Fire Inspectors & Stage Curtains

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Stage, theater, and auditorium rigging

These present a very complex systems that may incorporate very complex life safety systems.

Fire curtains are not the same as stage curtains!!

Stages, theaters, and auditoriums….

- This discussion today, will only be about stage curtain requirements. Highly recommend some self-study if you have these in your jurisdiction.
- Further research - starting point….Look into fire curtains and smoke vents as they pertain to theaters and stages.

Schools and Public venues

Schools….

- Public venues (theaters, stages, etc.) and schools both utilize the same type of stage curtains and stage rigging.
- Public schools can be a challenge for code enforcement, especially when it comes to something as obscure as flame retardant stage curtains.
- Big difference….Enforcement of code is possible (and a reality) at public (private) venues, but may not be so in public schools.

Do stage curtains really catch on fire? Is this really a concern?

- Most famous – Iroquois Theater, Chicago, 1903, 600+ killed, fire started on stage curtains.
- This disaster was a key point in code development, mostly, egress issues. However, cause of the fire was the stage curtain igniting!
- As usual, something bad needs to happen to encourage change.

Chicago Theater, famous photo.

Chicago Theater Fire was in 1903. Is this a modern day issue? YES…..! Conduct a web search…. there are a lot of fires involving stage curtains.

- 11/5/2010 – Columbus, OH, Ross Theater, stage curtains catch fire during concert with 150 patrons.
- 2/17/2010 – Guyana, stage curtains catch fire at National Cultural Center. Caused by stage lights.
- 3/23/2009 – Watertown, WI, High School. Stage lights too close to stage curtains ignite them.
- 2/10/2011 – Merrilville, IN, Star Plaza Theater. Stage curtain catches fire during circus, 1000 person auditorium. Caused by hot stage light.
- 9/20/2011 – Ranco Verde, CA, High School, stage curtain catches fire, undetermined cause.
- 12/13/2012 – Enid, OK, Elementary School, stage curtain catches fire, stage light too close.

The issue…..

- Stage curtains do catch fire.
- Old stage curtains accumulate dust which acts as an accelerant. Stage curtains that are old and dirty are a significant hazard.
- Stage curtains (any curtains) represent a significant fire load. Once alit, the fire will increase in intensity significantly.

Definitions

- NFPA 701 – This is the NFPA standard which measures flammability of fabric. As an AHJ, you can adopt code requiring stage curtains pass an NFPA 701 test.
- NFPA 705 – Match Flame Test
- Flame Retardant – FR – these fabrics have been treated with chemicals to make them flame-proof. This treatment wears off over time. Annual or semi-annual NFPA 701 tests are recommended.

Video of NFPA 701 test

Definitions (continued)

- Inherently Flame Resistant – IFR – Manufactured to be flame resistant without any chemical treatment. Still recommend periodic NFPA 701 testing.
- Durably Flame Resistant – DFR –or- Permanently Flame Retardant – PFR – Non combustible for useful life, even after cleaning. Normally used for fire curtains (not stage curtains)

Definitions (continued)

- Non-flame resistant – NFR – Fabric is not flame resistant, but can be treated to be such.
- Can not be made fire retardant – CNFR – Certain fabrics cannot be successfully treated to be fire resistant.

How does this apply to schools and school inspections??

OSFM has a “check box” for stage curtains on the new school inspection form…..

all) (256) Stairwells (273) Swimming Pools (292)

FIRE ALARM SIGNAL - AUDIBILITY

eral (11) Auditoriums (43) Automotive Shops (52) Boiler
ms (72) Cafeterias (86) Greenhouses (133) Gym &
tipurpose Rooms (144) Home Economics (152) Industrial
s (162) Library/Media Center (195) Mechanical Rooms (199)
ic Practice Rooms (201) Shower/Locker Room (238)
mming Pools (295) Toilets (308) Woodworking Shops (316)

FIRE ALARM INITIATING DEVICES

Detectors Arts & Crafts Rooms (29) Auditoriums(44) Auto
os (53) Boiler Rooms (73) Cafeterias (87) Computer Hub
et (102) Greenhouses (133+134) Home Economics & Family
ices Rooms (153) Industrial Tech Labs (163) Kitchens (177)
ary/Media Centers (196) Mechanical Rooms (200) Photo
eloping Lab (209) Projection Rooms (217) Science Labs (226)
es (Small) (259) Stage with Storage Underneath (267)
rwells (277) Storage/Supply Closets (284) Teacher's
krooms & Lounges (302) Woodworking Shop (317)
nual Fire Alarm Stations General (12)

FIRE RATED CONSTRUCTION

& Crafts Rooms (28) Auditoriums(42) Auto Shops (51)
er Rooms (70) Cafeterias (85) Classroom Doors (94+95)
idors (112) Protection of Openings near Fire Escapes (130)
enhouses (132) Gyms & Multipurpose Rooms (143) Home
nomics & Family Services Rooms (151) Industrial Tech Labs
) Kitchens (176) Library/Media Centers (194) Mechanical
ms (198) Photo Developing Lab (208) Projection Rooms
) Science Labs (225) Stages (Large) (245) Proscenium Wall
) Stages with Storage Under (265) Stair Enclosure (275)
age/Supply Closets (283) Classroom Storage/Janitor Rooms
) Swimming Pools (294) Teacher's Workrooms & Lounges
) Woodworking Shop (315)

Auditoriums (39) Cafeteria (82) Corridor Dead Ends (109) Gyms & Multipurpose Rooms (140) Library/Media Centers (191) Swimming Pools (291)

11 FIRE EXTINGUISHERS

General (16) Kitchens (178) Woodworking Shop (318)

12 NUMBER OF EXITS

Auditoriums (38) Cafeteria (81) Corridors (108) Gyms & Multipurpose Rooms (139) Library/Media Rooms (190) Shower and Locker Rooms (235) Swimming Pools (290)

13 INTERIOR FINISH/DECORATIONS

Decorative Vegetation (20) Furnishing & Decorations (22) Interior Wall, Ceiling & Floor Finishes (23) New Corridor Artwork (116) Sound Proofing (202) Curtains+Scenery Large Stages (247) Curtains+Scenery Small Stages (258)

14 HOUSEKEEPING/MAINTENANCE

Unobstructed Exits (6) Clearance above Storage (14) Extension Cords & Multi-Plugs (24) Storage Under Bleachers (64) Combustible Storage in Boiler Rooms (71) Storage in Corridors (114) Conveyances do not Obstruct Egress (121) Exterior Stairways (123) Fire Lane Clearances/Marking/Signage (124) FD Connection Clear (125) Fire Hydrants Clear/Maintained (126) Stairwells (272) No Storage in Stairwells (276) Woodworking Shop (321)

15 SYSTEM INSPECTION/TESTING/MAINT.

Testing Emergency Lighting (8) Functional Fire Alarm (10) Sprinkler System (13) Standpipe System (15) Elevator Certificate (122) FD Connection (125) Testing of Fire Escapes (131) Kitchen Exhaust Inspection & Cleaning (180) Kitchen Filter Maintenance (181) Cooking Extinguishing Systems (182)

But what are we checking for? What does the code say?

- Public Schools in IL defer to the code that was used when the school was built…usually BOCA or UBC.
- BOCA and UBC both require that re-treatment of textiles (stage curtains) be made as often as necessary to maintain the flame resistance of the material.
- Neither of these codes dictates a specific frequency for inspection or treatment. (locally adopt something!)

Code – IFC 2006

- IFC 2006 (or whatever is in your jurisdiction)
- Applicable and enforceable in private schools, theaters, churches, assembly areas, etc.
- Section 807 – Decorative Materials Other Than Decorative Vegetation in New and Existing
- One of the few instances in the I-codes that have retroactivity like LSC.

Code, IFC 2006 (continued)

- General requirements for most use groups.
- States that flame propagation performance must meet NFPA 701 standard.
- If a material is required to be Flame Resistant, it shall be tested by an approved agency. Reports of this test shall be made available to Fire Code Official.
- Fire Retardant coatings shall be maintained to retain effectiveness.

Code, IFC 2006 (continued)

- No where in IFC are retreatment or testing frequency noted.
- As AHJ you can defer to industry/manufacturers specifications.
- Many companies offer NFPA 701 testing on site and the ability to treat.
- These companies will also “certify” how long the FR treatment is good for.

Code – LSC

- Section 12.4.5 – Stages and Platforms
- Flame retardant requirements are identified. As in IFC, NFPA 701 standard must be met.
- Section 10.2.6 – Flame-Retardant Coatings
- Many sections of LSC refer back to this section.
- This Section calls for maintaining effectiveness of the treatment under service conditions encountered.
- As in IFC, frequency for testing and re-treatment are not identified.

Companies

- American Drapery Cleaners and Flame proofers, 2235-39 Roscoe Street, Chicago, IL 60618, 773-472-4066

Conclusions

- Most applicable codes recognize the hazard stage curtains present. (high fuel load, accelerant, etc.)
- None of the modern day codes indicated frequency of testing or treatment.
- Deferring to manufacturers specs is one option, but this does not account for operational environment.
- Locally adopting test/treatment frequency is the safest.

Questions? / Comments

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