LOSS CONTROL DURING CONSTRUCTION

To control losses during construction, include the following points in the various management programs.

SCHEDULE PROTECTION TO KEEP PACE

Before construction begins, the following features must be scheduled for early completion:

- Installation of fire protection water supplies, such as fire pumps and reservoirs, underground piping and hydrants. Hose stream protection must be available when combustible construction materials arrive at the site. If permanent water supplies are not in service, suitable temporary supplies must be provided.
- Installation of automatic sprinklers to keep pace with construction progress. If portions of the building are to be occupied before the entire building is completed, arrangements should be made to install sprinkler protection in those portions first. This protection should be promptly connected to the water supply. Such connections may be temporary or permanent.
- Delivery of automotive fire apparatus to the site during the earliest stages of construction if such apparatus is to be a permanent part of the facility's overall fire protection. Temporary garages should be provided to protect the apparatus from the elements. Training in the use of the apparatus should also be provided.
- Delivery of combustible materials in such a way as to minimize unprotected on-site storage.

REDUCE THE HAZARDS OF CONSTRUCTION

The individual responsible for loss prevention and control must consider the following measures in order to reduce construction hazards:

- Instruct construction superintendents and supervisors in their duties and responsibilities regarding loss prevention practices.
- Keep automatic sprinkler protection in service for as long as practical in buildings that must be demolished.
- Keep combustible materials out of buildings until sprinklers are in service.
- Schedule frequent trash removal. Combustible crating and packing material should be disposed of safely. Restrict the burning of trash to areas well away from buildings and use properly arranged incinerators where practical.
- Minimize the building of temporary structures during construction. Those that are necessary should be sprinklered and located a safe distance from the construction.
- Implement proper impairment handling when altering or extending existing sprinkler systems. (See PRC.1.1.0.)
- Provide special fire protection equipment during hazardous construction operations.
- Properly distribute a sufficient number of portable fire extinguishers.
- Prohibit smoking in hazardous areas. (See PRC.1.2.0.)
- Strictly supervise all hot work. (See PRC.1.9.0.)
- Provide properly arranged temporary lighting and wiring in accordance with Article 590 of NFPA 70.

- Use only tarpaulins that have been flameproofed or made of flame-resistant material tested in accordance with Test Method 2 of NFPA 701.
- Provide safe sources of temporary heat.
- Locate bulk storage of gasoline, fuel oil, paint, solvents, welding gases and other flammable and combustible liquids or gases outside the buildings. No more than one day's working supply should be allowed inside the buildings. Only approved containers and dispensing facilities should be used.
- Keep roofers' tar kettles outside of and as far away from, buildings as practical. Suitable fire extinguishing equipment should be provided nearby.
- Take special care in the placement, operation and service of combustion engine-driven equipment. Refuel small gasoline units from listed or approved safety cans and large units from listed or approved containers in suitable refueling areas.
- Take measures to prevent collapse from windstorm. (See PRC.2.0.1.1.) These may include:
  - Providing temporary guying, cable crossbracing or other stiffening that can resist wind loading from any direction.
  - Bracing laterally unsupported masonry walls.
  - Permanently fastening roof decking, vapor barriers and insulation as they are placed upon the frame.
  - Lowering and/or securing all crane booms to appropriate anchor points at the end of each working day. (Note that a proper safety procedure on some tower cranes is to release the sluing mechanism so that the boom can weathervane with the wind.)
  - Establishing a maximum limiting wind speed for crane operations.
  - Providing wind relief panels, where appropriate to prevent windstorm damage during erection of structures.
- Take measures to prevent collapse from causes other than windstorm. These may include:
  - Maintaining a self-supporting steel framework.
  - Posting and observing instructions for the use of cranes, derricks and hoists.
  - Installing properly designed formwork and shoring for concrete construction.
  - Providing shoring, bracing or underpinning if the stability of adjoining buildings or walls is to be endangered by excavations or demolition.
  - Installing and connecting roof drains as soon as each section of the roof deck is completed.
  - Utilizing experienced riggers for all heavy lifts during construction and installation phases.
  - Implementing a test program to insure the proper curing of concrete before forms are removed or before new work is subjected to loading.
  - Providing temporary bracing for structures and equipment in earthquake-prone areas.
- Take measures to prevent damage from flood conditions created by rising streams or heavy rains. These may include:
  - Dikes or levees to protect open foundation excavations.
  - Pumps to de-water excavations.
  - Provisions to remove or protect construction equipment or newly installed equipment in excavations below ground level.
  - Providing temporary drainage facilities.
- Other loss prevention considerations should include:
  - Ensuring the availability on short notice of critical spare parts for cranes or other specialized heavy machinery.

- Winterizing all equipment, systems and machinery that will be exposed to freezing temperatures.
- Providing for additional security measures during strikes or labor unrest to prevent sabotage.
- Establishing a formal program for inspection and test of all major equipment and systems to prevent damage to electrical, heating, cooling or process equipment when initially energized or operated.

If the property under construction is a completely new facility, then it is necessary in the early stages to appoint a Fire Brigade Chief or Emergency Team Coordinator and to organize a Fire Brigade or Emergency Team in accordance with the recommendations found in AXA XL Risk Consulting's PEPlan. (See PRC.1.7.0.) However, if this is an addition or remodeling project, then all personnel should be notified that the responsibilities of the Fire Brigade Chief or Emergency Team Coordinator include the new area under construction.

While the Fire Brigade Chief's regular duties are defined in AXA XL Risk Consulting's PEPlan, any new construction creates a changing environment that requires the Chief to continually review the situation at the construction site. The fire attack plan should be updated as necessary and regularly reviewed with the public fire department.

SELECT A SECURITY DIRECTOR

The individual responsible for security and surveillance should review PRC.1.11.0. The specific duties of this individual should include:

- Instructing guards in their duties and responsibilities regarding loss prevention practices.
- Seeing that the site is enclosed with a fence where necessary. Gates should be properly monitored during working hours and secured during nonoperating hours. The construction area should be segregated from existing areas of the facility.
- Seeing that adequate lighting is provided for the entire construction area.
- Making sure combustible materials and structures are located a sufficient distance from the fenced perimeter to prevent easy ignition from outside.
- Developing identification procedures that control the access of personnel, vehicles and materials to and their travel in and about, the site.
- Providing guard stations and patrols that are designed to cover both security and fire protection surveillance during working and nonworking hours.
- Requiring the proper storage and security of construction explosives.
- Providing a temporary means of notifying the public fire department should an emergency occur.

To ensure the full benefit of AXA XL Risk Consulting's expertise, management should follow the advice of the AXA XL Risk Consulting's representative during site surveys.