Safety Hazards

Demolition

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What is meant by "demolition"?

Demolition is the act of tearing down structures that may be structurally sound or damaged for various reasons. The scope of a demolition project may involve tearing down a section or an entire structure.

What should be done before demolition begins?

The scope of work must be identified before demolition begins. The structure must be assessed for stability and for the presence of hazardous materials, such as asbestos or lead, that could be disturbed during demolition and affect workers' health and safety.

A demolition plan should be drafted before work begins, outlining how the operation will be performed and including safety considerations. A risk assessment should be conducted specifically for every part of the work. Demolition and planning generally require input from experts, such as engineers and subject-matter experts, to ensure safety.

Before a structure is demolished, it should be cleared of hazardous materials. Electrical hazards and other utilities should be identified and deenergized, and if it is not possible to deenergize certain utilities, such as overhead wires, a safe work plan should be developed. Both public and private utility lines should be located (known as "locates") in the work area and included in the demolition plan. Locates identify utilities such as gas, electrical, telecommunications, and water services on a property.

What is a structural assessment?

A structural assessment examines the structural components to determine their overall condition, stability, and load-bearing capacities. Components such as the foundation, walls, columns, beams, and roof must be inspected.

A thorough structural assessment before demolition helps ensure the process is planned safely, reducing the risk of uncontrolled collapses or damage to nearby areas. A qualified professional, such as an engineer, must conduct the assessment. If hazardous materials are identified during the structural assessment, abatement may be required before demolition can proceed.

What are the different types of demolition?

There are many different types of demolition, including:

- **Selective demolition** involves removing specific parts of a structure while preserving others. This type of demolition is often used in renovation projects or for historic buildings.
- **Total demolition** is the teardown of an entire structure to clear the area for a new development. This type of demolition is often used when tearing down a plaza to build condominiums.
- **Implosion demolition** involves carefully using explosives to collapse a structure inward. It is typically used for large reinforced concrete buildings.
- **Mechanical demolition** involves using heavy equipment such as excavators or bulldozers to tear down a structure. This type of demolition is used for mid-sized buildings.
- **Interior demolition** focuses on removing non-structural elements such as ceilings and drywall while leaving the structural elements intact. This type of demolition is often used for office renovations.
- **Manual demolition** is done by hand, typically for smaller jobs requiring precision, such as removing material near an electrical system.

This list is not complete; each type of demolition can be used for various scenarios.

What are some occupational hazards from demolition?

Demolition exposes workers to many hazards. Hazards present will be specific to the operation and must be determined by hazard identification and risk assessment. The following is a list of hazards you may find during demolition. This list is not exhaustive.

- Structural collapse of a structure
- Falling objects or falling debris during dismantling
- Being struck by debris or machinery
- Crush injuries
- Confined spaces
- Oxygen-deficient environments
- Falls from heights
- Operating Heavy Machinery
- Exposure to dust and hazardous materials
- Contact with overhead electrical lines
- Contact with or damage to underground utilities such as electrical lines, gas lines and water lines
- Fire or explosion hazard, contact with gas line
- Contact with a biological hazard in existing structures
- Needlestick injury – discarded needles can be found in ducts or vents, for example
- Ergonomic hazards, including repetitive motion strain and Manual material handling – lifting, carrying, moving
- Vibration
- Noise
- Heat Stress
- Cold Stress

How can the hazards and risks be controlled?

Control measures are determined from a hazard identification and risk assessment. The following are examples of control measures and good practices that may be used during demolition.

- De-energize utilities before beginning work, or insulate or isolate live electrical systems
- Restrict access to demolition zones.
- Use supports or bracing as advised by engineers or as necessary
- Structural shoring and stabilization
- Develop a dust control plan
- Tether tools
- Air Monitoring
- Develop a working at heights plan
- Use signs and caution or danger tape
- Lock-out tag-out
- Establish good communication practices, such as using radio communication and hand signals
- Fire extinguisher
- Personal protective equipment

What personal protective equipment can you expect to use during abatement activities?

Personal protective equipment (PPE) must be determined based on a hazard identification and risk assessment specific to your scope of work. The following is personal protective equipment you can expect to use for demolition:

- Head protection
- Respiratory protection
- High visibility safety apparel
- Coveralls
- Eye and face protection, such as safety glasses, side shields, or a full-face shield
- Gloves that are puncture and abrasion-resistant
- Hearing protection
- Safety footwear

What training may be required?

Training needed will be based on the work scope and demolition type. Examples of training needed can include:

- Workplace Hazardous Materials Information System (WHMIS)
- Hazardous material handling, for example, lead, silica, or mercury
- Fall protection/working at heights
- Confined space entry
- Asbestos abatement certifications
- Hoisting and rigging
- Explosives handling certification
- Heat stress awareness
- Ergonomic hazards, including lifting and repetitive strain
- Machine operator training or certifications
- Training on the use of hand tools
- Personal protective equipment training

How is demolition debris managed?

Demolition generates debris. A plan should be implemented to outline how debris will be managed. Some materials, such as concrete, metals, and wood, can be recycled and repurposed. Other waste and hazardous waste should be disposed of according to regulatory guidelines. It is essential to be mindful of the environmental impact of demolition and comply with your jurisdiction's environmental regulations.

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