

Fast Food Restaurant Size-Up Sheet

Fire Engineering Simulation

Building Size Up: Some of this information would be common knowledge, based on your familiarity with the buildings in your area so make any changes needed to make this building match the ones in your district. *For example, is the roof structure light weight metal, light weight wood truss or standard joist construction?*

You decide what details you want to include in the scenario based on the lessons that you want to teach and, as instructor, you decide how much of the size up the student should be told to the student and what he needs to discover for himself.

(A good reference on Building Size Up is [Chief Michael A. Terpak,s book Fireground Size-Up.](#))

Construction: The restaurant is built on a concrete slab so there is no cellar.

- There is a front door and two rear doors (one to the kitchen, the other to the dining area).
- The walls are made of 2x4 wood studs and drywall with a stucco outer coating.
- The roof construction is light weight wood truss with gusset plates. (You can vary this feature to fit your training needs. If you want to use light weight steel truss then that is what you tell your students.)
- The roof is plywood with built up asphalt roofing. Alternatively, you can make it a membrane roof. It is up to you.
- The roof is flat, has a heavy air conditioning unit and a few exhaust ducts on it. You can see parts of them from the rear, exposure C.
- There is a dropped ceiling suspended from the roof structure. It is made up of a steel grid and ceiling panels.
- There is a false parapet wall around sides A, B and D. It is constructed of metal studs and plywood.

Occupancy: This is a fast food restaurant. You decide who is in the restaurant and relay that to the student. We include a video in the scenario that shows a bystander stating that there is an employee (probably the manager) still inside trying to get the money from the registers. Use it if it fits your scenario.

Apparatus & Staffing: Base this on what you realistically will respond with. It will affect what you can do as well as how and when you do it.

Life Hazard: The life hazard is anyone still in the restaurant. Occupants in restaurants do not always quickly evacuate when notified of fire. If they do not see smoke or if they perceive it to be a minor incident they might remain to finish their meal. The workers might try to retrieve personal belongings or the store receipts before leaving. Remember, there is always the firefighter life hazard.

- Are people are still in the building when you respond?
- Do the customers and employees get out before the smoke darkens and banks down to the floor?
 - Are firefighters inside when this happens?
- When the backdraft occurs, are all of the firefighters outside?
- Is anyone trapped by the falling dropped ceiling grid?
- Do you need to put your RIT team to work to rescue trapped firefighters?

Terrain: The building is on level ground and there are a few bushes in the rear.

Water Supply: Use your usual water supply. If you have hydrants, use them if not, do what you would normally do.

Auxiliary Appliances: There is no sprinkler in this building. Is there a fire extinguishing system for the cooking area and duct? What type is common in your area? It could be out of service or just not functioning. Again, you decide.

Street conditions: The streets are dry, flat and there is no construction or traffic. No cars are parked at the curb in front of the building.

Weather: It is a cool, clear, fall day with no wind.

Exposures: The fire building is isolated and there is little likelihood of fire extending to another building.

Area: The building is 40' x 60'.

Location and extent of fire: Upon arrival you see smoke coming from the roof. It smells of frying food. It is probably coming from the exhaust duct on the roof. In fact there is a grease fire in the duct above the cooking area and no one inside is aware of it. Eventually, light smoke from the cockloft starts to filter down into the occupancy.

The fire in the duct generates enough heat to ignite the roofing material, plywood and the wood truss (that is, if you decide the building has a wood truss roof structure!). The result is that the smoke coming off of the roof darkens and the cockloft starts to fill up with smoke. This smoke builds up pressure and quickly fills the store occupancy with the now darkened smoke. Then a fire glow is seen at the ceiling level near the front of the store.

Next there is a smoke explosion in the cockloft. The dropped ceiling grid support falls into the store. The ensuing pressure blows out the store windows and the smoke ignites. Flames are now licking out of the store windows. The fire continues and the light weight truss roof collapses dropping fire and debris onto the floor.

You can allow a shorter scenario by letting the student get a line into the store before the smoke changes color. By applying water to the duct and/or activating

the extinguishing system, he can prevent the progression of the fire. Alternatively, you can extinguish the fire before the roof collapses.

Time: It is the 3:00 in the afternoon, beyond the lunch rush and before the dinner rush. Of course you can change this to suit you.

Height: The building has a 10 foot interior ceiling and the exterior height of the building 16 feet on sides A, B and D. That puts a high parapet wall on all sides except side C.

Special Considerations: Fires in these types of buildings are dangerous. If there is no life hazard and the fire may have already involved the truss, you are at great risk if you decide on an interior firefight. In this scenario, the change in color of the smoke indicates that the fire has switched from a grease fire to involve the roofing and possibly the truss. The fire may be hidden above the ceiling and not evident to firefighters in the occupancy below. Brannigan told us that if the light weight truss is involved in fire, we should evacuate the building and not commit firefighters to the roof because roof collapse can occur without any warning signs in a short time. As we enter the smoky fire building, we should check if the ceiling harbors a truss structure and check for fire in the truss. This should be done initially at the entrance door and again as we progress into the structure.

In this scenario, you can have the store manager not exit right away. He, being the good employee, is trying to get the cash receipts out of the registers before leaving. You can leave him inside when the smoke banks down. Now you are faced with a search and rescue operation. Does the dropped ceiling grid collapse? Are firefighters trapped?

Read the NIOSH Fire Fatality Investigation of a restaurant fire in Texas.

[*Restaurant Fire Claims the Life of Two Career Fire Fighters - Texas*](#)

Consider:

- Do you enter the restaurant?
- Is there a life hazard
 - The store manager?
 - Are all occupants accounted for?
 - The firefighters?
- Is the fire in the truss?
 - Is collapse a consideration at this time?
 - If so what do you do about it?
 - Do you use your Thermal Imaging Camera?
- What are your first actions, hose line placement, or search and evacuation of the fire building?
 - Can you do both simultaneously?
 - If search is your decision, do you use a search rope?
- Do you have aerial stream capability, and will you use it?
 - Where do you set it up?

- When do you flow water from it?
 - Do you put anyone on the roof to vent?
 - What size hose line will you stretch and how many lines will be required to extinguish this fire?
 - Where do you put your first hose line and then where does the second one go?
 - Do you advance the lines into the building?
- What precautions do you take?
- What fire units are on the scene?
 - Where are they?
 - What are they doing?
- Where is the fire?
 - Where is it going?
- Where are the victims?
- What are the hazards?
 - Do you shut down the utilities?

Necessary actions:

- Transmit a preliminary signal to dispatch.
- Transmit progress reports to dispatch.
- Request assistance if necessary.
- Position your apparatus.
- Establish a water supply.
- Decide on hose line size and nozzle.
- Stretch and position as many hose lines as needed.
 - Locate, confine and then extinguish.
- Ladder the building as needed.
- Set up aerial streams if necessary.
- Force entry to the building as needed.
- Ventilate as needed.
- Confine and extinguish the fire.
- Search for life.
- Treat victims.
- Overhaul the fire area.
- Leave the fire scene safe for occupants when you leave.
- Shut down utilities as needed.
- Relieve firefighters as needed.

Certainly there are other considerations. Go to the forum and discuss them with others.