HIGH-RISE PLANS

PURPOSE

The purpose of this document is to identify key strategic and tactical objectives for Phoenix Regional operations in High-rise buildings. These include initial and ongoing building size-up, appropriate use of the risk management profile, assessment of occupant location and removal, and effective sectorazation within the incident structure. In the Phoenix Region, a high-rise building is defined as 6 elevator stops or greater or 75 feet in height or higher.

It is important to understand that fighting a fire in a high-rise building is a complex operation that must be based on a solid foundation of incident command and pre-fire attack support sectors. A standard approach to fires in high-rise buildings will enhance our ability for a successful operation. The omission of critical steps in the beginning of an incident can delay suppression operations and risk the lives of firefighters and civilians within the building.

Additionally, we can expect that a working high-rise fire will necessitate the deployment of over 100 firefighters. No Fire Department within the automatic-aid system will be capable of fighting a high-rise fire alone. Key to our shared operational success and safety is a commitment to the principles identified within this SOP. This SOP is not intended to address all potential emergency incidents or fire scenarios that could occur in a high-rise building. This SOP is intended to make sure all automatic aid partners are operating on the same page. The content of this regional SOP is based on case history from historical fires as well as best practices identified.

HIGH-RISE BUILDING SIZE-UP

Exterior View:

- Smoke and fire is often hidden from the exterior due to the building being well sealed and the large area for smoke to accumulate inside the building
- Determine if the building is residential or commercial
- Estimate the potential for falling debris and/or major structural collapse
- Guide responding companies around these hazards

Interior View:

- Building personnel accounts
- Is the building being evacuated?
- Alarm indications
- Stairwell identification
    - Number of stairwells?
    - Conditions within?
    - Standpipe location(s)?

  - Roof access?
  - How are they labeled?
  - Have the elevators been recalled?
- What resources are responding?
  - Are additional alarms needed based on observations?
  - Consider a minimum 3rd alarm assignment in working high-rise fires

RISK MANAGEMENT ASSESSMENT

- Is the building occupied?
- Commercial or Residential?
- Time of day and day of week?
- What caused this incident?
  - Accidental fire
  - Intentional
  - Unknown?
- How has this affected building integrity?
  - Is the building going to allow fire and/or rescue operations?
  - Will FD inaction cause the building to collapse into other buildings?
- Fire location?
  - What floor?

TACTICAL OBJECTIVES

Rescue:

- Secure and maintain viable evacuation and fire attack stairwells
- Elevators will not be used as a means of rescue in smoke or fire conditions
- Each of the following will be declared to Command or AHQ prior to making way to the fire floor:
  - Evacuation stairwell = stairwell dedicated to the removal of occupants from the building
  - Fire attack stairwell = stairwell dedicated to the fire attack operations with standpipe connections and roof access. *stairwells with standpipe connections without roof access that are closest to the fire may be preferable, but require special attention to ventilation techniques
- Attempt to diminish smoke conditions
  - Assess and control HVAC systems to eliminate smoke & fire spread
  - Any action that may change smoke or fire conditions should be coordinated with Command
  - Identify stair access to roof

    - Rescue of immediately threatened occupants
        - Use internal PA systems to direct occupants
        - Protect in place?
        - Remove to safe location?
        - Removal from the building?
- Establish evacuation plan for the remainder of building
    - Remove fire from the victims or victims from the fire?
    - Remove/guide occupants to lower floors or out of the building all together
    - Is protection in place a safe option?

Fire Attack:

- Assess fire and smoke conditions
    - Size of the fire
    - Resources in position to make an attack
    - Overall elapsed time for set up prior to fire attack
- Provide water supply via standpipe system
    - Built in fire pump or pumped by apparatus?
- Stop the production of heat and smoke
- Manage the spread of heat and smoke throughout the building
- Use of building systems includes but is not limited to:
    - Sprinklers
    - Standpipes
    - Fire pump
    - Secure HVAC
- Use of FD equipment includes but is not limited to:
    - PFD vent truck
    - Utility truck to support air standpipe systems
    - Battery/electric fans carried on apparatus
    - Natural ventilation

Property Conservation:

- Often involves high value occupancies
- Extensive damage is not usually contained to one floor alone

DEPLOYMENT

First arriving Fire Department Engine or Ladder Company:

- Assume Command
- Enter the building and locate the Fire Control Room or the fire alarm panel
- Meet with the building engineer (if available)

- Establish Building Systems Sector with a minimum of 1 member from the initial Company, and preferably a full company. If a single member is managing Building Systems, a full crew will be assigned to assist the member as soon as practical.
- Accountability passports from the first arriving companies will be left with Systems Sector until Lobby Sector is established
- FD Rescues should not take command if arriving first

Second arriving Engine:

- Report on scene
- Secure a water supply and spot apparatus as close to FDC as possible
- Establish water connection to FDC(s)
- Engineer should remain with the pumper
- Captain and remaining crew will proceed to the Fire Control Room or alarm panel to meet with the initial Incident Commander for assignment, keys, and phone when these resources are available
- Accountability passport will be left with Building Systems Sector until Lobby Sector is established
- If assigned to Stair Team, ensure stairwells are assessed and that the fire attack and evacuation stairwell(s) is identified and announced

First arriving Ladder Company:

- Spot in a position to utilize aerial device for rescue, water supply, or defensive firefight if necessary
- Brings 2 ½ high-rise packs with smooth bore nozzle
- Captain and crew will proceed to the Fire Control Room or fire alarm panel to meet with Command for assignment, keys, and phone

All additional operational resources:

- After a declaration of a “working fire,” once on scene, **all 1st and 2nd Alarm companies should proceed directly to the building and report to Lobby Sector to decrease transit time once an assignment is made.**
- Initial communications between the Incident Commander and Lobby Sector may take place on the tactical channel

Lobby Sector will be operating on the Staging radio channel once Command has transitioned to the Command Van as per the standard Phoenix Regional staging procedures. Lobby Sector, Staging Sector, and Command will coordinate arriving companies for accountability until assigned to a tactical position in the building.

SECTORIZATION & SECTOR PRIORITIES

To assure the effectiveness, safety, and accountability of fire companies, all sectors should be managed by *full, intact crews. Building Systems may initially be manned with a single person but will be given a full crew as soon as practical. **Command will not assign single members to manage sectors to rush suppression efforts on the fire floor.**

Building Systems:

- *Due to the amount of initial activities and communications, a full crew should be dedicated to the fire control room from the beginning of the operation. If a single member is left to establish Building Systems a full company will be assigned to assume the sector as soon as practical.
- Companies assigned to lead a sector should be directed by the initial Incident Commander to report to Building Systems for assignment, phone, and keys
- Manage distribution of building keys, fire phones, and floor maps
- Manage internal building systems (ventilation systems, elevators, door lock controls, etc.) and communications
- Coordinate closely with the building engineer (if the building engineer must leave the FC room, a firefighter with a radio will accompany them)
- Provide direct communications (via radio or red fire phones) to stair teams and fire attack companies regarding alarm and building information
- Coordinate communications regarding effectiveness of ventilation systems between stair teams, Ventilation Sector, and Fire Floor
  Sector

Fire Floor:

- Minimum of three companies
- Will establish “on-deck” staging area for companies in a “clean” environment (preferably 2 floors below the actual fire floor to allow the floor directly below the fire to be used to lay out attack lines)
- Announce the on-deck location to command
- All fire floor operations will be initiated from the on-deck floor.
- Assures attack line, backup attack line and stairwell protection line are in place and the roof access door is in the closed position and stair team is out of the stairwell in a safe location prior to making entry onto the fire floor.
- As the attack team makes entry to the fire floor, command will announce “all units hold all non-emergency radio traffic” to allow the attack team to make an initial assessment and report to command.
- Manage company work cycles in stairwells and on fire floors

- Communicate with all sectors and command to establish effective support for fire attack
- The BC/FIT will assume the fire floor sector from the on-deck floor.
- The BC/FIT assigned to the fire floor will deliver the RIC bag to the on-deck location
- Companies will recycle to/from the on-deck location
- Phoenix BC9 should be considered to manage the Fire Floor Sector when possible

Lobby:

- Lobby Sector involves many different tasks and can be initially very labor intensive. Two crews may need to be dedicated early on to properly establish lobby operations and communications.
- Create lobby staging area for crews
- Locate freight and/or Fire Service Access Elevator (FSAE) and determine if it is safe to use
    - If safe to use, assign crew members for proper roof escape hatch preparation of the car, and a dedicated operator
    - Elevators will not be used if smoke or water conditions exist in the elevator hoist way
- Works directly with Command and level 2 staging on the staging radio channel to direct fire companies in Lobby Sector to tactical assignments
- **All companies on first 2 alarms should proceed directly to Lobby**.
    - This allows rapid deployment to sectors from within the building
- In a working fire, maintain a minimum of a 1st alarm of companies in the lobby at all times
- Crew accountability must be tracked based on the assignment
    - All crews ultimately should be tracked by Command
- Manage lobby level elevator access
- Assist with safe egress of evacuating occupants
- Work with law enforcement to prevent re-entry of evacuated occupants

Ventilation:

- Manages communications with Stairwell teams (Fire Attack Stairwell team/Evacuation Stairwell Team) and coordinates with building systems
- Stairwell Teams will precede fire attack companies to identify the fire location, clear the stairwells of occupants, and manage roof access
- Coordinates built in ventilation/pressurization systems and roof access to maintain a habitable environment, and smoke removal as needed.
- Manage FD ventilation equipment and effectiveness
- Communicate with Fire Floor and Building Systems regarding effectiveness of ventilation systems

Resource:

- Establish equipment pool in building
- Needs to be well below the "on-deck" floor
    - Decreases the likelihood of becoming contaminated with smoke

Treatment/Transportation:

- May be remote from building
- Triage is key
- Large volume of resources may be needed

Rescue:

- Manage removal of trapped victims or patients from the building

Battalion Chief assignment priorities:

(Depends on conditions and actions in the building)

- Building Systems
- Fire Floor
- Lobby
- Ventilation
- Occupant Services
- Resource
- Treatment (if required)
- Transportation (if required)
- Rescue (if required)

Considerations:

- Incident may quickly become larger than sectors can support
- Identify trigger points that should automatically lead to expansion of the incident organization
- Branches that may be needed:
    - Fire
    - Medical

~~PD~~ Law Enforcement Liaison

- Coordinate all law enforcement functions within our operations
- C958/TLO

RESCUE PROFILE

- Most severely threatened
- Largest number

- Escape routes or methods of removal
- Protect in place
- Use of law enforcement in Lobby Sector
- Each building is directed by fire code to have an evacuation plan including a meeting place outside, away from the building

TREATMENT NEEDS

- Location of treatment area
  - Away from building and fire operations
- Resources needed for treatment and extrication if required
- Utilize law enforcement to secure corridor

FIRE ATTACK

- Crew accountability
- Stairwell teams
  - Immediate deployment to stairwell
  - Provide C.A.N. report from stairwell
  - Assist in establishing operational/tactical priorities
  - Access roof and control access door
  - Closed for fire attack
  - Open for coordinated ventilation operations
  - Rescue or redirect immediately endangered occupants
  - Not involved in fire attack
- Use of elevators
  - Typically, not initially used if fire floor is 10 or less
  - Evaluate the elevator hoist way to determine if conditions exist that prohibit elevator use (smoke, water, sensor indications, blind shaft)
  - Freight elevators are preferable because they are usually larger and service every floor
  - FSAE are best when available as they are well equipped for fire operations
  - Elevator must be Phase II capable (manual operation inside car with key)
  - Elevators must be prepped for use under fire conditions
    - Roof hatch opened
    - Appropriate tools present including telescoping ladder
    - Dedicated FF as an operator
- Hose line deployment
- Small diameter hand lines
  - Fire attack 1 ¾ or 2 ½ (offensive type activity)
  - Back up line with 2 ½ with smooth bore nozzle
  - Stairwell protection with 2 ½ with smooth bore nozzle

- Larger diameter hand line or master streams
    - Prevent fire extension floor to floor (defensive type activity)
- Coordination of support activities
    - Building system ventilation and pressurization
    - FD equipment ventilation (vent truck)
    - Utility Truck for support of built in Air Standpipe System (if equipped)
    - Provide air cart to “on-deck” location for Fire Floor Sector
- Crew staging and logistical supply
    - Air
    - Extra bottles
    - Air cart/Utility trucks
    - Manpower

UNIQUE HIGH-RISE SAFETY CONSIDERATIONS

- The standard BC/FIT Sector/Safety Officer will operate in key tactical positions
    - Provide for management of communications, accountability, air management, and work cycles in a standard manner
- All operations in high-rise buildings must be tied to areas of safe refuge
    - Clean environment for changing SCBA bottles
- Air Management
    - All crews entering building must bring a minimum of 1 spare SCBA bottle
    - 1 spare per crewmember initially
    - Due to nature of the building, firefighters can’t just step outside to change their SCBA bottle
        - When using stairs to ascend, crews must collectively check their air supply every 5 floors, managed by the Captain
        - Areas of “clean” atmosphere must be identified for retreat
        - These conditions may change rapidly
- Atmospheric monitoring may be necessary
    - CO monitoring in stairwells
    - Invisible dangerous gases
- Stack effect
    - Unique atmospheric conditions during summer and winter months affecting smoke movement inside the building
- Building security systems
    - Electronic locking mechanisms in stairwells and on floors
    - Possibly trapping occupants or firefighters
- Fire on first floor, in lobby, or below grade (sub-sectors)
    - Cuts off the natural escape routes for occupants
    - Inhibits the use of Fire Control Room and building systems

- Fire attack may need to come right off Engine companies on the street level

SPECIALTY CONSIDERATIONS

Communication

- Fire Department testing has indicated that the most difficult areas to communicate to and from will be fire control room, stairwells, and elevators
- The initial I.C. must be able to clearly communicate with incoming companies. A position close to the fire control room is preferred. Ascending the stairwell is not a good location for the I.C. due to potential communication limitations
- Use of portable high-rise radios carried on BC9 in fire control room and fire floor sector
- Haz Mat
- TRT
- Air operations
    - Recon
    - Victim removal
    - Deliver firefighters to roof with equipment

INITIAL OPERATIONAL SECTOR SETUP

The model below assumes readily available resources and is meant to be a template for working high-rise firefighting operations in a high-rise building. It provides the initial I.C. a simple plan to establish the required sectors that will maximize safety, communications, and effectiveness. Having the listed sectors in place with coordinated communications should precede the fire attack. The I.C. must assure the tactical decisions made will ensure the safety of building occupants and firefighters.

First Company (engine or ladder):

- Gives an on-scene report of exterior conditions (further report will follow once information is gained from the alarm panel)
- Establishes Command
- Proceeds with crew to the Fire Control Room
- Captain remains the initial I.C.
- Remaining personnel on company manages **Systems Sector** duties in the Fire Control room
- Early balance and additional alarms. Working Fires require a minimum of a 3rd alarm.
- 1st and 2nd alarm companies will come directly to the building

*Due to the amount of initial activities and communications, a full crew should be dedicated to the fire control room from the beginning of the operation. If a single member is left to establish Building Systems a full company will be assigned to assume the sector as soon as practical.

Next Engine:

- Connect to the FDC of the building and leave the engineer
- Meets with the I.C. in the Fire Control Room for fire phone and keys
- Assigned by command to identify the attack stairwell closest to the fire with standpipe and preferably roof access, and assume **Stair Team** (designation will be whatever the building designation is i.e. stairwell A = Stair Team A)
- Stair Team will:
    - Only take air bottles, irons, and a PW can (no hose lines)
    - Quickly evaluate each floor for conditions
    - Redirect evacuees to the evacuation stairwell
    - May need to coordinate with Systems to make a PA announcement to building occupants
    - If smoke conditions are encountered during assent, coordinate with Systems Sector for smoke removal
    - Identify the fire floor location and announce to command
    - If the fire is minor (trash can or kitchen appliance) and can ~~be~~ reasonably be controlled by a PW can, extinguish the fire.
    - Assure the sprinkler isolation valve is in the “OPEN” position
    - Proceed to the roof access door
    - Control roof door as needed
    - Stage in a safe location out of the stairway during the fire attack

Next Company (3rd):

- Assigned the Attack Team leader (4th and 5th arriving companies will be assigned to the Attack Team)
- Brings air bottles, irons, standpipe bag, and high-rise packs
- Meets with the I.C. in the Fire Control Room for fire phone and keys
- Coordinates with the 4th and 5th in companies on ascent
- Assures one 1 ¾ or 2 ½ hose line and two 2 ½ hose lines (backup and stairwell protection) are being carried up
- Assembles the team and stages near the stairwell until the Stair Team verifies the fire floor location
- Communicates the on-deck floor location to Command (two floors below the fire floor)
- Assumes floor # Sector (Sector 15, if the fire is on floor 15)
- Assures the sprinkler isolation valve is in the “OPEN” position
- Makes hose line hook ups in the stairwell and the floor below the fire (if available). Initial 1 ¾ or 2 ½ attack line, 2 ½ back up line, and 2 ½ stairwell protection line from a lower standpipe connection
- Coordinates with Stair Team to assure the roof door is closed and team is out of the stairwell prior to making entrance to the fire floor

- Communicates with the I.C. that the Attack Team is ready to make the attack and the roof door is closed, with the Stair Team is out of the stairwell.
- Communicates a CAN report to Command ASAP

Next Company (4th):

- Assigned to be part of the Attack Team
- Brings air bottles, irons, standpipe bag, and high-rise packs
- Meets with the Attack Team leader and the I.C. near the Fire Control Room

Next Company (5th):

- Assigned to be part of the Attack Team
- Brings air bottles, irons, standpipe bag, and high-rise packs
- Meets with the Attack Team leader and the I.C. near the Fire Control Room

Next Company (6th):

- Assigned to be Lobby Sector
- Meets with I.C. in the Fire Control Room for fire phone, keys and accountability passports of all previously assigned companies
- Manages accountability for companies assigned within the building
- Assesses the elevator(s) hoist way for signs of smoke, fire, or water
- If the elevators will be used, an additional company will be assigned to Lobby to provide elevator preparation and a dedicated car operator
- Maintain a First Alarm of available companies in the lobby
- Once the Command Vehicle is set up and the I.C has transitioned, the primary communication between Lobby and Command will be on the staging channel

Next Company (7th) (unless required to reinforce initial sectors):

- Assign to **Evacuation Stair Team**. Stair team (designation will be whatever the building designation is i.e. stairwell A = Stair Team A)
- Stair Team will:
    - Only take air bottles, irons, and a PW can (no hose lines)
    - Quickly evaluates stairwell conditions
    - If smoke conditions are encountered during assent, coordinate with Systems Sector for smoke removal
    - Assists evacuees with egress
    - May need to coordinate with Systems to make a PA announcement to the building

Additional Companies:

- Consider early reinforcement of on-deck companies to the Fire Floor
- Match the commitment of initial companies with on-deck companies
- On-deck companies will provide RIC capabilities
- Floor above fire floor