ADVANCE APPROACH FOR FIRE AND SAFETY

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Abstract
This project attempts to bring under one cover all the information about and related to our topic advance approach for fire and safety. The basic idea behind installation of firefighting systems is extraordinarily simple and maybe that is why also people tend to miss out on the essential requirement of the same. In introduction discusses the complexities of relationship between humans and fire and the status of human efforts of control the disastrous effects of fire. A subsequent section examines characteristics and behavior of fire, with a special note on smoke movement in building. We also discuss fire safety and protection of building in design and construction, with attention to high rise structures. Fire hazards in residential and commercial buildings and understanding the role and responsibility of public fire department and facilities for fire protection are examined. Several sections offer details of fire protection devices and system including fire alarms, detection devices guard services, extinguishing agent, water sprinkler, special system at portable fire extinguishing.

Today, we see the emergence, not only of new technologies, but also efficient working and usage of the existing fire protection system. Saving lives and property has been the basic aim since time immemorial. Hence, the motivation of this project: to create an unbreachable system such that even fire also cannot spread its flames. At last all the ideas represented before are tried to install in holistic model.

Keywords: Hydrants,
Risers,
Voice evacuation,
Hose reel,
Stair well,
Fire ball etc.

INTRODUCTION
Fire protection is an integral part of the built environment. As such, it should always be engineered in conjunction with the overall building design. Multi discipline engineering firms sometimes have engineers of other disciplines design the fire protection systems. Sometimes they outsource the fire protection design to engineering consultants. Either option can result in inefficiency, improper design, or excess cost if not properly coordinated. Fire protection design was once almost exclusively prescriptive. In other words, projects incorporated specific fire protection majors prescribed by courts. Prescriptive fire protection design is still commonly used on many projects.

Engineers in disciplines other than fires protection are often charged with designing the fire protection in accordance with prescriptive court requirements. Proper design of fire protection systems for a prescriptive type project requires coordinating the fire protection design with the overall building design and integrating the fire protection design features with the other engineering disciplines. Fire protection features that are not designed while a building is being planned can sometimes be very difficult to incorporate later. Adding these features later increases the cost leaving them out comprises the level of protection provided in the building. In contrast with prescriptive design, performance-based fire protection design considers how fire protection systems perform Given the selected building design and its expected fire loading. Performance based fire protection design is steadily becoming more common. This type of design requires very close coordination with the building design, because every change specified to the building can affect fire protection system performance. Following prescriptive code requirements and coordinating them with the other engineering disciplines is not sufficient. In addition, the fire protection engineer and architect must closely coordinate all fire protection design features and documents their place in the performance-based design. For example, if a wall is intended to increase available occupant egress time or to eliminate the need for sprinklers in a particular area, then the interior designer must be made aware that the wall cannot be changed without changing the fire protection design. Many buildings with atria have special design features that likewise should not be changed. Once the performance-based fire protection design features have been selected and documented, they can be specified and coordinated with the other engineering disciplines. Whether a building is new or existing, or whether the fire protection design is prescriptive or performance based, this project explains the fire protection systems into the buildings.

Innovative techniques / systems in firefighting services

At an increasing rate, the fire service is learning to put to use existing technologies such as thermal imaging and positive pressure ventilation techniques, and is anticipating the integration of new innovative technologies, such as tactical decision aids, training simulators, and improved protective clothing. For existing technologies, it is critical that performance be measured and evaluated in a scientifically sound manner and that the technology is successfully transferred to the fire service through training programs and firefighting simulators. For emerging technology, industry needs science-based performance metrics to evaluate and improve their products and develop new technology, and an under- standing of the requirements of the fire service. For both existing and emerging technologies, it is critical that the technology be successfully transferred to the fire service through computer model simulations, virtual training programs and science-based training materials.

1. COBRA Technique
The COBRA is a new way of fighting fires from outside the building so that we don't have to put fire fighters in very hot environments. The COBRA is a very fine jet of water at 300 bars pressure & at that pressure water is capable of cutting through walls and even reinforced concrete. This is made possible by the graphite based cutting material similar to iron filings, in the jet of water that enables it to cut through almost anything. The important aspect is that, once the jet is through into the compartment, the water at 300 bars pressure becomes very atomized, increasing the surface area dramatically. This means it can absorb heat much faster than an ordinary jet of water.

- Advantages of COBRA:
  The COBRA has multifaceted safety advantages as:

1. It is safe for the people in the compartment because the temperature inside is controlled within a matter of seconds. The emission is also stabilized faster than conventional methods.
2. Fire fighters do not have to enter in the compartment in order to

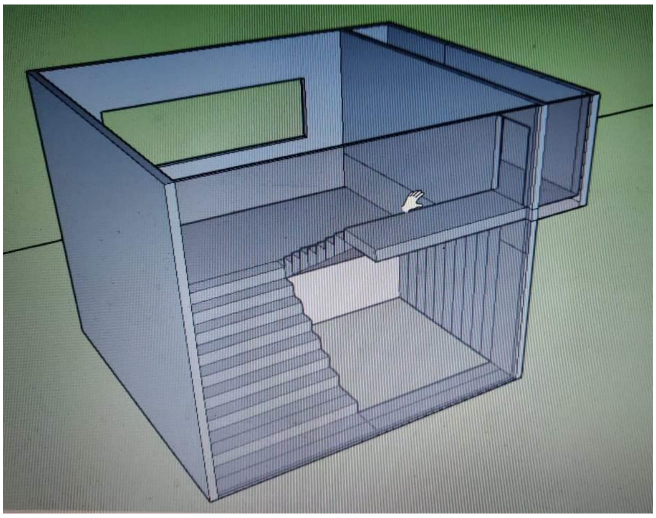
control the fire.

3. Because COBRA uses very small amount of water (60 l/min.) it saves water over conventional techniques.

2. Passive Fire Protection (PFP)

Passive Fire Protection (PFP) is an integral component of the three components of structural fire protection and fire safety in a building. PFP attempts to contain fires or slow the spread, through use of fire-resistant walls, floors, and doors (amongst other examples). PFP systems must comply with the associated listing and approval use and compliance in order to provide the effectiveness expected by building codes. The aim for Passive Fire Protection systems is typically demonstrated in fire testing the ability to maintain the item or the side to be protected at or below either 140 °C (for walls, floors and electrical circuits required to have a fire-resistance rating) or ca. 550 °C, which is considered the critical temperature for structural steel, above which it is in jeopardy of losing its strength, leading to collapse. Smaller components, such as fire dampers, fire doors, etc., follow suit in the main intentions of the basic standard for walls and floors. Fire testing involves live fire exposures upwards of 1100 °C, depending on the fire-resistance rating and duration one is after. More items than just fire exposures are typically required to be tested to ensure the survivability of the system under realistic conditions. To accomplish these aims, many different types of materials are employed in the design and construction of systems. For instance, common endothermic building materials include calcium silicate board, concrete and gypsum wallboard. During fire testing of concrete floor slabs, water can be seen to boil out of a slab. Gypsum wall board typically loses all its strength during a fire. The use of endothermic materials is established and proven to be sound engineering practice. The chemically bound water inside these materials sublimes. During this process, the unexposed side cannot exceed the boiling point of water. Once the hydrates are spent, the temperature on the unexposed side of an endothermic fire barrier tends to rise rapidly. Too much water can be a problem, however. Concrete slabs that are too wet, will literally explode in a fire, which is why test laboratories insist on measuring water content of concrete and mortar in fire test specimens, before running any fire tests. PFP measures can also include intumescent and ablative materials. The point is, however, that whatever the nature of the materials, they on their own bear no rating. They must be organized into systems, which bear a rating when installed in accordance with certification listings or established catalogues.

Proposed Model Image



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