



April 2, 2018

INTERIM LIFE SAFETY MEASURES PROGRAM

OFFICE OF PRIMARY RESPONSIBILITY

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Pages: 10

This Operating Instruction Supersedes Fire Safety Instruction 1-12 dated December 11, 2015

This instruction establishes policy and procedures and assigns responsibilities and requirements; establishes a tool to assist with assessing the loss or potential loss of a life safety feature during construction, renovation, alterations, or damage that occurs to a life safety feature; establishes policy when a fire alarm will be out of service more than 4-hours or automatic sprinkler system will be out of service more than 10-hours. This Operating Instruction does not replace or substitute for the Construction Risk Assessment program. Violations of this policy may result in appropriate disciplinary action.

1. OBJECTIVE

- 1.1. To ensure the fire and life safety of all building occupants during periods of construction, renovations, alterations or during automatic fire protection system outages that compromise the level of life safety protection provided by the building features and design.
- 1.2. To ensure life safety deficiencies that are entered into the Plan for Improvement (PFI) process continue to be evaluated for effectiveness and necessity.
- 1.3. Provide a tool to evaluate and assign appropriate Interim Life Safety Measures (ILSM) during life safety deficiencies

2. PERSONNEL AFFECTED

- 2.1. Facilities, Planning, Design, Construction (FPDC)
- 2.2. Engineering & Operations (E&O)
- 2.3. Facilities Maintenance Department (FMD)
- 2.4. OESO-Fire and Life Safety Division
- 2.5. Duke University Police Department (DUPD) and Duke Security (in-house & contracted services)
- 2.6. Construction contractors, services, and other related construction trades

3. DEFINITIONS

- 3.1. Automatic Fire Protection System-Approved automatic devices, equipment, and systems or combination of systems used to detect a fire, activate an alarm, extinguish or control a fire, control or manage smoke and products of a fire or any combination thereof. (NC Fire Prevention Code - 2012)
- 3.2. Interim Life Safety Measure-Actions or activities developed, implemented, and managed when life safety deficiencies that cannot be immediately corrected exist. Usually consists of 14 administrative functions that are selected to temporarily compensate for the life safety deficiency
- 3.3. Immediately corrected – corrective actions that are implemented and completed within the same day.

4. RESPONSIBILITIES & PROCEDURES

- 4.1. Planning and Project Managers (FMD, E&O, FPDC)
 - 4.1.1. Shall comply with the intent of this operating instruction and all other referenced codes, standards, and operating instructions
 - 4.1.2. Shall complete a formal Construction Risk Assessment (CRA) of planned and awarded construction, renovation, or alteration projects. The CRA will help determine if life safety features (e.g. exits, egress paths, sprinkler systems, etc.) of the facility will be affected by the construction. Affected includes but is not limited to: blocking, sealing off, removing, impairing, or any other action that alters the originally designed life safety feature.
 - 4.1.3. Shall outline, design, and document recommended alternative actions to be implemented during life safety deficiencies and deficiencies that have been referred to a PFI. These documents shall be a permanent part of the construction planning and construction documentation.
 - 4.1.4. Review the alternative actions with the OESO-Fire and Life Safety Division
 - 4.1.5. Annotate OESO-Fire and Life Safety Division mandated implemented ILSMs on the Duke Construction Site Safety Board
 - 4.1.6. Appropriately post ILSM alert notices and other required signage; and provide copies to the OESO-Fire and Life Safety Division Office
- 4.2. Work Site Supervisors/Project Managers (FPDC, FMD, E&O, Contractor)
 - 4.2.1. Shall comply with the intent of this operating instruction and all other referenced codes, standards, and operating instructions
 - 4.2.2. Shall ensure that all mandated ILSMs are in affect during all phases of the construction until properly relieved through correcting the deficiency, release from the OESO-Fire and Life Safety Division Office, and/or work assignment is completed.
 - 4.2.3. Document daily life safety and ILSM assessments on the Fire & Life Safety ILSM, Construction Site Inspection Form—(Note: form is available on the OESO-Fire and Life Safety Division Web site under the Forms tab)

- 4.2.4. Notify the OESO-Fire and Life Safety Division Office of any conditions that affects the alternate actions, ILSM, or newly created life safety deficiency.

4.3. OESO-Fire and Life Safety Division

- 4.3.1. Shall assist with the development of ILSMs for any life safety deficiency that cannot be mitigated through design, or procedural change.
- 4.3.2. Reviews documentation (floor plans, architectural drawings, specifications, etc.) provided by planning and project managers, contractors or other approved sources.
- 4.3.3. Utilizing the ILSM Matrix, determine the appropriate ILSMs that will be implemented for the specified period appropriate to the project phases.
- 4.3.4. Ensures ILSM Alert Notices and other required signage are provided, distributed, and displayed in accordance with Life Safety Plans, ILSM Alert notices, or other directives. Minimum postings include:
 - 4.3.4.1. Entrances
 - 4.3.4.2. Facility/Department Supervisors
 - 4.3.4.3. Duke University Safety Committee
- 4.3.5. Development of all training materials and information necessary, appropriate to the scale of the project, to train and educate staff members in the project area.
- 4.3.6. Brief/present the ILSM at the next scheduled Duke University Safety Committee meeting
- 4.3.7. Conduct periodic life safety assessments (at least weekly) for any active life safety system that is impaired. Periodic assessments will be utilized to measure the overall effectiveness of the Project Managers adherence to this policy.
- 4.3.8. Upon notification of life safety deficiency correction, assess the area and ensure the deficiency has been fully restored to the original or approved condition and all signage relating to the deficiency is removed
- 4.3.9. Duke Police & Duke Security
- 4.3.10. When requested and during construction off-duty times, shall be responsible for the actions in 4.2 above.

5. GENERAL INFORMATION

- 5.1. If a life safety deficiency warrants a fire watch, the fire watch will be implemented and maintained in accordance with Fire Watch Program Operating Instruction 1-3
- 5.2. At no time will a life safety deficiency that is identified be allowed to exist without either implemented ILSMs or other coordinated corrective actions.
- 5.3. Life Safety deficiencies that cannot be corrected within the prescribed allocated time, will require a submittal of a PFI. Pre-assessed ILSMs will be evaluated and determined if they still are valid or may require modification. Evaluations of the existing ILSMs will be accomplished utilizing the ILSM Matrix.
- 5.4. The need to provide and maintain equivalent fire alarm/fire detection systems for systems that are installed in addition to *Life Safety Code* minimum requirements will be evaluated using the ILSM Matrix to determine if a temporary system must be installed.
 - 5.4.1. Portions of an existing system that are not part of the minimum required system may be impaired on a temporary basis (e.g. heat detectors used in place of smoke

detectors in active construction areas) during periods of construction or during other dust producing activities are being performed as long as the following minimum conditions are maintained:

- 5.4.1.1. The minimum required protection level is in full working order
 - 5.4.1.2. A hard barrier (1-hour rated) is in place to limit the movement of smoke and fire
 - 5.4.1.3. Combustibles are maintained at an absolute minimum
 - 5.4.1.4. Area is not used for the storage of flammables
 - 5.4.1.5. Smoke detectors are replaced with heat detectors during the dust producing activities
 - 5.4.1.6. Smoke detectors are returned to service at the completion of dust producing activities
- 5.5. Life safety deficiencies will be reported to the OESO-Fire and Life Safety Division Office immediately during duty hours and to DUPD during off-duty hours.
- 5.6. DUPD will attempt to correct the deficiency by contacting the appropriate maintenance organization. In the event the deficiency cannot be corrected immediately, DUPD will contact the one of the following:
- 5.6.1. OESO-Fire and Life Safety Division Director (919-812-9030)
 - 5.6.2. OESO-Department Director (919-812-3576)
- 5.7. ILSM Implementation: refer to attachment 1.

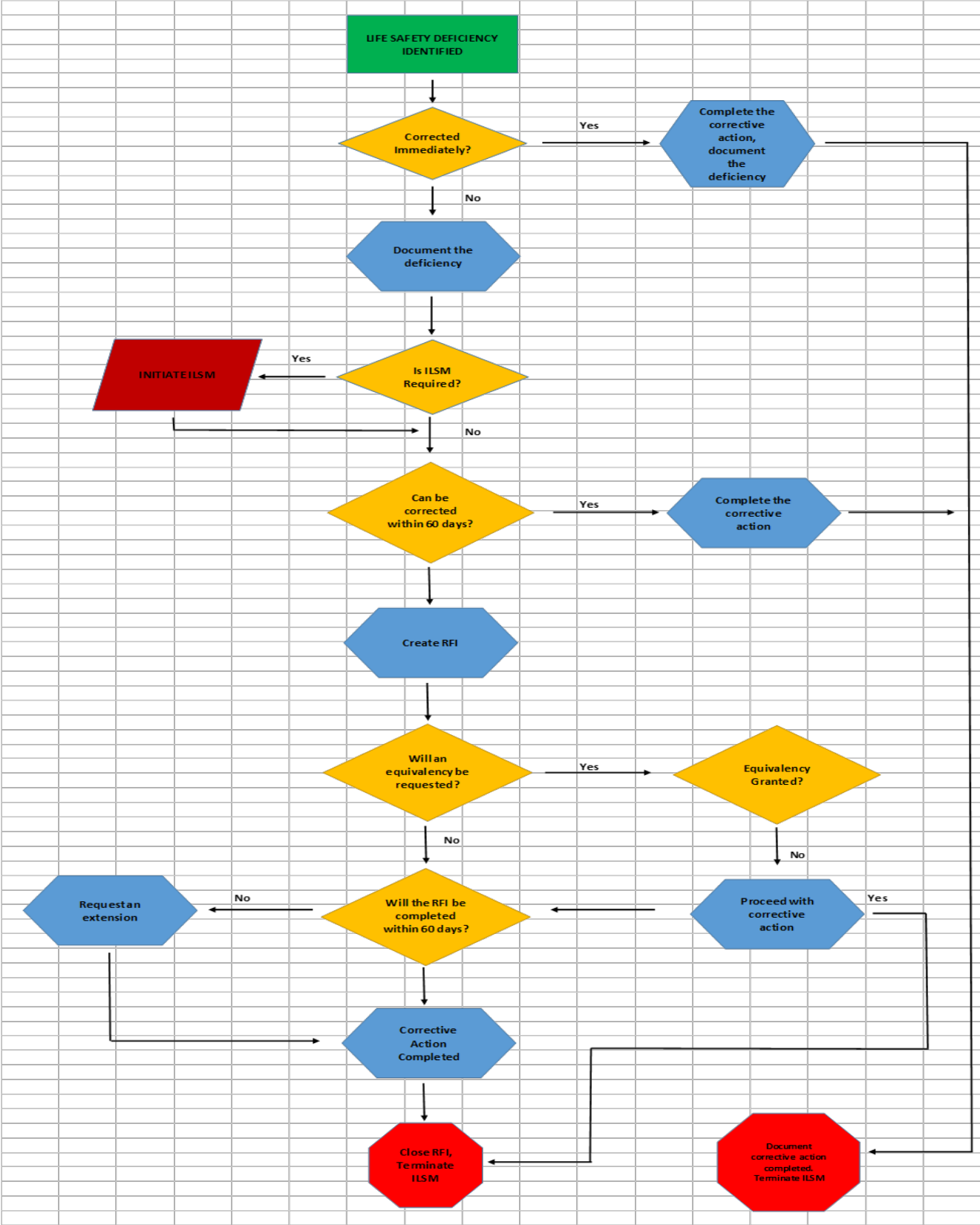
ATTACHMENT 1
INTERIM LIFE SAFETY MEASURE (ILSM) IMPLEMENTATION

1. All life safety deficiencies and construction/renovation projects must be evaluated for ILSM risk utilizing Attachments 2 and 3 and an assessed risk value assigned per Attachment 4.
 - a. Required ILSMs will be implemented in accordance with Attachment 3.
2. If ILSM are needed, apply any or all of the 14 administrative actions as appropriate:
 - a. When a fire alarm system is out of service for more than 4 hours out of 24 hours or a sprinkler system is out of service more than 10 hours in a 24-hour period in an occupied building the building will be evacuated or the Durham Fire Department shall be notified and a fire watch initiated in accordance with the Fire Watch Operating Instruction 1-3.
 - b. When exits do not provide free and obstructed egress - signage will be posted identifying the location of alternative exits to everyone affected.
 - c. When the construction area is contained within an occupied building - all exits adjacent to and within the construction areas must be inspected daily by the general contractor. The Duke University project manager shall forward documentation by close-of-business each Friday to the OESO-Fire and Life Safety Division Office.
 - d. When the fire alarm and detection system is impaired - a temporary but equivalent system shall be provided. This determination will be made by the Duke University project manager and Engineering and Operations Alarm Shop at the beginning of each construction project for all hospital projects and with the Duke University project manager and OESO-Fire and Life Safety Division Office for all university projects.
 - When temporary systems are put into use they shall be inspected and tested monthly and documented by the project manager. Copies will be forwarded to the OESO-Fire and Life Safety Division Office upon completion.
 - e. Additional firefighting equipment should be considered when:
 - There is a major renovation to an occupied floor (contractor provided)
 - There is a fire watch implemented for an occupied building (contractor or OESO-Fire and Life Safety Division Office provided)
 - There is an impairment to a kitchen suppression system (OESO-Fire and Life Safety Division Office will provide class-K and ABC extinguishers, as needed.)
 - The OESO-Fire and Life Safety Division Office will provide affected building occupants additional training when these measures are put into effect.
 - f. Construction areas shall be separated from an occupied building utilizing smoke-tight or non-combustible (or limited combustible) materials that will not contribute to the development or spread of fire.
 - g. During periods of construction and renovation requiring ILSM

implementation increased surveillance is required to include the building, grounds, equipment, and especially the construction site, storage areas, excavation sites, and field offices.

- The general contractor shall perform these actions on an ongoing basis while the site is active
 - Duke University project managers and OESO-Fire and Life Safety Division Office shall perform these actions at least weekly.
- h. During periods of construction and renovation in occupied buildings the Duke University project manager and general contractor shall develop a plan prior to construction beginning that will enforce storage, housekeeping, and debris-removal practices that reduce the flammable and combustible fire load to the lowest feasible level. This plan will be reviewed by OESO-Fire and Life Safety Division Office prior to construction beginning.
- i. When exit configurations are altered during periods of construction or renovation that will be impacted longer than 30 days, one additional fire drill per quarter shall be conducted.
- NOTE: The additional fire drill will not utilize the fire alarm system. They will be initiated verbally.
- j. The OESO-Fire and Life Safety Division Office will work with Duke University project management teams from FPDC and FMD to provide education to promote awareness of building deficiencies, construction hazards, and temporary measures implemented to maintain fire safety when these hazards are not correctable within a 24-hour time period and when any administrative actions are taken for ILSM implementation.
- Upon decision that the ILSM will be implemented, OESO-Fire and Life Safety Division Office will disseminate an email to hospital administrative staff, Duke University and contractor project managers, leadership within affected patient care areas and ensure notifications are posted in the immediate vicinity of the affected area.
 - Upon decision that an ILSM will be implemented for a university building, OESO-Fire and Life Safety Division Office will disseminate an email to the facility manager(s), Duke University and contractor project managers, and ensure notifications are posted in the entrances and affected areas of the facility.

ATTACHMENT 2



Life Safety Deficiency - ILSM Decision Matrix

Assessed By: _____

Assessment Date: _____

Date applicable ILSM initiated (if required): _____

Work Order Number: _____

Interim Life Safety Measures

ILSM not required. Risk is considered manageable with existing conditions	Durham Fire Dept. notification	Fire watch initiated	Signage for alternate exits	Inspect exits on a daily basis	Provide temporary fire alarm and detection systems. Test temporary systems monthly.	Test temporary systems monthly.	Additional firefighting equipment	Temporary construction barriers	Increased hazard surveillance	Enforce housekeeping, storage and debris removal practices that reduce the flammable and combustible load to the lowest feasible level	Conducting 2 fire drills per shift per quarter in affected areas	Provide education - awareness of building deficiencies, construction hazards, and temporary measures implemented and train those affected.
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Protection Deficiencies

Large hole (10% of surface) in a smoke barrier			X									
Large penetrations (10% of surface) in fire barriers			X						X	X		X
10% of surface area of suspended ceilings in corridors	X											
Major renovation of an occupied floor				X			X	X	X	X	X	X
Hazardous areas not properly protected			X						X	X		X

Exit Deficiencies

Blocking off an approved exit		X	X									X
Egress path width reduced			X									X

Door Deficiencies

Door does not close or latch			X									X
												X

Fire Alarm and Sprinkler Deficiencies

Fire alarm (out-of-service more than 4 hours)		X	X									X
Sprinkler (out-of-service more than 10 hours)		X	X									X
Blocked access to the fire department connection		X										

Other Deficiencies

Blocked Hall				X								X
Minimal Deficiency-corrected within 24 hours	X											

Notes:

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ATTACHMENT 4 – RISK ASSESSMENT MATRIX

Risk Level		Severity of the Potential for Fire Damage				
		Insignificant Damage to Property, Equipment	Minor Loss of Process or Slight Damage to Property	Moderate Loss of Process or Limited Damage to Property	Critical Loss of Process or Damage to Property	Catastrophic Loss of Property
Low Risk (4)						
Moderate Risk (3)						
High Risk (2)						
Extremely High Risk (1)						
Likelihood of a Fire Happening	Almost Certain	4	3	2	1	1
	Will Probably Occur	4	3	2	1	1
	Possibly Occur	4	3	3	2	2
	Remote Possibility	4	4	3	3	3
	Extremely Unlikely	4	4	4	4	4

Priority (4) Low Risk Mitigation Measure	The mitigation measure must be completed no later than the next preventive/routine maintenance cycle or through the use of an action plan.
Priority (3) Moderate Risk Mitigation Measure	Health Care: The mitigation measure must be initiated during the current shift and completed no later than the current shift +2. University: The mitigation measure must be completed within 3 calendar days.
Priority (2) High Risk Mitigation Measure	Health Care: The mitigation measure must be initiated during the current shift and completed no later than the current shift +1. University: The mitigation measure must be completed within 2 calendar days.
Priority (1) Extremely High Risk Mitigation Measure	The mitigation measure will be initiated immediately and will continue, without interruption, until completion.

IMPAIRMENT COORDINATION

- A tracking board will be used to log all impairments that are ongoing. Entries shall not be removed from the board until 24 hours have passed with no further impairments in the building.
- Specialists will be responsible for contacting FM Global and Durham Fire Department's Fire Marshal's Office on all required ILSM's involving sprinkler and fire alarm impairments

REQUIRED DOCUMENTATION:

- Bi-weekly construction site visits
- Additional fire drills when required
- Monthly tests of equivalent systems when utilized (contractor provided)
- Training of personnel for additional firefighting equipment
- Training of personnel for alternative exits
- Documentation of exit signage and accessibility daily (contractor provided)