Best Practices for Protecting Projects During a Prolonged Outage/Shutdown

In the event that a project is to be postponed/idled for prolonged periods of time it is important to follow some best practices to ensure that critical systems, equipment, and conditions continue to function normally and provide for the safety and well-being of all stakeholders. Critical elements of site protection as they apply to idled projects include:

- Project Security
- Public Safety
- Worker Safety
- Environmental Protection and Control
- Fire Protection
- Material Protection and Quality Control

Along with taking steps to control hazards as they apply to the elements listed above, it is equally important to establish an Inspection and Maintenance Program that is tailored to the specific exposures that a site must deal with in its down time.

Thorough inspection and maintenance procedures help to ensure uninterrupted commencement of the project once the idle period has ended and helps maintain compliance with regulatory requirements and contractual obligations such as terms and conditions of insurance policies and lender requirements.

Identification of critical systems and protective measures is the first step in designing the inspection and maintenance program. A risk assessment by project leaders and competent persons can be the ideal method of identifying sitewide needs. These typically relate to life safety and fire detection/response equipment, fire main/sprinklers, electrical system, HVAC, plumbing, and major machinery such as cranes and construction hoists.

Once all critical systems are identified, the controlling contractor/party should inventory all appropriate competent persons for inspecting and maintaining these facilities while the project is in idle stages. Site inspection checklists/guidelines should be created to aid employees on what locations to review, and what types of conditions to be aware of.

Some guidelines and best practices to consider include the following:

Site Security

Creating a site boundary serves several purposes related to the prevention of unwanted entry, and safety of all who enter, or pass by, the project.

- Establish a physical barrier to secure the perimeter of the site.
  - » The physical barrier may include site fencing or hard walls with closing/locking doors or gates.
- Control all access points into the site.
  - » Reducing the number of building entry points reduces vulnerability and security costs associated with monitoring and controlling larger spaces and multiple points of entry.
- Install and maintain keyed door locks.
  - » Considerations for locking mechanisms should include compliance with applicable fire and safety (code) requirements and ensuring only critical personal are given keys.
- Install warning signs and informational postings to alert all stakeholders to hazards.
  - » Postings should include hazard warnings, no trespassing, and site emergency contact information.

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Site Lighting

Ensure site lighting is installed and functioning to enhance the visibility of security measures and provide for the safety of personnel moving between areas and around the facility.

- Lighting placement, direction, and angles should be carefully considered as to avoid bright glare towards vehicle traffic, CCVE systems, and posted security guards.
  - » Ensure any possible work area has a minimum of 5ft-candles of light to comply with OSHA.
- In remote locations, implementation of protective covers that protect the lighting from vandalism should be considered.
  - » Implement the use of motion detection and timed lighting systems to help protect indoor areas and office space that will be infrequently occupied.

Closed Circuit Video Equipment (CCVE)

Video monitoring can be an effective tool in identifying public safety, security, and employee safety related hazards.

- Establish cameras in areas within the site where critical assets, high value equipment/material is stored, or where known hazards exist.
- Cameras should be in sufficient number and appropriately located to cover the areas to be monitored.
  - » Keeping all cameras recording 24/7 can achieve the appropriate coverage/recordkeeping needed to detect illegal activity, unauthorized access, and any other events that occur on site that may be organizational threats.

Protecting the Public

Projects should ensure that no conditions are left at/around the site that may pose a threat to the health and safety of the public who may continue using areas at/around their project.

Ensure any water, debris, or dust from the site is cleaned up and controlled in a way that it will not impact members of the public who may share space or pass by.

Ensure construction devices and equipment do not impede public walkways, roadways, bikeways, or block signage, signals, or barriers related to traffic safety, navigation, and/or warnings.

- Secure any attractive nuisance that will remain on site.
  - » Remove all unnecessary heavy machinery or equipment from site prior to closure.
  - » Lock, and remove keys/controls from, all machinery and equipment.
  - » Ensure all pneumatic/hydraulic energy in construction equipment is released prior to storage.
  - » Remove bulk fuel storage from site or secure it in a location that it can be adequately protected.
  - » Store and secure all scaffolds and ladders.
- Remove any suspended scaffold systems and overhanging rigging systems.
- Backfill any trenches or excavations to prevent collapse, cave in, or flooding.
- Store all remaining tools in locked boxes that are not easily accessed.
- Remove any material or debris from areas where it may be susceptible to wind movement.

This precaution may include a need for tying down, or anchoring, material stored on roofs, edges, or in lay down areas.

Worker Safety

During times of periodic inspection and maintenance workers who must be on site must be provided with the proper personal protective equipment to complete their duties. Considerations related to suspended operations may include a need for

employees to come in and work in adverse weather conditions such as extreme cold, extreme heat, snow/ice, standing water, or to provide maintenance on damaged equipment.

- Ensure ample supplies of Personal Protective Equipment (PPE) are available.
  - » This may relate to cold weather gear, face/eye protection, fall protection, and respiratory protection equipment.
- All existing fall exposures at the project must be adequately protected (guardrails & covers) in alignment with regulatory guidelines.
  - » This includes leading edges, floor holes, and shafts.
- Lavatory and sanitation facilities must also be provided to employees who are asked to work during a shutdown.
- Identify "competent persons" related to existing site systems and conditions who can be called on to abate hazards as they are identified.
  - » Maintaining a record of persons with expertise in the projects electrical, mechanical, and plumbing system is critical in protecting employees from hidden dangerous energy sources.

Environmental Protection/Control-Water Intrusion

The project should identify potential sources of water infiltration and take steps to prevent the unwanted entry, or release, of water into the project. Unwanted water entry may lead to large losses due to product damage, mold, or freezing. Sources of water entry may include:

- Unsealed roof/deck areas
- Open windows or other vertical penetrations.
- Sprinkler systems
- HVAC systems containing water
- Water, sewer, and drain lines.
- Eliminate as many potential water sources as possible that may become a threat to the site due to lack or maintenance, freezing, or damage.
  - » Unnecessary systems containing water should be drained down, and drainage pipes inspected to ensure no blockages.
- All horizontal, or vertical penetrations in the buildings envelope should be closed, covered, or sealed to ensure water cannot enter.

Fire Protection

It is critical to ensure that all required fire safety detection and response devices are left in good working order during times of a project shutdown.

- Ensure all smoke and/or heat detectors, fire alarm systems, extinguishers, and access to a water sources are left in good working order and are easily accessible.
- Ensure access is maintained for emergency vehicles leading into the project and inside areas have clear, unobstructed, walking paths.
- Remove all unnecessary flammable and combustible liquids, materials, and debris.
  - » Flammable liquid storage areas must be adequately marked indicating their location and contents. Bulk storage of combustible material should be kept neat, orderly, and at a safe distance from any potential heat source.

If possible, consider removing from site all:

- Gas/Diesel/Kerosene
- Propane
- Oxygen/Acetylene
- Bulk epoxy/resin materials
- Large volume herb/pesticides
- Bulk Paint

Material/Quality Control and Protection

It may be necessary to maintain temporary electricity for HVAC, lighting, water supply, and life safety systems. It is also important to maintain the site in good sanitary condition by removing any trash or waste and placing it in appropriate dumpster facilities.

- Inspect inside areas for the elimination of food stores or waste to minimize the potential for infestation prior to site becoming idle.
- Have a competent person inspect the electrical system to ensure it is in safe operating condition for all anticipated conditions/working loads during the idle.
- Instruct employees not to change or modify any existing systems without authorization of the competent person.
- If projects require the use of a backup, or portable, generator then the generator and systems it supports should be staffed at all times while in operation and operated in alignment with appropriate NFPA and local authority guidelines.
- Cover, protect, or remove any critical tools or equipment that, if lost, could cause adverse harm to the project and its ability to continue/complete.