Chapter 12: Fire and Life Safety

Fire Protection Equipment Requirements

1 Purpose

The purpose of these requirements is to ensure the adequate provision and operability of fire protection systems. They cover design and construction review, maintenance, and inspection. They apply to workers and supervisors, area and building managers, the SLAC fire marshal, Facilities and Operations, and the local fire department.

2 Requirements

Active fire protection systems include

- Automatic fire suppression systems (such as sprinkler, clean agent, carbon dioxide, and dry chemical systems)
- Fire hydrants and standpipe outlets
- Fire alarm systems, including smoke and heat detectors and evacuation alarms

Passive fire protection systems include

- Fire and smoke barrier walls and penetrations
- Fire and smoke doors and dampers

2.1 Design and Construction Review

Plans for construction and building modification and experiments will be reviewed for fire safety following the General Policy and Responsibilities: ESH Project Review Procedure. The SLAC fire marshal, under delegated authority of DOE Bay Area Site Office manager, will review the plans, specifications, procedures, and acceptance tests.

2.2 Removing from Service

To have fire protection equipment taken out of service temporarily, contact Facilities through the Facilities Service Request System. Only Facilities may take fire protection equipment out of service. Active fire protection systems may only be taken out of service following Fire and Life Safety: Fire Protection System Impairment Procedures.
2.3 Sprinkler Systems

The Department of Energy (DOE) requires sprinklers in most SLAC buildings (DOE O 420.1C, Chg 3 [LtdChg] SCP). Sprinkler systems at SLAC are designed and installed in accordance with National Fire Protection Association (NFPA) 13, “Standard for Installation of Sprinkler Systems” (NFPA 13). The majority of sprinkler systems at SLAC are wet-pipe sprinkler systems. Wet-pipe systems are normally pressurized with water. Individual sprinklers activate and release water when directly exposed to the heat of a fire. Facilities maintains and tests sprinkler systems.

- Keep heat sources away from sprinkler heads.
- Allow at least 18 inches of clearance below sprinkler heads.
- In areas where damage to sprinkler heads is likely, such as in rooms with low ceilings, protective guards should be installed over the sprinkler heads. (Building managers should contact Facilities to have protective guards installed.)
- Do not hang material from sprinkler piping or sprinkler heads.
- Do not paint sprinkler heads.
- Allow at least three feet of clearance around sprinkler control valves so that fire department personnel can access them easily.

2.4 Fire Hydrants and Fire Lanes

Fire hydrants are maintained for emergency use by local fire departments. Non-emergency use of fire hydrants by non-fire department personnel, such as construction subcontractors, must be authorized by the SLAC fire marshal before such use. The local fire department annually inspects and flows fire hydrants at SLAC.

To provide access in the event of an emergency, parking is prohibited at all times in marked fire lanes, along red-painted curbs, and in front of sprinkler-system inlet connections (“fire department connections”) and fire hydrants.

2.5 Portable Fire Extinguishers

For details on the installation, use and maintenance of portable fire extinguishers, see Fire and Life Safety: Portable Fire Extinguisher Requirements.

2.6 Smoke and Heat Detectors and Evacuation Alarms

Many buildings are equipped with evacuation alarms. Some buildings have smoke and heat detectors for specific purposes. Smoke and heat detectors at SLAC automatically transmit an alarm to the local fire department and activate evacuation alarms, if present. Alarms may also be activated manually at fire alarm boxes. Emergency responders are dispatched in response to all fire alarms received from SLAC. Facilities tests and maintains smoke and heat detectors and evacuation alarms. Some special alarms known as supervisory alarms will dispatch SLAC personnel for an investigation without evacuating the building or notifying the fire department. One such example is the tamper alarm on an automatic external defibrillator (AED) device cabinet.
2.7 Fire Barrier Walls and Penetrations

For design reasons, certain walls are required to function as fire barrier walls. These walls are specially constructed to resist fire and are assigned an hourly rating indicating their degree of fire resistance. When such walls are penetrated by pipes or electrical cables, listed penetration blocking systems are used to preserve the fire rating of the wall. Similar systems are used to seal fire-rated joints, such as the interface between a fire-rated wall and the roof or ceiling deck above. When Facilities or cabling personnel or subcontractors make alterations to such utilities or joints penetrating a fire wall, the installer must ensure that the penetrated barrier is restored properly.

- Notify the SLAC fire marshal before making new holes or alterations in fire barrier walls (using the firebarrier-impair listserv).

Fire barriers can be difficult to identify. The presence of an orange-colored caulking material around penetrating pipes or cables is an indication of one of the more popular sealing systems. Another indication is the use of special small pillows to seal a multiple cable opening. However, there are many types of fire barrier systems. Check with the SLAC fire marshal if you are in doubt about the status of an architectural barrier.

2.8 Fire Doors and Fire Dampers

Fire doors and dampers block the spread of smoke and fire through fire barrier walls by automatically closing when fire is detected. Depending on their type, fire doors and dampers are activated by an evacuation alarm or by a smoke or heat sensor. Fire dampers are strategically located in ventilation ducts or air transfer openings. Facilities inspects and maintains fire doors and dampers.

- Do not chock open fire doors.

Fire doors and dampers are labeled as such by Underwriters Laboratories, Inc. (UL) or another nationally recognized test laboratory (NRTL). (This information is included in the manufacturer’s literature or on the product’s label.)

- Do not paint, remove, or otherwise obscure these labels.

- Enclosed stairwells must have NRTL-listed fire doors, and these doors must be kept closed.

3 Forms

The following forms and systems are required by these requirements:

- The firebarrier-impair listserv is required for notifying the SLAC fire marshal before making new holes or alterations in fire barrier walls

- Facilities and Operations Project and Work Request System. System for requesting services from Facilities

- SLAC Fire Hydrant GIS. Map of active fire suppression systems

- SLAC Fire Barriers GIS. Map of passive fire barriers
4 Recordkeeping

The following recordkeeping requirements apply for these requirements:

- Portable fire extinguisher records are maintained by the SLAC fire marshal.
- Active fire suppression systems are tracked by the SLAC fire marshal (SLAC Fire Hydrant GIS).
- Active fire protection system (suppression systems, fire alarm systems, smoke management system) records are maintained by Facilities and Operations.
- Passive fire barrier locations are tracked by the SLAC fire marshal (SLAC Fire Barriers GIS).
- Passive fire barrier maintenance records are maintained by Facilities and Operations.

5 References

SLAC Environment, Safety, and Health Manual (SLAC-I-720-0A29Z-001)

- Chapter 12, “Fire and Life Safety”
  - Fire and Life Safety: Fire Protection System Impairment Procedures (SLAC-I-730-0A12C-002)
  - Fire and Life Safety: Portable Fire Extinguisher Requirements (SLAC-I-730-0A12S-001)
  - Fire and Life Safety: Exit Path Requirements (SLAC-I-730-0A12S-005)
  - Fire Protection Resource Site (FireFacts) (SharePoint)

- Chapter 1, “General Policy and Responsibilities”
  - General Policy and Responsibilities: ESH Project Review Procedure (SLAC-I-720-0A24C-001)

Other Documents

- National Fire Protection Association (NFPA) 13, “Installation of Sprinkler Systems” (NFPA 13)
- Occupational Safety and Health Administration (OSHA), Directorate of Technical Support and Emergency Management. Nationally Recognized Testing Laboratory Program
- Underwriters Laboratories, Inc. (UL)