INSTALLED BUILDING SERVICES AND EQUIPMENT

A Contractor's loss prevention guide

ALLIANZ RISK CONSULTING

INTRODUCTION

Installed equipment losses result in a significant portion of builder's risk claims

Installed equipment losses often occur during building construction due to problems arising from delivery, handling, storage, natural catastrophe events (such as extreme weather events and earthquake), as well as unexpected construction loss scenarios such as water damage, fire and contaminant damage. These losses result in a significant portion of builder's risk claims. This paper provides an overview of installed equipment best practices regarding risk exposure and loss prevention from storage and installation through to final acceptance by the owner.

POSSIBLE LOSSES

Equipment loss exposure often begins before the equipment even reaches the project site and can occur during transportation or while in the possession of the subcontractor. Loss exposure for equipment once onsite continues throughout the delivery process, including unloading, installation, commissioning and testing, and ultimately continues until final acceptance by the owner. Typical losses include improper handling, storage problems (e.g., humidity and dust issues, storm exposure), water ingress/leakage, fire, deterioration, impact (such as dropping) and theft.

TYPICAL BUILDING SERVICES AND EQUIPMENT*

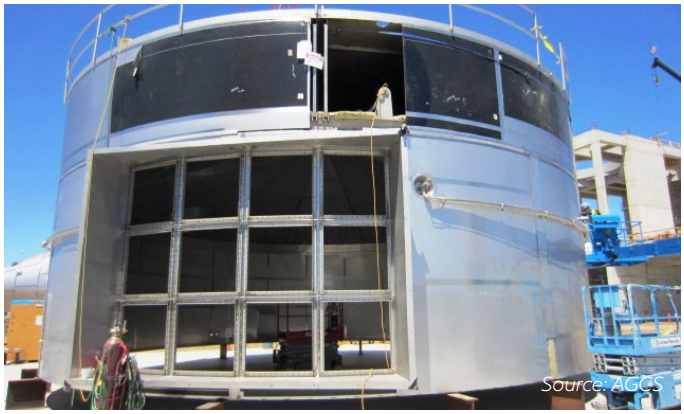
- Energy supply (e.g., gas, electricity and renewable sources)
- Heating, ventilation and air conditioning (HVAC) equipment
- Water systems
- Escalators and elevators
- Refrigeration systems
- Fire detection and protection equipment
- Low voltage systems
- Lighting and lightning protection controls
- Communication and IT networks
- Building management systems
- Security and alarm systems
- Medical and special equipment (e.g., for hospitals, theatres, stadiums, etc.)
- Manufacturing equipment

* not an exclusive list

INSTALLED EQUIPMENT PREVENTION

There are a number of steps that the contractor and project management can take to prevent installed equipment losses.

1. Schedule the equipment and material delivery "just-in-time" (onsite right before installation). The delivery of equipment and materials should be continuously updated in accordance with the construction progress schedule, in order to prevent long-term storage onsite.
2. Store equipment on pallets (or equivalent platform/support, in relation to the type of equipment) in a climate-controlled storage area considering humidity, temperature, dust, security, etc; Care for the equipment in accordance with the manufacturer's instructions and, in the event of long-term storage, maintain and operate intermittently if recommended.



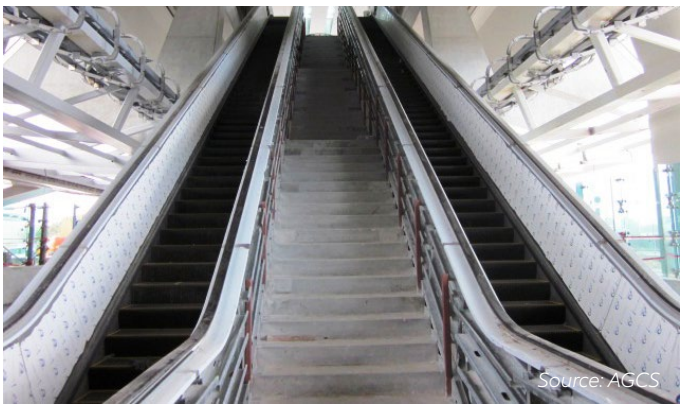
Take care to develop an appropriate lifting plan for heavy equipment

3. Where appropriate, cover the stored equipment with fire-resistive covers or suitable sheeting to provide added protection.
4. Prepare a dedicated room or laydown area in advance of the equipment arrival. Consider the storage and protection requirements for each type of equipment.
5. Ensure that the storage areas are protected from water ingress and leakage. Often contractors store equipment in the lower levels of the basement so as not to interfere with ongoing construction. Be aware that in the event of a water leak (unexpected plumbing/sprinkler failure, chiller lines separation or building envelope openings) the basement often becomes flooded. Consider locating equipment above the lowest level and if possible above the maximum flood level to minimize the risk of water damage. Consider installing moisture or high-water detectors in low lying areas to notify of the presence of water that could damage equipment.
6. When storing equipment in offsite locations, the locations should be carefully selected with consideration given to the following risks:
   a. *Natural hazards:* Specifically, water damage and high winds resulting from storms (e.g., flood, storm surge, tornados and hurricanes).
   b. *Fire:* The storage facility should have appropriate fire protection, which may include automatic sprinklers, fire alarm/detection system and appropriate fire extinguishers.
   c. *Theft:* The facility should be locked, alarmed and, where appropriate, guarded.
   d. *Temperature and Humidity:* If recommended by the equipment manufacturer, the warehouse should be temperature-and humidity-controlled.
   e. *Maintenance:* Depending on the duration of storage, maintenance of equipment may be required. Consult the manufacturer regarding equipment maintenance requirements while in storage and perform all recommended activities.

   The mitigation of these risks could include selecting alternative storage locations, elevated storage areas, highly weather resistant storage structures, fire protected warehouses, secure and guarded facilities, as well as appropriately covering equipment and performing routine maintenance, etc., to provide the maximum protection possible.
7. Ensure that the storage area is protected against vehicle impact.
8. Theft-prone equipment should be stored in lockable rooms or containers and security personnel should make rounds to deter theft.
9. Make sure that fire exposure is avoided or reduced by maintaining proper housekeeping and adequate fire prevention measures (i.e., proper hot work permits, fire extinguishers, smoking prohibitions, mobile detectors, etc.).

Equipment damage can result in rework, delay costs, lost profits and reputational damage

10. In the event equipment is to be cleaned prior to installation, refer to manufacturer instructions so as not to damage sensitive equipment. Insure final cleaning contractors are aware of special coatings, such as reflective/thermal coatings for glass and other sensitive surfaces.
11. Consider the impact of a cyber-attack to the IT systems of the building in respect of possible damages to or losses of the installed items.
12. Take care to develop an appropriate lifting plan. Ensure all cranes, hoists and forklifts are appropriately rated and adequate for the intended purpose, and use only certified operators for the offloading of equipment. Consider that, as equipment is lifted, toppling and dropping are very real possibilities. Offloading equipment should not be done in a hurried manner but rather with the same methodical care and planning as any construction lift.



Consider the storage and protection requirements for each type of equipment

13. Following equipment offloading, it is a best practice to either move the equipment to the installation location or take it to the pre-arranged storage location. Equipment often is damaged while in a temporary staging area.
14. Have a backup secondary location for equipment storage in the event that the planned location is not available, which can occur due to a variety of unexpected scenarios during construction.
15. In the event of adverse weather, such as a hurricane, tropical cyclone, etc., immediately stop all equipment and material deliveries and adequately protect or relocate equipment already onsite. For example, move equipment into shipping containers, cover equipment, fasten equipment to prevent movement, etc.

Note that Allianz has prepared ***The Calm Before the Storm - A Contractor's Loss Prevention Guide***, which addresses hurricane specific risks and protection measures which can be taken. Please request the guide from your Allianz Risk Consultant if constructing in hurricane exposed locations.

http://www.agcs.allianz.com/assets/PDFs/riskfeatures/Construction_Site_Hurricane_Protection_072511.pdf

16. When hot-testing equipment, always have a written commissioning plan with detailed start-up procedures in place and the manufacturer's representative and appropriate installation subcontractor present to prevent equipment damage.

PROTECTING EQUIPMENT IN SUB-CONTRACTOR CARE

Note that it is important for the contractor to ensure proper handling and care of equipment by the subcontractor. Often contractors do not consider the protection of equipment while offsite and in the subcontractor's possession a project exposure, however, this is often an incorrect assumption. Many losses to contractor equipment occur while in the custody of the subcontractor or stored offsite. With long-lead equipment, such losses can delay project completion, resulting in a costly loss and owner dissatisfaction.


Source: AGCS

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Builder's risk insurance experience has shown that most installed equipment damage could have been prevented with minor mitigation efforts and due diligence. It actually costs very little to prevent equipment damage and primarily requires a focus on planning and protection throughout the construction process.

When investigating most equipment losses it becomes evident that minor efforts and diligence during the construction processes would have prevented the loss.

Equipment damage can result in rework, delay costs, lost profits and reputational damage. Our construction experience indicates that review and adherence to the points discussed in this document are imperative to the prevention of equipment losses.

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