



Lauderdale-By-The-Sea Volunteer Fire Department

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Section: 603	
Subject: Commercial Occupancy Fires	
By Order of the Fire Chief: Steven Paine	

Section 603 - Commercial Occupancy Fires

Purpose

To provide a Standard Operating Guideline (SOG) for response and operations at commercial occupancy fires. Personnel must be thoroughly familiar with basic fire ground procedures since this SOG only covers occupancy-specific information and shall serve as a guideline.

Scope

Commercial occupancies are generally one to two-story structures designed mainly for occupancy by retail and public assembly businesses. Buildings may be warehouse type structures, strip malls or other commercial structures. Some commercial occupancies may also contain residential units within them. Due to their construction features, contents, and different occupancies within them, fires in these structures pose a disproportionately high hazard to firefighters compared to civilians. Firefighter safety should be the primary focus while addressing tactical concerns.

Responsibility

It is the responsibility of the Fire Chief, or designee, to review and update this procedure as needed. It is the responsibility of all Officers to ensure that this procedure is adhered to. All personnel are responsible for the basic knowledge and understanding of this procedure.

Definitions

Attic -The space between the topside of the ceiling and the underside of the roof in a building with a peaked roof.

Canopy -A supported roof like covering which projects from a wall.

Cantilever -A horizontal structural member supported on one end only.

Cockloft - In a structure with a flat roof, it is the space between the topside of the ceiling and the underside of the roof in a building with a flat roof.



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Marquee -Lighted reader boards or signs usually cantilevered by a supporting wall.

Parapet -the portion of a wall continued above the roofline used to hide unsightly features on the roof.

Plate Glass -Regular, untreated glass that when shattered creates irregular-shaped shards.

Scrub Area -The entire area on the face of the structure that can be effectively reached by an aerial ladder without repositioning the apparatus. For rear mount aerial apparatus, this area is maximized when backing into position.

Service Corridor - An enclosed hallway providing access to the rear of strip mall occupancies. Present in those strip malls where the rear of the occupancies face each other and do not exit directly to the outside.

Split Lay -A water supply evolution where two apparatus are utilized to establish a single supply line. The evolution typically involves one apparatus beginning a hose lay toward the fire followed by a second apparatus conducting a reverse lay from the first unit's hose to a water source.

Strip Mall/Strip Center - An open area shopping center where stores are arranged in a row and open to a common parking area.

Tempered Glass - Glass that has been heat-treated to break into small fragments. It is required by code where falling glass shards from plate glass would present a hazard to people.



Procedures

I. SIGNIFICANT CONSTRUCTION FEATURES

General

1. One of the most common commercial occupancies in South Florida is the strip center or strip mall. These structures are most commonly one or two stories in height and contain a myriad of occupancies. These buildings can be constructed entirely as one structure or may contain open divisions used as walkways connecting the front and rear parking areas
2. The location of the stairs leading to the second floor is not always obvious. Some may be located in a vestibule accessed through what appears to be the front door to one of the occupancies; others may only be accessed from the sides or rear of the structure.
3. Elevators may or may not be present.
4. Strip malls may be designed to contain one or more large "anchor" stores. When present these stores generally have concrete block and stucco (CBS) fire walls, fire alarms, and sprinkler systems.

Wall and Roof Construction

1. Exterior walls are most commonly CBS. Except for large "anchor stores", individual occupancies are divided by drywall partitions from floor to ceiling. Anchor stores are generally separated by CBS firewalls.
2. Roof support systems are generally lightweight wood or metal trusses, poured reinforced concrete, twin T, and conventional beam and rafters in older structures. Roof decking may be tongue and groove, plywood or other compressed wood sheets and metal decks with lightweight gypsum concrete. Roof coverings can be of the same variety found in single-family homes (tile, shingles, tar and gravel, metal, etc.).
3. Tilt-up construction is becoming very popular in South Florida for commercial structures. Tilt-up buildings have solid, reinforced concrete exterior walls and normally feature lightweight concrete roofs supported by metal decking and metal trusses. Although the exterior walls seldom collapse, expect early collapse of the roof and portions of interior construction when exposed to heavy fire.
4. Overhanging roof facades are generally attached to the front exterior supporting wall and attached by various construction methods. Some older structures may have a facade that is cantilevered on to existing trusses and is continuous to the attic space in order to give a



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flat roof the look of a mansard or some other more decorative roof style. In either case they both provide overhang protection from the weather and an area for store signs and lights.

These overhangs provide a path for fire to travel on the outside of the building and can fail under fire conditions causing a collapse hazard. This collapse may be localized to a single storefront or span the entire length of the building. Extreme care must be exercised in operating underneath and checking for fire extension in such overhangs.

5. Mixed construction features are very common. Assume the weakest construction characteristics until proven otherwise.
6. Heating Ventilation and Air Conditioning (HVAC) units for individual occupancies are most commonly placed on the roofs and towards the rear of these buildings. These AC units are very heavy and may precipitate roof collapse under fire conditions.

C. Ceilings, Attics, and Cocklofts

1. Commercial occupancies are built to allow for many different types and sizes of tenants. In order to accommodate the changing nature of tenants, the wall Partitions will typically extend only to the drop "false" ceiling creating a common cockloft, which in many cases will run the length of the building.
2. There may be drywall fire separations that divide the attic space. Even when present, these divisions may contain openings that will allow fire spread. Until firewalls are verified, all commercial occupancies will be assumed to have one continuous cockloft.
3. Drop ceilings are most commonly comprised of a light gauge metal framework suspended from the underside of the roof with the use of metal hangers or wire. Acoustical ceiling tiles are then inserted into the framework. The entire assembly provides little resistance to heat and fire and should be expected to collapse early. Failure of this ceiling will create an entanglement hazard for firefighters.
4. Multiple drop ceilings may be encountered.
5. Some occupancy in newer buildings or during renovations of older ones does not employ a ceiling at all. The interior is open directly to the underside of the roof with exposed trusses and utility conduits. The structural roof components, which may or may not be sprayed with a fireproofing material, are directly exposed to any resulting fire.

D. Doors and Store Fronts

1. Front doors may be constructed of wood, metal or tubular aluminum frame with tempered glass. These doors are often protected by security bars that may be attached directly to the



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door or attached to the exterior or interior of the structure. These doors may be secured with a pivoting deadbolt lock that cannot be conventionally forced. If a pivoting type lock is identified, they are usually best opened by pulling the lock and manually rotating the mechanism with a screw driver or creating a space with forcible entry tools (gapping the door) and cutting the lock throw with a K-12.

In some cases, overhead rolling doors or hurricane shutters are utilized to cover storefronts during non-business hours. Unless they are of the electric type, most of these doors will be secured utilizing some sort of pad lock, which can be cut permitting the covering to be opened.

2. Storefronts consist of brick, wood, block, poured concrete, and glass in any mixed fashion. The typical storefront configuration is a CBS quarter or half wall continued with plate or tempered glass. This construction is topped by a reinforced concrete tie beam or steel I-beam.

- a. The rear of most commercial occupancies will have either a swinging door, or in some cases, an overhead door. The rear doors are the most often heavily secured to deter burglars.
- b. Generally, access to these buildings will be limited to only the front and the rear. Occupancies on the ends may have additional access points along one side.

D. Floor Construction

1. The ground floor will be poured concrete, which is part of the foundation.
2. Some commercial occupancies are two stories with commerce occupying the first floor and either commerce or residences occupying the second floor. Floor construction for the upper story is generally reinforced concrete, lightweight concrete over metal trusses, or wood flooring over wood trusses.

F. Utility Distribution, Meters, and Shut-off Locations

1. Each unit will usually have its own electrical meter and, depending upon the age of the structure, an electrical shut-off that turns off power to each unit. Meters are located on the rear and side exterior of the building, service corridor, or in electrical meter rooms located at the rear or sides. Meters may or may not be adequately labeled with the occupancy address or unit number.



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2. These occupancies often have electrical vaults with transformers that supply electric power to the entire building internally. If an electrical vault is present, the meters are usually in this same room.
3. Natural gas or Liquefied Petroleum Gas (LPG) will be supplied to restaurants, Laundromats, or any other occupancy that currently has or used to have cooking or heating equipment within them. Gas meters, shut-offs, and LPG tanks will generally be located at the rear of the structure.

G. Fire Protection

1. Many commercial occupancies will be sprinklered throughout. Depending on size, an overhang may also contain sprinkler heads located outside the front wall. Initial actions should include locating and supplying the sprinkler system.
2. Some commercial occupancies will be completely un-sprinklered or be partially sprinklered. Partial sprinkler protection usually covers the larger units or anchor stores only.
3. Fire Department Connection (FDC) may be located away from the structure near a fire hydrant; they may also locate on the rear of the building. Multiple FDCs may be present, each serving a specific large occupancy or section of the building.
4. Cooking equipment will usually be protected with dry or wet chemical suppression systems located in the ventilation hood.

II. PERSONNEL HAZARDS

A. Hazards at these incidents generally involve:

1. Facade collapse without warning.
2. Undetected fire between roof and more than one ceiling.
3. Downed power lines and potentially electrified fences.
4. Boiling Liquid Expanding Vapor Explosion (BLEVE) of containers. LPG cylinder hazards.
5. Roof collapse and wall collapse.
6. Ceiling collapse with wire entanglement.



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7. Intentionally set hazards to prevent unwanted entry.
 8. Vacant or abandoned structures.
 9. Heavy dead loads on roof (i.e., HVACs).
 10. Occupancy ingress/egress limited to the front and rear.
 11. Hazardous materials.
 12. Flammable liquids present at arson fires.
 13. Injury from large glass shards (guillotine effect).
 14. Fall through roof hazards from pre-existing openings that are later covered up with roofing materials only. What is left is a hole that cannot be distinguished from the roof level (ex. removed cooking vent, old skylight).
 15. Unsecured high piled stock and shelving.
 16. Trip or fall hazards.
 17. Alterations to structures leading to increased fire spread potential.
- B. If any hazards to personnel are identified, they must be transmitted over the radio and action taken to mitigate the hazard. An example might be the posting of a firefighter near a downed power line to prevent others from getting near or the reporting of cracks in supporting walls, walls out of plumb, sagging tie beams. etc.

III. APPARATUS ARRIVAL ORDER, PLACEMENT, TASKS, and FUNCTIONS

A. First Arriving Apparatus

1. Regardless of apparatus type, the first arriving company must conduct a thorough size up and provide an initial radio report. The first arriving officer shall establish command. The enunciator panel should be located to determine the location of activated smoke / heat detectors, pull stations, etc. Whenever possible, the system should be silenced to decrease noise levels and improve communications within the building as long as occupant safety will not be compromised.
2. Any personnel hazards must be identified and mitigated.

B. First Arriving Suppression Units



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1. The initial Officer in Charge (OIC) must establish command and determine initial course of action, including exposure protection (interior and / or exterior) or defensive posture course of action. Command presence should be known. At a minimum, the initial size-up should include the following:
 - Command name identification
 - Height and dimensions
 - Type of construction
 - Occupancy type
 - Exposures
 - Method of attack (offensive / defensive)

2. Attention should be given to the following (if warranted)
 - PD for traffic and crowd control
 - Designation of a working fire
 - Call out of an investigator
 - Ensure RIT/RIC is assigned
 - Contact utility provider
 - Special call apparatus or striking additional alarms

3. Administrative page notification is completed

4. First arriving engine apparatus should be positioned in a fashion to facilitate hose line deployment and advancement, supplying a FDC for interior cabinet operation, and / or operating top-mounted master streams.

5. Unless it is not applicable to the particular incident, the final position should not block the most advantageous spot for arriving aerial apparatus (generally the front of the fire occupancy).

6. First arriving aerial apparatus should be positioned to maximize the use of the aerial device for both laddering and master stream applications. Tower ladder apparatus must give strong consideration to the potential for aerial master stream operations, which should preferably be conducted in an offensive posture. The tower ladder bucket should be positioned to operate from the lowest position possible in order to operate and apply the master stream in the most effective and efficient manner. Stretching of hose lines from these apparatus should be a secondary consideration when spotting these trucks.

7. Additional arriving suppression units should support initial actions underway at the scene as directed by the IC. Priority for this company must be in ensuring the initial attack line is in place and operating with an adequate water supply established. The following functions should be accomplished as needed:



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- a. Water supply.
 - b. Assisting with the initial attack hose line placement, when necessary.
 - c. Horizontal / vertical ventilation.
 - d. Back-up lines and lines to exposed areas.
 - e. Search for occupants and fire extension in adjacent and / or exposed units.
 - f. Exposure protection as needed.
 - g. Creating a secondary means of egress, such as opening the rear (anticipate heavy security measures).
 - h. Controlling utilities.
 - i. Placement of ground and / or aerial ladders.
 - j. Salvage and overhaul.
8. Consider locating Knox Box, if present, and obtaining keys to facilitate access to building.

*Note – Commercial occupancies generally require a more cautious approach than a standard residential occupancy. Based upon current and anticipated fire conditions; strong consideration should be given to ensuring that adequate personnel and resources are on scene, sufficient water supply to support large diameter attack lines has been established and aggressive horizontal and / or vertical ventilation are in progress prior to committing companies to interior operations at a commercial occupancy.

Searches should generally be conducted utilizing team search rope equipment or by maintaining contact and orientation to hose lines.

All personnel MUST carefully monitor status of air supply and should plan sufficient egress time to allow exit from the building prior to SCBA going into low air status.

C. Arriving Engine: (Attack)

1. Stretch initial attack line of the appropriate size. Attack line size shall be determined by the crew officer. 2.5" attack lines are usually the most appropriate choice for working fires in commercial occupancies.
2. Force entry as needed.



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3. Search en route to seat of fire.
4. If no other companies are on scene, remove victims if found. (Must maintain focus on fire attack as indicated above.)
5. Extinguish all visible fire.
6. Initiate or assist with search for and extinguishment of fire extension.

Tool Assignments:

Officer: Thermal Imager, Hand Light

Driver Engineer: Apparatus or Crew as deemed necessary by the officer.

Firefighter: Irons, Hand Light

Firefighter: Irons, 6' Hook

Responsibilities:

Officer: Assess scene, give size up, confirm initial assignments, and assist with forcible entry, back-up nozzle person as needed, search en route to fire, direct interior fire attack, maintain situational awareness / open up ceiling to check for extension as needed during hose line advancement, assist with ventilation if not performed.

***Water application to the fire is usually the most critical action taken on the fire ground. Expeditious application of the correct fire flow, in the proper form, to the correct location during initial fire ground operations will have the greatest impact upon the outcome of a fire.**

Note – Depending upon intensity of fire and level of building involvement, Rapid Attack Monitor (Blitz Monitor) deployment should be strongly considered.

Driver Engineer: Position apparatus with consideration of additional arriving companies (**specifically aerial apparatus**), assist with stretch of initial hose line to point of entry, pressurize initial attack line as directed, check for and remove kinks in hose line, prepare for additional assignments as needed such as backup line, fan, supplemental lighting, ground ladders, etc.

Firefighter: Stretch or assist with stretch of initial hose line to point of entry, assess for forcible entry / force entry with Officer as needed, ensure water to nozzle -correct pattern, air bled, and adequate pressure, advance hose line from entry position toward seat of fire as directed by Company Officer and apply water to fire compartment in appropriate fashion. Stand by to extinguish flare-ups and hidden fire as needed.

D. **2nd Arriving Engine: (Water Supply)**



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1. Establish sustainable water supply to attack engine and FDC if applicable.
1. Stretch back-up hose line if not completed or assist with attack line if needed. Back up line should be stretched in position to protect initial attack line as first priority.
2. Assist with ventilation or structure if not already initiated.
3. Initiate search if not already under way.
4. Once water supply is established, stand fast if all other assignments above have been performed. Perform assignments as directed by Incident Commander. May be assigned as initial rapid intervention crew at discretion of IC or utilized to check for fire extension, stretch additional lines for fire control and / or exposure protection as needed or assist with evacuation of civilians.

Tool Assignments:

Officer: Thermal Imager, Hand Light,

Driver Engineer: Apparatus

Firefighter: Irons, Hand Light

Firefighter: Irons, 6' Hook, Rope Bag (if needed)

Responsibilities:

Officer: Direct Company in laying out supply hose line to supply initial attack engine with sustainable water supply. Assure that apparatus is not impeding ingress or egress for arriving suppression apparatus. Perform assignments as outlined above if not already under way, and complete necessary assignments as directed by the Incident Commander.

*** Prior to any other assignment being attempted, must visualize establishment of sustainable water supply to engine making initial fire attack unless otherwise directed by IC.**

Driver Engineer: Operate apparatus while laying supply hose as directed by Officer to supply initial attack engine with sustainable water supply. Forward lay is preferred I practical; position apparatus where it will not interfere with the Ladder Company or other arriving suppression apparatus. Assist Company in establishment of sustainable water supply; once a sustainable water supply has been established assists the Driver Engineer of the initial attack engine with necessary assignments. May also assist first due aerial apparatus D/E with set up and operation of aerial device if needed. Consideration should be taken to secure utilities in coordination with command.

Firefighter: Proceed with hose layout as directed by the Officer to establish a sustainable water supply. Ensure proper radio monitoring and notifications prior to charging of any supply line. Report back to Officer and perform tasks as assigned.



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E. Arriving Ladder: (Ventilation / Searches / RIT)

1. Position apparatus to fire building where access and use of the aerial device will be maximized if at all possible.
2. Establish Rapid Intervention Team (RIT) operations
3. Initiate aggressive ventilation of structure. Utilize all possible avenues of smoke and heat removal to improve interior conditions, visibility and facilitate fire location and attack. Adequate ventilation will greatly improve the tenability and operating conditions within a commercial occupancy. Ventilation shall include all swinging doors, overhead doors and vertical ventilation.
4. Driver Engineer shall set up aerial apparatus and position aerial ladder to the appropriate position based on conditions and / or direction from Company Officer or IC.
 - a. Position ground ladders for access and egress if appropriate.
5. Initiate primary/secondary search as appropriate.
6. Upon completion of search, following knock down of visible fire, immediately check for fire extension and continue to do so until complete extinguishment is confirmed.
7. Initiate salvage and overhaul / property conservation efforts as soon as practical. Consider fire investigation needs when conducting overhaul and do what is prudent and necessary to confirm fire control while maintaining scene integrity when possible.
8. Perform additional assignments as directed by Incident Commander.

Tool Assignments:

Officer: Thermal Imager, Hand Light.

Driver Engineer: Apparatus, 6' Hook, Halligan, Hand Light

Firefighter: RIT KIT, K-12 (if needed)

Firefighter: Irons, Saw (if needed)

Responsibilities:

Officer: Direct Driver Engineer in positioning of apparatus; perform vent size up, along with the firefighter, Established RIT Operations and initiate ventilation and searches.

Driver Engineer: Position apparatus as directed by Officer, set up Aerial device, don PPE. Assist with assigned duties and tasks. Consider deployment of ground ladders for additional means of access / egress.



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Firefighter: Establish and stage RIT operations

Firefighter: Force entry, ventilates, and search for fire extension along with the Officer. Once primary tasks are completed, assist with salvage and overhaul as directed by the Company Officer.

F. Arriving Aerial: (Rear of Building/Special Call)

1. The fourth arriving suppression should respond to the rear of the structure for the following:
 - a. Perform a size-up of the rear of the structure and report to Command.
 - i. Access problems.
 - ii. Fire conditions.
 - iii. Other information deemed relevant.

NOTE:

If the apparatus is unable to gain access to the rear of the structure, it is imperative that all possible forcible entry tools are taken with the crew (i.e., Irons, K-12,).

This will eliminate the need to return to the apparatus, which may cause a significant delay in accomplishing assigned tasks.

- b. Establish a water supply and supply the FDC, when applicable.
- c. Open up the rear to provide ventilation, secondary means of egress, and additional vantage point for fire attack.

*** If fire attack is initiated, Officer must coordinate operations with command and other companies committed to interior operations in order to ensure operational safety.**
- d. Secure utilities, if not already completed.
- e. Ladder the structure for roof operations and:
 - i. Determine the type of roof construction. It may be necessary to make an inspection (Kerf Cut) hole with the K-12.
 - ii. Locate natural ventilation points.



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- iii. Look for signs of fire underneath the roof, use of thermal imager may be helpful (i.e., sagging roof, bubbling tar, spongy deck, leaking smoke, heat signature indications, etc.)
- iv. Determine dead loads such as HVAC units, heavy antennas, and standing water.
- v. Determine if front façade is attached to the front wall or part of the cockloft. If a parapet wall exists, the facade is not continuous with the cockloft.
- vi. In order to avoid fall through hazards, companies must use a tool to sound the roof in front of them as they walk on it. This is necessary even under light fire conditions.

***Companies assigned to the rear must request additional resources as necessary to carry out all critical functions at their location.**

Tool Assignments:

Officer: Thermal Imager, 6' Hook, Hand Light, Rope Bag (if needed)

Driver Engineer: Apparatus, 6' Hook, Halligan, Hand Light

Firefighter: Irons, Hand Light, K-12 (if needed)

Responsibilities:

Officer: Direct Company in completing priorities as listed above.

Driver Engineer: Position apparatus where it will not interfere with the Ladder Company or other, arriving, suppression apparatus. Don full PPE and remain with Company Officer to complete assigned tasks.

Firefighter: Assist Company with assignments as directed.

G. Support Unit/Utility Vehicle

1. Responsibilities

Support Unit/ Utility vehicle Shall respond and establish a rehab area in coordination with medical sector. If unavailable, contact fire communication and request mutual aid canteen unit.

I. Arriving Medical Rescue:

1. Position apparatus where it will not interfere with other arriving apparatus while maintaining ability to depart the scene for rapid transport if needed.



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2. Provide medical assistance for any victims in need upon arrival.
3. If medical transport is required prior to the arrival of another Medical Rescue, provide the transportation as needed.
 - a. If no immediate need for medical treatment or transport exists, command should be contacted for orders. Preparations should be made for providing fire assistance.
 - b. Establishment of medical sector for firefighter rehab should be considered
 - c. Medical sector must request additional medical units to assist transport requirements.

***NOTE: upon declaration of a working fire and the filling out of the working fire assignment, a second rescue will be requested immediately and utilized for medical rehab duties and/or treatment as needed. Single rescue units will be assigned medical rehab. Additional rescues will be assigned as designated by command.**



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I. Chief Officer Roles / Responsibilities

1st Due Battalion Chief – IC - Assume command upon conferring with initial arriving officer following size up of building and conditions. Makes assignments, requests additional resources as needed. (i.e. and alarms, notify fire chief and deputy chief)

Tools - Helmet, Coat, Hand Light if needed.

2nd Due BC - Incident Safety Officer - Conducts 360 of fire building if possible and reports pertinent info to command, May be assigned interior safety / operations sector depending upon building and fire conditions as determined by IC.

***Assumes role of RIT OIC in event of a RIT deployment.**

Tools - Full PPE w/ SCBA and Hand Light. Other hand tools as deemed appropriate.

Accountability / Medical Group - reports all pertinent info or alarms to IC. Also coordinates medical treatment and transports as needed. It is imperative that rehab be conducted and monitored at all applicable incidents.

Deputy Chief – Assist IC with command functions as needed. Once an incident escalates to a alarm or greater, Division Chief on duty shall assume command of incident. Initial IC (due BC) moves into the Operations position upon transfer of command to Division Chief.

***On duty Division Chief must maintain awareness and responsibility for all emergency activities and situations taking place within the Town of Lauderdale-By-The-Sea and ensure that adequate resources to respond to incidents are maintained.**

Tools - Helmet, Coat, Hand Light if needed.

Staff Chiefs – All Staff Chief Officers and other additional personnel responding to an incident shall report in to the command post for assignment upon arrival at the scene of an incident.

J. TACTICAL CONSIDERATIONS

A. Command and Control

1. The hazards presented by commercial fires dictate the need for a much slower and more cautious approach than that employed at residential fires.



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2. The IC must recognize those tasks requiring more than one company to complete them effectively, safely, and expediently. Be prepared to team-up crews as needed.
3. The rear of the commercial may be an area of extensive activity and importance. Consider the creation of a Charlie division and assignment of a Battalion Chief to this area. Evolvement of the incident to include operations on multiple sides of the structure should prompt the creation of additional Divisions and assignment of additional Battalion Chiefs where multiple companies and / or critical operations are taking place.
4. A serious fire in a commercial occupancy will rapidly deplete first alarm resources. Early request of additional alarms will aid the IC in managing the resource requirements needed to ensure a successful outcome. A dedicated Staging Area and designation of a Staging Officer will ensure orderly resource usage, increase accountability, and minimize freelance tendencies.
5. Avoid opposing streams and the use of master streams concurrent with interior hose line operations. During exterior defensive operations, opposing streams are acceptable as long as they are not having a detrimental effect on personnel and operational safety. Dispatch should be told to announce/tone for elevated M.S. activation.
6. The need for multiple, highly maneuverable master streams may necessitate the special call of additional aerial apparatus that may not be part of the requested or responding alarms.
7. The need for a rapid intervention crew is paramount for the safety of firefighters. Special consideration should be emphasized with regards to the following:
 - Effective rehabilitation is established and monitored
 - Personnel accountability reports are completed
 - Determine the location, profile, and assignment of missing personnel
 - RIC's are dedicated and assembled with equipment
 - Additional alarms are struck when RIC is activated
 - There is consideration to switch operations to a separate tactical channel
 - Ensure there is an appropriate number of crews and staged/deployed locations are effective

B. Strategy

1. An offensive strategy is generally the mode of operation at commercial occupancies unless the fire has progressed beyond the firefighting capabilities of the initial units. If the fire is beyond the early stages, exposure protection is critical.
 - a. In the early stages it must be determined if the fire can be contained to the occupancy of origin or if the fire could spread to adjacent units.



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- b. Once fire gets into the attic / cockloft area, loss of the building is probable if measures are not taken immediately to stop fire progression. Crews must quickly enter adjacent, uninvolved occupancies with hose lines and open ceilings to prevent the spread throughout the space for rapidly spreading fires, seemingly uninvolved areas may have to be skipped in order to get ahead of the fire.
 - c. Commercial fires may require larger amounts of water and the use of 2.5" lines and Rapid Attack Monitors (RAM's) are recommended.
 2. Defensive strategies must be considered when the fire has progressed to the point that the structural integrity of the building is in question. Roof support systems will quickly weaken and may fail when subjected to direct fire conditions. Heavy loads, such as HVAC units, will increase the collapse potential.
 - a. Unmanned master stream devices can be deployed from the exterior of the building to apply large quantities of water to the fire. Crews must be aware of operating under the building overhang that may fail.
 - b. Aerial ladder streams or ground master streams can be directed to attack the fire without risking crews.
 3. Due to the inherent dangers of vacant / abandoned structures, a defensive strategy should be considered based on the risk vs. benefit analysis.

C. Rescue

1. If residences are present on the second floor, search of these apartments should be a high priority.
2. Unless there are residences present on the second story of a commercial occupancy, a civilian life hazard during a fire should be minimal. If persons are trapped or missing, expect to find them in locations that prevented their self-egress, such as the heavily secured rear of the occupancy.
3. Primary search may have to be delayed until the fire has been located and controlled.
4. The possibility of a security guard, storeowner, or employee sleeping or working inside the occupancy should be considered. However, it should not delay fire attack.
5. The size, open spaces, and disorienting floor plans of commercial occupancies complicate the search. Although a Thermal Imaging Camera (TIC) should always be carried, it will prove exceptionally beneficial to search crews in these instances. A search line should also be employed as applicable.



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6. Vacant or abandoned structures are by definition uninhabited; however, they could potentially contain vagrants or homeless individuals. A search must still be conducted but with extra caution due to hazards presented by these occupancies.

D. Fire Control

1. Locating and accessing the fire can be complicated by:
 - a. Large structures with limited points of entry.
 - b. Smoldering fires producing large amounts of smoke and little flame.
 - c. Confusing and atypical floor plans, interior layouts containing stock and merchandise.
 - d. Congested parking areas, long setbacks, and inherent obstructions/limitations impeding apparatus access and hose line deployment.
2. Unless the fire is showing signs of rapid extension and threatening to consume exposed occupancies, the initial attack should be initiated on the occupancy of origin.
3. All significant fires shall require a dedicated water supply prior to advancement to the interior.
4. Advanced fires encountered on arrival should prompt the OIC to consider the need for 2.5" hose lines. After fire knockdown, these hose lines may be reduced to 1.75" as needed.
5. When the seat of the fire's location is unknown and / or multiple turns or obstacles will be encountered during the interior advance, 1.75" hose lines may facilitate deployment and movement within the occupancy if needed.
6. While pre-connected attack lines may be of sufficient length for smaller occupancies, less than optimal apparatus positioning and larger stores may require more hose. Attack line extension evolutions and / or supplying remote attack lines with a wyed 2.5" hose line may be required.
7. Hose teams failing to check the overhead risk being caught in a flashover or ceiling / roof collapse. Ceiling heights provide ample space to contain elevated temperatures or fire with little indication at floor level. Crews should check for the presence of fire above their heads immediately inside the point of entry and prior to advancing into a fire occupancy. This can be done with any combination of the following:



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- a. Remove or poke through the ceiling with a hook or pike pole. The hose stream itself will be sufficient to remove or knock out acoustical ceiling tiles.
- b. The overhead environment should be inspected visually and with the aid of a TIC.
- c. In the absence of a TIC, direct a short burst of water directly overhead. Absence of much water raining back down together with the creation of steam indicates elevated temperatures. Holding the head of a hook in the overhead for a few seconds and then examining it for heat, is another option.

NOTE:

If the right mixture of fire gases and heat is present in the attic/cockloft, the introduction of oxygen while pulling ceiling may ignite a back draft of this space. Personnel must be aware of this potential and be prepared to take action as necessary.

8. Unless the fire is incipient and limited in size and intensity, advancing the hose line into the fire occupancy without venting the front show windows is dangerous and should not be undertaken. The hose team should only advance the hose line after complete removal of the front show windows.
9. In some limited size occupancies with little partitions or obstructions, the hose stream can effectively knock down the main body of fire without physically entering the occupancy. When this is possible, it is preferred to maintain this safer position and enter for final extinguishment when conditions are safer and the roof integrity has been established.
10. Companies should only advance into the structure far enough to achieve initial knockdown while continuously assessing structural stability. Final extinguishment and overhaul are generally accomplished after ventilation has improved visibility and structural conditions have been further assessed.
11. A back-up line for the attack crew(s) should be in place as soon as practical.
12. Companies entering attached exposures to check for or cut off fire extension must exercise the same caution and utilize the same procedures outlined for the crew(s) attacking the main fire.
13. Attached exposures must be entered and searched for extension of fire and hose lines stretched as required. Fire travel should be anticipated in six directions (top, bottom, and 4 sides) from the area or occupancy of origin. Particular attention should be paid to the following areas:
 - a. Attics and other overhead spaces.
 - b. Electrical, plumbing and other utility chases and voids.



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- c. Area along party walls, firewalls, or other shared structural members.
- d. Shared combustible exterior surfaces.

NOTE:

The presence of a firewall does not eliminate the need to check adjoining structures for smoke and fire extension as well as carbon monoxide (CO), which can be present in the absence of visible smoke. Often times poor workmanship, illegal alterations, and shared combustible surfaces lead to fire travel from one occupancy to another. In all cases, the severity and location of the fire should guide the IC in the decision to check adjacent areas.

- 14. When fire conditions dictate the use of master streams, they are best utilized from ground level into and through the front show window openings. The most versatile master streams for this purpose are those at the end of aerial devices. If much or the entire roof has burned through, elevated master streams may be useful. If elevated streams are employed, they must be closely monitored in order to prevent fire spread in uninvolved spaces.
- 15. When the involved occupancy is sprinklered, a suppression company must supply the FDC that is generally located at the rear.
- 16. To protect detached exposures water application to the exterior of the exposed structure(s) is generally sufficient. Any indications of fire inside the exposure warrant entering the occupancy with a charged hose line.

E. Water Supply

- 1. Any "working fire" in a commercial occupancy should prompt the need for a dedicated water supply {hydrants, draft, or both}. For serious fires, attack crews should avoid interior positions until a dedicated water supply has been established.
- 2. If multiple hydrants are available, a single hydrant and pumper should not be relied upon for all the water needs of the incident. Supply lines from multiple hydrants to multiple apparatus provide a greater degree of redundancy for unexpected failures.
- 3. In the event of a large fire requiring excessive fire flows, consideration should be given to contacting utilities to request an increase in water pressure supplied to mains in the area of the fire as needed.

F. Ladders



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1. Due to the presence of marquees and parapet wafts, the safest location to ladder most commercial occupancy's is the rear. At this location, crews can access the roof with few obstructions and a small parapet if any.
2. **Ground / aerial ladders should be placed for:**
 - a. Access for roof operations (minimum of two (2) ladders remotely located).
 - b. Access to identified or potential victims or victim locations on upper floors.
 - c. Providing a secondary means of egress for companies working on upper floors.
 - d. As vantage points for fire streams or advancing hose lines to upper floors.
 - e. Providing access for ventilation of upper level windows.
 - f. Lights on the end of an aerial ladder will provide valuable illumination on the roof.
3. Rear mounted aerial apparatus provide their maximum scrub area when the aerial is operated off the rear of the apparatus. Therefore, when practical, aerial apparatus should be backed into position.

G. Ventilation

1. Unless venting for life, all ventilation must be coordinated with the fire attack.
2. Ventilation will generally include opening up the front, rear, and any skylights or roof ventilators and roof as needed.
3. Venting of the front show windows prior to advancement into a working fire is a critical tactic. However, this type of ventilation may cause rapid intensification of the fire and even precipitate a back draft or flashover under the right conditions. For these reasons, the following procedure should be followed:
 - a. Windows will not be vented until a charged hose line is deployed and manned.
 - b. Windows will be vented prior to advancing the hose line to the interior.
 - c. In anticipation of a back draft or similar event, the hose crew, vent person(s), and all other personnel will not stand directly in front of the occupancy during venting. This may become a blast zone.
 - d. Large windows will be vented using the reach of a long pike pole or hook and broken at the top first (in anticipation of plate glass). Although tempered glass is



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required by code and broken by striking at the bottom, frequently, and illegally, it is replaced with plate glass.

- e. If back draft conditions are present, additional precautions are in order. After breaking each large window, a pause should be taken to await the development of a back draft prior to moving ahead with the next window. For safety, the venting firefighter should begin with the outermost window and work their way inward. Each time, the firefighter should retreat to a safe position out of the blast zone.
4. When utilized, Positive Pressure Ventilation (PPV) of the involved store should be coordinated with the interior crew. If possible this should be accomplished with the crews on the exterior while monitoring conditions in order to prevent a rapidly growing fire that may trap unsuspecting firefighters. PPV should only be utilized once the extent and path of the fire is known. If fire is suspected of being in any concealed spaces, PPV should not be used.
5. When necessary, roof ventilation must be done early before the fire has weakened the supportive structure. Sufficient resources must be committed to ensure its success.
6. Trench cuts may be an option though are not intended to be used on roofs as expansive as those on strip malls and in general should not be a consideration. The best way to contain a laterally spreading fire is by flanking from underneath. In the rare event the IC determines that a trench cut is the appropriate course of action, enough personnel and equipment must be committed (this is not a one-company-one saw evolution).

H. Salvage and Overhaul

1. Inspect for fire extension in all directions from the involved area(s).
2. Check for extension along pipe and utility chases, ventilation hood exhaust piping, and where roof members poke through fire separations onto other occupancies. Also check for extension in the roof facade(s) that are not fire stopped.
3. Any indications of fire inside an exposure warrant entering the occupancy with a charged hose line.

I. Collapse

1. Some of the warning signs that will signal a potential structural collapse during firefighting operations are:
 - a. Heavy body of fire which has been burning out of control for 20 minutes or more, particularly in a large open floor area.
 - b. Walls leaking smoke or water.



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- c. Walls or columns out of plumb.
 - d. Unsupported walls.
 - e. Sagging or bulging walls.
 - f. Cracks in exterior walls.
 - g. Movement in or on any floor or the roof.
 - h. Rumbling noises or heavy puffs of smoke
 - i. Cracking or groaning noises, which may indicate strain being placed on structural members.
 - j. Presence of heavy equipment or signs on the roof. They pose especially dangerous collapse potential when their supporting structural members are subject to heavy fire conditions.
 - k. Spongy or soft-feeling roofs as you walk on the roof. Wood truss roofs may give little indication prior to failure. Metal truss-metal deck roofs may begin to sag prior to failure.
 - l. Steel beams over show windows or part of the structural integrity that is heated by fire may elongate sufficiently to push out walls or buckle and fall.
 - m. Window and/or door frames out of plum; evidenced by glass breaking spontaneously or doors not fitting into their doorframe when attempting to close.
2. When collapse is anticipated, all personnel and apparatus should be positioned away from the structure a minimum of 1.5 times the building's height. When this is not possible, the corners of the structure are the next safest location.
 3. Of particular concern for collapse is the front parapet wall and overhanging roof facade. If collapse of these components is expected, it must be anticipated that they will fail along the entire length of the building. Personnel should be withdrawn along this entire area until proven otherwise by a visual inspection of its interior.



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SPECIFIC FIRE SITUATIONS

A. Attic / Cockloft Fires

1. A rapidly moving fire through a common attic or cockloft can threaten the entire building. Companies should concentrate on moving far enough ahead of the fire to pull ceiling and position hose lines to stop the spread.
2. A rapidly moving fire through a common attic or cockloft can threaten the entire building. Companies should concentrate on moving far enough ahead of the fire to pull ceiling and position hose lines to stop the spread.
3. Depending on the location of the fire, the initial effort may have to be directed at a simultaneous flanking of the fire from two separate directions. When resources are initially limited, utilize wind direction, the greatest number of salvageable
 - i. Stores, and/or any slope of the roof to decide which flank to attack first.
4. This type of attack may require several companies and multiple hose lines teamed up for each flank that is being attacked. Multiple pike poles should be available for rapid pulling of the ceilings. Do not underestimate the number of personnel required to pull ceilings and position hose lines to stop the advancing fire.
5. Roof operations may consist of cutting vent holes, opening skylights and ventilators, and making access points for piercing or rotary distributor nozzles. However, the prolific use of trusses makes roof operations directly over the fire dangerous when an attic fire is present. Therefore, roof operations should only take place in safe locations if it aids the overall operation. Ultimately the IC, with input from an OIC assigned to size up the roof, will make the decision on initiating any roof operations.
6. Depending on the method of construction, the front façade may be opened up from the roof, the reach of ladders, or the underside of the facade itself. Opening the backside of a facade from the roof is usually the quickest, safest, and least manpower-intensive of any other means. To protect detached exposures water application to the exterior of the exposed structure(s) is generally sufficient. Any indications of fire inside the exposure, warrants entering the occupancy with a charged hose line.
7. When time allows, removal of valuables and placement of salvage covers should take place prior to pulling the ceiling and commencing with extinguishment.

B. Restaurants

1. Most strip shopping centers contain some form of eating establishment. This may range from a small counter and window establishment to a large full service restaurant. Most fires in these occupancies originate in the rear of the structure where the kitchen area is



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located.

2. Gas utilities will pose additional hazards and must be secured.
3. Grease fires are common. These grease fires might be located in a deep fryer, oven, or hood and exhaust system.
4. If fire exists in the exhaust system, it probably will spread to the roof where grease usually accumulates around the vent discharge. A thorough inspection of the cockloft must be accomplished in order to detect fire that escapes the ventilation system due to breaks in the system or accumulated grease.
5. If a fire exists in a commercial grade oven. Secure the utilities and when possible, allow the fire to burn itself out and cool on its own. The application of water to the oven or other extinguishing agents often causes more damage than the fire. Check for spread and extension to those areas around the oven.

C. Hazardous Materials

1. There is a potential for hazardous materials in a strip shopping centers (pool stores, paint stores, hardware stores, etc.). These incidents should be handled as a hazardous materials incident and have a Haz Mat unit respond for technical support. After addressing fire control issues the focus should be on product identification, isolation, and scene stabilization.

D. Electrical Vault Fires

1. Electrical vault fires are usually the result of transformer(s) burning. These incidents generally do not pose a serious fire control issue. Building codes require the vault to be poured concrete on all six sides. Fire extension to adjacent areas is uncommon. If fire control is necessary inside the vault prior to being de-energized, the use of dry chemical and/or CO2 should be utilized from the exterior of the vault.
2. The most important action is to have Florida Power and Light (FPL) disconnect the electrical service to the building.
3. Never have personnel enter an energized vault.
4. Never apply water into an energized vault.

***** These Standard Operation Guidelines should be considered guidelines for use at specific emergencies. Different situations may dictate alteration of the procedures, however, the safety of personnel and the public shall remain the highest priority. *****