Submitter: Jake Pauls, Jake Pauls Consulting Services

Recommendation: Revise text to read as follows:

12.33.1 General. One- and two-family dwellings, residential dwelling units in lodging or rooming house and apartment building occupancies shall comply with Section 12.33.

12.33.X For new dwellings, a minimum of one dwelling unit entrance shall comply with ICC/ANSI A117, section 1005, requirements for Type C Dwellings. [Additional text might be added here by the Building Systems Technical Committee to address site impracticality.]

Substantiation: (This public input complements one separately submitted, by another proponent, addressing an accessibility problem with a “visitability” substantiation for the same changes to NFPA 5000 text.) The problem addressed here is one of ever-increasing dependency on homes as key adjuncts to (1) public health and (2) health care systems. For (1) the concern is the prevention of predictable and preventable injuries which are a significant and, for steps/stairs, a growing problem necessitating medical treatment. For example, in the USA between 1997 and 2009, the increase in the rate (per 100,000 population) of home step/stair-related injuries requiring hospital admission, as a function of victim age, was 85 percent for the 65-and-older population and 103 percent for the under-65 population. These data are based on analyses of US CPSC/NEISS national estimates publicly available at www.cpsc.gov. Forensic and other investigations have implicated combinations of doors and stairs (including, especially single steps) as relatively dangerous because negotiating one or more steps while dealing with one (or two, in the case of storm/screen) doors is very difficult in terms of the ergonomics (human factors). For (2), aside from the problem of adding to the pressure on health care resources, dysfunctional features of homes—including difficult-to-use circulation facilities, toilets and food-preparation areas (the key focus areas for Type C dwellings)—reduce the critical usability of homes as highly desired places to recuperate for example, thus reducing pressures on institutional settings such as hospitals and other care facilities. Dysfunctional facilities in homes pose problems, including safety concerns, for those recovering and those caring for them, including families, friends, home-care professionals and emergency responders. Many of these problems were directly or indirectly considered in the Health Care Summit that NFPA hosted on March 28, 2012, in Baltimore (with information on the presentations and discussions there available from NFPA). Thus this public input addresses growing concerns about the ability of the health care system to cope with increasing demands posed by changing demographics and national, state, local, family and personal economic conditions. To date, a prime focus has been to make institutional settings more homelike; now (with changes like those proposed by this public input) homes must incorporate certain basic features that have long been absolutely essential in institutional and other non-home settings—including no-step entrances and interior access to essential, functional services that do not require use of stairs.

Finally, while it is not a straightforward matter, I would like to see the responsible technical committees make this public input also apply to the extent possible (due to document scope) to NFPA 101, specifically by amending section 24.2.4.8(2) to require compliance with Type C dwelling requirement of ICC/ANSI A117.1 in addition to making other changes that might be considered appropriate by the technical committees addressing this public input. Here it should be noted that there are more-general discussions occurring on expansion of the scope of NFPA 101 to address a broadened range of emergencies.

Public Input Response:
See first revision # 700. The committee has met the intent of the submitter.
Submitter: Steve Ferguson, ASHRAE  
Recommendation: Revise text to read as follows:

49.2.2 Ventilation Rates.

49.2.2.1 Ventilation rates for the following occupancies shall conform to ASHRAE 62.1, *Ventilation for Acceptable Indoor Air Quality*:

1) Assembly  
2) Business  
3) Educational  
4) Day care  
5) Detention  
6) Health care  
7) Mercantile  

Substantiation: This proposal does three things:

First: The current text of Section 15.5.6.2 applies to all building types. ASHRAE Standard 62 (the previous reference) covered all building types. Since that time, the standard was split into 62.1, for all commercial buildings and all residential stories taller than 3 stories, and 62.2, for all single family residential and residential buildings lower than 3 stories.

In order to be complete, this section needs to reference both ANSI/ASHRAE 62.1 and ANSI/ASHRAE 62.2 – the two ANSI standards for ventilation in buildings.

Second: The Indoor Air Quality Procedure (IAQ) is one compliance path for Standard 62.1. Standard 62.1 also has a simpler ventilation rate procedure. Standard 62.2 does not have an IAQ procedure. In order for the reference to be complete, the reference to the specific compliance path in one of the standards should be removed.

Third: The ventilation rates for the occupancies in Section 49.2.2.1 are set in ASHRAE Standard 62.1, so the reference is being modified for accuracy. If residential spaces are added to 49.2.2.1, then a reference to 62.2 should be added as well.

Public Input Response:

See FR #701
NOTE: This proposal appeared as Comment 5000-161 (Log #100a) which was held from the A11 ROC on Proposal 5000-268.

Submitter: Steve Gutmann, City of Santa Ana Planning and Building Agency / Rep. NFPA Building Code Development Committee (BCDC)

Recommendation: Keep the original proposal and add the following section:

51.7 Photovoltaic Systems. [1:11.10]
51.7.1 New photovoltaic systems installed for all existing buildings shall be in accordance with Section 11.10 and NFPA 70. [1:11.10.1]
51.7.2 Building Mounted Photovoltaic Installations. [1:11.10.2]
51.7.2.1* Marking. Photovoltaic systems shall be permanently marked as specified in this section. [1:11.10.2.1]
51.7.2.1.1 Main Service Disconnect Marking. A placard shall be permanently affixed to the main service disconnect panel serving alternating current (AC) and direct current (DC) photovoltaic systems. The placard shall be red with white capital letters at least ¾ inch in height and in a non-serif font, to read: “SOLAR DISCONNECT INSIDE PANEL”.

The placard shall be constructed of weather resistant, durable plastic with engraved letters, or other approved material. [1:11.10.2.1.1]
51.7.2.1.2 Circuit Disconnecting Means Marking. A permanent label shall be affixed adjacent to the circuit breaker controlling the inverter or other photovoltaic system electrical controller serving alternating current (AC) and direct current (DC) photovoltaic systems. The label shall have contrasting color with capital letters at least 3/8 inch in height and in a non-serif font, to read: “SOLAR DISCONNECT”.

The label shall be constructed of durable adhesive material, or other approved material. [1:11.10.2.1.2]
51.7.2.1.3* Conduit, Raceway, Enclosure, Cable Assembly, and Junction Box Markings. Marking is required on all interior and exterior direct current (DC) conduits, raceways, enclosures, cable assemblies, and junction boxes. [1:11.10.2.1.3]
51.7.2.1.3.1 Marking Locations. Marking shall be placed on all direct current (DC) conduits, raceways, enclosures, and cable assemblies every ten feet, at turns, and above and below penetrations. Marking shall be placed on all direct current (DC) combiner and junction boxes. [1:11.10.2.1.3.1]
51.7.2.1.3.2* Marking Content and Format. Marking for direct current (DC) conduits, raceways, enclosures, cable assemblies, and junction boxes shall be red with white lettering with minimum 3/8 inch capital letters in a non-serif font, to read: "WARNING: SOLAR CIRCUIT".

Marking shall be reflective, weather resistant, and suitable for the environment. [1:11.10.2.1.3.2]
51.7.2.1.4 Secondary Power Source Markings. Where photovoltaic systems are interconnected to battery systems, generator backup systems, or other secondary power systems, additional signage acceptable to the authority having jurisdiction shall be required indicating the location of the secondary power source shutoff switch. [1:11.10.2.1.4]
51.7.2.1.5 Installer Information. Signage, acceptable to the authority having jurisdiction, shall be installed adjacent to the main disconnect indicating the name and emergency telephone number of the installing contractor. [1:11.10.2.1.5]
51.7.2.1.6* Inverter Marking. Markings are not required for inverters. [1:11.10.2.1.6]
51.7.2.2 Access, Pathways, and Smoke Ventilation. [1:11.10.2.2]
51.7.2.2.1 General. Access and spacing requirements are required to provide emergency access to the roof, provide pathways to specific areas of the roof, provide for smoke ventilation opportunity areas, and to provide emergency egress from the roof. [1:11.10.2.2.1]
51.7.2.2.1.1 Exceptions. The authority having jurisdiction is allowed to grant exceptions where access, pathway or ventilation requirements are reduced due to any of the following circumstances:

1. Proximity and type of adjacent exposures
2. Alternative access opportunities, as from adjoining roofs,
3. Ground level access to the roof,
4. Adequate ventilation opportunities beneath solar module arrays,
5. Adequate ventilation opportunities afforded by module set back from other rooftop equipment,
6. Automatic ventilation devices,
7. New technologies, methods, or other innovations that ensure adequate fire department access, pathways, and ventilation opportunities. [1:11.10.2.2.1.1]
51.7.2.2.1.2 Pitch. Designation of ridge, hip, and valley does not apply to roofs with 2-in-12 or less pitch.

51.7.2.2.1.3 Roof Access Points. Roof access points shall be defined as areas where fire department ladders are not placed over openings (windows or doors), are located at strong points of building construction, and are in locations where they will not conflict with overhead obstructions (tree limbs, wires, or signs).

51.7.2.2.2 One- and Two-Family Dwellings and Townhouses. Photovoltaic systems installed in one- and two-family dwellings and townhouses shall be in accordance with this section.

51.7.2.2.2.1 Access and Pathways.

51.7.2.2.2.1.1 Hip Roof Layouts. Photovoltaic modules shall be located in a manner that provides a 3 foot wide clear access pathway from the eave to the ridge of each roof slope where the photovoltaic modules are located. The access pathway shall be located at a structurally strong location of the building, such as a bearing wall.

51.7.2.2.2.1.1 Exception. Where adjoining roof planes provide a three-foot (3') wide clear access pathway.

51.7.2.2.2.1.2 Single Ridge Layouts. Photovoltaic modules shall be located in a manner that provides two 3 foot wide access pathways from the eave to the ridge on each roof slope where the modules are located.

51.7.2.2.2.1.3 Hip and Valley Layouts. Photovoltaic modules shall be located no closer than 1-1/2 feet to a hip or valley if modules are to be placed on both sides of the hip or valley. Where modules are located on only one side of a hip or valley of equal length, the photovoltaic modules shall be allowed to be placed directly adjacent to the hip or valley.

51.7.2.2.2.2 Ridge Setback. Photovoltaic modules shall be located no higher than 1-1/2 feet below the ridge.

51.7.2.2.3 Buildings other than One- and Two-Family Dwellings and Townhouses. Photovoltaic energy systems installed in any building other than one- and two-family dwellings and townhouses shall be in accordance with this section. Where the authority having jurisdiction determines that the roof configuration is similar to a one- and two-family dwelling or townhouse, the authority having jurisdiction shall allow the requirements of Section 11.10.2.2.2.

51.7.2.2.3.1 Access. A minimum 4 foot wide clear perimeter shall be provided around the edges of the roof for buildings with a length or width of 250 feet or less along either axis. A minimum 6 foot wide clear perimeter shall be provided around the edges of the roof for buildings having length or width greater than 250 feet along either axis.

51.7.2.2.3.2 Pathways. Pathways shall be established as follows:
1. Pathways shall be over structural members.
2. Centerline axis pathways shall be provided in both axes of the roof.
3. Centerline axis pathways shall run on structural members or over the next closest structural member nearest to the center lines of the roof.
4. Pathways shall be in a straight line not less than 4 feet clear to skylights, ventilation hatches, and roof standpipes.
5. Pathways shall provide not less than 4 feet clear of roof access hatches with at least one not less than 4 feet clear pathway to the parapet or roof edge.

51.7.2.2.3.3 Smoke Ventilation. Ability for fire department smoke ventilation shall be provided in accordance with this section.

51.7.2.2.3.3.1 Maximum array. Arrays of photovoltaic modules shall be no greater than 150 feet by 150 feet in distance in either axis.

51.7.2.2.3.3.2 Ventilation options. Ventilation options between array sections shall be either:
1. A pathway 8 feet or greater in width;
2. A pathway 4 feet or greater in width and bordering on existing roof skylights or ventilation hatches; or
3. A pathway 4 feet or greater in width and bordering 4 foot by 8 foot venting cutouts options every 20 feet on alternating sides of the pathway.

51.7.2.2.4 Location of Direct Current (DC) Conductors. Exterior mounted Direct Current conduits, wiring systems and raceways for photovoltaic circuits shall be located as close as possible to the ridge, hip or valley and from the hip or valley as directly as possible to an outside wall to reduce trip hazards and maximize ventilation opportunities.

51.7.2.2.4.2 Conduit runs between sub-arrays and to DC combiner boxes shall be designed to take the shortest path from the array to the DC combiner box.

51.7.2.2.4.2.1 Exterior mounted Direct Current conduits are located so that conduit runs are minimized in the pathways between arrays.

51.7.2.2.4.3 Direct current (DC) wiring shall be run in metallic conduit or raceways when located within enclosed spaces in a building and shall be run as follows:
ordinance is that the California guidelines require a three foot setback from the ridge, and a three foot setback from eve
to ridge on full hip roof, even when the opposing hip is unobstructed. Whereas, the proposed Monterey ordinance
currently reduces this to 18” (which is supported by many in California) including the requirement for hipped roofs, this reduced
requirement is in practice in San Francisco.


The main difference between the guidelines from the California State Fire Marshal and the suggested Monterey
ordinance is that the California guidelines require a three foot setback from the ridge, and a three foot setback from eve
to ridge on full hip roof, even when the opposing hip is unobstructed. Whereas, the proposed Monterey ordinance
reduces this to 18” (which is supported by many in California) including the requirement for hipped roofs, this reduced
requirement is in practice in San Francisco.

The proposal provides three basic safety measures: it establishes markings on photovoltaic system components to

1. When run perpendicular or parallel to load-bearing members, a minimum 10 inch space below roof decking or
sheathing shall be maintained.

2. Where flexible metal conduit (FMC) or metal clad cable (MC) containing PV power circuit conductors is installed
across ceilings or floor joists, the raceway or cable shall be protected by guard strips. [1:11.10.2.2.4.3]

51.7.3* Ground-Mounted Photovoltaic System Installations. Ground-mounted photovoltaic systems shall be installed in
accordance with this section. [1:11.10.3]

51.7.3.1* Clearances. A clear area of ten feet (10’) around ground-mounted photovoltaic installations shall be provided.
[1:11.10.3.1]

51.7.3.2* Non-Combustible Base. A gravel base or other non-combustible base acceptable to the authority having
jurisdiction shall be installed and maintained under and around the installation. [1:11.10.3.2]

51.7.3.3* Security Barriers. Fencing, skirting or other suitable security barrier shall be installed when required by the
authority having jurisdiction. [1:11.10.3.3]

Also, add the following annex information to Annex A to read as follows:

A.51.7.2.1 Marking is needed to provide emergency responders with appropriate warning and guidance with respect to
working around and isolating the solar electric system. This can facilitate identifying energized electrical lines that
connect the solar modules to the inverter, which should not be cut when venting for smoke removal during firefighting
operations. [1:A11.10.2.1]

A.51.7.2.1.3 Markings are intended to alert emergency responders to avoid inadvertent cutting through the conduits,
raceways or cable assemblies during firefighting operations. [1:A11.10.2.1.3]

A.51.7.2.1.3.2 Materials used for marking should be in compliance with Underwriters Laboratories (UL) Standard 969,
Marking and Labeling System Standard. [1:A11.10.2.1.3.2]

A.51.7.2.1.6 Inverters are devices used to convert DC electricity from the solar system to AC electricity for use in the
building’s electrical system or the grid. [1:A11.10.2.1.6]

A.51.7.3.1 The zoning regulations of the jurisdiction setback requirements between buildings or property lines, and
accessory structures may apply. [1:A11.10.3.1]

A.51.7.3.2 Though dirt with minor growth is not considered noncombustible, the authority having jurisdiction might
approve dirt bases as long as any growth is maintained under and around the installation to reduce the risk of ignition
from the electrical system. This could be a serious consideration for large ground mounted photovoltaic systems. Not
only should the base be considered under the systems, but also around the systems to the point that the risk of fire from
growth or other ignition sources will be reduced. [1:A11.10.3.2]

A.51.7.3.3 Security barriers are intended to protect individuals and animals from contact with energized conductors or
other components. [1:A11.10.3.3]

Substantiation: Note: This comment was developed by the proponent as a member of NFPA’s Building Code
Development Committee (BCDC) with the committee’s endorsement.

These provisions have been accepted by the NFPA 1 TC as ROP 1-81. We have submitted the text in this comment to
NFPA 5000 because it would be useful to have this information in the building code for new construction. It is intended
that the provisions be extracted from one document to the other. Proposed section 51.7.2.2.4.3 Item 2 has been shown
with strikeout because the NFPA 1 Technical Committee has deleted it in their committee action. Since the provisions
are related to “green construction”, we believe the Comment is germane to ROP 5000-268.

The following is the substantiation from the ROP 1-81:

Many buildings are being retrofitted – or built – with photovoltaic (PV) systems. Photovoltaic systems present unique
life & safety hazards to building occupants and firefighters. These electrical systems carry voltages up to 600 v (DC) and
currents up to 8 amps in residential systems, and there is no way to isolate the power at the modules in the daytime
hours. Because of the life-threatening voltages and current, these systems, not prevalent until recently, pose significant
risks to people on the roofs of these buildings – particularly firefighters, who conduct dangerous ventilation (and other)
procedures during fire operations. Photovoltaic system installations should take into consideration the tactics employed
by the fire service by providing safe roof access and means for identification of the presence of a PV system. These
provisions are intended to address firefighter safety during fire operations.

This proposal is modeled after guidelines established by the California State Fire Marshal, entitled Solar Photovoltaic
Installation Guidelines, April 22, 2008, and particularly an ordinance under review by the City of Monterey. The

The main difference between the guidelines from the California State Fire Marshal and the suggested Monterey
ordinance is that the California guidelines require a three foot setback from the ridge, and a three foot setback from eve
to ridge on full hip roof, even when the opposing hip is unobstructed. Whereas, the proposed Monterey ordinance
reduces this to 18” (which is supported by many in California) including the requirement for hipped roofs, this reduced
requirement is in practice in San Francisco.

The proposal provides three basic safety measures: it establishes markings on photovoltaic system components to
alert responding firefighters to the dangers of the system, it provides access and pathways within solar module arrays for roof ventilation and other firefighting duties during fire operations, and it provides other safety measures for firefighters and others.

Drawings similar to those at the end of the California State Fire Marshal Guidelines may be useful to readers of these code provisions as Annex material. Consideration should be given to including them, with the appropriate 18 inch dimensions noted in this proposal (which differ from those 3 foot dimensions in the Guidelines.)

This is not original material; its reference/source is as follows:
NFPA 1, ROP 1-81

Public Input Response:
The primary issues here are within the purview of NFPA 70. The subject matter does not belong in Chapter 51 on energy efficiency as these are primarily electrical installation requirements.
Recommendation: Revise as follows:

Chapter 54 Elevators and Conveying Systems

54.3 Ambulance Stretcher Accommodation.
54.3.1 In buildings of more than three stories, a minimum of one elevator shall be provided for fire fighter emergency operation to all floors.
54.3.2 The elevator car shall be sized and arranged to accommodate a 2 ft × 6 ft 4 in. 7 ft (610 mm × 1930 mm) ambulance stretcher with minimum 5-in. (125-mm) radius corners in the horizontal, open position.
54.3.3 The elevator car shall be identified by the international symbol for emergency medical services (star of life). The symbol shall be minimum 3 in. (75 mm) in height and shall be located inside the car on both sides of the door frame.

54.5 Elevator Machine/Control Rooms and Machinery/Control Spaces. Elevator machine/control rooms and machinery/control spaces that contain solid-state equipment for elevators that have a travel distance of more than 50 ft (15 m) above the level of exit discharge, or more than 30 ft (9.1 m) below the level of exit discharge, shall be provided with independent ventilation or air-conditioning systems to maintain the required temperature during fire fighter service operations for elevator operation.
54.5.1 The operating temperature shall be established by the elevator equipment manufacturer's specifications.
54.5.2 Where standby power is connected to the elevator, the machine/control room and machinery/control space ventilation or air-conditioning shall be connected to standby power.
54.5.3 Elevator machine/control rooms and machinery/control spaces shall be enclosed with fire barrier walls meeting one of the following criteria:
   (1) The fire barrier walls shall have a fire resistance rating of not less than the required rating of the hoistway enclosure the machine/control rooms or machinery/control spaces serve.
   (2) The fire barrier walls, for other than fire service access elevators, shall have a minimum 1-hour fire resistance rating where the machine/control rooms and machinery/control spaces do not abut, and do not have openings to, the hoistway enclosure they serve.
   (3) The fire barrier walls shall have a minimum 1-hour fire resistance rating where the machine/control rooms or machinery/control spaces serve a hoistway that is not required to be fire resistance rated.
54.5.4 Openings shall be protected with assemblies having a fire protection rating meeting one of the following criteria:
   (1) The opening protective assembly shall have a minimum rating not less than that required for the hoistway enclosure doors.
   (2) The opening protective assembly shall have a minimum ¼-hour rating where the machine/control rooms and machinery/control spaces do not abut, and do not have openings to, the hoistway enclosure they serve.
   (3) The opening protective assembly shall have a minimum ¾-hour rating where the machine/control rooms and machinery/control spaces serve a hoistway that is not required to be fire resistance rated.

Substantiation: Relative to the proposed changes to 54.3.2, the minimum 7-ft stretcher length and minimum 5-in. radius corners, along with the currently mandated 2-ft width, are the standard dimensions that need to be accommodated in an elevator car with the stretcher in the horizontal, open position. A 3500 pound capacity elevator car can accommodate such stretcher.

Relative to the proposed changes to Section 54.5, where the term “machine rooms” and the term “machinery spaces” occur, a change is proposed to standardize the terminology for correlation with ASME A17.1/CSA B44 – and that term is “machine/control room and machinery/control space.” In 54.5, the word “independent” is being deleted as Machine Room Less (MRL) elevators have controllers in spaces common to the building, like a closet off the corridor, and the air conditioning unit might serve more than the control space. Relative to 54.5.3(2), it is critical to protect Fire Service Access Elevator systems by keeping heat from reaching the solid-state equipment and associated wiring/equipment located in machine rooms and machinery spaces. The reduction to 1-hour fire-resistance rating, as offered by current 54.5.3(2), defeats this need.

Public Input Response:
See First revision #702

Printed on 9/14/2012

Recommendation: Revise as follows:

Chapter 54 Elevators and Conveying Systems

54.12 Fire Service Access Elevators.

54.12.1 General. When required by 33.3.7, every floor of the building shall be served by the minimum number of fire service access elevators required by this section 33.3.7. Except as modified by this section, the fire service access elevator shall be installed in accordance with Chapter 54 and ASME A17.1/CSA B44, Safety Code for Elevators and Escalators.

54.12.1.1* Shunt breakers shall not be used on fire service access elevators.

54.12.1.2 A minimum of two elevators each having a minimum 3500 lb (1588 kg) capacity serving every story within the subject building shall be provided to serve as a fire service access elevator.

54.12.1.3 A minimum of one fire service access elevator shall be sized in accordance with 54.3.2.

54.12.2 Fire Service Access Elevator Lobbies.

54.12.2.1 General.

54.12.2.1.1 Each fire service access elevator shall open into a fire service access elevator lobby complying with 54.12.2, except as otherwise permitted by 54.12.2.1.2.

54.12.2.1.2 Exception: Where a fire service access elevator has two entrances onto a floor, the second entrance shall not be required to open into an elevator lobby complying with 54.12.2.

54.12.2.2 Access.

54.12.2.2.1 Each fire service access elevator lobby shall have direct access to an exit stair enclosure.

54.12.2.2.2 The exit stair enclosure shall also have access to the floor without passing through the fire service access elevator lobby.

54.12.2.3 Lobby Enclosure.

54.12.2.3.1 Each fire service access elevator lobby shall be enclosed with a smoke barrier, in accordance with Section 8.11, having a minimum 1-hour fire resistance rating, except as otherwise permitted by 54.12.2.3.2 that lobby door assemblies shall comply with 54.12.2.4.

54.12.2.3.2 Exception: Enclosed fire service access elevator lobbies shall not be required at the street floor or level of exit discharge.

54.12.2.3.3 Lobby door assemblies shall comply with 54.12.2.4.

54.12.2.4 Lobby Door Assemblies. Each fire service access elevator lobby door, other than doors to the hoistway, exit stair enclosure, elevator control room, or elevator control space, shall comply with both of the following:

1) The door shall have not less than a ¾-hour fire protection rating.

2) The door shall be a smoke leakage-rated assembly in accordance with NFPA 105, Standard for Smoke Door assemblies and Other Opening Protectives.

3) The door shall be self-closing or automatic-closing in accordance with 11.2.1.8.

54.12.2.5 Lobby Size. Each fire service access elevator lobby enclosure shall be not less than 150 ft² (14 m²) in area with a minimum dimension of 8 ft (2440 mm).

54.12.3 Pressurization System.

54.12.3.1 General. Fire service access elevator hoistways and fire service access elevator lobbies that are required to be enclosed in accordance with 54.12.2.3 shall be pressurized in accordance with Section 55.7.

54.12.3.2 Activation of Pressurization System. The elevator pressurization system shall be activated by initiation of the building fire alarm system.

54.12.3.3 Supply Air. The supply air intake for the pressurization system shall be from an outside, uncontaminated source located a minimum distance of 20 ft (6100 mm) from any air exhaust system or outlet.

54.12.4 Sprinklers.

54.12.4.1 The building shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with 55.3.1.1(1), except as otherwise specified in 54.12.4.1.1 through 54.12.4.3.

54.12.4.1.1 A sprinkler control valve and a waterflow device shall be provided for each floor.

54.12.4.1.2 The sprinkler control valves and waterflow devices required by 54.12.1.1 shall be monitored by the building fire alarm system.

54.12.4.2* Sprinklers shall not be installed in fire service access elevator machine/control rooms and machinery/control
spaces, and such prohibition shall not cause an otherwise fully sprinklered building to be classified as nonsprinklered.

54.12.4.3* Where a hoistway serves fire service access elevators, sprinklers shall not be installed at the top of the elevator hoistway or at other points in the hoistway more than 24 in. (610 mm) above the pit floor, and such prohibition shall not cause the building to be classified as nonsprinklered.

54.12.6* Water Protection. 54.12.10* An approved method to prevent water from infiltrating into the hoistway enclosure from the operation of the automatic sprinkler system outside the enclosed fire service access elevator lobby shall be provided.

54.12.7.54.12.4 Elevator System Monitoring. The fire service access elevator shall be continuously monitored at the emergency fire command center by a standard emergency service interface system meeting the requirements of NFPA 72.

54.12.8 Hoistway Lighting. Where fire fighters’ emergency operation is active, the entire height of the hoistway shall be illuminated to a minimum of 1 ft-candle (10.8 lux) as measured from the top of the car of each fire service access elevator.

54.12.9.54.12.6 Electrical Power. The following features serving each fire service access elevator shall be supplied by both normal power and Type 60/Class 2/Level 1 standby power:

1. Elevator equipment
2. Elevator machine room ventilation and cooling equipment for elevator machine/control rooms and machinery/control spaces.
3. Elevator controller cooling equipment and car lighting.

54.12.10 Protection of Wiring or Cables.

54.12.10.1 Wires or cables that are located outside the elevator hoistway and machine room and that provide normal and standby power, control signals, communication with the car, lighting, heating, air-conditioning, ventilation, and fire detecting systems to fire service access elevators shall be protected by one of the following means, except as otherwise provided by 54.12.10.2:

1. The wiring shall utilize Type CI cable with a minimum 2-hour fire resistance rating.
2. The wiring shall be enclosed in minimum 2-hour fire resistance construction.

54.12.10.2 Control signaling wiring and cables that do not serve Phase II emergency in-car service shall not be required to be protected.

54.12.7 Standby Power. The fire service access elevator shall be provided with standby power in accordance with 34.2.5.

54.12.8.1 Elevator Machine Rooms and Machinery Spaces. Automatic fire sprinklers shall not be installed in fire service access elevator machine rooms and machinery spaces.

54.12.9 Fire Service Access Elevator Symbol. A pictorial symbol of a standardized design designating which elevators are fire service access elevators shall be installed on each side of the hoistway door frame on the portion of the frame at right angles to the fire service access elevator lobby. The fire service access elevator symbol shall be designed as shown in Figure 54.12.11 and shall comply with the following:

1. The fire service access elevator symbol shall be a minimum of 3 in. (76 mm) in height.
2. The helmet shall contrast with the background, with either a light helmet on a dark background or a dark helmet on a light background.
3. The vertical centerline of the fire service access elevator symbol shall be centered on the hoistway door frame. Each symbol shall be not less than 78 in. (1980 mm) and not more than 84 in. (2134 mm) above the finished floor at the threshold.

Figure 54.12.911 Fire Service Access Elevator Symbol.

54.12.10 Water Protection. An approved method to prevent water from infiltrating into the hoistway enclosure from the operation of the automatic sprinkler system outside the enclosed fire service access elevator lobby shall be provided.

Substantiation: This proposal makes many changes:

- (54.12.1) The determination building height at which fire service access elevators are necessary, and the required minimum number of fire service access elevators are the purview of the technical committee responsible for the high-rise building provisions of Chapter 33. Currently 33.3.7 and 54.12.1 each specify a minimum of two elevators, and 33.3.7 also specifies the 120 ft building height threshold. To avoid conflict where changes are made in the future, Section 54.12 should be silent on number of fire service access elevators and concentrate on detailing the system features.
- (54.12.1.1 and A.54.12.1.1) The annex text explains the need for the prohibition on shunt breakers. The prohibition is already a feature of Section 11.14 relative to occupant evacuation elevators. It is needed here too in the...
were added to the 2012 edition of NFPA 5000. Fire fighters rely on visual checks for smoke before moving an elevator up toward the fire floor. The lighted hoistway assists with checking for the presence of smoke.

(54.12.9) The electronics associated with elevator operation are sensitive to heat. Such electronics can be found in more places than the elevator machine/control room or machinery/control space. Subitems (2) and (3) are moved into a generalized, more-inclusive item (2). Resultant item (3) recognizes that elevator car lighting needs both normal power and standby power.

(54.12.10) Several changes were made:
Report on Public Input – June 2014

- Only wire and cable that is located outside the hoistway and machine room needs protection as the elevator is not expected to run if the fire is in the hoistway or machine room.
- The two protection methods were reformatted as a numbered list rather than a run-on paragraph. This was done for consistency with a similar provision in the occupant evacuation elevator provisions of Section 11.14.
- The change from 1-hr to 2-hr protection of the building runs of elevator power cabling is consistent with a fire in a non-sprinklered room or a space where the sprinkler system fails to operate properly. The fire service access elevators require power to run; maintaining the power source is crucial. The change also is consistent with 54.12.9 that requires the standby power system to have minimum 2-hr duration (i.e., Class 2).
- Relative to new 54.12.10.2, there is no technical need to protect control signaling wiring (like that found in the hall call stations) that does not serve Phase II emergency in-car service.

Public Input Response:
The committee is not necessarily opposed to the submitters intent, however it has many questions relative to the specific language in a number of places. The submitter was not present and therefore the committee could not get responses to those questions. The submitter is encouraged to submit his text at the public comment stage and to be available to present it to the committee.

Submitter: Bill Conner, Bill Conner Associates, LLC
Recommendation: Add a new section to read:

A.12.2.11.1.6 The written plan should identify the unguarded areas and should include precautions and provisions to mitigate the fall hazard. Such precautions and provisions may include:
- Training
- Choreography
- Rehearsal
- Restricted access to the stage
- Restricted access to unguarded edges
- Warning lights
- Audible warnings
- Tactile edges
- Warning barriers
- Signage
- Temporary barriers
- Personal fall protection
- Fall restraint
- Spotters

Substantiation: The need for exceptions from the normal guard requirements on stages is fundamental to the use and activity of a stage and the performing arts. None-the-less, through anecdote and in the NFPA data, there is a record of regular occurrences of falls off the edge of the stage, and into the first row, orchestra pits, openings for stage lifts, or other openings in the stage necessary for the activity of a stage. It is time for a change.

Public Input Response:
This should be submitted to NFPA 101 committee on Assembly Occupancies.

Printed on 9/14/2012
Elevator shunt breakers are intended to disconnect the electric power to an elevator prior to sprinkler system waterflow impairing the functioning of the elevator. The provisions of 54.12.4.3 and 54.12.4.4 prohibit the installation of sprinklers in the elevator machine/control room, machinery/control space, and at the top of the elevator hoistway, obviating the need for shunt breakers. The provision of 54.12.1.1 is not actually an exemption to the provisions of ASME A17.1/CSA B44, Safety Code for Elevators and Escalators, as ASME A17.1/CSA B44 requires the automatic main line power disconnect (shunt trip) only where sprinklers are located in the elevator machine/control room, machinery/control space, or in the hoistway more than 24 in. (610 mm) above the pit floor.

**Substantiation:** This proposal makes many changes:

- **54.12.1** The determination building height at which fire service access elevators are necessary, and the required minimum number of fire service access elevators are the purview of the technical committee responsible for the high-rise building provisions of Chapter 33. Currently 33.3.7 and 54.12.1 each specify a minimum of two elevators, and 33.3.7 also specifies the 120 ft building height threshold. To avoid conflict where changes are made in the future, Section 54.12 should be silent on number of fire service access elevators and concentrate on detailing the system features.
  - (54.12.1.1 and A.54.12.1.1) The annex text explains the need for the prohibition on shunt breakers. The prohibition is already a feature of Section 11.14 relative to occupant evacuation elevators. It is needed here too in the provisions for fire service access elevators.
  - (54.12.1.2) Deletion of the minimum number of fire service access elevators is consistent with the change, noted above, to 54.12.1. The text related to stories served is redundant with that in 54.12.1 and needs to be deleted.
  - (54.12.2.1.1 and 54.12.2.1.2) The reformatting does away with “exception formatting” as required by the NFPA Manual of Style.
  - (54.12.2.3) The reformatting does away with “exception formatting” as required by the NFPA Manual of Style. Similarly, the new 54.12.2.3.3 moves text that was buried at the end of current 54.12.2.3 into its own numbered item. Additionally, in 54.12.2.3.1 where a smoke barrier is required, the typical reference to Section 8.11, which is where the requirements for smoke barriers appear, has been made.
  - (54.12.2.4) Requirements for doors from the elevator to the required exit stair enclosure are addressed in Chapter 11 for means of egress. Doors from the elevator lobby to the hoistway are addressed in Chapter 8 starting with the provisions for the protection of vertical openings. Relative to the new text related to doors to elevator control room or elevator control space, Machine Room Less (MRL) elevators, as permitted by ASME A17.1/CSA B44, typically have control rooms or control spaces that are accessed by a door immediately adjacent to a hoistway opening in an elevator lobby. 54.12.2.4 is intended to maintain the integrity of the lobby enclosure smoke barrier and the lobby’s separation from the remaining floor area on a building floor. This ensures that smoke from another area on the floor will not reach the lobby smoke detectors and place the elevator(s) into Phase I, thus rendering them unusable for Fire Service Access. Smoke and draft control is unnecessary on elevator control room or space doors because any smoke emanating from those spaces has already activated the smoke detector in the control room/space and placed the elevator(s) in Phase I operation. It is thus unnecessary to protect the lobby smoke detector from smoke originating in the control room/space (or the hoistway to which the room/space is connected).
  - (54.12.2.4(2)) The Hazard Analysis performed by the ASME A17 Task Group on Elevators Used in an Emergency determined that the elevator lobby doors need to be smoke leakage-rated assemblies to help assure the lobby remains free of smoke. The reference to NFPA 105 assures that the required testing of the door will not conducted with an artificial bottom seal.
  - (54.12.2.5) Minimum fire service access elevator lobby size was not determined when the provisions of 54.12 were added to the the to the 2012 edition of NFPA 5000. The minimum 150 ft² with minimum 8-ft dimension is needed.
  - (54.12.3) Fire service access elevators need to be protected from smoke entering either through the shaft directly or from smoke in the corridor or stair system that adjoins the elevator lobbies. 54.12.2.3 includes a requirement that elevator lobbies be protected with a smoke barrier, but the Hazard Analysis performed by the ASME A17 Task Group on Elevators Used in an Emergency determined this was insufficient to provide the resistance to smoke intrusion necessary for these elevators to be of value for an extended period during a building fire. This proposal requires that the elevator shaft and enclosed elevator lobbies of fire service access elevators be pressurized. Recognizing that in many cases one or more elevator doors and doors to either the corridor or stair system could be open (gress or blocked by
fire hoses), the pressurization system must be sized to provide an adequate differential pressure even with multiple
doors open. The reference to Section 55.7 assures that the provisions of NFPA 92 will be utilized to engineer an
effective pressurization system.

- (54.12.4) The requirement for sprinkler protection throughout the building provides “desirable redundancy” as
33.3.2 requires the sprinklering of high-rise buildings. Inclusion of the sprinkler requirement in 54.12 helps emphasize
that sprinklers are an important part of the protection package that makes it safe for the fire service to use elevators.
The requirement for sprinklers also resides in Section 11.14 for occupant evacuation elevators. The addition to 54.12
helps to make the two elevator systems more compatible. The annex text added as A.54.12.4.2 and A.54.12.4.3 helps
to explain the basis for the requirements.

- (54.12.6) The water protection provisions of current 54.12.10 are being relocated to follow the provisions for
extinguishment.

- (54.12.7) The term “emergency command center” is being changed to “fire command center” for correlation
with NFPA 72. NFPA 72 reserves the use of the term “emergency command center” for mass notification systems. The
term “fire command center” is associated with fire.

- (54.12.8) Requirements for hoistway lighting were not determined when the provisions of 54.12 were added to
the 2012 edition of NFPA 5000. Fire fighters rely on visual checks for smoke before moving an elevator up toward
the fire floor. The lighted hoistway assists with checking for the presence of smoke.

- (54.12.9) The electronics associated with elevator operation are sensitive to heat. Such electronics can be
found in more places than the elevator machine/control room or machinery/control space. Subitems (2) and (3) are
moved into a generalized, more-inclusive item (2). Resultant item (3) recognizes that elevator car lighting needs both
normal power and standby power.

- (54.12.10) Several changes were made:
  o Only wire and cable that is located outside the hoistway and machine room needs protection as the elevator is
    not expected to run if the fire is in the hoistway or machine rom.
  o The two protection methods were reformatted as a numbered list rather than a run-on paragraph. This was
done for consistency with a similar provision in the occupant evacuation elevator provisions of Section 11.14.
  o The change from 1-hr to 2-hr protection of the building runs of elevator power cabling is consistent with a fire in
    a non-sprinklered room or a space where the sprinkler system fails to operate properly. The fire service access
elevators require power to run; maintaining the power source is crucial. The change also is consistent with 54.12.9 that
    requires the standby power system to have minimum 2-hr duration (i.e., Class 2).
  o Relative to new 54.12.10.2, there is no technical need to protect control signaling wiring (like that found in the
    hall call stations) that does not serve Phase II emergency in-car service.

- (Current 54.12.7 and 54.12.8) Material moved/incorporated as 54.12.9 and 54.12.4.3.

- (54.12.11) New subitem (2) added as the helmet symbol needs to contrast with its background in order to be
  seen effectively.

**Public Input Response:**
See First revision # 702 and committee response to PI #157
The presence of sprinklers in the elevator machine/control room or machinery/control space would necessitate the installation of a shunt trip for automatically disconnecting the main line power for compliance with ASME A17.1/CSA B44, Safety Code for Elevators and Escalators, as it is unsafe to operate elevators while sprinkler water is being discharged in the elevator machine/control room or machinery/control space. The presence of a shunt trip conflicts with the needs of the fire service access elevator, as it disconnects the power without ensuring that the elevator is first returned to a safe floor so as to prevent trapping occupants.

**Substantiation:** This proposal makes many changes:

- (54.12.1) The determination building height at which fire service access elevators are necessary, and the required minimum number of fire service access elevators are the purview of the technical committee responsible for the high-rise building provisions of Chapter 33. Currently 33.3.7 and 54.12.1 each specify a minimum of two elevators, and 33.3.7 also specifies the 120 ft building height threshold. To avoid conflict where changes are made in the future, Section 54.12 should be silent on number of fire service access elevators and concentrate on detailing the system features.

- (54.12.1.1 and A.54.12.1.1) The annex text explains the need for the prohibition on shunt breakers. The prohibition is already a feature of Section 11.14 relative to occupant evacuation elevators. It is needed here too in the provisions for fire service access elevators.

- (54.12.1.2) Deletion of the minimum number of fire service access elevators is consistent with the change, noted above, to 54.12.1. The text related to stories served is redundant with that in 54.12.1 and needs to be deleted.

- (54.12.2.1.1 and 54.12.2.1.2) The reformatting does away with "exception formatting" as required by the NFPA Manual of Style.

- (54.12.2.3) The reformatting does away with "exception formatting" as required by the NFPA Manual of Style. Similarly, the new 54.12.2.3.3 moves text that was buried at the end of current 54.12.2.3 into its own numbered item. Additionally, in 54.12.2.3.1 where a smoke barrier is required, the typical reference to Section 8.11, which is where the requirements for smoke barriers appear, has been made.

- (54.12.2.4) Requirements for doors from the elevator to the required exit stair enclosure are addressed in Chapter 11 for means of egress. Doors from the elevator lobby to the hoistway are addressed in Chapter 8 starting with the provisions for the protection of vertical openings. Relative to the new text related to doors to elevator control room or elevator control space, Machine Room Less (MRL) elevators, as permitted by ASME A17.1/CSA B44, typically have control rooms or control spaces that are accessed by a door immediately adjacent to a hoistway opening in an elevator lobby. 54.12.2.4 is intended to maintain the integrity of the lobby enclosure smoke barrier and the lobby’s separation from the remaining floor area on a building floor. This ensures that smoke from another area on the floor will not reach the lobby smoke detectors and place the elevator(s) into Phase I, thus rendering them unusable for Fire Service Access. Smoke and draft control is unnecessary on elevator control room or space doors because any smoke emanating from those spaces has already activated the smoke detector in the control room/space and placed the elevator(s) in Phase I operation. It is thus unnecessary to protect the lobby smoke detector from smoke originating in the control room/space (or the hoistway to which the room/space is connected).

- (54.12.2.4(2)) The Hazard Analysis performed by the ASME A17 Task Group on Elevators Used in an Emergency determined that the elevator lobby doors need to be smoke leakage-rated assemblies to help assure the lobby remains free of smoke. The reference to NFPA 105 assures that the required testing of the door will not conducted with an artificial bottom seal.

- (54.12.2.5) Minimum fire service access elevator lobby size was not determined when the provisions of 54.12 were added to the to the 2012 edition of NFPA 5000. The minimum 150 ft² with minimum 8-ft dimension is needed.

- (54.12.3) Fire service access elevators need to be protected from smoke entering either through the shaft directly or from smoke in the corridor or stair system that adjoins the elevator lobbies. 54.12.2.3 includes a requirement that elevator lobbies be protected with a smoke barrier, but the Hazard Analysis performed by the ASME A17 Task Group on Elevators Used in an Emergency determined this was insufficient to provide the resistance to smoke intrusion necessary for these elevators to be of value for an extended period during a building fire. This proposal requires that the elevator shaft and enclosed elevator lobbies of fire service access elevators be pressurized. Recognizing that in many cases one or more elevator doors and doors to either the corridor or stair system could be open (egress or blocked by fire hoses), the pressurization system must be sized to provide an adequate differential pressure even with multiple
doors open. The reference to Section 55.7 assures that the provisions of NFPA 92 will be utilized to engineer an effective pressurization system.

· (54.12.4) The requirement for sprinkler protection throughout the building provides “desirable redundancy” as 33.3.2 requires the sprinklering of high-rise buildings. Inclusion of the sprinkler requirement in 54.12 helps emphasize that sprinklers are an important part of the protection package that makes it safe for the fire service to use elevators. The requirement for sprinklers also resides in Section 11.14 for occupant evacuation elevators. The addition to 54.12 helps to make the two elevator systems more compatible. The annex text added as A.54.12.4.2 and A.54.12.4.3 helps to explain the basis for the requirements.

· (54.12.6) The water protection provisions of current 54.12.10 are being relocated to follow the provisions for extinguishment.

· (54.12.7) The term “emergency command center” is being changed to “fire command center” for correlation with NFPA 72. NFPA 72 reserves the use of the term “emergency command center” for mass notification systems. The term “fire command center” is associated with fire.

· (54.12.8) Requirements for hoistway lighting were not determined when the provisions of 54.12 were added to the 2012 edition of NFPA 5000. Fire fighters rely on visual checks for smoke before moving an elevator up toward the fire floor. The lighted hoistway assists with checking for the presence of smoke.

· (54.12.9) The electronics associated with elevator operation are sensitive to heat. Such electronics can be found in more places than the elevator machine/control room or machinery/control space. Subitems (2) and (3) are moved into a generalized, more-inclusive item (2). Resultant item (3) recognizes that elevator car lighting needs both normal power and standby power.

· (54.12.10) Several changes were made:
  o Only wire and cable that is located outside the hoistway and machine room needs protection as the elevator is not expected to run if the fire is in the hoistway or machine rom.
  o The two protection methods were reformatted as a numbered list rather than a run-on paragraph. This was done for consistency with a similar provision in the occupant evacuation elevator provisions of Section 11.14.
  o The change from 1-hr to 2-hr protection of the building runs of elevator power cabling is consistent with a fire in a non-sprinklered room or a space where the sprinkler system fails to operate properly. The fire service access elevators require power to run; maintaining the power source is crucial. The change also is consistent with 54.12.9 that requires the standby power system to have minimum 2-hr duration (i.e., Class 2).
  o Relative to new 54.12.10.2, there is no technical need to protect control signaling wiring (like that found in the hall call stations) that does not serve Phase II emergency in-car service.

· (Current 54.12.7 and 54.12.8) Material moved/incorporated as 54.12.9 and 54.12.4.3.

· (54.12.11) New subitem (2) added as the helmet symbol needs to contrast with its background in order to be seen effectively.

**Public Input Response:**

See First revision # 702 and committee response to PI #157

Recommendation: Add text to read as follows:

A.54.12.4.3 NFPA 13, Standard for the Installation of Sprinkler Systems, permits sprinklers to be omitted from the top of the elevator hoistway where the hoistway for passenger elevators is noncombustible and the car enclosure materials meet the requirements of ASME A17.1/CSA B44, Safety Code for Elevators and Escalators.

Substantiation: This proposal makes many changes:

- (54.12.1) The determination building height at which fire service access elevators are necessary, and the required minimum number of fire service access elevators are the purview of the technical committee responsible for the high-rise building provisions of Chapter 33. Currently 33.3.7 and 54.12.1 each specify a minimum of two elevators, and 33.3.7 also specifies the 120 ft building height threshold. To avoid conflict where changes are made in the future, Section 54.12 should be silent on number of fire service access elevators and concentrate on detailing the system features.

- (54.12.1.1 and A.54.12.1.1) The annex text explains the need for the prohibition on shunt breakers. The prohibition is already a feature of Section 11.14 relative to occupant evacuation elevators. It is needed here too in the provisions for fire service access elevators.

- (54.12.1.2) Deletion of the minimum number of fire service access elevators is consistent with the change, noted above, to 54.12.1. The text related to stories served is redundant with that in 54.12.1 and needs to be deleted.

- (54.12.2.1.1 and 54.12.2.1.2) The reformatting does away with “exception formatting” as required by the NFPA Manual of Style.

- (54.12.2.3) The reformatting does away with “exception formatting” as required by the NFPA Manual of Style. Similarly, the new 54.12.2.3 moves text that was buried at the end of current 54.12.2.3 into its own numbered item. Additionally, in 54.12.2.3.1 where a smoke barrier is required, the typical reference to Section 8.11, which is where the requirements for smoke barriers appear, has been made.

- (54.12.2.4) Requirements for doors from the elevator to the required exit stair enclosure are addressed in Chapter 11 for means of egress. Doors from the elevator lobby to the hoistway are addressed in Chapter 8 starting with the provisions for the protection of vertical openings. Relative to the new text related to doors to elevator control room or elevator control space, Machine Room Less (MRL) elevators, as permitted by ASME A17.1/CSA B44, typically have control rooms or control spaces that are accessed by a door immediately adjacent to a hoistway opening in an elevator lobby. 54.12.2.4 is intended to maintain the integrity of the lobby enclosure smoke barrier and the lobby’s separation from the remaining floor area on a building floor. This ensures that smoke from another area on the floor will not reach the lobby smoke detectors and place the elevator(s) into Phase I, thus rendering them unusable for Fire Service Access. Smoke and draft control is unnecessary on elevator control room or space doors because any smoke emanating from those spaces has already activated the smoke detector in the control room/space and placed the elevator(s) in Phase I operation. It is thus unnecessary to protect the lobby smoke detector from smoke originating in the control room/space (or the hoistway to which the room/space is connected).

- (54.12.2.4(2)) The Hazard Analysis performed by the ASME A17 Task Group on Elevators Used in an Emergency determined that the elevator lobby doors need to be smoke leakage-rated assemblies to help assure the lobby remains free of smoke. The reference to NFPA 105 assures that the required testing of the door will not conducted with an artificial bottom seal.

- (54.12.2.5) Minimum fire service access elevator lobby size was not determined when the provisions of 54.12 were added to the to the 2012 edition of NFPA 5000. The minimum 150 ft² with minimum 8-ft dimension is needed.

- (54.12.3) Fire service access elevators need to be protected from smoke entering either through the shaft directly or from smoke in the corridor or stair system that adjoins the elevator lobbies. 54.12.2.3 includes a requirement that elevator lobbies be protected with a smoke barrier, but the Hazard Analysis performed by the ASME A17 Task Group on Elevators Used in an Emergency determined this was insufficient to provide the resistance to smoke intrusion necessary for these elevators to be of value for an extended period during a building fire. This proposal requires that the elevator shaft and enclosed elevator lobbies of fire service access elevators be pressurized. Recognizing that in many cases one or more elevator doors and doors to either the corridor or stair system could be open (egress or blocked by fire hoses), the pressurization system must be sized to provide an adequate differential pressure even with multiple doors open. The reference to Section 55.7 assures that the provisions of NFPA 92 will be utilized to engineer an effective pressurization system.

- (54.12.4) The requirement for sprinkler protection throughout the building provides “desirable redundancy” as...
33.3.2 requires the sprinkling of high-rise buildings. Inclusion of the sprinkler requirement in 54.12 helps emphasize that sprinklers are an important part of the protection package that makes it safe for the fire service to use elevators. The requirement for sprinklers also resides in Section 11.14 for occupant evacuation elevators. The addition to 54.12 helps to make the two elevator systems more compatible. The annex text added as A.54.12.4.2 and A.54.12.4.3 helps to explain the basis for the requirements.

· (54.12.6) The water protection provisions of current 54.12.10 are being relocated to follow the provisions for extinguishment.

· (54.12.7) The term “emergency command center” is being changed to “fire command center” for correlation with NFPA 72. NFPA 72 reserves the use of the term “emergency command center” for mass notification systems. The term “fire command center” is associated with fire.

· (54.12.8) Requirements for hoistway lighting were not determined when the provisions of 54.12 were added to the 2012 edition of NFPA 5000. Fire fighters rely on visual checks for smoke before moving an elevator up toward the fire floor. The lighted hoistway assists with checking for the presence of smoke.

· (54.12.9) The electronics associated with elevator operation are sensitive to heat. Such electronics can be found in more places than the elevator machine/control room or machinery/control space. Subitems (2) and (3) are moved into a generalized, more-inclusive item (2). Resultant item (3) recognizes that elevator car lighting needs both normal power and standby power.

· (54.12.10) Several changes were made:
  o Only wire and cable that is located outside the hoistway and machine room needs protection as the elevator is not expected to run if the fire is in the hoistway or machine rom.
  o The two protection methods were reformatted as a numbered list rather than a run-on paragraph. This was done for consistency with a similar provision in the occupant evacuation elevator provisions of Section 11.14.
  o The change from 1-hr to 2-hr protection of the building runs of elevator power cabling is consistent with a fire in a non-sprinklered room or a space where the sprinkler system fails to operate properly. The fire service access elevators require power to run; maintaining the power source is crucial. The change also is consistent with 54.12.9 that requires the standby power system to have minimum 2-hr duration (i.e., Class 2).
  o Relative to new 54.12.10.2, there is no technical need to protect control signaling wiring (like that found in the hall call stations) that does not serve Phase II emergency in-car service.

· (Current 54.12.7 and 54.12.8) Material moved/incorporated as 54.12.9 and 54.12.4.3.

· (54.12.11) New subitem (2) added as the helmet symbol needs to contrast with its background in order to be seen effectively.

Public Input Response:
See First revision # 702 and committee response to PI #157

Recommendation: Revise text to read as follows:

A.54.12.6 A.54.12.10 This performance language will permit alternate design options to provide a means to prevent water from an operating sprinkler system from infiltrating into the hoistway enclosure. For example, such approved means could include drains, sloping floor, and so forth. The objective of the water protection is to limit water being discharged from sprinklers operating on the floor of fire origin from entering the lobby and flowing under the landing doors and down the hoistway, where it might interfere with safety controls that are normally located on the front of the elevator car. A small flow of water (of the order of the flow from a single sprinkler) will usually be diverted by the landing doorway nose plate to the sides of the opening, where it can do little harm. The protection is intended to protect from sprinklers outside the lobby.

Water protection can be achieved in any of several ways. Listed as follows are a few examples, which should be effective in keeping the waterflow from a sprinkler into a lobby to a minimum:

(1) A raised lip designed in compliance with the accessibility provisions of Chapter 12
(2) A sloped floor and a floor drain
(3) Sealing the sill plates and baseboards on both sides of the lobby partitions

Substantiation: This proposal makes many changes:

· (54.12.1) The determination building height at which fire service access elevators are necessary, and the required minimum number of fire service access elevators are the purview of the technical committee responsible for the high-rise building provisions of Chapter 33. Currently 33.3.7 and 54.12.1 each specify a minimum of two elevators, and 33.3.7 also specifies the 120 ft building height threshold. To avoid conflict where changes are made in the future, Section 54.12 should be silent on number of fire service access elevators and concentrate on detailing the system features.

· (54.12.1.1 and A.54.12.1.1) The annex text explains the need for the prohibition on shunt breakers. The prohibition is already a feature of Section 11.14 relative to occupant evacuation elevators. It is needed here too in the provisions for fire service access elevators.

· (54.12.1.2) Deletion of the minimum number of fire service access elevators is consistent with the change, noted above, to 54.12.1. The text related to stories served is redundant with that in 54.12.1 and needs to be deleted.

· (54.12.2.1.1 and 54.12.2.1.2) The reformatting does away with “exception formatting” as required by the NFPA Manual of Style.

· (54.12.2.3) The reformatting does away with “exception formatting” as required by the NFPA Manual of Style. Similarly, the new 54.12.2.3.3 moves text that was buried at the end of current 54.12.2.3 into its own numbered item. Additionally, in 54.12.2.3.1 where a smoke barrier is required, the typical reference to Section 8.11, which is where the requirements for smoke barriers appear, has been made.

· (54.12.2.4) Requirements for doors from the elevator to the required exit stair enclosure are addressed in Chapter 11 for means of egress. Doors from the elevator lobby to the hoistway are addressed in Chapter 8 starting with the provisions for the protection of vertical openings. Relative to the new text related to doors to elevator control room or elevator control space, Machine Room Less (MRL) elevators, as permitted by ASME A17.1/CSA B44, typically have control rooms or control spaces that are accessed by a door immediately adjacent to a hoistway opening in an elevator lobby. 54.12.2.4 is intended to maintain the integrity of the lobby enclosure smoke barrier and the lobby’s separation from the remaining floor area on a building floor. This ensures that smoke from another area on the floor will not reach the lobby smoke detectors and place the elevator(s) into Phase I, thus rendering them unusable for Fire Service Access. Smoke and draft control is unnecessary on elevator control room or space doors because any smoke emanating from those spaces has already activated the smoke detector in the control room/space and placed the elevator(s) in Phase I operation. It is thus unnecessary to protect the lobby smoke detector from smoke originating in the control room/space (or the hoistway to which the room/space is connected).

· (54.12.2.4(2)) The Hazard Analysis performed by the ASME A17 Task Group on Elevators Used in an Emergency determined that the elevator lobby doors need to be smoke leakage-rated assemblies to help assure the lobby remains free of smoke. The reference to NFPA 105 assures that the required testing of the door will not conducted with an artificial bottom seal.

· (54.12.2.5) Minimum fire service access elevator lobby size was not determined when the provisions of 54.12 were added to the to the 2012 edition of NFPA 5000. The minimum 150 ft² with minimum 8-ft dimension is needed.
(54.12.3) Fire service access elevators need to be protected from smoke entering either through the shaft directly or from smoke in the corridor or stair system that adjoins the elevator lobbies. 54.12.2.3 includes a requirement that elevator lobbies be protected with a smoke barrier, but the Hazard Analysis performed by the ASME A17 Task Group on Elevators Used in an Emergency determined this was insufficient to provide the resistance to smoke intrusion necessary for these elevators to be of value for an extended period during a building fire. This proposal requires that the elevator shaft and enclosed elevator lobbies of fire service access elevators be pressurized. Recognizing that in many cases one or more elevator doors and doors to either the corridor or stair system could be open (egress or blocked by fire hoses), the pressurization system must be sized to provide an adequate differential pressure even with multiple doors open. The reference to Section 55.7 assures that the provisions of NFPA 92 will be utilized to engineer an effective pressurization system.

(54.12.4) The requirement for sprinkler protection throughout the building provides “desirable redundancy” as 33.3.2 requires the sprinklering of high-rise buildings. Inclusion of the sprinkler requirement in 54.12 helps emphasize that sprinklers are an important part of the protection package that makes it safe for the fire service to use elevators. The requirement for sprinklers also resides in Section 11.14 for occupant evacuation elevators. The addition to 54.12 helps to make the two elevator systems more compatible. The annex text added as A.54.12.4.2 and A.54.12.4.3 helps to explain the basis for the requirements.

(54.12.6) The water protection provisions of current 54.12.10 are being relocated to follow the provisions for extinguishment.

(54.12.7) The term “emergency command center” is being changed to “fire command center” for correlation with NFPA 72. NFPA 72 reserves the use of the term “emergency command center” for mass notification systems. The term “fire command center” is associated with fire.

(54.12.8) Requirements for hoistway lighting were not determined when the provisions of 54.12 were added to the 2012 edition of NFPA 5000. Fire fighters rely on visual checks for smoke before moving an elevator up toward the fire floor. The lighted hoistway assists with checking for the presence of smoke.

(54.12.9) The electronics associated with elevator operation are sensitive to heat. Such electronics can be found in more places than the elevator machine/control room or machinery/control space. Subitems (2) and (3) are moved into a generalized, more-inclusive item (2). Resultant item (3) recognizes that elevator car lighting needs both normal power and standby power.

(54.12.10) Several changes were made:
- Only wire and cable that is located outside the hoistway and machine room needs protection as the elevator is not expected to run if the fire is in the hoistway or machine room.
- The two protection methods were reformatted as a numbered list rather than a run-on paragraph. This was done for consistency with a similar provision in the occupant evacuation elevator provisions of Section 11.14.
- The change from 1-hr to 2-hr protection of the building runs of elevator power cabling is consistent with a fire in a non-sprinklered room or a space where the sprinkler system fails to operate properly. The fire service access elevators require power to run; maintaining the power source is crucial. The change also is consistent with 54.12.9 that requires the standby power system to have minimum 2-hr duration (i.e., Class 2).
- Relative to new 54.12.10.2, there is no technical need to protect control signaling wiring (like that found in the hall call stations) that does not serve Phase II emergency in-car service.
- (Current 54.12.7 and 54.12.8) Material moved/incorporated as 54.12.9 and 54.12.4.3.
- (54.12.11) New subitem (2) added as the helmet symbol needs to contrast with its background in order to be seen effectively.

Public Input Response:
The additional language is redundant and does not provide any additional clarification.