

Appendix C: Health and Safety by Design checklist for structures

The following list is a guide, and may be used to assist in identifying risks associated with the design of a structure throughout its lifecycle. It is the responsibility of the designer to ensure, so far as is reasonably practicable, that all the risks presented by the interaction between their design and people have been identified and appropriately managed.

Electrical safety

- Earthing of electrical installations
- Location of underground and overhead power cables
- Protection of leads/cables
- Number and location of power points

Fire and emergencies

- Fire risks
- Fire detection and fire fighting
- Emergency routes and exits
- Access for and structural capacity to carry fire tenders
- Other emergency facilities

Movement of people and materials

- Safe access and egress, including for people with disability
- Traffic management
- Loading bays and ramps
- Safe crossings
- Exclusion zones
- Site security
- Lay of work area

Working environment

- Ventilation for thermal comfort and general air quality and specific ventilation requirements for the work to be performed on the premises
- Acoustic properties and noise control (eg noise isolation, insulation and absorption)
- Seating
- Floor surfaces to prevent slips and trips
- Space for occupants
- Environmental issues – cold, heat, air movement, vibration, noise, lighting
- Work organisation – hours worked, shiftwork, work flow, workers ability to control the job/task

Plant

- Tower crane locations, loading and unloading
- Mobile crane loads on slabs
- Plant and machinery installed in a building or structure
- Materials handling, plant and equipment
- Maintenance access to plant and equipment
- Guarding of plant and machinery
- Lift installations

Amenities and facilities

- Access to various amenities and facilities such as storage, first aid rooms/sick rooms, rest rooms, meal and accommodation areas and drinking water

Earthworks

- Excavations (eg risks from earth collapsing or engulfment)
- Location of underground services

Structural safety

- Erection of steelwork or concrete frameworks
- Load bearing requirements
- Stability and integrity of the structure

Manual tasks

- Methods of material handling
- Accessibility of material handling
- Loading docks and storage facilities
- Workplace space and layout to prevent musculoskeletal disorders, including facilitating use of mechanical aids
- Assembly and disassembly of pre-fabricated fixtures and fittings:
 - Work layout and awkward positions – reach, ability to adjust work area or plant or tool to fit worker
 - Load and forceful movements – carrying, pushing, lifting, lowering, pulling (the human interface)
 - Task invariability – repetitive static holding, lack of variation in cognitive demand
 - Design to ensure that manual handling aids are suitable for the tasks for which they are used and that they are effective and safe for the range of people who may use them, and under the circumstances in which they are used.

Substances

- Exposure to hazardous substances and materials including insulation and decorative materials
- Exposure to volatile organic compounds and off gassing through the use of composite wood products or paints
- Exposure to irritant dust and fumes
- Storage and use of hazardous chemicals, including cleaning products

Human factors

- Individual factors – age, gender, fitness, fatigue
- Psychosocial factors – stress, time to do the task/work

Falls prevention

- Guard rails
- Window heights and cleaning
- Anchorage points for building maintenance and cleaning
- Access to working spaces for construction, cleaning, maintenance and repairs
- Scaffolding
- Temporary work platforms
- Roofing materials and surface characteristics such as fragility, slip resistance and pitch

For more information on Working at Height, see WorkSafe's guidance *Best practice guidelines for working at height in New Zealand*.

Specific risks

- Exposure to radiation (eg electromagnetic radiation)
- Exposure to biological hazards
- Fatigue
- Working alone
- Use of explosives
- Confined spaces
- Over and under water work, including diving and work in caissons with compressed air supply

Noise exposure

- Exposure to noise from plant or from surrounding area

Safe Work Australia Code of Practice *Safe Design of Structures* (2012)