



Retimix Concrete Pumping Health and Safety Policy

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1. Introduction

Concrete pumping is an efficient method of moving and placing concrete. This process is used in the manufacture of pre-cast and tilt-up panels, concrete formwork, slab construction, concrete paving and concrete spraying.

The construction and concrete pumping industries must be aware of the obligations to prevent harm to employees, contractors and others under the Health and Safety in Employment Act 1992 (the Act) and its regulations.

These guidelines provide practical advice about the safe operation and maintenance of concrete pumping equipment. The emphasis is to ensure a safe working environment whenever this equipment is used. They are not intended to be an all-encompassing design, maintenance and operation manual.

2. Purpose

This guideline provides practical guidance about the health and safety issues of concrete pumping to ensure as far as practicable a safe working environment for people in the industry. It provides guidance for principals, employers, contractors and pump operators (employees or contractors) on how to meet their obligations to provide a safe working environment when using concrete pumping equipment.

3. Scope

The guideline applies to the supply, acquisition, disposal, inspection, maintenance, registration and safe operation of all types of concrete pumps and associated placing equipment used in pumping or spraying concrete in the construction industry throughout New Zealand.

4. Relationship to New Zealand Standards:

This guideline complements the key New Zealand and Australian standards applying to concrete pumps.

5. Managing Site Hazards

This section outlines some of the significant hazards that are likely to occur on concrete pumping sites. Manual handling hazards an employer has a duty to identify and control hazards, including hazardous manual handling tasks. These tasks must be assessed, and if the potential for serious injury is determined, control measures should be put in place to reduce the likelihood that harm will occur.

| Hazard | Control |
|--|---|
| During set-up, pump workers manually handle items such as timber pads, reducers, pipes and hoses. When handling these items, the terrain or the access to the work area may increase the risk of injury. | Where practicable, establish walkways around the site and keep it clear of obstacles and debris. Provide non-slip ramps where workers are required to walk up inclines. |
| The use of hammers on clamps and the flapper boxlever, if carried out in areas of restricted access, are tasks that may create an increased risk of injury due to working in cramped positions. | Ensure that impact tools are kept in good condition; wear appropriate protective equipment, such as eye protection. Where practicable, conduct work in environments where there is more space to move |
| The laying out of pipes is a task that requires carrying bulky objects. The risk of injury presented by this task can be increased by walking long distances and the need to manoeuvre pipes around obstacles. | Where practicable, use mechanical equipment to lift and move bulky objects. Position bulk stores of equipment as close as practicable to labouring sites to minimise carrying. |
| Bending one's back to move beneath objects and stepping over obstructions whilst carrying pipes increases the risk of injury. | Where practicable, establish walkways that are kept clear of debris. Use Mechanical equipment to lift pipes over objects or up to higher floors |
| The location and design of the storage points on the truck for things like pipes, hoses, reducer and outrigger pads have a bearing on the operators' postures and the distance these items must be carried. | Position the truck as close as practicable to the concrete pour site. Do not use hoses longer than specified by the concrete pump manufacturer. |



5.1 Clearing Blockages

Blockages in pipelines can be a highly hazardous task, as their removal may release built-up air pressure. This may also be the case during clean-up or when removing and inverting the hose reducer to empty out concrete.

The end of the hose should not be enclosed by metal. Ensure that non-necessary personnel are kept clear of the pour area. The end-hose should not be longer than what the concrete pump manufacturer recommends.

Operators should be trained in how to recognise the potential signs of when air blockages could occur in the hose, for example:

- when first starting,
- re-starting after moving,
- when the hopper is empty,
- if the concrete is too stiff; and
- when the pump is reversed (although it should be recognised that sometimes it may not be possible to predict when an air blockage has occurred inside the hose).

5.2 Cement Hazards

Overseas research shows that between five and ten percent of construction workers may be sensitised, or allergic, to cement. Exposing the skin to cement can cause both irritant and allergic dermatitis.

Irritant dermatitis occurs because the abrasive and drying nature of cement on the skin causes it to become dry, itchy, red and scaly.

Allergic dermatitis is caused by a person becoming allergic to a chemical component in the cement, usually chromium salts. This usually occurs upon skin exposure to wet cement. Further, repeated exposure to cement can lead to allergic contact dermatitis. The more often the person is exposed, the worse the dermatitis becomes. Affected people may have to leave the industry if the dermatitis becomes serious.

5.3 Working in Wet Cement

Wear appropriate protective clothing and equipment:

- gloves,
- safety goggles (if splashes to the face could occur),
- long clothing,
- waterproof footwear

Remove footwear/clothing immediately and wash skin with a pH-neutral soap and water if direct contact with concrete occurs. If the symptoms of dermatitis appear, see a doctor as soon as possible for treatment.

5.4 Noise hazards

Workers in the construction industry use a variety of tools and machinery during their work. A significant hazard of using this equipment, or working near people who use this equipment, is excessive noise.

Prolonged exposure to excessive noise causes permanent hearing loss. It is not a general loss of hearing; the ability to hear some frequencies of sound is lost. It is a bit like listening to music with the treble control turned all the way down. Although a person with hearing loss may hear people talking, it becomes more difficult for that person to understand what they are saying.

Beware of hazards when set up in enclosed areas

An increase to normal operating noise levels may occur due to sound being reflected from other structures. Suitable control measures may need to be put in place to ensure that workers in the area are protected. These workers include but are not exclusive to:

- the workers in the affected area
- the concrete pump operators
- the delivery truck drivers
- the operators of other associated equipment.
- When positioning the pump, efforts should be made to minimise the effect of the surroundings on the workers' overall noise exposure.



6. Concrete Pumping Contractor

The concrete pumping contractor, after consulting with the principal and other involved contractors, should ensure that the most suitable location for the pump set-up is selected, including: an accessible, reasonably level area within the operating capacity of the equipment a firm base able to support the fully loaded working pump and delivery trucks clearance from obstructions and excavations observing electricity safety, including the restrictions of operating near overhead power lines the pump's operational safety zone.

The pumping contractor must ensure that any supplied pumping equipment is in a mechanically sound condition and has:

- legible identification on each piece of equipment
- comprehensive operator's instructions or the manufacturer's operation manual(s)
- all of the correctly positioned, legible warning and safety signs/stickers
- all required safety equipment
- an adequate supply of packing for the stabiliser base plates
- a completed assessment of the risks of injury from all associated tasks current equipment maintenance logbooks(s)
- any required transport authority permits and
- vehicle registration detailed maintenance and inspection records available upon request.

The pumping contractor must ensure that enough workers are available to safely pump concrete.

6.1 Planning and Preparation

Planning and preparation is the first step in ensuring that concrete pumping is done safely, and must involve consultation with all those engaged in the work.

Planning should incorporate the project's total pumping operational requirements. This plan may need to be reviewed each time a concrete pumping operation is scheduled, to consider any unforeseen circumstances.

6.2 Arrival on Site

When arriving on site (where practicable), the concrete pump operator, or other experienced representative, should be shown the set-up area, and the site conditions reviewed with the other contractors involved in the pumping operation.

Where any of the conditions under which the pumping equipment is to operate are not satisfactory, or if confirmation of the equipment's mechanical soundness is not available, rectification should occur before pumping commences.

6.3 Pump Set-up

The concrete pumping area should be reasonably level, solid and free of obstructions, with careful attention paid to the positioning of the pumping equipment and any stabilising devices.

The area should be clear of excavations, trenches or holes in the ground clear of inadequately compacted or soft ground clear of cellars, basements, pits or back-filled ground, unless stability is approved in writing by a qualified engineer clear of overhead power lines and fixed electrical equipment of a size enough to allow for safe operation of a size enough to allow for the safe discharge from the concrete delivery trucks.

6.4 Receiving Hopper

The concrete pump should be positioned so the receiving hopper is at a height that allows a gravity flow of concrete from the pre-mix delivery trucks into the hopper.

Hopper guard the concrete pump should not be operated unless the hopper opening is fitted with a grille-type safety guard. Upon which no-one can stand on, which prevents access to dangerous moving parts is constructed of parallel or mesh bars complying. Cranes (Including Hoists and Winches) – Concrete Placing Equipment which requires a tool to be removed is connected to an interlocked cut-out switch designed to stop all moving parts if the guard is lifted.

A correctly fitted hopper guard reduces the risk of body entrapment within the moving parts of the hopper, but due to its design, it cannot protect against all possible contact with the moving parts. Equipment manufacturers use a range of additional measures to limit the likelihood of entrapment, including, separating the operator's controls away from the moving parts raising the height of the hopper lid from the ground.



6.5 Operational Safety

Access to areas around the concrete pump and delivery pipeline should be restricted - the most appropriate method of isolating the area should be used.

The use of one or more of the following controls is recommended covered walkways barricades posts and safety mesh posts and danger tape or flags. The pumping or pipeline set-up is for a longer duration project, the isolation methods should be made more permanent.

Other people

No person, other than those workers directly involved in the concrete pumping operation, should be in the operational safety zone during concrete pumping.

Concrete delivery area the concrete truck delivery area, including the area around the pump hopper, should be set up to ensure that workers are safe from other vehicles adequate lighting is provided if pumping in non-daylight hours' appropriate signage is posted there is clear access for delivery trucks.

If multiple concrete deliveries are expected and on-site traffic management is not provided, only one delivery truck should approach and discharge into the hopper at a time.

6.6 Quick-Release Clamp with Locking Pin

Quick-release pipe clamps may only be used if provided with locking pins and should be visually checked prior to each pumping operation.

Locking pins, R-type or equivalent, are to be fitted and engaged when quick release pipe clamps are used on fixed or vertical pipelines, or where compressed air is used for cleaning pipelines the rated maximum concrete pressure exceeds 40 Bar.

7. Trainee Workers

Trainee workers must be under the direct supervision of a suitably trained or experienced worker who has been appointed as a supervisor by the employer or contractor and can immediately act to rectify a dangerous situation.

7.1 Cleaning of Equipment

Cleaning out residual concrete from pumping equipment should only be carried out by trained workers in accordance with the manufacturer's procedures or the detailed written instructions developed by a competent person.

When concrete pumping equipment is being cleaned out, ensure that another person is in the immediate vicinity to provide help in an emergency.

Pipeline

When cleaning out pipelines, the following safety precautions should be observed the end-hose should be secured or removed before cleaning to prevent the hose whipping around. All workers are to be kept clear of the discharge end while the concrete is under pressure. **Never attempt to dismantle the pipeline while it is still under pressure.**

8. Fatigue

8.1 Employee Responsibilities in Managing Fatigue

Employers do not have the sole responsibility to manage workplace fatigue. Employees must take all practicable steps to keep themselves, and other people around them safe.

Employees should:

- Turn up in a state fit for work, having done everything possible to get a good sleep and rest.
- Inform their manager or supervisor if a task is beyond their capabilities.
- Recognise the signs and symptoms of fatigue.

They include feeling (constantly) tired, having little energy, feeling 'sluggish', excessive yawning or falling asleep at work, less vigilant, bad moods, forgetfulness, inability to concentrate, poor communication, poor decision-making, reduced hand-eye coordination and slower reaction times. Other symptoms not so obvious to others include feeling drowsy, headaches, dizziness, blurred vision or impaired visual perception and a need for extended sleep during days off work.

- Communicate with your manager or a supervisor if you start showing the signs and symptoms of fatigue. Also, make managers and supervisors aware of other workers who may be fatigued.
- Report fatigue-related incidents.



8.1.1 Practical Steps to Minimise Fatigue

- **Sleep:** People generally need between 6 and 8 hours of sleep a night to maintain health and alertness. Adequate, good quality sleep is essential to maintain and restore full physical and mental functioning. It is the only way to recover from fatigue.
- **Promote better sleep:** If it is hard to get good- quality sleep, try - keeping a regular sleep schedule by going to sleep and waking up at the same time daily; sleeping in a dark room; avoiding using electronics directly before sleep; eliminating noise; not eating large meals directly before sleep; exercising regularly; changing to a different bed. Look at sleep-specific websites for more advice. If that does not work, consult a sleep expert.
- **Nutrition:** Eat a balanced diet, particularly foods that provide a steady release of energy throughout the day (e.g. whole grains). Drink sufficient amounts of fluid.
- **Work/life balance:** Have a life outside of work and 'switch off' after work hours. Continue any personal hobbies i.e. sports, social group meet-ups, etc.

9. Drugs and Alcohol

Drugs are defined as any substance that has the potential to impair work performance including:

- Illegal drugs including (but not limited to) cannabis, opiates, cocaine, amphetamines type substances (e.g. P, speed, ecstasy, benzyloperazine), LSD and Synthetic THC.
- Prescription or "over the counter" medicines that have the potential to impair work performance whether on their own or in combination with another substance, e.g. benzodiazepine, other tranquillisers and sedatives.
- Other restricted or legal substances that may impair work performance including (but not limited to) party drug or herbal highs.
- Other "mind altering" substances can be added to the testing suite as they become available and are misused.
- Alcohol is defined as any substance or beverage that contains ethyl alcohol including (but not limited to) beer, wine and spirits, etc.

9.1 Serious Misconduct

Working under the influence of drugs or alcohol is a breach of the Retimix concrete pumping rules and can constitute serious misconduct. Serious misconduct in relation to drugs and alcohol also includes (but is not limited to):

- Leaving the scene of an accident without a valid reason before the test has been conducted.
- Tampering with or attempting to adulterate the specimen or collection procedure.
- Returning a confirmed positive drug or alcohol test.
- Possession, use or sale of drugs in the workplace.
- Unauthorised possession, consumption or sale of alcohol in the workplace or during working hours (including meal or rest breaks).
- Driving under the influence of drugs or alcohol at work.
- Any action or behaviour that brings the Company into disrepute.
- Inability to provide sufficient quantities of breath or urine to be tested without a valid medical explanation.

9.2 Drug and Alcohol Testing

Retimix Concrete Pumping will use drug and alcohol testing to minimise the risks of drug and alcohol related harm in the workplace when necessary.

9.3 Random Testing

Retimix are willing to support any Customers who as part of their health and safety obligations require Retimix staff to undertake drug and alcohol testing.

Our management will be required to work in conjunction with the delegated Customer lead in order to ensure all requests, applied processes and result management is in accordance with advocated drug and alcohol testing processes and practice.



9.4 Test Results

Where a confirmed positive drug or alcohol test is returned by an employee or contractor it can constitute serious misconduct and will be managed in accordance with our disciplinary processes which may include dismissal.

9.5 Confidentiality and Privacy

All information gathered for implementing and achieving the objectives of this policy will be collected and held in accordance with the Privacy Act 2020.

Such information includes consent forms completed prior to testing and test result notifications. The employee or contractor tested, their representative, their manager and/or authorised Retimix Concrete Pumping representative may be informed of not negative or positive test results. Any documentation supporting a positive or not negative result will be held on the employee's file.

10. Environmental Practice

Retimix is very environmentally conscious. We use ground sheets for any potential spills and create water traps if necessary.

A spill response kit is used in cases where concrete slurry and or water may get into water ways e.g. Storm water drains, creeks and rivers.

11. Off Road Driving

Should any off-road driving be applicable, Retimix will ensure only competent vehicle operators holding a full license are assigned to any off-road driving responsibilities.

