

Feb '15 - LUNCH & LEARN

WISCONSIN HEALTHCARE ENGINEERING ASSOCIATION

Dedicated to Excellence in Healtbcare Engineering

LIFE SAFETY PLANS



Bill Lauzon, PE Heather Werner, BS

Lauzon Life Safety Consulting, LLC

262-945-4567 Website: Lauzon-LSC.com



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2015 - LUNCH & LEARN CALENDAR (as of Feb, 2015 – subject to change)

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AGENDA **1. CODE REQUIREMENTS** 2. TYPES OF LSP **3. BASE DRAWINGS** 4. FEATURES OF LIFE SAFETY 5. SMART LSP 6. HOW TO USE



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1. CODE REQUIREMENTS



Lauzon Life Safety Consulting, LLC 262-945-4567 Website: Lauzon-LSC.com

NONE !



Lauzon Life Safety Consulting, LLC 262-945-4567 Website: Lauzon-LSC.com

Life Safety Plans are NOT

mentioned in



LSC or IBC



DHS 124 (hospitals)

Life Safety Plans

are NOT

mentioned



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Subchapter I --- General

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DHS 124.02 Definitions. In this shaper

(1) "Alliad hall permanent" insume persons who are not phyicians, policitation or destribution but who are admitted to presistor in the heapital through the models staff condentialing process or an insignal employees who function maker the supervision (or physicians), podamites or domites as mated in the appropriate yeb descriptions.

[169] "Critical access hospital" means a hospital that is doingsuited by the department as mosting the requirements of 42 USC (1995)-4 (c) (2) (0) and is Televally certified as meeting the true

Chapter DHS 124

HOSPITALS

(4) "General hargetal" means a hespital providing inputient medical and surgical care for sense illness, injury or obstatics. (5) "Health physicist" means a person holding a machine

(5) "Heidh physicid" means a person holding a machine degree or doctorate in un appropriate discipline of tudiologia physics or who has equivalent adaction and experience.

(6) (a) "Hospital" means any building, structure, institution or place that does all of the following:

1. Offers inputient, internight case on a 24-bitst or skey basis or on an av-needed basis in the case of a critical secons hospital

3. Devotus tieff prinnerly to the maintaneou and coprotive of facilities for the diagonus with transmert of unal medical or umpical azer. For, 3 or more networksted individuals, designated "patients" in the chapter, withrong thron libers, diverse, tages or disability, whether physical is moduli, or who may pregnant.

3. Regularly mailen resultable at last clinical bioratory usvices, diagnostic v zey services and luminost factoristics for ourgary, dimetrical cose or other definitive methical memory, ecorytic encorytical for critical ecory hospitals in the chapter (b) "Diopnit" men include, but is nel limited by, ruleted facilities runds as optimistic ficilities, numeri, internit" and exidenti quarters, susang facilities and control service ficebian operadal in curvancians with the hospital.

(c) "Hospital" includes a special hospital.

(b) Hample that many graduates of recognized scheels of medicate and osteopady who are instantial in secondance with ch. 440, Stats, and are envilsed in por-graduate training programs in which the trajend periodication.

(6) "Lapally authorized person" means a period of a minor, u court appointed guardian or a person authorized by the potent in accordance with law to set on the potent" (behalf.

(0) "Licensed practical surse" sound a perior licensed in a trained practical state rader ch. 441, State.

DHS 132 (Nursing Homes)

Chapter DHS 132

NURSING HOMES

Subchapter 1 - General

 BHS 152.11 Supram subtrain BHS 152.55 Supra Distances Distanc

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Subchapter I - General

OHS 132.11 Statutory authority. This sharper is primalgated and/or the substray of m. 49.498 (14), 44.499 (2m), 50(2, 50(0), 50(0), 50(3) (2008), Statis, to provide conditions of lacessate for moving homes. Basego is based for 2008 (16) of 3-1 C (2008-00) an happen

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DHS 132.42 Scope. All mering home backed under s 5003. Statu, an ubject in all the provisions of this chapter, except fir done provisions that apply only to particular learners categores, and except for thisse mering homes regulated by du-BUS 134. Naming homes include those orised and operand by the statu, controls, nonnegatifies, we other public bodies. Naming homes are also subject to the provisions in th. 90. Statu, and chusing homes are also subject to the provisions combanal in 42 CFH 483.

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(3) "Department" means the Woocensie department of health services.

(4) "Developmental disability" means mental setardation or a robust condition, such as constrail poles, endopsy or antiam, but excluding mental illness and infimities of aging, which is.

(a) Manifested before the individual reaches age 22.

(b) Likely to continue indefinitely: and (c) Results in substantial functional limitations in 3 or more of the following areas of major life activity:

- Self-sare;
 Understanding and use of language;
 Learning;
- 4 Mehler
- 3. Self-direction and
- 6. Capacity for independent firing.
- (5) "Detstan" means a person who is any of the fellowing. (s) Cartified sudor a: 448 78, Stata.
- (a) Cartined vision 8, 448, /8, Stats.
 (b) Electored or cartified as a dietitian in mother state.
- (7) "Facility" means a surving home subject to the requirements of this chapter.
- (d) "Full-time" means at least 37.5 hours each week devoted to facility business.
- (8m) "IMD" or "institution its mental discover" music a

Life Safety Plans

are NOT

mentioned



DHS Requires LSP for construction plan submittals for Hospital & **Nursing Homes**



<u>Code</u> Requirements

PLAN SUBMITTALS, F-62333

DEPARTMENT OF HEALTH SERVICES Division of Quality Assurance F-62333 (04/2014) STATE OF WISCONSIN Chapter 50.02(2)(b)1 and 50.36(2)(a), Wis. Stats. Page 1 of 6

PLAN APPROVAL APPLICATION

INSTRUCTIONS

GENERAL

- Hospitals and nursing homes use this form. Attached structures also use this form.
- Free standing CBRFs must use DQA form F-62496, Free Standing CBRF Plan Approval Application.

DQA Contact Information

Telephone: 608-264-7748

Fax: 608-264-9847

Email: DHSDQAPlanReview@dhs.wisconsin.gov

Website: http://dhs.wisconsin.gov/rl_dsl/PlanReview/index.htm

SUBMISSION OF MATERIALS AND FEES

Materials to be Submitted

- ORIGINAL, completed DQA form F-62333, Plan Approval Application
- Fee that reflects the current scope of work
- ONE (1) bound set of plans with the drawing index sheet bearing the required signature and seals
- Three (3) additional copies of the index sheet bearing the required signature and seals
- ONE (1) bound set of specifications and calculations bearing the required signature and seals

ONE Interim Life Safety Plan

PLAN SUBMITTALS, F-62333 4/2014

F-62333 (R	ev. 04/2014)	Page 6 of 6
ADDITIONAL INFORMATION TO ASSIST REVIEW COMPLETION		
LIFE SAFETY PLAN / GENERAL INFORMATION is provided on Drawing:		
	Project Area: Intended project and neighboring areas are clearly labeled	
	Fire Rating System: Fire walls, fire barriers, fire partitions, smoke barriers, and smoke partitions are identified	L. C.
	Egress System: Exits, horizontal exits, exit stairs, egress corridors, and exit passageways are identified.	
	Revisions: Clear identification of all revisions is identified throughout submittal.	
	Column Lines: Orientation for multi-floor projects is provided throughout submittal.	
	Plan North: Floor plans have a plan north indicated.	

SUBMITTAL HINTS:

 Only submit the LSP for the <u>portion</u> of the building affected by the project

Include entire smoke compartments



2. TYPES OF LIFE SAFETY PLANS



Lauzon Life Safety Consulting, LLC 262-945-4567 Website: Lauzon-LSC.com

TWO TYPES OF LSP

<u>1. "CONSTRUCTION" LSP</u>

Construction: Shows Wall Types for contractors to build it per spec

2. "INSPECTION" LSP

Inspection: Shows Functions of Areas for surveyors to confirm it was built & maintained right

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"CONSTRUCTION" LSP

Used by Plan Reviewers



Helps Plan Reviewers see how the project fits into the overall building from a compliance perspective

Used by Contractors



Helps contractor to construct the building by knowing the specification of the construction feature





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"INSPECTION" LSP

Used by Inspectors



Helps Inspectors (DQA-CMS-TJC) survey the code-required life safety features & know what codes apply

Used by Maintenance



Helps Maintenance find items to inspect & know their requirements





Typical "Inspection" LSP

0 -the

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TYPES OF LSP

1

"INSPECTION" LSP

Important Tool to AVOID Cites

- **1. Facility defines LS features, not inspector**
- 2. Inspector looks at only what he needs to
- 3. Keynote explanation of code compliance
- 4. Facility can taylor pre-inspections

"INSPECTION" LSP

<u>Attributes</u>

- 1. Portable reasonable size
- 2. Easily Read
- 3. Accurate
- 4. Key Note Explanations
- 5. Colorized

Top 10 Citations in Wisconsin Typical in Nursing Homes & Hospitals



3. BASE DRAWINGS



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BASE DRAWINGS 3. BASE DRAWINGS "The Starting Point" FORMAT: ACAD PDF, PPT

Adobe

AutoCAD

26



Best quality More Accurate Layers – on/off

Easy to Change Walls/Doors Can determine Areas & Distances

Can generate PDF





May be hard to get from Arch

Program can be expensive only use a small portion of ACAD capabilities (but alternates are available)

Takes time to learn, but the basic tasks are easy to learn



Poor Drawing Capability No Layers

Free Reader (Upgrade to Acrobat version)

29

Can Generate JEG Easy Printing & Transmission



Adequate Drawing Easy Colorization

Limited Layering

Can Generate PDF Frequently in MS Office

BASE DRAWINGS





"The Starting Point"

<u>Clean-Up</u>

- 1. Remove Extraneous Lines
- 2. Remove Line Types & Fills
- 3. Make Sure of Accuracy
- 4. Simplify Layers

BASE DRAWINGS Clean-Up Goal STORE IIIA OFFICE e PATIENT SLEEP LAB 日 DIRTY PATIENT O.B. p۵ PATIENT PEDS PATIENT PATIENT O.B. PATIENT SLEEP LAB EXAM OFFICE PATIENT EXAM ¶₽₽ SLEEP LAB ď PATIENT PATIENT SLEEP LAB OFFICE LOUNGE SLEEP LAB Pain Clinic PATIENT O.B. PATIENT PATIENT O.B. PATIENT O.B. Exa.

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BASE DRAWINGS



LIFE SAFETY PLANS



4. FEATURES OF LIFE SAFETY



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What's on a Life Safety Plan ?





Recommended Legend

INSPECTION LIFE SAFETY PLAN

LIFE SAFETY CODE REQUIREMENTS

SMART LSP





LIFE SAFETY LEGEND				
NON-RATED WALLS & DOORS:				
	CORRIDOR (yellow fill)			
	SPACE OPEN TO CORRIDOR (yellow hatch)			
(//////	HAZARDOUS ROOM -Smk Tight (pink hatch fill)			
Ĥ	HAZARDOUS ROOM < 50 Sq Ft			
	SUITE BOUNDARY (blue dashed line)			
RATED WAL	LS & DOORS:			
	VERTICAL OPENING (green fill)			
	VERTICAL OPENING EXCEPTION (green hatch)			
	HAZARDOUS ROOM-Rated (pink hatch)			
SB	SMOKE BARRIER (blue line, w/SB)			
= = = o s	OCCUPANCY SEPARATION (black dash, w/OS)			
BS	BUILDING SEPARATION (gold line, w/BS)			
HE	HORIZONTAL EXIT (gold line, w/HE)			
TRAVEL DIS	TANCE ROUTES:			
	SUITE TRAVEL DISTANCE (black dash)			
	SMOKE TRAVEL DISTANCE (black dash-dot)			
	EXIT TRAVEL DISTANCE (black dash-dot-dot)			
	COMMON PATH OF TRAVEL DIST.			
NOTE: Each of the above lines are shown individually. If a wall has multiple functions, each function is shown separately, beside each				

WHY Show the Function?

Reason 1:

Because CODE REQUIREMENTS are written according to it's <u>FUNCTION</u>, Not rating

LSC is organized by FUNCTION !

m to the me.

18.3.1 Protection of Vertical Openings.

(a) The entire no

ating floor levels

or other

18.3.1.1 Any vertical opening shall be enclosed or protected in accordance with 8.2.5. 071 -072

exception No. 1: Unprotected vertical openings in accordance with 8.2.3.8 shall be permitted. Crist concealed -4 require June Exception No. 2: Exception No. 1 to 8.2.5.6(1) shall not apply to patient sleeping and treatment rooms. atrium exception Exception No. 3: Multilevel patient sleeping areas in psychiatric facil-

ities shall be permitted without enclosure protection 15, 510vided that all the following conditions

Vertical Openings the or wicat area fe (c) 7 lowest finished floor levels shall not e number of levels shall not be restricted. Exception No. 4: Unprotected openings in accordance with 8.2.5.5 shall not be permitted. "MINI-a Triven" - P71 18.3.1.2 A door in a stair enclosure shall be self-closing and 2 shall normally be kept in the closed position. | holds in / human

Exception: Doors in stair enclosures held open under the conditions specified by 18.2.2.2.6 and 18.2.2.2.7. see Table p152 8.3.2 Protection from Hazards.

----18.3.2.1 Hazardous Areas. Any hazardous area shall be pro-tected in accordance with Section 8.4. The areas described in Table 18.3.2.1 shall be protected as indicated.

18.3.2.2* Laboratories. Laboratories employing private fammable, comfamilia sidered as a severe hazard shall with NFPA 99, Sanda

Haz Areas 18.3.2.3 A 18.3 tion Stand 18.3.2 be protected as hazardred hazardous Gift shops not considered ous are in quan

d having separately protected storage shall be hazardou permitted to be as follows: 45004 (1) Open to a lobby or corridor if the gift shop does not

exceed 500 ft2 (46.5 m2)

Separated from a lobby or corridor with non-fire-rated > 5004

18.3.5.5 (Reserved.)

18.3.5.4 (Reserved.)

18.3.5.5* Sprinklers in areas where cubicle curtains are installed shall be in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems. 5-6.5.2.3

18.3.5.6 Portable fire extinguishers shall be provided in all health care occupancies ig accordance with 9.7.4.1. p 74

129. ywidths on p150 8.3.6.1 Corridors shall be separated from all other areas by

rtitions complying with 18.3.6.2 through 18.3.6.5. (See also 182591

prophers No. 12 Spaces shall be permitted to be unlimited in crea and open to the corridor, provided that the fellowing enteria are met:

(a) The spaces are not used for patient sleeping rooms, treatment more to hazandras amas See p 152 SEPARGE (b) The corridors goto which the spaces open in the same basks

umpartment are pylicited by an electrically outermand automatic smoke detection system in accordance with 18.3.4. The smoke of Corridors partment in adjech the space is located is protected thro quick-maponay/prinklors

(c) The open space is protected by a matic imple detection system in a space is groupped and bocated to a ity stafffrom a nurses' station or st (d) The space does not obstruct

stem No. 2: Weiting error the rider, provided that the following crit

(a) The aggregate waiting area in each smoke compartment does at excited 600 ft2 (55.7 m2). 550 arolosam

(b) Each area is protected by an electrically supervised estepatic make detection paters in accordance with 18.3.4, or each drea is arranged and located to allow direct supervision by the facility staff from a nursing station or similar space.

(c) The area does not obstruct access to required exits.

norphism No. 3.* Spaces for warses' stations.

Exception No. 4: Gift shots open to the corrider where predected in accondenser with 18325~p[S] Exception No. 5: In a limited care facility, group meeting or multipur

se therapeutic spaces shall be permitted to open to five corridor, proided that the following criteria are net:

(a) The space is not a hozardous area.

NFP

(b) The space is protected by an electrically supervised automatic the detection system in accordance with 18.3.4, or the space is arranged and located to allow direct afpervision by the facility staff from the warses' station or similar location.

(c) The area down and attinued access to required exits.

18.3.6.2* Construction of Corridor Walls Corridor walls shall form a barrier to limit the transfer of smoke. Such walls shall be permitted to terminate at the ceiling where the ceiling is constructed to limit the transfer of smoke. No fire resistance rating is required for corridor walls.

18.3.6.3" Corridor Doors. NOT RATED

18.5.6.3.1* Doors protecting corridor openings shall be constructed to resist the passage of smoke. Compliance with NFPA 0, Standard for Fire Doors and Fire Windows, shall not be sured. Clearance between the holtom of the door and the

floor covering not exceeding 1 in/(2.5 cm) shall be permitted for corridor doors. Energtion: Doors to toilet rooms, bachroomi, sieuer rooms, sink clasets, and similar auxiliary spaces that do not contain flammable or combrastible materials.

18.3.6.3.2 Doors shall be provided with positive latching hardware. Roller latches shall be prohibited.

Exception: Doors to joilet more, bathmone, shower means, sink close ets, and similar auxiliary spaces that do not contain flammable or combustible materials

18.3.6.3.3* Hold-open devices that release when the door is pushed or pulled shall be permitted.

18.3.6.3.4 Door-closing devices shall not be required on doors in corridor wall openings other than those serving required exits, smoke barriers, or enclosures of vertical oper ings and hazardous areas.

18.3.6.3.5 d, factory, or field applied protective plate than 48 ju? (122 cm) above the bottom of

> shall be permitted where they conlition, both the upper leaf and lower with a latching device, and the meeting er and lower leaves shall be equipped with an a rabbet, or a bevel.

Dutch doors protecting openings in enclosures around hazardous areas shall comply with NFPA 80, Standard in Fire Doors and Fire Windows

18.3.6.4 Transfer Grilles, Transfer grilles, regardless of whether they are protected by fusible link-operated dampers, shall not be used in these walls or doors.

Exception: Doors to todet rooms, bathrooms, shower rooms, sink closets, and similar enxiliary spaces that do not contain flammable or combustible materials shall be permitted to have ventilating lowers or to be underent. MAIL SLOTSALLINGOUL

18.3.6.5 Openings. In other than smoke compartments containing patient bedrooms, miscellaneous openings such as mail slots, pharmacy pass-through windows, laboratory pass through windows, and cashier pass-through windows shall be permitted to be installed in vision panels or doors without special protection, provided that the aggregate area of openings per room does not exceed 30 in." (520 cm*) and the openings are installed at or below half the distance from the floor to the room ceiling. A SMOKE

183.7* Subdivision of Building Spanner BARRIER

18.3.7.1 Buildings containing health care facilities shall be ubdivided by smoke barriers as follows:

- 1) To divide every story used by inpatients for sleeping or treatment imp hot less than two smoke compartments
- (2) To divide every story having an occupant load of 50 or more persons, regardless of use, into not less than two smoke compartments.
- (3) To limit the size of each smoke compartment required by (1) and (2) to an area not exceeding 22,500 ft² (2100 m²) Exception: The area of an atrium separated in accordance with 8.2.5.6 shall not be limited in size.

(4) To limit the travel distance from any point to reach a door in the required smoke barrier to a distance not exceeding 200 E\(60 m).

Exception No. 1: Stories that do not contain a health care occupancy. beated totally above the health care occupancy.

Exception No. 2: Areas that do not contain a health care occupancy and that are separated from the health care occupancy by a five burrier complying with 7.2.4.3.

Exception No. 3: Stories that do not contain health care occupant and that are more than one story below the health care occupancy. Exception No. 4: Open-air parking structures protected throughout by

an approved, supervised automatic sprinkler system in accordined with Section 9.7.

18.3.7.2 Smoke barriers shall be provided on stories that are usable but unoccupied. -P73 FRR 18.3.7.3 Any required smoke barrier shall be constructed in

accordance with Section 8,3 and shall have a fire resistance rating of not less than 1 hour,)

Exception No. 1: Where an atrium is used, smoke l nitted to terminate at an atrivy wall cer Exception No. 2 to 8.2.5.6(1) Not partments shall be provid

smoke Barriers and areas or ies not housing bed or had 6 net fi2 (0.56 net m2) per led on each side of the smoke barrier er of occupants in adjoining compartments.

18.5.7.5* Doora in smoke barriers shall be substantial doors such as 13/cin. (4.4-cm) thick, solid-bonded wood core doors or shall be of construction that resists fire for not less than 20 minutes. Nonrated factory-or field-applied protective plates extending not more than 48 in) (122 cm) above the bottoen of the door shall be permitted. Cross-corridor openings in amoke barriers shall be protected by a pair of swinging doors or a bor-Izontal sliding door complying with 7.2.1.14. Swinging doors shall be arranged so that each door swings in a direction opposite from the other.

The minimum clear width for swinging doors shall be as follows:

 Hospitals and musing homes 41.5 in. (105 cm)
Psychiatric hospitals and limited care facilities 32 in. (81 cm)

The minimum clear width opening for borizontal sliding doors shall be as follows:

- (1) Hospitals and nursing homes 83 in. (211 cm)
- (2) Psychiatric hospitals and limited care facilities -- 64 in. (163 cm)

18.3.7.6* Doors in smoke barriers shall comply with 8.3.4 and shall be self-closing or automatic-closing in accordance with

18.3.7.7* Vision panels consisting of fire-rated glazing or wire glass panels in approved frames shall be provided in each rous-corridor swinging door and at each cross-corridor horiintal sliding door in a smoke harrier

LIFE SAFETY LEGEND			
NON-RATED WALLS & DOORS:			
	CORRIDOR (yellow fill)		
	SPACE OPEN TO CORRIDOR (yellow hatch)		
	HAZARDOUS ROOM -Smk Tight (pink hatch fill)		
Û	HAZARDOUS ROOM < 50 Sq Ft		
	SUITE BOUNDARY (blue dashed line)		
RATED WAL	LS & DOORS:		
	VERTICAL OPENING (green fill)		
	VERTICAL OPENING EXCEPTION (green hatch		
	HAZARDOUS ROOM-Rated (pink hatch)		
SB	SMOKE BARRIER (blue line, w/SB)		
= = = =0S	OCCUPANCY SEPARATION (black dash, w/OS)		
BS	BUILDING SEPARATION (gold line, w/BS)		
HE	HORIZONTAL EXIT (gold line, w/HE)		
TRAVEL DIS	TANCE ROUTES:		
- $ -$	SUITE TRAVEL DISTANCE (black dash)		
	SMOKE TRAVEL DISTANCE (black dash-dot)		
	EXIT TRAVEL DISTANCE (black dash-dot-dot)		
	COMMON PATH OF TRAVEL DIST.		
NOTE: Each of the a multiple functions, e	bove lines are shown individually. If a wall has ach function is shown separately, beside each		

WHY Show the Function?

Reason 2:

Because Your DHS-AHJ Marks Your LSP with Colors

> Be One Step Ahead !



LIFE SAFETY LEGEND		
NON-RATED WALLS & DOORS:		
	CORRIDOR (yellow fill)	
××××××	SPACE OPEN TO CORRIDOR (yellow hatch)	
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	SMOKE TRAVEL DISTANCE (black dash-dot)	
<u> </u>	EXIT TRAVEL DISTANCE (black dash-dot-dot)	
	COMMON PATH OF TRAVEL DIST.	
NOTE: Each of the above lines are shown individually. If a wall has multiple functions, each function is shown separately, beside each		

WHY Show the Function?

Reason 3: DQA would LOVE IT if everyone used the same coloring system

But DQA can't mandate it because the LSP is not code48 required

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NOTE: Each of the a multiple functions, e	bove lines are shown individually. If a wall has ach function is shown separately, beside each	

WHY Show the <u>Function?</u>

Reason 4:

Coloring the function makes it "POP" out to the eye

So it's not missed



LIFE SAFETY LEGEND			
NON-RATED WALLS & DOORS:			
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Let's take an <u>IN-DEPTH</u> look at each LS Feature

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<u>Corridors</u> –

- Exit Access Paths
- Paths that have doors that open into them

<u>Open Areas</u> – Spaces not separated from corridor with walls & doors 52



Corridors- Walls & Doors

- Plan should clarify the <u>Method</u> used for room enclosure
 - 1. full-height sealed Walls, or
 - 2. Smoke-tight Corridor Ceiling
 - 3. (In un-sprinkled zones must use full-height wall enclosure)

- Measure <u>Dead End</u> Corridors (max 20'/30')
- Mark Spaces <u>Open</u> to Corridor (smoke detection required)

NON-RATED WALLS & DOORS:



Suites-Any room that doesn't have a door that opens to a yellow corridor is within a suite





BENEFIT: There are no corridors

- * Fewer obstruction requirements;
- * No door latching requirements;
- * No wall requirements

- * NO min widths
- * Doors can slide
- * Ventilation Benefits

NON-RATED WALLS & DOORS:



Will Cover these with the Rated Hazardous Rooms

RATED WALLS & DOORS:			
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HE	HORIZONTAL EXIT (gold line, w/HE)		



8.2.5.6 – Enclosure Exception #1: "Atrium"

7 Conditions:

- . If not prohibited by occupancy chapter
- 2. 1-hr fire barrier enclosed
- 3. Exit Access & Exit Discharge may go thru atrium
- 4. Atrium occupancy is low/medium hazard
- 5. Building is fully sprinkled
- 6. Smoke-Layer ENGINEERING ANALYSIS
- 7. SMOKE CONTROL System

8.2.5.7 – Enclosure Exception #2: "Tall-Room"

4 Conditions:

- 1. Max 2 stories
- 2. Not an exit enclosure
- 3. Pierce only one floor
- 4. Separated from rest of bldg by fire barriers with same rating as the floor



"Floors" wraps
up/down to form a
"tall" space

MOST COMMON

8.2.5.8 – Enclosure Exception #3: <u>"Non-Egress Space"</u>

6 Conditions:

- 1. If permitted by occupancy chapter
- 2. Not enclosed within the building
- 3. Max 2 stories
- 4. SEPARATED from rest of bldg by fire barrier
- 5. SEPARATED from corridors
- 6. CANNOT EGRESS through the opening





HAZARDOUS <u>STORAGE</u> AREAS

FEATURES OF LIFE SAFETY

Caution: There is NO agreed on <u>QUANTITY</u> of combustible materials that an inspector will deem as hazardous. It is best to consider almost any amount of stored combustibles as hazardous and protect the room according to its size.



HAZARDOUS <u>STORAGE</u> AREAS

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HE	HORIZONTAL EXIT (gold line, w/HE)
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- In Health Care, must be 2 hr Rated
- Generally good to be non-Health Care Occup (due to fewer regs), but weigh the pros/cons 73
 - CMS: where ever an inpatient travels must be HC

RATED WALLS & DOORS:	
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SMART LSP

NFPA TYPES OF CONSTRUCTION

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FIRE RESISTIVE (I, II): <u>Concrete</u> columns, beams & floors; metal stud walls or <u>Steel</u> column, beam, concrete floors, metal stud walls

<u>WOOD FRAME (V)</u>: Wood columns, beams, floors, wood stud walls

SMART LSP

Typical construction Types: Need Fire Proofing

77

Hospitals: I(332), II(222), II(111)

Nursing H: II(222), II(111), II(000), V(111)

NFPA Hourly Ratings: (XYZ)

- **X** = hour rating of Exterior Bearing Walls
- Y = hour rating of beams & columns
- Z = hour rating of floor

RATED WALLS & DOORS:	
	VERTICAL OPENING (green fill)
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Horizontal Exit



Horizontal Exits are used when the travel distance to a standard exit exceeds the limit (300' in HC)
RARE in HC

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- Measure with wheel
- PDF: Determine drawing scale; measure & calculate
- ACAD: Click "Properties" for length

87















Step 2 – Locate Most Remote Spots Within Smoke Compartment

Smoke Travel Distance

NATO **Consider spot midway** REN INF 1000 between two X doors п 0404 TO 75,004 INAL OF MER Saints. 1012 **Consider spot farthest** Dente ADDRESS OF AN from the X door DATE: ZVERSA-1 93

t triangeld





PDF: Determine drawing scale; measure & calculate ACAD: Click "Properties" for length ⁹⁵







<u>Corridor Exit Travel Distance Requirement</u> will be DISCONTINUED under the 2012 LSC

Step 1 – Locate Doors in Stairwells & Exterior Exit Discharges

Corridor Exit Travel Distance



Do NOT Consider doors that are NOT Compliant Exits (i.e. NO Exits)

98

Step 2 – Draw lines between the X's

Corridor Exit Travel Distance



Follow actual walk path; cut within 12" of corners

99

Step 3 – Determine the Length of each Line

Corridor Exit Travel Distance



PDF: Determine drawing scale; measure & calculate ACAD: Click "Properties" for length 100

Step 4 – Mark TD on LSP

Corridor Exit Travel Distance



<u>Code:</u> Max TD from any door in a corridor to an exit shall be less than 150' (if sprinkled), which means the max distance between exits is 300' 101

LIFE SAFETY PLANS



6. SMART LSP



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HOW do you make a LSP .

CHECK LIST FOR A 'SMART' LIFE SAFETY PLAN

- 1. Constr Types, Building Separations
 - Verify Constr Type for Ea Bldg
 - Avoid Type V (if not sprinkled)
 - Avoid 2 Hr Walls

2. Occupancy Separations

- Minimize Health Care
- Use Business or Storage where Possible
- Check Basements
- 3. Corridors
 - Avoid Corridors Maximize Suites
 - Confirm Dead End Corridors
 - Check spaces open to corridors

4. Suites

- Check for rooms within rooms
- Confirm Size & Travel Distance
- Confirm remote exits
- Maximize Suites; Minimize Corridors

5. Exits

- Verify Signed Exits
- Corridor Travel Distance
- Minimize Exits...Not all exterior doors
- Check for "NO exits"

6. Stairs

- Open Stairs Confirm Exception
- Confirm Exit Discharge Path OK
- Communicating Stairs

- 7. Smoke Barriers
 - More Compartments = More Cites

2

- Know Exact Wall Location & Confirm Route
- Confirm Size & Travel Distance
- 8. <u>2 Hour Walls</u> More 2,3,4 Hr Walls = More Cites

9. Shafts

- Check Air Handler Rms
- Match Duct Risers to Shafts
- Match Damper Inventory to Shafts

10. Hazardous Rooms

- Color so Easily Spotted
- Keep under 50 Sq. Ft.
- Check before Every Survey

11. LSP Key Notes

- Explain All exceptions & gray areas
- Give Location of Support Doc
- Doc prior AHJ Acceptance
- 鋖 1000 15 1 1 ©2015-LauzonLSC










SMART LSP

- 1. Not all paths to the outside are exits
- 2. Exits have many requirements
- 3. An exit sign shows your intent to use it as an official exit

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Benefits of Eliminating Exits

Signage

Sidewalk Cracks/Heaving

Redundant Lights

Emergency Power

Snow/Ice Removal













11. LSP Key Notes

- Explain All exceptions & gray areas
- Give Location of Support Doc
- Doc prior AHJ Acceptance
- **q** Categorical Waivers

- 1. <u>Constr Types, Building Separations</u>
 - Verify Constr Type for Ea Bldg
 - Avoid Type V (if not sprinkled)
 - Avoid 2 Hr Walls
- 2. Occupancy Separations
 - Minimize Health Care
 - Use Business or Storage where Possible
 - Check Basements
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LIFE SAFETY PLANS



7. HOW TO USE



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Self-Inspection Pre-Inspect What Inspectors Inspect Concentrate on the COLORED Items Use the Legend as a Guide Use as a Tool of What to Inspect

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Maintenance Guide



Check Work Requests for Wall, Door & Other changes to make sure you stay in compliance

Use as the Basis for Fire Stop Permits

- Mark route of work on LSP
- Fire Stop all Rated (Colored) Walls

Use the Legend as a Guide to Train staff on the Life Safety Code



AHJ Survey Guide

AMPERTAL OF SAVETY ALS	APE BARETY COOK RECEIPENENTS	
	HALL RECOMMENDETS	DOOR REQUESTS
NAMES OF TAXABLE PARTY.	Company of the	THE REAL PROPERTY AND INCOME.
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Contract of the other light in the		the second which we want to be

Give 11x17 Copy to Inspector

Make sure they inspect per plan

Mark on YOUR Copy all locations of potential cites

Take photos of potential cites & mark location with a "P"

Use Keynote explanations to show that the situation is compliant





This facility is a "Defend-In-Place" occupancy, which means during a fire emergency that members and staff initially evacuate to another part of the building (adjacent smoke compartment) and only evacuate to the exterior as a second step when directed to leave the building.

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Fire Dept Orientation





Have set available at building entrances FD will use

Add items that FD wants, such as:

 Fire Pump, O2 Main Valves, Haz Chem, Main Switchgear

LIFE SAFETY PLANS

<u>AGENDA</u>

- CODE REQUIREMENTS
 TYPES OF LSP
- **3. BASE DRAWINGS**
- 4. FEATURES OF LIFE SAFETY
- 5. SMART LSP
- 6. HOW TO USE



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LIFE SAFETY PLANS

Waiting For Your Questions







Bill Lauzon, PE Heather Werner, BS

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CONSTRUCTION BARRIERS

* Required by NFPA 101 or 241

<u>Negative Air</u> 1. Fan large enough for neg.02"static pressure; Record neg pressure level

- 2. Close supply & return grills or cover with filters
- 3. Must HEPA filter if return to AHU or recirc within building

<u>Debris</u>

Transport in clean carts; must be covered if required by dust control level; wipe exterior & wheels when dirty



Contractor Entry

- 1. One in/out for contractors (away from pt & staff paths, if possible)
- 2. Wet mat inside area (shampoo as needed to keep clean)
- 3. Dry mat outside (vac/shampoo as needed to keep clean; Need cleaning if stomping gives any dust)
- 4. Sticky Mat outside (replace if can't hear sucking when lifting feet)
- 5. Sealed door; Doors must be kept closed except during deliveries; Doors should be locked during non-work periods

Restrict Entry Seal & sign door closed to restrict entry (if possible) Barrier* 1. Provide all around site 2. Full height to slab rated wall (unless site is sprinkled) 3. Visqueen only if approved by AHJ 4. Use visqueen barrier during construction & removal of solid barrier; Must be limited combustible type, with zippered single or double doors (for carts); seams sealed with tape; mechanically attach to structure

Inside*

- 1. Remove debris daily
- 2. Hot Work Permit w/dedicated fire watch
- 3. Daily inspection of clear egress path
- 4. Port ABC extinguisher in plain sight
- 5. No combustible packaging, unless sprinkled or oked by AHJ
- 6. Weekly inspections w/records available to AHJ
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6. Lock, if required by AHJ*



Feb '15 - LUNCH & LEARN

WISCONSIN HEALTHCARE ENGINEERING ASSOCIATION

Dedicated to Excellence in Healtbcare Engineering

LIFE SAFETY PLANS

Healthcare Survey

Bill Lauzon, PE Heather Werner, BS

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