



Life Safety Plans for Compliance A New Approach





Life Safety Architects

Life safety plans: what is required?

Life Safety Plans

**Produce Drawings • Usage Verification •
Digital Conversions • Combine Multiple
Plans Sets • Code Analysis • NFPA/CMS
Requirements • Legend Conversions**



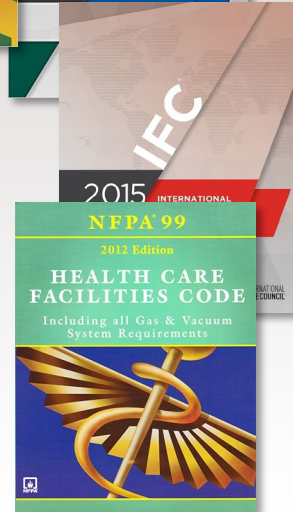
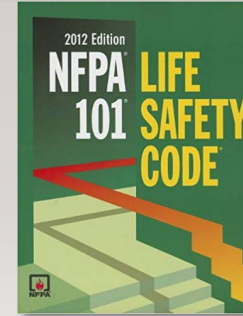
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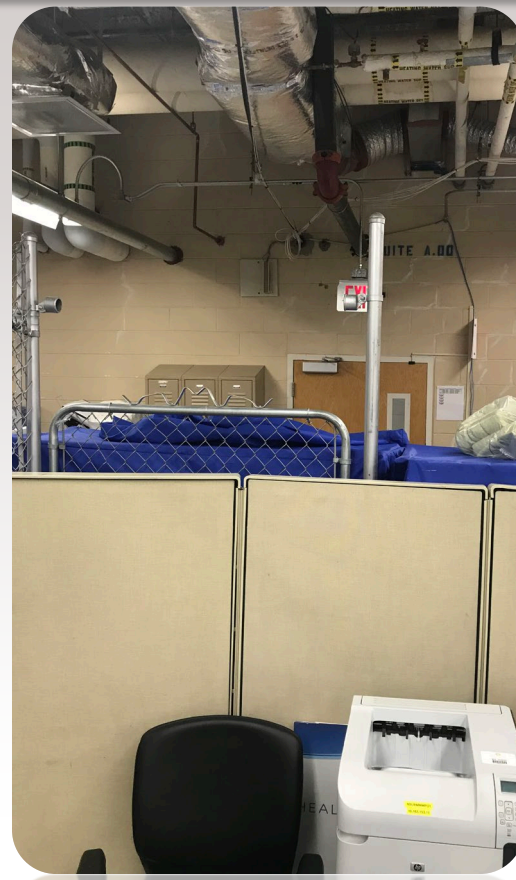
The Current Safety & Compliance Approach

Hospitals

- Non-Stop Construction Projects
 - Rooms constantly being re-purposed
 - New equipment, moving equipment
 - Municipal and CMS regulators – using differing codes/standards
 - Changing codes/standards
 - Complicated physical environments
- "Reactive Compliance"***



Difficulty example: the moment a facility is turned over, LSPs start changing...



Why are accurate LSP's so difficult to produce?

Your typical “healthcare” architect or engineer:

- Does not solely focus on healthcare complexities.
- Architect is not set up to be on site.
- Studies municipal code for permitting and does not process dual codes/standards. (NFPA+IBC)
- Is **focused on new construction + renovation**, not existing plans.

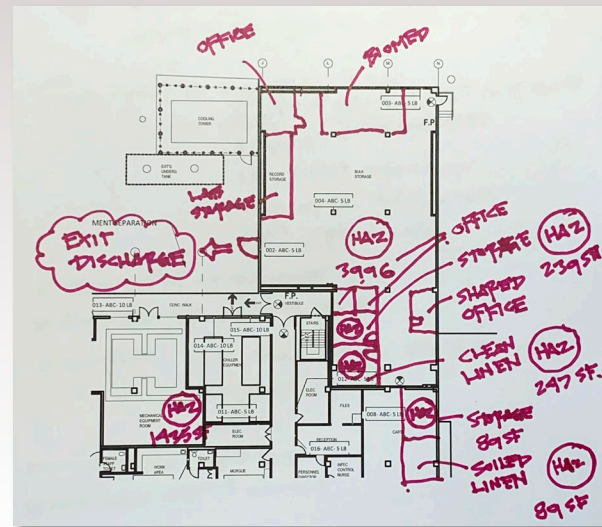
*The above makes TJC Life Safety Chapter EP:3
"Current and Accurate" with Life Safety Plans
impossible*



The Current Product of Life Safety Plans

End Result.....Incorrect Life Safety Plans

- Multiple sets of drawings
 - Rooms mislabeled
 - Incomplete Legend
- Incorrect fire and life safety protection
- New floor plans not merged
- Impacts to egress, travel distances, hazardous rooms, etc.



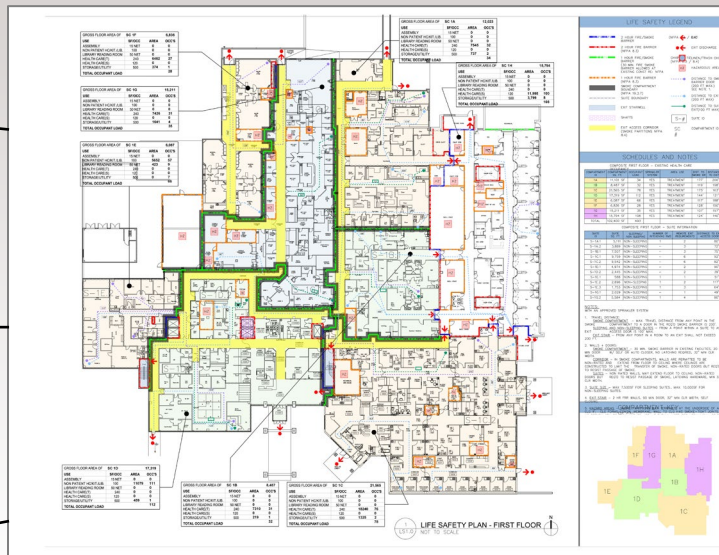
The down stream effect of incorrect LSPs

The problems then manifest

Renovations
done incorrectly

Compliance
inspections are
wrong

Incorrect repairs



BEWARE of mistaking pretty
for accurate!

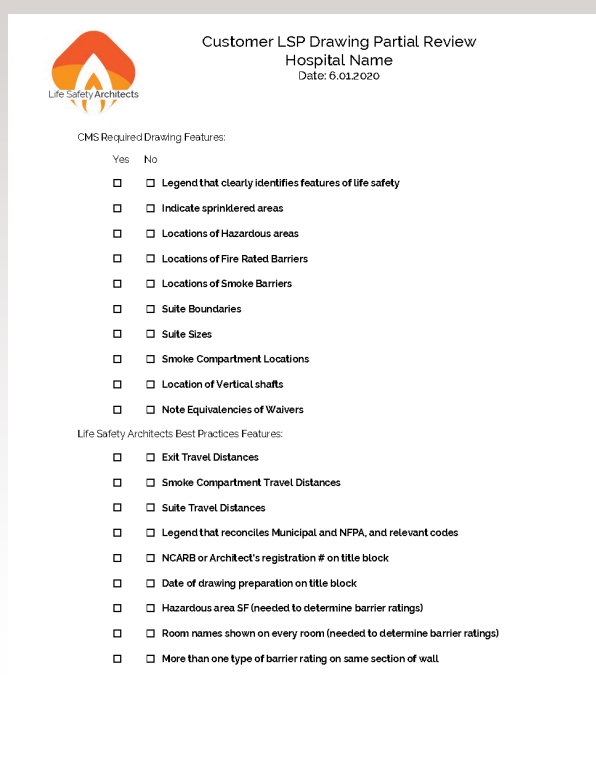
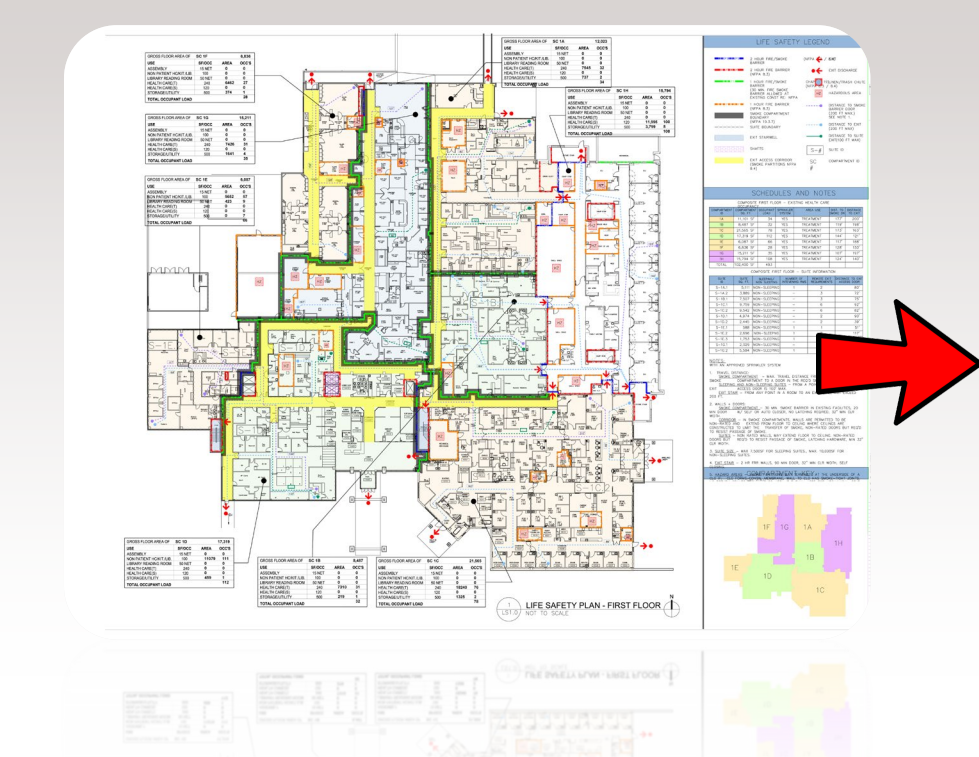
Passive fire
protection is
compromised

Downstream
elements are likely
wrong as well:

- Egress paths
- Travel distances
- Compartment Sizes

Let's fix it.

Existing life safety drawing CMS gap review



GRAINGER

What is Required- Hospital "I-2"?

- a. Areas of building fully sprinklered (if building only partially sprinklered)
- b. Locations of all hazardous storage areas
- c. Locations of all fire-rated barriers
- d. Locations of all smoke-rated barriers
- e. Sleeping and non-sleeping suite boundaries, including size of identified suites
- f. Location of designated smoke compartments
- g. Locations of chutes and shafts
- h. Any approved equivalencies or waivers

LS.01.01.01 EP:3 Current an accurate drawings w/ fire safety features & related square footage



What is Required- Business "B"?

What are some of the new items to address?

- a. assessment of fire doors and barriers***
- b. protection of vertical openings***
- c. protection of pipes, conduit, cables with fire rated material***
- d. Doors free of coverings, decorations***
- e. Compliant corridor width***
- f. Travel distance to exits***
- g. Travel distance to fire extinguishers***
- 75'***
- h. Alcohol based hand rubs (ABHR) stored/ handled properly***



TJC Business Occupancy new requirements July 1, 2021:

LS 05.01.10 Fire, Smoke, Heat

LS 05.01.20 Egress

LS 05.01.30 Fire and Smoke Hazards

LS 05.01.34 Fire Alarm

LS 05.01.35 Fire Extinguishing








29 new Elements of Performance

"Recommend new life safety plans"

Accurate Legend: Codes Applied Correctly NFPA + Municipal

- Plans need to show BOTH NFPA standards and municipal standards.
 - Codes bodies adopted (eg NFPA, IBC, IFC, IMC, local codes)
 - Publication dates adopted (eg 2015, 2010, 2012)
- All walls MUST show the hourly fire and smoke rating.
- Usability is key. Showing the door and damper requirements helps eliminate confusion for ALL parties.
- Smoke modifiers should be clearly defined and easy to recognize.

**LIFE SAFETY ARCHITECTS
SMARTLEGEND®**

	2015 IBC			2012 NFPA 101		
	DOOR RATING	DAMPERS	SELF OR AUTOMATIC CLOSING DOORS	DOOR RATING	DAMPERS	SELF OR AUTOMATIC CLOSING DOORS
 1 HR SMOKE BARRIER	DOOR RATING 20 MIN WHERE A PAIR OF OPPOSITE HINGED DOORS IN A CORRIDOR ARE PROVIDED, THE DOORS ARE NOT REQUIRED TO BE RATED IF THE FOLLOWING ARE MET: a) the doors are unlabeled no more than 2' b) no vertical mullion is provided c) head and side seals, thresholds, or gaskets are provided at meeting edges d) no louvers or grills are provided	SMOKE NO	YES	DOOR RATING 20 MIN 1 1/2" THICK, SOLID BOUNDED WOOD CORE DOORS, OR CONSTRUCTION THAT RESISTS FIRE FOR NO LESS THAN 20 MINUTES NO LOUVERS OR GRILLS AND NO MORE THAN 1/2" UNDERCUT. MEET SMOKE AND DRAFT CONTROL REQUIREMENTS OF UL 178A	DAMPERS SMOKE DAMPERS UNLESS: a) the air in ducts continues to move and the air handling system is designed to prevent recirculation of exhaust or return air under fire emergency conditions b) the air inlet or outlet opening is limited to a single smoke compartment c) the HVAC system is fully ducted and smoke compartments adjacent to the smoke barrier is provided with an approved supervised smoke system	YES
 2 HR SMOKE PARTITION	DOOR RATING NO LOUVERS ARE ALLOWED IN DOOR MUST MEET SMOKE AND DRAFT CONTROL REQUIREMENTS OF UL 178A	SMOKE PARTITIONS ARE NOT REQUIRED TO BE RATED PER IBC	YES	DOOR RATING 20 MIN NO LOUVERS	SMOKE NO	YES
 1 HR FIRE BARRIER	DOOR RATING 90 MIN AT STAIR ENCLOSURES AND SHAFTS 45 MIN AT ALL OTHERS	90 MIN NOT REQUIRED IF DUCTED HVAC SYSTEM IN FULLY SPRINKLERED BUILDING AND DUCTS ARE CONSTRUCTED OF MINIMUM 30GA THICKNESS PENETRATION NOT ALLOWED AT STAIR ENCLOSURES	YES	DOOR RATING 90 MIN AT STAIR ENCLOSURES AND SHAFTS 45 MIN AT ALL OTHERS	DAMPERS NO	YES
 1 HR FIRE BARRIER MEETING NFPA 101 8.5 REQUIREMENTS FOR SMOKE BARRIERS (COMMONLY CALLED FIRE SMOKE BARRIERS)	NA	NA	NA	DOOR RATING 90 MIN AT STAIR ENCLOSURES AND SHAFTS 45 MIN AT ALL OTHERS	DAMPERS NO	YES
 2 HR FIRE BARRIER	DOOR RATING 90 MIN	DAMPERS 90 MIN	SELF OR AUTOMATIC CLOSING DOORS YES	DOOR RATING 90 MIN	DAMPERS 90 MIN	SELF OR AUTOMATIC CLOSING DOORS YES
 2 HR FIRE BARRIER MEETING NFPA 101 8.5 REQUIREMENTS FOR SMOKE BARRIERS (COMMONLY CALLED FIRE SMOKE BARRIERS)	NA	DAMPERS NA	SELF OR AUTOMATIC CLOSING DOORS NA	DOOR RATING 90 MIN	DAMPERS 90 MIN FIRE SMOKE	SELF OR AUTOMATIC CLOSING DOORS YES
 CORRIDOR NON-RATED PER IBC 2 HR FIRE (SEE NFPA 101 19.3.2.2)	NA MAXIMUM 1/2" UNDERCUT	IF DOOR IS NOT LESS THAN 20 MIN THICK STEEL AND NO OPENINGS ARE PROVIDED INTO THE CORRIDOR, THEN NO DAMPERS ARE REQUIRED	NO	DOOR RATING 1 1/2" THICK, SOLID BOUNDED WOOD CORE DOORS, OR CONSTRUCTION THAT RESISTS FIRE FOR NO LESS THAN 20 MINUTES. MAXIMUM 1/2" UNDERCUT. DOORS TO TOILET ROOMS, BATHROOMS, SHOWER ROOMS, SINK CLOSETS AND SIMILAR AUXILIARY SPACES THAT DO NOT CONTAIN HAZARDOUS MATERIALS ARE NOT REQUIRED TO MEET THIS REQUIREMENT. CORRIDOR DOORS IN SMOKE COMPARTMENTS PROVIDED WITH AN APPROVED SUPERVED AUTOMATIC SPRINKLER SYSTEM ARE ONLY REQ. TO RESIST THE PASSAGE OF SMOKE.	DAMPERS TRANSFER GRILLS NOT ALLOWED PER 19.3.4.1 NO	NO

Features: Smoke Compartments

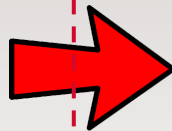
2012 NFPA 101: 19.3.7 Subdivision of Building Spaces

2015 IBC (Primary code for building design):

407.5 Smoke Barriers (1 Hour)

Smoke Barriers shall be provided to subdivide every story used by persons receiving care, treatment or sleeping and to divide other stories with an occupant load of 50 or more persons, into **no fewer than two smoke compartments**.

(Smoke barrier in accordance with Section 709)



2012 NFPA 101 (TJC Compliance):

19.3.7.1 Subdivision of Building Spaces (19.3.7.3 = 1/2 Hour)

Smoke Barriers shall be provided to divide every story used for more than 30 patients into **no less than two smoke compartments...**

1) The size of any such smoke compartment shall not exceed 22,500 SF, and the travel distance to reach the smoke barrier door shall not exceed 200'

Features: Facts regarding Suites

2012 NFPA 101: 19.2.5.7 Suites

2012 NFPA 101:

19.2.5.7.1.1 Suite Separation

Suites shall be separated from the rest of the building, and from other suites, by one of the following:

- 1) Walls and doors meeting the requirements of 19.3.6.2 through 19.3.6.5*
- 2) Existing approved barriers and doors that limit the transfer of smoke*



2012 NFPA 101:

19.2.5.7.2.2 Sleeping Suite Number of Means of Egress

(A) Sleeping suites of more than 1000 SF shall have not less than two exit access doors remotely located from each other.

***Suites must be approved through the permit process.
Go and check your life safety plans!***

Features: Hazardous Areas

2012 NFPA 101: 19.3.2 Protection from Hazards Use the SP option.

2012 NFPA 101:



19.3.2.1 Hazardous Areas

Any hazardous areas shall be safeguarded by a fire barrier having a **1 hour fire resistance rating** or shall be provided with an automatic extinguishing system in accordance with 8.7.1

OR SHALL



2012 NFPA 101:



19.3.2.1.2

Where the sprinkler option of 19.3.2.1 is used, the areas shall be separated from other spaces by **smoke partitions** in accordance with Section 8.4

2015, 2018 IBC

Also refer to IBC Table 509 Incidental Uses I-2

Features: Storage (Hazard)

***2015 International Building Code + 2012 NFPA 101
Are quantities deemed hazardous by the authority having
jurisdiction? {19.3.2.1.5 (7)}***

Storage less than 50 SF

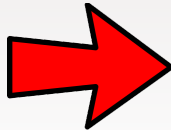
Storage 50-99 SF

Storage over 100 SF

No Rating

SP if fully sprinklered (NFPA)

1 hour fire barrier and 45 minute doors (IBC) TABLE 509



Features: Corridor Walls

2012 NFPA 101: 19.3.6.2 Construction of Corridor Walls

2012 NFPA 101:



19.3.6.2 Construction of Corridor Walls

Corridor walls shall be **continuous from the floor to the underside of the floor or roof deck above**.....unless otherwise permitted by 19.3.6.2.4 through 19.3.6.2.8

2015 IBC Section 407.3 Group I-2:

Corridor walls shall be constructed as smoke partitions in accordance with Section 710 (710.4 Continuity similar to 19.3.6.2.4)

UNLESS
OTHERWISE



2012 NFPA 101:



19.3.6.2.4

In smoke compartments protected throughout by an approved, supervised automatic sprinkler system in accordance with 19.3.5.7, a corridor shall be permitted to be separated from all other areas by non fire rated partitions and shall be **permitted to terminate at the ceiling** where the ceiling is constructed to limit the transfer of smoke.

Features: Corridor Doors

2012 NFPA 101: 19.3.6.3 Corridor Doors

2012 NFPA 101:

19.3.6.3.1 Corridor Doors

Doors protecting corridor openings in other than required enclosures of vertical openings, exits, or hazardous areas shall be doors constructed to resist the passage of smoke and shall be constructed of materials such as the following:

- 1) 1 3/4" thick solid bonded core wood*
- 2) Material that **resists fire** for a minimum of 20 minutes*

**2015 INTERNATIONAL BUILDING
CODE: 3/4" MAXIMUM UNDERCUT**



2012 NFPA 101:

19.3.6.3.2

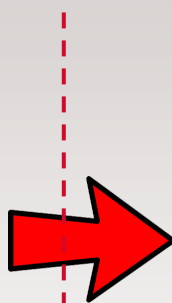
2) In smoke compartments protected throughout by an approved, supervised automatic sprinkler system in accordance with 19.3.5.7, the door construction materials requirements of 19.3.6.3.1 shall not be mandatory, but the doors shall be constructed to resist the passage of smoke

**2012 NFPA 101:
1" MAXIMUM UNDERCUT**

LSA Results: Accurate and Up To Date LSP



Starting Point: Piles of old drawings.



***Deliverable: New CAD, new Code
Report, new LSP's***

...OF CRITICAL IMPORTANCE

If your Life Safety Plans are incorrect....
the work being done on your fire and smoke barriers

(of which in health care there is a
disproportionately high percentage of these
barriers due to having to defend in place)

will likely be wrong!

Accurate Plans: Verify Existing Conditions

- MUST walk the facility
- Plans marked up in field
- OFTEN means completely redrawing existing plans.
 - Adding layers
 - Revising incorrect items
 - Applying new codes / standards
 - Clarifying multiple items in Legend and drawing
- All revisions made to updated CAD drawing



Life Safety Architects

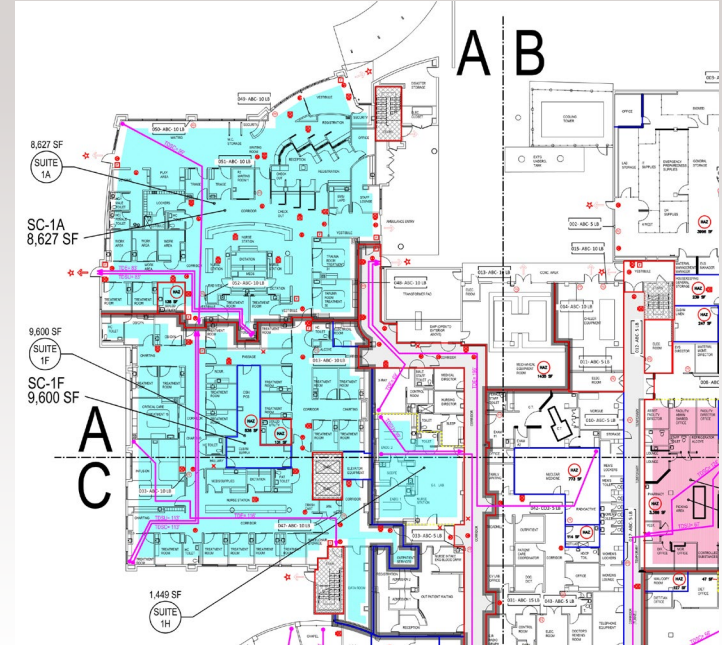
Building Assessment



Code Report



Life Safety Plans



Sound Decisions: Team Based Approach

- Facility, architect, product vendors and compliance contractor should act in unison to make compliance decisions.
 - Code analysis
 - Trade-off analysis
 - Cost to de-rate/ decommission items/areas
 - Future use considerations
 - Cost effective product alternatives
- Reminder that ALL changes to the fire protection features of a building must be approved by the local municipal AHJ and a revised set of drawings will most likely be required.



How To Get Started

Contact your Grainger Account Manager to:
Place a Service Request to meet with:



Questions

