Coming to a Town Near You!

BY **TOM MERRILL AND MICHAEL M. DUGAN**

THE WAY AMERICA SHOPS has changed quite a bit over the past 20 years. And, to help support the new shopping habits, there has been an increase in the number of big-box warehouse type stores, supercenters, megastores, and distribution centers being built. Big box is a term used for industrial facilities or warehouses that store all sorts of products awaiting distribution throughout the region. They are often used by retailers catering to online customers but can also be used to stockpile products for the traditional brick and mortar stores as well. Commercial big-box stores can be broken down into two basic categories: general merchandise such as Walmart, Target, and Costco and specialty retailers such as Home Depot, IKEA, and Best Buy. These retailers specialize in goods within a specific category of merchandise. These might include hardware, books, furniture, and electronics.

The common denominator between the two categories is that the buildings are very large. A big-box warehouse has a minimum size of 200,000 square feet to 650,000 to 750,000 square feet. Fulfillment centers range in a size from 600,000 square feet to more than 1,000,000 square feet and most employ more than 1,000 employees in those facilities.

They are large in terms of quantity as well. In 2023, the big-box building inventory amounted to approximately 2.9 trillion square feet in the United States. In 2023, there were more than 6,000 big box buildings in the United States. Warehouse distribution centers have grown in numbers every year since 2013; in 2023 alone, 1,827 were constructed.

If you are not ready to operate in one of these large buildings, you are going to have a problem. You need a plan, resources, standard operating procedures, and breathable air to fight these fires. The question is, are you ready?

1. Depending on the resources of the responding department and the volume of fire, a defensive attack might be your only choice. *(Photo by Lloyd Mitchell.)*

There are many reasons for the explosive growth in the big-box world. Changing consumer habits in the wake of the COVID-19 pandemic, the closing down of many traditional retailers, and a switch over to e-commerce and online shopping are just a few of them. Small mom-and-pop stores are being driven out by high rent and the cost of doing business. The construction boom in big-box and mega warehouses does not appear to be slowing down anytime soon,

and if there isn't a big-box distribution center in or near your first-due area yet, there is a good chance one will be coming soon. If you want to know, use the map app on a phone or tablet and ask it to search for "big-box stores and fulfillment warehouses near me." You will be amazed.

Firefighters may find themselves driving by these buildings without even giving them a second thought. They take comfort in the fact that the buildings seem to be well built. It's easy to be complacent because the buildings may be relatively new and conform to all the latest building codes. Most have sprinklers systems, standpipes, and other modern fire safety systems in place, so you may think there is just no way that they can burn.

But they have burned, and there have been plenty of serious fires along with many near misses that firefighters everywhere need to be aware of and take note of the important lessons learned.

Fires and Near Misses

Here are summaries of some of the fires, incidents, and near misses.

- In Dayton, Ohio, in June 2024, there was a fire on the fifth floor of a big box facility.
- In Alcoa, Tennessee, in March 2024, there was a fire in a 634,812-square-foot warehouse that had 16 miles of conveyer belts to move one million packages a day. It had just opened a few months prior.
- In Staten Island, New York, in October 2022, there was a compactor fire on a loading dock that spread smoke throughout the building.
- In Huntsville, Alabama, in September 2022, a small and isolated fire was knocked down quickly in a big-box facility that had only been open for a year. There was a second fire there a week later.
- At a Walmart warehouse fire in March 2022 in Plainfield, Indiana, the 1.2-million-square-foot warehouse burned for days. It took 30 fire departments to fight the fire. Investigators are still unsure what started the fire, and a new warehouse is going up on the site now.

2. The footprint of the structure is going to be a key point in determining the resource needs. Some of these fires burn for days at a time. *(Photo by Tim Olk.)*

- In Edwardsville, Illinois, in December 2021, a tornado destroyed an Amazon warehouse, killing six people when the warehouse collapsed. Amazon said in response it has reviewed its emergency procedures, increased manager training, mandated drills (two per quarter), and issued cards to all employees outlining safety procedures for severe weather events. It has also assessed where severe weather assembly areas are to ensure they are in the right place.
- In Redlands, California, in June 2020, an Amazon warehouse caught on fire. A quick search will lead you to video of the gigantic warehouse filled with flames.
- At a Gap warehouse in Fishkill, New York, in August 2016, the 1.3 million-square-foot building was reduced to rubble. Firefighters from 23 departments fought the fire. Officials ruled the fire was intentionally set.

Preplanning

Fire departments charged with protecting these structures must recognize that they present many serious challenges. A lot of planning needs to be done well ahead of time, before the emergency call comes in, preferably even before any shovels hit the ground to build the structure. You need to have a seat at the table to ensure the fire department needs are addressed. There at the table, you can discuss what special equipment you may need or what management can put in place to make emergency operations easier, safer, and more effective. Preplanning is not often at the top of the chief's "to-do" list, and that can be understandable with everything department leaders are responsible for. But it is imperative that the preplans are put in place ahead of time, before the call comes in.

A normal size building has plenty of hazards to be aware of and operational strategies to consider, but the big-box structure takes planning to another level. Proper preplanning prevents poor performance and can make the difference between success and failure. Even if your department has a robust preplan program in place, these facilities can prove problematic to train in or even conduct a walk-through in. Management must understand that a plan needs to be worked out that allows departments time on site to not just conduct a walk-through but to train there as well.

The planning process must encompass many levels. Management and contractors need to understand the needs of the first responder agencies. As much as we are going to want fire crews to have a basic understanding of the building layout and operational procedures, building employees must understand the need to relay important

3. If an advanced fire problem is present, there will be a need for resource management to maintain a continuous operation. *(Photo by Tim Olk.)*

directions to the dispatch center as well. The dispatch center must also be involved in the planning process so dispatchers can update their computer system with important notes and be trained to ask the right questions when calls come in from a big-box complex.

The planning needs to also include neighboring departments as well because chances are they will be responding to any serious emergency involving these structures. The planning must include someone in the facility in charge of employee safety. This person should also be assigned as the communications director to immediately report to a predetermined location to inform the incident commander (IC) of the situation. The IC will also need information about the fire safety system in the building. What types of standpipe, sprinkler, communications, and air systems are in the building to support the firefight?

Most of these buildings are operational 24 hours a day, 7 days a week. We must be proactive, or we will allow a certificate of occupancy to be issued without getting much needed guarantees that we can drill in the building on a regular basis. Most of these big-box complexes are always operating and may not want to allow fire departments access for training because it doesn't fit in with management's schedules for the facility. If the facility shuts down on July 4 or on Christmas, that may not be the best time for a volunteer fire department to assemble members for a training drill. It's best to work out agreements ahead of time and in writing to accommodate fire department training drills.

The critical conversation is about how you are going to handle any type of fire in these facilities. Some municipalities have chosen to hide their head in the sand and not get involved. This is a huge mistake because you lose all your bargaining power after the certificate of occupancy is issued to the facility. Staffing expectations and mutual-aid agreements need to be factored into the conversation. Playing catchup is never a good fireground strategy.

It's important to note that this topic and these challenges do not just apply to big city fire departments, as these structures are in just about every geographic area. Even in rural America, large retailers and manufacturers are building an increasing number of big-box buildings. Land can be less expensive, and highway and interstate access can be more convenient than in a city, so distribution centers, warehouses, and industrial spaces continue to absorb land.

In many of these settings, that land is protected by volunteer or smaller fire departments. The local municipality is also looking for employment for

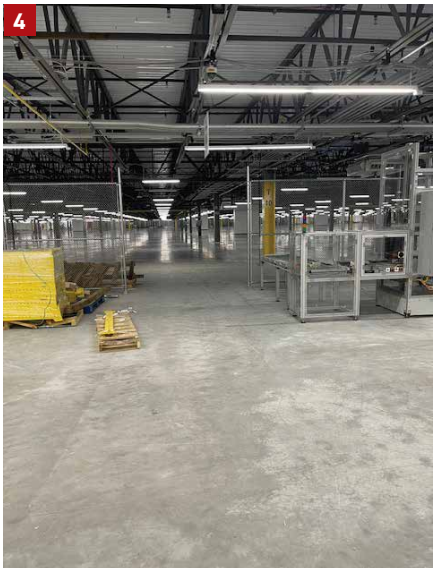
citizens, income generated by construction, and the tax revenue these businesses create. This is a serious topic that is equally important to all firefighters everywhere.

These meetings are also a great time to discuss emergency action plans and recommend that someone needs to be on duty, on all shifts, to ensure the safety of employees. A system must be put in place that allows for effective communication throughout the building and even to the 911 center in case of emergencies. There may be restrictions placed on employees regarding cell phone use, and perhaps they are not even allowed to have cell phones while working. If that's the case, there needs to be a designated person located in strategic areas, on all shifts, who can call 911 for help and get the word out regarding an emergency and what actions need to be taken.

It's important to remember that proper planning and preparation are not limited to fire incidents. Consider the risk of snowstorms, tornadoes, floods, power failures, and even civil unrest and the impact on the big-box facility and, by extension, the nearby fire department. A hazardous materials incident on the highway nearby can have severe consequences on the facility's operation if deliveries can't be made.

Remember, many of these complexes are built near major thoroughfares. If they are closed for an extended period, it can have a serious financial impact. Evacuating these complexes can be extremely difficult for first responder agencies already dealing with a hazmat spill or even an impending weather event.

It's important to understand that a "routine" medical call or alarm activation investigation may not be so routine at these big-box facilities. If responding units do not know what entrance to use, they may park a long distance away from the distressed party or from the fire alarm panel. A simple request that is easy to accommodate during the planning process is for numbers or letters to be assigned to all the entrance points. These can serve as a point of reference for firefighters making entry and can also help when directing crews on a medical call. The dispatcher can relay what door letter or number to use to quickly get to the patient, and building staff can be waiting at the entrance to lead crews to the patient or location of a problem. Of course, this only works if the staff is trained and educated on the procedure, which is another reason to have a seat at the table ahead of time.



4. On a good day with no heat or smoke, how far into this building could you get in full gear and SCBA? What if the building is loaded with materials? *(Photo by John Feehan.)* **5.** Imagine this space in a heavy smoke condition with sprinklers discharging water. How deep are you willing to get without protection of a handline or an air source? *(Photo by John Feehan.)*

Challenges for these structures include the need for people, water, and air. The need for water will require you to be involved with standpipe systems. What type of system is it? What is the water supply? What size water mains are supplying this building? Is there a yard hydrant system, which may have limited water supply? Is it a dead-end main system? You need to know this going in, because any type of fire in this building is going to require a large volume of water to fight.

What is your number of personnel responding? How many members in your volunteer department are interior certified and willing to show up at a fire? If you are a small career department, how many members do you have on the apparatus? Any fire is going to be labor intensive.

Once the building is up and operational, departments should conduct regular walk-throughs and gain familiarity with the building layout. Note where all the fire department connections are located, what area of the building they supply, and how they will be supplied. Do they have locking caps requiring a special key to unlock them? Do all nearby departments have that key?

Record the location of nearby fire hydrants and whether they are private hydrants or municipal hydrants. Locate, mark, and record the fire department connections. It's also critical to note how they are supplied.

At one recent fire, the water supply line supplying the sprinkler system was on a dead-end main. A pumper tapped into a hydrant a few hundred feet back from the building, limiting the sprinkler's output and effect on the fire. Obviously, this is something to address before shovels even hit the ground, with looped hydrants being the preferred method.

Crews need to understand how the machinery works, especially the robots that zip around from point A to point B gathering inventory for shipment. They

6. The column closest to the camera is marked D-21. There are at least 20 additional bays between the columns. If you haven't adequately planned before the fire, it will be way too late to do it during the fire. *(Photo by John Feehan.)*

are programmed to "go and get" and, if a human gets in the way, may not know to stop, causing serious injuries. There are specific directions that can help "nest" these robots, but the time to learn how to do it is at a preplan drill. You also need to know where the power shutoffs are located for the conveyor system. In some buildings, there are miles of conveyer belts that may need to be shut down during a fire or other emergency.

It's always a great idea to test the radio and communication equipment and see how it works from inside the building. Determine if repeaters or signal enhancers are going to be needed to help facilitate radio transmissions. Be sure to work with the communication center to see if the dispatchers can effectively transmit as well as hear the radio traffic.

Training

Assembling a plan is one thing, but ensuring it is understood is another. Preplan binders gathering dust on a shelf or locked away inside a computer do no one any good if you do not occasionally review and drill on plans. Crews coming in on mutual aid will not be very helpful if they are coming in blind.

Add training and familiarization drills into the department schedule and review them often. Members come and go. Make sure you educate new members and bring them up to speed. Even veteran members will appreciate the refresher as well as build muscle memory that comes from regular drills and training.

When training on these buildings, consider strategy and tactics. Take search rope procedures, for example. First, ensure that your search ropes are uniform throughout your companies. All search ropes should be the same on every apparatus and should be marked in a similar fashion to indicate what company or unit deployed that rope. Second, take into account the type of search you are doing. Are you searching for fire or for missing employees with a hoseline operating on the fire? This is vital to the safety of your personnel. If you are searching for fire, members should not be entering the building more than 50 feet without a hoseline for protection. If you are operating up to 50 feet inside and still haven't found the fire, bring a hoseline to protect those members' escape. Once you have water on the fire, the searches can be more extensive and deeper into the structure.

The protection of members is essential to all successful operations. Are you allowing them into the building? You must decide how you plan on fighting this fire and how you are going to protect your members. A lot of progressive fire departments are using the method of thirds of an air bottle: one-third for operations, one-third for exit, and one-third for emergencies. Many others are using the half bottle rule: half a bottle in, half a bottle out. Many departments are also installing Firefighter Air Replenishment Systems (FARS) to provide air refill on the interior of the building. Normally located near standpipe outlets or egress areas, "the air standpipe" allows refill while being under full respiration. Firefighters can continue operations without having to leave for a refill of their second bottle. This would prevent the loss of critical reflex time for fires that can be fought from the interior.

Big-box stores and distribution centers are being built at an increased rate and in all types of areas. Because they are new and must conform to all the latest building codes, they'll have modern fire protection systems in place. This may cause leadership and responders to discount the serious challenges in these structures. But recent history has proven that big-box structures do catch fire and present many hidden dangers and obstacles, even during nonfire incidents. It's imperative that responders work to understand the risks and educate themselves so they can be better prepared and educated ahead of time. Department leaders need to ensure they have a seat at the table from the start. The time to be proactive is before the emergency call comes in and the tones drop. Are you ready? ■

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