

**HIGH-RISE FIRE &
LIFE SAFETY
DURING MAJOR
REDEVELOPMENT
AT THE WILLIS
TOWER**



WILLIS TOWER: BUILDING FACTS

- Located in Chicago, IL USA
- Opened in 1974
- 110 stories
- 1,450 feet high
- 1,733 feet including the antenna towers
- 4.5 million gross square feet of floor space
- 2,232 steps to the roof
- 16,100 windows
- 103 elevators
- Average sway is 6" from true center

Willis Tower



WILLIS TOWER: BUILDING FACTS

- Over 50,000 miles (80467.2 Km) of electrical wire
- Approximately 43,000 miles (69201.792 Km) of telephone cable in the building
- Over 13,000 employees & visitors in the building daily, Monday - Friday
- Approximately 25,000 entries into the building daily
- 103 floor is a tourist attraction
- 1.7 million Skydeck visitors annually
- Four states, Indiana, Illinois, Michigan, and Wisconsin are visible from the Skydeck on the 103rd floor
- Record Skydeck daily attendance is 14,600



WILLIS TOWER: BUILDING LIFE SAFETY SYSTEMS

- Full sprinkler system (mostly wet system)
- 10 fire pumps
 - 500 GPM to 1,500 GPM
- 3 Water Tanks
 - 5,000 – 10,000 Gallons
- 28 risers in 7 standpipe zones
- 2 Generators serve life safety equipment
- Public address system



WILLIS TOWER: REDEVELOPMENT PROJECT

\$500M Redevelopment



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CATALOG FACTS

- 300,000 sq. ft.
- 4 floors
- Fully sprinklered
- Roof event and gathering area
- Entire 3rd floor is conference and temporary office
- Existing tower life safety systems integrated to Catalog space
- 5 story atrium
- Main entry to Skydeck attraction
- Private underground parking garage entry and egress





Willis Tower





Willis Tower





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EXPECT THE UNEXPECTED S__T HAPPENS (A LOT)

1. Pandemic
2. Major flooding x 2
3. Total power outage
4. Protests/looting
5. Broken pipes
6. Frozen pipes
7. Fires
8. Derecho
9. PA system failure
10. Smoke
11. Extreme cold interior temperatures
12. Rain in building
13. Slippery walkways
14. Items falling from ceiling



CONSIDERATIONS

- 10 things to consider
 1. Perception
 2. Meet & Greet
 3. Expectations
 4. Risk
 5. Exercise
 6. Access & Navigation
 7. Moving People
 8. Breaking Bread
 9. Hot-work & Impairments
 10. Communications





1. PERCEPTION

- Understand that each groups perception of safety may be different
- Perception is not reality
- What matters is the life safety goal, not the process
 - $1+2+3+4+5 = 15$
 - $5+5+5 = 15$
 - $10 + 5 = 15$

2. MEET & GREET

- Identify key management early on
- Meeting should be cordial
- Coffee
- Strive to create great relationships
- Walk & talk



3. SETTING EXPECTATIONS

- Discuss incident management
- Notification
- Meetings
- How will issues be handled

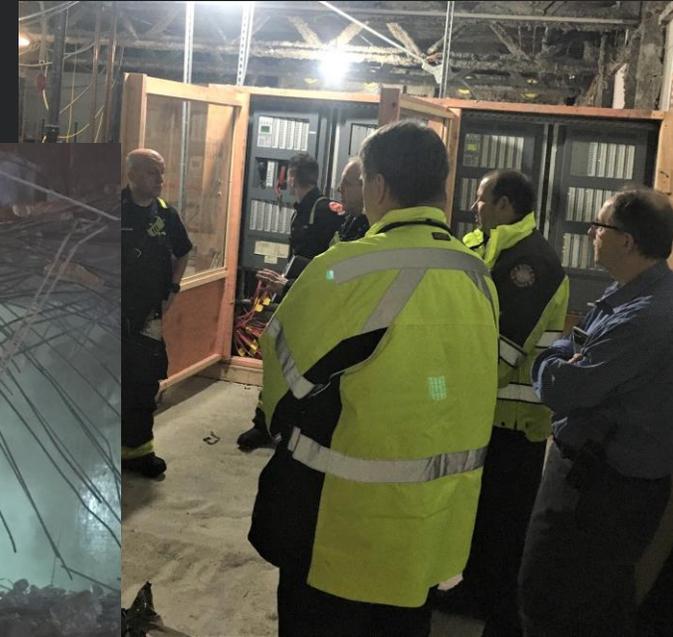


EXPECTATION



4. RISK AWARENESS

- Risk is ever-changing and evolving (daily)
- Establish a risk identification process for all life safety system work
- Safety walks (daily)
- Understand risks on all sides



5. EXERCISE

- Bring groups together to act out risk realization
- Integrate construction into emergency response
- Who
 - Building
 - Construction
 - External Agencies (several)
- Use step exercises for longer projects
 - Call notification
 - Tabletop
 - Simulation
 - Full-scale
- Build in opportunities to work together.
 - Add injects that force group decisions
- Document for insurance, due diligence
- After action reporting



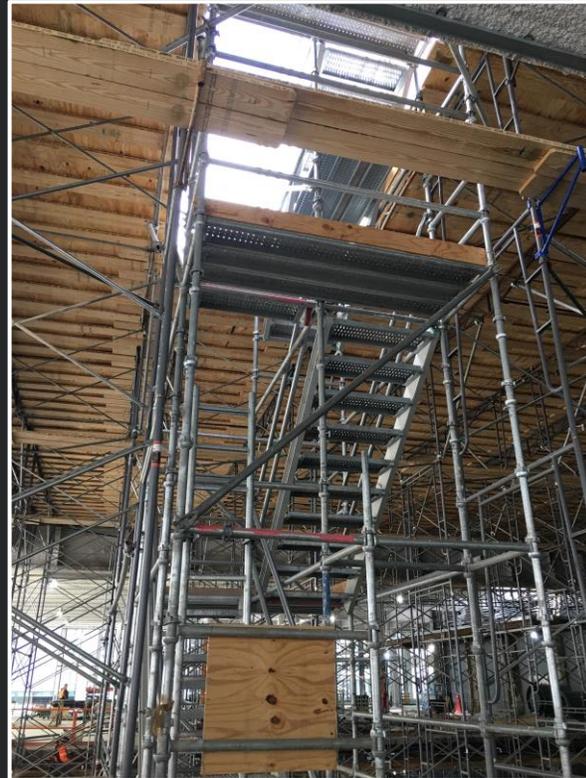
6. ACCESS & NAVIGATION

- Access for FD
- Access for PD
- Access for Medics
- Navigating construction zones
- Mass evacuations
- Signage
- Drills
- Walkthroughs



7. MOVING PEOPLE

- Evacuation
- Relocation
- Shelter in Place
 - Active shooter
 - Severe weather
 - Haz-Mat incident



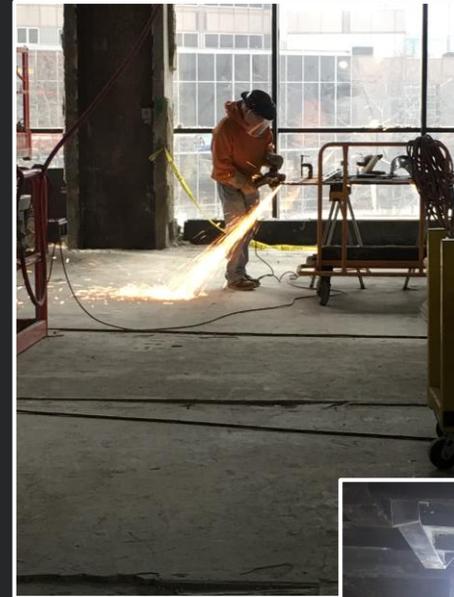
8. BREAKING BREAD

- After exercises
- During meetings
- Make a separate part of event
- Include all



9. HOT WORK AND IMPAIRMENTS

- Define what hot-work and impairments mean to each group
- Identify how it will be handled
- Get input from insurance and risk
- Create a hybrid plan
- Make part of safety walk
- Do spot checks
- Communicate to all who need to know



10. COMMUNICATION

- Crisis communications
- Signage
 - Emergency
 - Directional
 - Informational
- Identify all stakeholders
- Establish a rhythm
- Anticipate communication needed



SUMMARY

1. Perception
2. Meet & Greet
3. Expectations
4. Risk
5. Exercise
6. Access & Navigation
7. Moving People
8. Breaking Bread
9. Hot-work & Impairments
10. Communications



QUESTIONS

- Thank you for your attention
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QUESTIONS?



REIMAGINING AN
AMERICAN
ICON

FROM STREET TO SKY

