipps, Estructure).

### Mitigation Details



Some rack manufacturers offer "seismic kits" to strengthen the rack base

Figure 6.5.3.2-4 Data rack (ER).

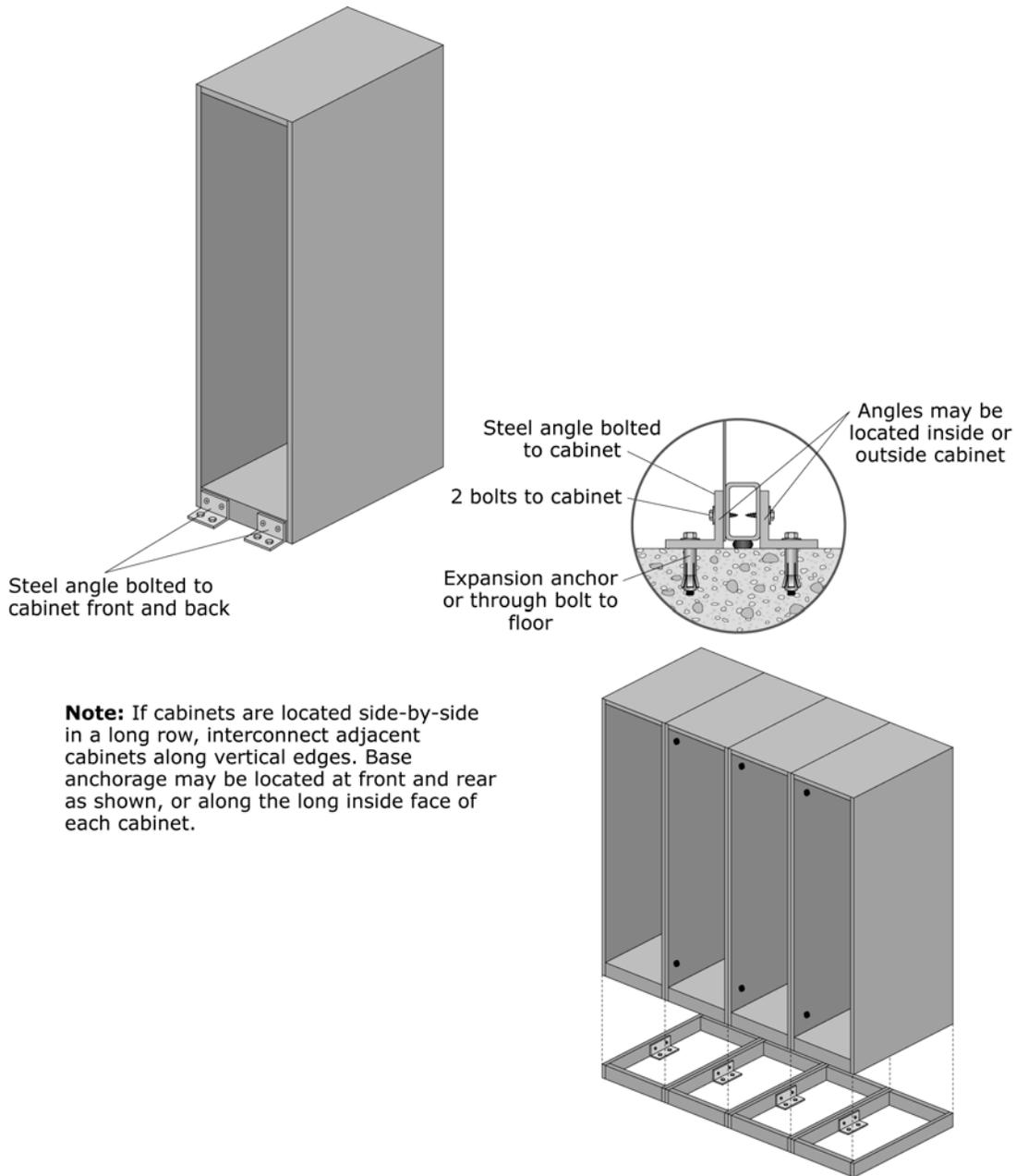


Figure 6.5.3.2-5 Data cabinet (ER).