



FIRE PROTECTION PROGRAM

HOT WORK

Due the nature of our service work, Tate Engineering Systems is often called upon to perform cutting, brazing and welding operations (Hot Work) in existing buildings. The purpose of this program is to eliminate the potential for injury to our employees, customers and the public and to prevent damage to facilities and their contents.

Fire poses the greatest risk of sudden catastrophic loss during construction activities in existing buildings. According to NFPA, 60 % of the fire losses to buildings under construction were caused by the following:

- 1) Portable heating equipment (25%);
- 2) cutting, welding, and plumbers' torches (20%); and,
- 3) matches and smoking (15%).

The building owner and design professionals typically include minimum fire protection measures and procedures in the specifications or construction agreement. Where this is the case, the specified measures and procedures should be meticulously followed. Tate Engineering Systems considers these specifications the minimum, and, where our program is more stringent, the Tate Engineering Systems' program should be followed. In the absence of specified measures and procedures, the following program must be used.

HOT WORK PERMITS

Where required, the Service Manager will determine if client or contractor will issue Hot Work Permit.

SAFE WORK PRACTICES

The second most frequent cause of fire during construction operations is the use of open flame cutting, welding, and soldering equipment. Cutting and welding in existing buildings should be conducted with adequate supervision, fire watches, and emergency fire protection apparatus to assure that sparks or drops of hot metal do not start fires. Hot Work should not be conducted until the following conditions are satisfied:

1. Hot work shall not be conducted in any area not authorized by the Owner or General Contractor;
2. It has been determined that cutting and welding can be safely conducted at the desired location;
3. All workers performing hot work shall have been trained in the proper use of fire extinguishers. Fire extinguishers must be inspected monthly and annually and be ready for immediate use.
4. Combustibles have been moved away or safely covered;
5. Fire watchmen with extinguishers are posted for the duration of the work and for 30 minutes after work completion;
6. Cutting and welding operations cease 2 hours prior to the close of construction each day to minimize the risk of undetected smoldering fire.



FIRE PROTECTION PROGRAM

7. In sprinklered buildings while such protection is impaired, an alternative and appropriate means of fire protection is provided;
8. In the presence of explosive atmospheres (mixtures of flammable gases, vapors liquids or dusts with air) or explosive atmospheres that may develop inside drums, tanks, or other containers and equipment that has previously contained such materials or that may develop in areas with an accumulation of combustible dusts; and
9. In areas near the storage of large quantities of exposed combustible materials, an appropriate fire protection system is provided and is readily available.

HOT WORK PROCEDURES

1. All workers performing hot work must have been trained in the proper use of fire extinguishers. All workers must be aware of the contact information for emergency responders. A means of contacting emergency personnel (i.e. cell phone, two-way radio) must be located in close proximity to the work being performed.
2. Make sure hot work equipment to be used is in satisfactory operation and in good repair. Use only approved apparatus (e.g. torches, manifolds, regulators or pressure reducing valves and acetylene generators).
3. Where combustible materials such as paper, cardboard, scrap lumber and wood shavings are on the floor, the floor shall be swept for a radius of 35 feet in all directions.
4. Combustible floors or roofs (except wood on concrete) shall be kept wet, covered with damp sand, or protected by fire resistant shields (*see floor protection below*). Where floors have been wet down, personnel operating arc welding or cutting equipment shall be protected from possible shock.
5. Where practical, all combustibles shall be relocated at least 35 feet horizontally from the work site. Where relocation is impractical, combustibles shall be protected with fire retardant covers or otherwise shielded with metal or fire-retardant guards or curtains.
6. Edges of covers at the floor shall be tight to prevent sparks from going under them. This precaution is also important at overlaps where several covers are used to protect a large pile of combustible materials.
7. Openings or cracks in walls, floors, or ducts within 35 feet of the work area shall be sealed and tightly covered to prevent the passage of sparks or hot slag to adjacent areas (*see wall protection below*).
8. Conveyer systems, rubbish chutes and vertical openings that might allow sparks or slag to travel to distant combustible material shall be suitably protected.
9. Where hot work is done near walls, partitions, ceilings or roofs of combustible construction, fire-retardant shields or guards shall be provided to prevent ignition (*see floor & wall protection below*).



FIRE PROTECTION PROGRAM

10. If welding or cutting is to be done on metal walls, partitions, ceilings or roofs, precautions shall be taken to prevent ignition of combustibles on the other side, due to conduction or radiation, preferably by relocating combustible materials. Where combustibles are not relocated, a fire watch on the opposite side of the work shall be provided.
11. Hot work shall not be attempted on metal partitions, walls, ceilings or roofs having a combustible covering, or on walls or partitions of combustible sandwich-type panel construction.
12. Hot work on pipes or other metal in contact with combustible walls, partitions, ceilings or roofs shall not be undertaken if the work is close enough to cause ignition by conduction.
13. The appropriate type of fully charged and operable fire extinguishers shall be available at the work area. Fire extinguishers must be inspected monthly and annually, be ready for immediate use and within sight of the work area. At a minimum, there shall be two 10lb. ABC extinguishers on hand. If the work is being performed on a roof an additional two 10 lb. ABC extinguishers shall be placed on the roof in close proximity and within sight of the roof access. Where hose lines are available, they shall be connected and ready for service.
14. When hot work is done in close proximity to a sprinkler head, a wet rag shall be laid over the head and then removed at the conclusion of the hot work operation. Special precautions shall be taken to avoid the accidental operation of automatic fire/smoke detection or suppression systems.
15. Where hot work operations may cause an accidental alarming of the fire/smoke detection system, the Owner or General Contractor shall be notified so they may disarm the fire protection system (or portions thereof) until completion of the hot work operation.
16. Nearby personnel working in the immediate area where hot work operations are taking place shall be suitably protected against heat, sparks, slag, etc.
17. Hot Tapping. "Hot tapping" or other hot work on flammable gas or liquid transmission or distribution utility pipelines shall be performed by a crew qualified to make hot taps.
18. Workers performing hot work shall frequently stop work and inspect the area for signs of possible ignition of combustible material.
19. Means of access for firefighters and egress for workers shall be maintained.
20. Maintain a fire watch for 30 minutes after the completion of the hot work operations to detect and extinguish any possible smoldering fires and perform a final checkup four hours after cutting and/or welding has been completed. Watch for fires in all exposed areas, and try to extinguish them first only when obviously within the capacity of the equipment available, or otherwise sound the alarm immediately. Be familiar with facilities and procedures for sounding an alarm in the event of a fire.

FLOOR AND ROOF PROTECTION

Floor and roof protection shall be fabricated from fire-retardant treated plywood. Plywood panels should be carefully fitted with tight seams and laid continuously over the area to be protected. Joints should be taped to avoid displacement of the panels after setting.



FIRE PROTECTION PROGRAM

For greater protection from physical force, a layer of fire-retardant treated plywood can be applied over Homasote panel underlayment, with joints staggered to stabilize the assembly. In this double layer assembly, - the top plywood should be treated with a fire-retardant, but the underlayment need not be.

WALL PROTECTION

Wall protection is typically fabricated from fire-retardant treated plywood attached to wood framing. The assembly should be self-supporting and self-bracing, secured at its base to the floor protection assembly. Struts and balers need to be provided, as required, to brace the assembly without installing fasteners into finished surfaces.

EMPLOYEE TRAINING

To ensure the successful implementation of the Fire Prevention Program all Tate Engineering field personnel will receive training and information on the following:

1. The existence and contents of the Fire Prevention Program;
2. How to recognize potential fire hazards;
3. How to read and understand the hot work safety survey; and
4. Proper use of the portable fire extinguisher.

Each session will include a verbal presentation and the opportunity for questions and answers. Training must be conducted at initial assignment and annually thereafter or sooner if employee demonstrates the need for refresher training. The Safety Manager will maintain an updated list of the training completed by all employees.

FIRE RESPONSE

Watch for fires in all exposed areas and try to extinguish them first only when obviously within the capacity of the equipment available, or otherwise sound the alarm immediately. Be familiar with facilities and procedures for sounding an alarm in the event of a fire. Continue to monitor the area for four hours after the fire has been extinguished.

Do not attempt to use fire extinguishers on fires that are too large or spread out over a large area.

Do not attempt to use fire extinguishers in enclosed spaces where toxic gasses may be present.

As soon as possible, notify the Owner or General Contractor that an incident has occurred. Notify the Corporate Safety Manager promptly.