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RiskTopics

Gas Fire Pit Safety Considerations

Features such as fire pits are becoming a popular amenity in many types of occupancies. They can be found in patio settings and even on Rooftops. This RiskTopic will discuss common exposures and possible controls.

Figure 1 – Alamy Photo Approved & Purchased for The Zurich Services Corporation

Introduction

Gas Fire Pits are a popular feature in a multitude of occupancies today and are used for a variety of purposes including providing a gathering feature for people to socialize, a source of seasonal radiant heat, and even a cooking medium for camp fire type snacks.

Concerns arise from several areas including installation considerations, device location, fuel source considerations, use and misuse potential.

Due to the varied sizes, types, and installation configuration, standards revolve around the components versus the entire assembly.

Discussion

Here are some common specification variables for many fire pit – type installations:

- Most units are natural gas or propane fired with the propane tank(s) being integral to the assembly
- Size of LP Gas tank is dependent on the BTU capacity of the unit
- Up to 65,000 btu units can use manual ignition. This is not recommended. Auto ignition with a flame or ignition failure shutoff is preferred. It should be noted, the larger the btu, the larger the flame.
- Some units will use a bed of pebbles, glass beads, other glass shapes, or lava rocks as part of the bed. These are usually at least 2" deep. Materials should be designed for the type of table used.
- Units can be arranged to provide for cooking of "camp fire" food such as marshmallows or even hot dogs.
- Glass barriers can be arranged to prevent coming in contact with flames.

Guidance

Specifying/Obtaining a unit. Determine the fuel source to be used and ability to deliver fuel to planned location of the unit. Units should meet the following standards: *CSA 2.41-2014/ANSI Z21.97-2017 and NFPA 54 National Fuel Gas Code.* If the unit has glass stones or other features, they should be specified for the particular unit.

Siting the unit

Placing the unit adjacent to main walkways should be avoided as well as areas near corners where people can strike or walk into unit while passing. If there is a possibility of exhaust gas to enter a building, carbon monoxide detection should be installed. If bottle gas is the fuel source, consideration should be made for delivery of fuel cylinders. If plumbed in, consideration of the likelihood of the plumbing being struck or a trip hazard should be made. If furniture is located close to the unit, it should be fixed so it can't be placed too close and provide a burn hazard (metallic) or ignition source (combustible).

Consideration should be given for the prevailing wind and shielding provided if the fire pit is in an unshielded area.

Placing the unit

Units should be placed on a flat, solid, level surface. If combustible material is under the unit, it should be removed or covered with non-combustible material. Ample clearance should be provided to prevent nearby combustibles from igniting or pyrolizing. This should be at least three feet or per manufacturer's instructions.

If furniture is located close to the unit, it should be fixed so it can't be placed to close and provide a burn hazard or ignition source.

In the unit under a sprinklered canopy, it should be no less than six feet away from the sprinklers or as manufacturer recommends.

Fueling the unit

Most units are LP Gas fired with the size of the fuel tanks related to the BTU rating of the unit itself. The tanks are usually integral to the fire pit assembly generally stored away for aesthetic purposes. LP gas units should not be used on rooftop units. Wood or pellet fired units should not be used.

Plumbing the unit

Plumbing for the unit should meet NFPA 54 requirements of a rigid line or other line rated for this use. Aluminum alloy piping should not be used in exterior installations. Connections should be protected from thermal exposure and physical damage.

Excess flow valves should be installed when possible. Electronic ignition should be installed. Flame failure sensors that shut fuel train off when loss of ignition occurs should be installed. Electronic ignition is greatly preferred and control switches should be secured so only staff can energize system.

An emergency shutoff should be placed in the fuel train.

Piping should be installed in a manner to prevent it from being struck or becoming a trip hazard.

Accessories

If glass walls are installed to protect unit, ensure glass is appropriate for heat it will be exposed to. Sharp edges should be trimmed.

Covers should be available to place on the units to protect the burners when not in use. They should be designed for the use.

If the unit is located near enough to an interior space such as a patio or overhang, consideration should be given to the installation of carbon monoxide and combustible gas detection.

If the unit is idled for the winter, it should be covered and prior to next season use, have the burner assemblies inspected for corrosion and blockage. Fuel lines should be shut off and bled off.

Signage should be posted advising children to be supervised around table; not to throw objects onto the fire pit; not to cook on table (unless designed for that purpose) and not to adjust or alter flame.

Signage should also be placed for staff advising on the do's and don'ts with the units as well as weather conditions it should not be operated in (high winds, rain, thunderstorms).

Figure 2 – Alamy Photo Approved and Purchased for The Zurich Services Corporation

Conclusion

Fire pits constitute a gathering point and a place of warmth for their intended audience. By following installation and use guidelines, they can provide an attractive amenity.

References

NFPA 54 National Fuel Gas Code

CSA 2.41-2014/ANSI Z21.97-2017 Outdoor Decorative Gas Appliances

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