

TOWNSHIP FIRE DEPARTMENT
CHAPTER 2: SUGGESTED OPERATING GUIDELINES

Part 8: Strategic Guidelines

Subject: Large Area Buildings

Page 1 of 7

Section: 2-8-4

Effective Date: 07-01-95

Reviewed/Revised Date: 05-24-10

- 4.01 Purpose. To identify items concerning large area buildings which affect fire response strategy.
- 4.02 Goal. Develop response strategies which recognize hazards and conditions associated within the exterior walls. For this guideline, large area buildings will include:
- A) Warehouses.
 - B) Wholesale/retail sales display.
 - C) Manufacturing/processing plants.
 - D) Gymnasiums/exhibition halls.
- 4.04 Special Problems.
- A) Roof Construction.
 - 1) Flat roof most common.
 - 2) Truss support is common design feature.
 - 3) Steel deck (w/truss support) - often unprotected.
 - 4) Anticipate sudden/dramatic roof failure with heavy fire involvement.
 - B) Walls.
 - 1) New buildings - light weight metal sheeting.
 - 2) Unprotected metal supports.
 - 3) Few doors, windows.
 - 4) Designed for ease of replacement - not collapse resistance.
 - 5) Collapse can be sudden/dramatic.
 - 6) Pre-fab concrete walls.
 - C) Water Supply.
 - 1) Anticipate that needed fire flow will exceed water available for nearby hydrants.
 - 2) Use relays, tandem pumping, etc. to increase available water.

- 3) May require multiple fill and dump sites for tender shuttles.
- 4) Major factor in offensive/defensive decisions.

D) Fire Protection Features.

- 1) Fire division walls may be breached.
- 2) Fire doors may have been left or blocked open.
- 3) Water curtains used to protect walls or openings have not been effective.

E) Overhead Steel Doors.

- 1) Easily distorted by heat.
- 2) Security features slow down access.
- 3) Collapse potential following heating.

F) Inadequate Stream Penetration.

- 1) Fire streams may not reach deep into interior because of distance.
- 2) Few exterior openings present need to consider commitment of companies deep into interior (SAFETY CONCERN).

G) Sprinkler System.

- 1) System was designed for specific conditions - type of building, type of occupancy.
- 2) Change in conditions could produce fire beyond system capability.
- 3) Sprinkler must have water to work - check valves, pump into system.
- 4) Building collapse can damage sprinkler system.

H) Misuse of Building.

- 1) Example: former dairy barn now used for tire storage.
- 2) Contents at or exceeding floor loads.
- 3) Contents which can produce fire exceeding ability of original sprinkler system design.

I) Poor Warehousing Practices.

- 1) Contents stacked in manner which can easily collapse.
- 2) Mix of products - chemicals, flammable/combustible liquids - potential for reaction.

- 3) Mix of products can produce severe environmental problem from water runoff.

J) Access.

- 1) Security measures - building (systems, steel doors, etc.).
- 2) Security measures - property (fences, road barricades, etc.).
- 3) Large set back from roadway (green space).
- 4) Railroad access.

K) Ventilation.

- 1) Solid walls - little or no openings.
- 2) Roof construction of wood lamination, concrete materials.
- 3) Roof supported by trusses - early collapse potential.
- 4) Plastic roof panels can melt and lead to rapid fire development.
- 5) Back draft - although considered unusual for this type of building - potential still exists.
- 6) Collapsible panels and roofs designed for ventilation.

L) Radiant Heat.

- 1) Heat may even prevent approach to building perimeter.
- 2) Building and contents may produce temperatures in thousands of degrees.
- 3) Exposure problem may become acute.
- 4) Master stream use essential.
- 5) May result in fireground abandonment assuming secondary defensive positions.
- 6) Loss of equipment/apparatus is a possibility.
- 7) Impact on personnel can be severe.

M) Command/Control.

- 1) Distance - out-of-sight operations.
- 2) Knowledge of **TODAY'S** building interior arrangement and contents may be limited.
- 3) Visual factors may conceal developing problem deep within building.

N) Flying Brands (Embers).

- 1) Can be severe problem - especially when building is in area adjacent to buildings with combustible walls and roofs.
- 2) Will require commitment of personnel and resources.
- 3) Wind conditions can complicate problem.

4.05 Strategic Considerations.

A) Pre-Planning.

- 1) Review map books, aerial photos, owner property and CAD files, to verify access, exposure potential, etc.
- 2) Review resources listed for multiple alarms.
- 3) Identify special resources needed - heavy equipment, Haz-Mat Team, etc.
- 4) Review available water supplies.
- 5) Identify potential safety hazards.
- 6) Estimate fire flow.
- 7) Determine location of fire department connections (stand pipes).

B) Inter-Agency.

- 1) Anticipate need for traffic/crowd control (law enforcement).
- 2) Anticipate need to protect in place or for downwind evacuation (law enforcement).
- 3) Anticipate need for utility control (gas/electric utility).
- 4) Anticipate need for water utility support.
- 5) Assign Liaison Officer early.

C) Command Function.

- 1) Position command post upwind.
- 2) Determine direction and rate of fire spread.
- 3) Collect situation and resource status information.
- 4) Consider potential when determining resource needs.
- 5) Assign Safety Officer early.

D) Operations Function.

- 1) Rapid fire development/multiple operating positions.
 - a) Rate of spread can overtake placement of companies.

Subject: Large Area Buildings

Date: 07-01-95

Page 5 of 7

- b) Anticipate sudden roof/wall failures with heavy fire involvement.
 - c) Companies may be advanced too far toward center of building.
 - d) Consider immediate downwind brand patrol.
- 2) Reliable information is critical.
 - a) Perimeter of fire and direction of fire spread.
 - b) Number of exposures.
 - c) Potential for further spread.
 - d) Consider use of reconnaissance officer.
 - 3) Mobility.
 - a) Rate of spread could overrun companies.
 - b) Companies should be aware of need to move quickly.
 - c) Beware of relying on fire walls and separations.
 - 4) Evacuation.
 - a) Use non-fire personnel for evacuation.
 - b) Select locations for injured and displaced persons.
 - 5) Use of Resources.
 - a) Do not commit all companies until extent of problem is determined.
 - b) Maintain reserve force for contingencies.
 - 6) Safety (personnel and apparatus).
 - a) Potential for injuries to personnel is great.
 - 1) Collapse of roof, walls and ceilings.
 - 2) Radiant heat.
 - 3) Fatigue.
 - 4) Confusion.
 - 5) Inadequate water supply.
 - 6) Test atmosphere - CO
 - b) Apparatus placement is important.
 - 1) Building collapse.
 - 2) Changing fire conditions.

E) Logistics Function.

- 1) Resources.
 - a) Maintenance of reserve.
 - b) Fatigue will be a factor.
 - c) Relief companies required for extended operations.
- 2) Water Supply.
 - a) Expect water supply to be taxed.

- b) Increase or supplement existing supply.
 - 1) Assign water supply officer.
 - 2) Request maximum pumpage from utility.
 - 3) Emergency inter-connect with adjoining utility.
 - 4) Use of available static sources (swimming pools, etc.).
- 3) Maintenance/Support.
 - a) Extended operations will require special support.
 - 1) Food.
 - 2) Fuel.
 - b) Need for specialized equipment.
 - 1) Aircraft.
 - 2) Street barricades.
 - 3) Lighting equipment.
- 4) Communications.
 - a) May require more than one tactical channel.
 - b) Consider separate command channel.
 - c) Use cellular and commercial telephone service.

F) Planning Function.

- 1) Strategy.
 - a) Determine perimeter, amount of fire, and potential.
 - b) Have a contingency plan.
 - c) Pick spot to hold and control fire.
- 2) Reflex time.
 - a) Large resource commitment takes time to arrive.
 - b) Base plans on resources available on-scene.
- 3) Situation/Resource status.
 - a) Immediate and accurate status display critical.
 - b) Need reliable information.
 - c) Cover all bases.
 - d) DO NOT WASTE RESOURCES.
- 4) Documentation.
 - a) Log of decisions considered to be minimum.

Subject: Large Area Buildings

Date: 07-01-95

Page 7 of 7

G) Finance Function.

1) Track costs of specialized equipment.

2) Track costs of supplies and services.