

FIREHOUSE®

Weekly Drill

DRILL #113: FUEL LOAD

Introduction

It has often been said that “No two fires are the same.” So, if they are all different, then what makes them different? One of the biggest factors is the fuel load within the structures and the occupancy. Firefighters must have a good understanding and a working knowledge of these factors. In addition to the occupancy, the type of building construction will also have an effect. Fires react differently to the construction features of a building, so knowing the way it will react is to our benefit.

Fuel load is just a fancy way of stating what combustible materials might be commonly found within a given structure. However, these materials all produce heat (BTU) at different levels. The National Fire Protection Association (NFPA) and other agencies have come up with a simple rule of thumb for determining the amount of water flow needed for the different fire loads we have to fight.

The first fuel load, and most common for firefighters, is known as a light fire load. This light fire load is generally found in residential occupancies, school classrooms, and in most office environments. For these light fire load type fires, the NFPA has determined that a water flow rate of 10 gallons per minute for every 100 square feet of fire area should be sufficient. For ordinary fire loads, fires found in most commercial occupancies, the recommendation water flow of 20 gallons per minute for every 100 square feet fire area is sufficient. However, for high fire loads, fire found in many industrial buildings, a water flow of 30 to 50 gallons of water per minute for every 100 square feet of fire area is recommended.

Construction Types

Building construction will also have an effect on the way a fire will react. Type I buildings are rated “Fire Resistant” because they are constructed of non-combustible materials. However, all these buildings are full of combustible materials. An office building has nice wood furniture, wall-to-wall carpeting and lots of books and files full of paper. As mentioned above, this type of occupancy would be rated as a light fuel load. The building itself may be classified as “Fire Resistant;” however the contents is not.

Type II buildings (also known as “Non-combustible”) are mainly warehouses and are used for storage of com-



busibles in large quantities. Don't get hung-up on the name applied to the building (fire resistant, non-combustible) because even though the building is not going to burn that aggressively, the material stored within (fire load) its contents will.

Type III buildings are “Ordinary” construction and consist of masonry walls with interior partitions of wood. The occupancy found in this type of construction can range from residential to commercial. You may at times find an occasional manufacturing occupancy in these structures.

Type IV construction is known as “Heavy Timber” and generally will present a high fire-load condition. However, due to the features of this construction, these buildings are excellent at resisting fire. As the name indicates, the building is made with heavy-timber materials (minimum of 8x8 columns, beams and girders).

And the final type is Type V “Wood Frame” construction. This type of construction is the most common and is used in the construction of most, if not all, single-family dwellings. All elements of the building are prone to the spread of fire...and don't get fooled, many businesses and even hotels are now being constructed using wood frame.

—Prepared by Russell Merrick