

PRACTICAL FIRE PREVENTION IN MUSEUMS

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Many times one has been asked "What is the main cause of fire?" Inevitably, the answer must be - humans.

For instance, we build buildings of reinforced concrete which are almost indestructible before occupation, then we set about filling them up with flammables of all kinds, including human beings. Latest reports of main causes of fires are smoking in bed, electrical faults and arson - all human factors. So, being pretty smart humans, we who are left set out in a humanised way to find ways to stop fires that we humans cause, and at present, according to reports, we are still losing our fellow humans in fires.

There are many types of buildings that contain a variety of combustibles. Museums, for instance, are institutions in which objects of permanent interest are collected, preserved, studied and exhibited. Most of the objects are irreplaceable and they form an important part of a man's national heritage. They are especially vulnerable to damage by fire, smoke and water. Museums range in size from a single room to a complex of buildings and, although they are characteristically urban, many smaller ones operate at a distance from organised fire fighting services.

The trustees and their staffs bear responsibilities for the preservation of the objects under their control. They must provide them with continuous and adequate protection from many hazards other than fire, such as adverse humidity, dust, polluted air, insects, mould, theft, vandalism and arson. The last mentioned subject is increasing on a world-wide basis, and it is sad to note that during a ten year period arson has increased in America by 285%!

Fires in Museums

Museums are also vulnerable to the wide varieties of common occurrences responsible for most fires, - careless smoking, malfunction of furnaces, faulty wiring, improper use of a cutting torch, etc. Fires have occurred in museums with fire-resistant construction, in structures largely of wood, in large fully staffed institutions and in smaller undermanned ones. Fires have broken out in museums during the day when they were often filled with people, and at night when they were closed. Experience shows that the hazard of fire is increased when a museum is being renovated or when a new exhibit is being installed.

Some examples of fires that have occurred suggest two reasons for their having spread beyond the point of origin. One, of course, was the presence of combustible material which, too often, was in unnecessarily large quantities or lacked protective measures; the second reason was the delay in discovering and reporting fires. The first moments are critical - it takes only a few minutes for a small fire to grow to a big one. Yet, in the absence of automatic fire detection, discovery has been left to chance. Costly delay has also occurred when people finding a fire

have tried to extinguish it before giving the alarm. This is a cardinal sin of fire safety.

Some illustrative fires that have occurred in America are:-

National Museum of History and Technology, Smithsonian Institute, U.S.A., 1970 - probable electrical short-circuit in the exhibit, \$100,000.

Henry Ford Museum, 1970 - probable cause an overheated hair curling iron in the dressing room. Loss over \$2 million.

Other fires have occurred with considerable losses.

In the planning of a new museum building the site selected should have public fire protection and an assured water supply for fire fighting. Consultation with fire officials at this stage is necessary to obtain full benefit from the recognised authority on fire safety.

Other important points that continue on from the embryo stage include:-

- planning
- security
- Lighting
- gallery flexibility, such as moveable walls, etc.

Protection against outside exposure fires

If a fire breaks out nearby, will it spread to the Museum? Location is of prime importance, and isolation such as a site in a city park is ideal. If this is lacking, the greatest possible distance from neighbouring buildings should be maintained. This also contributes to museum security.

All combustibles such as dried grass, rubbish, etc. are to be removed and a clean, clear space maintained on the outside of the building.

In addition to this point, other facets need to be implemented, such as planning, construction, layout, lighting, air conditioning, means of egress and distance from neighbouring buildings in relation to possible damage from radiant and convected heat in the case of fire.

Fire protection equipment

Quote:- "Sprinkler systems cost about the same as carpeting, but the former is a necessity, the latter a luxury".

So states Mr. Charles Morgan, President of National Fire Protection Association in America. Automatic sprinklers have continually proved their value in the reduction of fire losses throughout the country, and their value should not be overlooked for museums. Automatic sprinklers perform several functions:-

1. Detect fires at the point of origin
2. Cause the sounding of alarms
3. Control or extinguish the fire
4. Can and should be connected directly to a central station to summon Fire Department assistance immediately.

Special fixed systems using carbon dioxide, halon agents, etc. can provide needed protection for specimen store-rooms or other areas where especially valuable contents would be irreparably damaged by water.

Portable extinguishers are important items of fire protection and should be installed for the class of fire anticipated. They should be properly located, identified and inspected regularly so they will be in working order when needed.

Housekeeping

Time does not permit discussion of all other problems, but to mention the main points in housekeeping control -

Appoint a Building Control Officer whose duties would include prior consultation with Fire Brigade Officials on -

1. The selection, location and maintenance of all fire equipment such as automatic sprinklers, smoke detection systems, portable fire extinguishers, etc.
2. Instruct all employees on the importance of fire safety and the necessity for complying with smoking regulations. Each employee should be carefully instructed in the event of fire or other emergency.
3. The assignment of the best qualified personnel to assist the Fire Brigade in the protection of museum collections.
4. Employ a night guard system if possible.
5. Restriction of smoking by visitors and employees to designated areas.
6. Regular inspection and maintenance of fire doors and exit facilities to ensure that they are in working order and unobstructed.
7. Daily inspection to ensure that rubbish, flammable packing materials, rags and scraps, paint and oily cloths which are liable to ignite spontaneously are disposed of immediately.
8. Supervision of the installation and use of all electrical appliances and the storage of flammable liquids.

9. Maintain contact with specialists such as the Fire Brigade and fire protection engineers.

If a fire occurs, the Building Control Officer should see that:-

1. The alarm is sounded.
2. Call the Fire Brigade.
3. Evacuate the building if deemed necessary.
4. Account for all persons.
5. Co-operate with the Fire Department.
6. Institute the clean-up action with special attention to the safety and salvage of objects.

In conclusion, it is admitted that fire protection and security equipment costs money, but it is most necessary to ensure that irreplaceable items are safely guarded from all possible sources of damage.