

Part 30 Demolition

Highlights

- Section 417 requires that employers remove from structures to be demolished all chemical and biological substances that could be hazardous to workers during demolition.
- Section 418 requires employers ensure that a competent person develops a demolition procedure for the use of explosives during demolition activities. (Section 8 of the *OHS Regulation* requires that the procedure be in writing and available to workers.)
- Section 420 requires employers to enclose particularly steep materials chutes. Chutes installed at an angle steeper than 45 degrees from the horizontal must be totally enclosed to prevent debris from falling or flying out of the chute.

Requirements

Section 415 Worker in charge

By its nature, demolition work is hazardous. A competent worker designated by the employer must be in charge of the demolition work at all times while work is in progress.

Section 416 Location of equipment

Because buildings or structures are being torn down or razed during demolition activities, falling materials are always a potential hazard at the work site. Temporary offices and tool boxes must be located to remain clear of falling materials and debris.

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Section 417 Hazardous substances

Subsection 417(a)

A structure that is being demolished may have at one time been used to store, manufacture or process a harmful substance. Harmful substances may also be present in the building structure.

A harmful substance is defined as a substance that, because of its properties, application, or presence, creates or could create a danger, including a chemical or biological hazard, to the health and safety of workers exposed to it.

This section of the OHS Code requires that all chemical and biological substances that could pose a hazard to workers during demolition be removed from the structure (or part of the structure being demolished) prior to demolition. This applies to a wide range of substances, including the following:

Chemical

- insulation (fiberglass, asbestos, refractory ceramic fibre)
- building materials containing asbestos (see Chapter 1 of the Alberta Asbestos Abatement Manual for examples)
- lead paint
- mercury (fluorescent lights, switches, gauges)
- polychlorinated biphenyls (liquid cooled electrical equipment, fluorescent light ballasts, paints, electrical insulating materials)
- paints and solvents
- oils and lubricants
- fuels (gasoline, diesel)
- batteries
- process chemicals
- glues
- air conditioning system or cooling system chemicals (freon, halon, other chlorofluorocarbons)
- compressed gases
- welding rods and solder

Biological

- mould
- bacteria (medical waste, human or animal waste)
- animal or human waste (sewage contamination, manure, bird droppings, rodent droppings)

The above list provides some examples of harmful substances that may be encountered, but is not a comprehensive list. The employer must, as part of the hazard assessment required by Part 2 of the OHS Code, identify harmful substances that may be present at the work site. The assistance of a consultant who can conduct a survey of the building for hazardous materials may be needed.

For all demolition projects, a written hazard assessment is required prior to work beginning. If substances are identified that may pose a hazard to workers during the demolition, these substances must be removed before work begins. The employer must consider both direct hazards e.g. contact with lead paint, and indirect hazards e.g. exposure to dust containing lead paint. Alternatively, the employer must develop work procedures that reduce or remove the potential hazard e.g. dust control measures, use of enclosures around demolition areas, etc.

Part 4 of the OHS Code requires that all asbestos-containing materials be removed prior to demolition. Asbestos-containing materials are considered to be materials that contain 1 percent or more asbestos by weight i.e. in the individual material, not aggregate waste. However, regardless of the asbestos content, if asbestos fibres may be released in amounts that reach or exceed the occupational exposure limit for asbestos, then the work site is considered a “restricted area”, as defined in section 1 of the OHS Code. For more information regarding asbestos removal prior to demolition, see Chapter 5 of the Alberta Asbestos Abatement Manual.



<http://employment.alberta.ca/SFW/2988.html>

Alberta Asbestos Abatement Manual

Although not addressed in the OHS Code, the employer needs to determine the appropriate method for disposing of the demolition waste. Requirements for waste disposal are covered under environmental legislation which is administered by Alberta Environment (www.environment.gov.ab.ca) The employer needs to contact the appropriate environmental authorities and the landfill to determine disposal requirements. In addition, the employer must ensure that the waste materials are contained in a manner so that they will not pose a hazard to workers transporting the waste or to workers at the disposal facility.

Subsection 417(b)

Any concrete that is to be included in the demolition must be assessed to determine if there are any facilities embedded in the concrete. As an example, there may be conduits carrying electrical lines, water/sewage lines, product lines, etc. It is important that workers know of the presence of such lines, their locations and whether or not they are carrying anything that might be harmful or injurious to workers. Concrete-embedded facilities must be identified, located and marked in accordance with section 447.

Section 418 Use of explosives

The use of explosives at the demolition site presents additional hazards. The employer must ensure that a competent person develops a demolition procedure for the use of explosives. The applicable requirements of Part 33, Explosives, must be met. As required by section 468, the employer must ensure that the blasting area is under the direction and control of a blaster having a valid Blaster's Permit.

Section 419 Disconnecting services

All electric, gas, water, steam, sewer, and other services lines should be disconnected i.e. shut off, capped, or otherwise controlled, at or outside the structure before demolition begins. In each case, any utility company which is involved should be notified in advance, and its approval or services, if necessary, should be obtained. Written confirmation of the disconnection is required. This written confirmation should be readily available at the work site to workers and an officer.

If it is necessary to maintain any power, water, or other utilities during demolition, such lines should be temporarily relocated as necessary and/or protected. The location of all overhead power sources should also be determined, as they can be especially hazardous during any machine demolition. All workers should be informed of the location of any existing or relocated utility service.

Section 420 Materials chute

To prevent debris from falling or flying out of a materials chute, chutes installed at an angle steeper than 45 degrees from the horizontal must be totally enclosed.

If material is being dropped, thrown or conveyed by a materials chute workers must be prevented from entering the area into which the material falls e.g. barricades, guardrails, etc. Highly visible warning signs must also be posted in the immediate area to advise workers of the danger.

Section 421 Dismantling buildings

Subsection 421(a)

This is one of the very few requirements in the OHS Code that addresses protection of the public as well as worker safety. The intent of the requirement is self-evident.

Subsections 421(b), 421(e), 421(f) and 421(g)

All structures are loaded in some way or other e.g. by external loads of various kinds, the weight of the structure itself, etc. The various parts – or in the case of framed structures, the members – transmit these loads to the foundations. In the complete structure the forces and reactions balance one another and equilibrium is achieved. The removal of a load-carrying member may unbalance the forces in that part of the structure, upset the equilibrium, and cause collapse.

In general, it is a sound rule to demolish in the reverse order to that used for construction. However, a deliberately engineered collapse, or a mechanical process, such as the use of demolition balls, pusher arms or explosives, may sometimes be the quickest and most economical way of demolishing some structures. Such work must always be carried out under expert supervision and measures taken to prevent injury to personnel or property.

Consideration should always be given to the following:

- (a) Can the proposed method lead to sudden or uncontrollable collapse of the part in question? If so, what alternative method can be used to allow the work to be carried out under control and in safety?
- (b) Is the member helping to support any other parts of the framed structure not intended to be demolished in this particular operation? If so, what measures will be necessary to prevent possible collapse of those other parts?

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- (c) Are arrangements made for the proper use of temporary struts, braces, shores or guy ropes to control temporary instability or sudden springing of the structure?

Subsection 421(c)

The release of forces in structures where tensioned cables or bars have been used may produce unpredictable reactions. Information about the design and construction of the building should be obtained prior to demolition beginning. Demolition procedures must be prepared and supervised by a professional engineer who is at the work site to control and supervise all related work.

Subsection 429(d)

This subsection is necessary to protect workers from falling material or the collapse of any portion of the structure.

Section 422 Building shaft demolition

If the scaffold were anchored to the structure, a collapse of that portion of the structure might pull the scaffold down with it. A free-standing scaffold is required when a building shaft is being demolished from the inside.