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NZ Wood Design Guides

WORKING SAFELY WITH PREFABRICATED TIMBER

Chapter 5.3 | January 2020

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Wood Processors & Manufacturers
Association of New Zealand

NZ Wood Design Guides

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Each title has been written by experts in the field and is the accumulated result of years of experience in working with wood and wood products.

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NZ Wood Design Guides is a Wood Processors and Manufacturers Association (WPMA) initiative designed to provide independent, non-proprietary information about timber and wood products to professionals and companies involved in building design and construction.

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IMPORTANT NOTICE

PURPOSE

The purpose of these guidelines is to raise the awareness of the risks to anyone involved in erecting prefabricated timber framing designed in accordance with NZS 3604: 2011 Timber-framed buildings. They have been designed by representatives of the wider industry to improve worker safety and performance. The guidelines combine industry training standards, hazard management and best-practice information and aim to promote the safety and well-being of workers by providing a reference manual for people involved in handling, transporting and erecting prefabricated timber framing and trusses.

SCOPE

The guidelines are intended for use by all parties involved in the design, manufacture, handling, transport and erection of prefabricated timber frames and trusses. They:

- describe the risks associated with handling, transporting and erecting prefabricated timber frames and trusses
- provide recommendations for managing the risks and how to reduce the risk of injury or fatality to workers involved in handling, transporting and erecting prefabricated timber frames and trusses
- describe best-practice processes and procedures for the supply and erection of timber frames including:
  - the need for communication of information between everyone involved in the design, manufacture, transport, handling and erection of prefabricated timber frames and trusses
  - how information can best be communicated between all parties involved
  - systems and procedures for handling, lifting, erecting and securing frames.
- provide guidance on how to meet the requirements of the Health and Safety at Work Act 2015 (HSWA).

These guidelines apply to timber frames and trusses for residential timber-frame construction. These guidelines do not apply to frames and trusses for commercial, industrial and non-standard construction residential buildings.

The guidelines represent the best available knowledge at the time of publication on safe handling, transportation and erection of prefabricated timber frames. All work with prefabricated timber frames must comply with the requirements of the Health and Safety at Work Act 2015 (HSWA) and other relevant legislation.

Please note that nothing specified in this document supersedes legislation or the recommendations of manufacturers.

Good practice guidelines offer advice but they are not legally binding. They may however, be used in legal proceedings as evidence or whether or not a duty or obligation under the HSWA was complied with and may be cited by WorkSafe New Zealand as the expected standard of practice.

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Funding for the NZ Wood Design Guides is provided by our partners:

1. INTRODUCTION

1.1 SAFE SYSTEMS OF WORK

The handling, transport and erection of prefabricated timber frames is a hazardous operation that exposes workers to the risk of injury or fatality. The HSWA imposes a duty on PCBUs to ensure, so far as is reasonably practicable, the provision and maintenance of safe systems of work. The principles of a safe system of work are that the hazards are identified and the risks assessed prior to the commencement of work, and that all operations are well planned, organised and supervised to ensure that they are carried out safely.

Safe systems of work should:

- identify the hazards
- assess the risks
- document how risks will be eliminated, minimised or controlled
- ensure that everyone understands their roles and responsibilities
- monitor and review the control measures for identified hazards and risks
- have an emergency plan.

The objective of a safe system of work when dealing with prefabricated timber frames and trusses is that all hazards associated with and all factors affecting the handling, lifting and erection of frames are identified, considered, communicated, understood and managed by everyone involved in the operations.

1.2 COMMUNICATION IS ESSENTIAL

Good communication between all parties involved in a building project is key for a successful outcome. The principal parties are the client, the designer and the main contractor and good communication between these three groups is essential. Ideally all parties should be involved from the start of the project but in reality, this seldom happens. In fact, when the client is the owner, there may be no communication between the owner/client and the main contractor. Instead communication flows are between owner/client and designer, and between designer and main contractor. Figure 1 illustrates these communication flows.

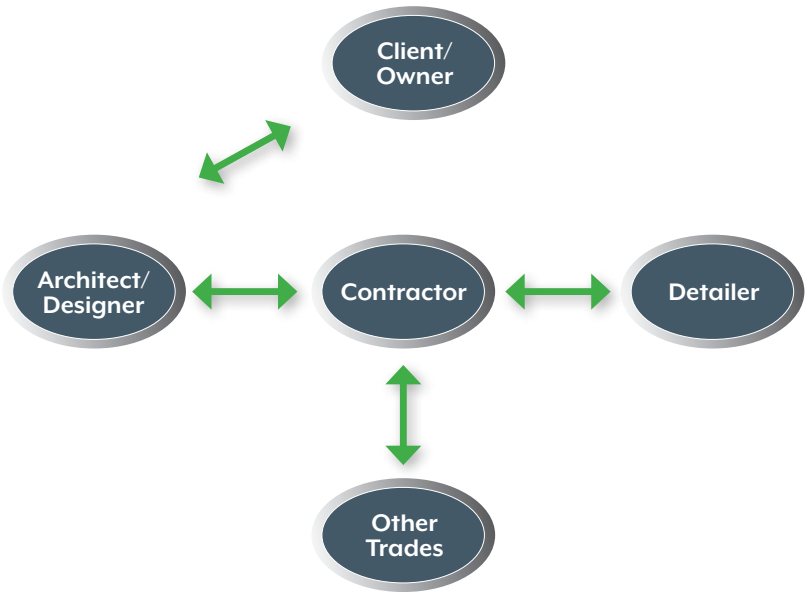


Figure 1: On-site communication

Good communication with the client is critical to the client's better understanding of the processes that occur and decisions that must be made. Poor communication is likely to lead to a lack of understanding of what is to be delivered. This in turn may result in design changes, leading to cost overruns, client dissatisfaction and potentially compromised worker safety. Good client communication from the outset of a project involves obtaining information from the client as well as describing all processes and procedures to the client.

Regular and effective communication between the three parties has wider implications to the project as it benefits the relationship of the management team, the workers and the project as a whole. HSWA requires regular and effective communication as each PCBU involved on the project has a duty to consult, cooperate and coordinate regarding health and safety matters. Conversely, a lack of communication hinders the relationship of the management team and workers, is detrimental to the project, can result in costly time delays and is ultimately likely to compromise worker safety.

A collaborative approach, including good communication, between client, designer, and contractor to safety, and working towards a common goal means that identifying and resolving problems and addressing safety issues are more likely to occur. The integrated approach encourages a culture of safety and safer working conditions through mutual trust and understanding.

Information sharing is vital to a project's success. Problems have occurred on building sites because one party has made an assumption but has not passed the information on to the other party or parties who need to have the information.

Communication must be two-way and there must be a mutual understanding between the parties including agreement on the means of communication. Channels of communication should be efficient and kept as short as possible as the longer a communication 'chain' becomes, the greater the likelihood of losing effective communication.

The primary methods of communication include:

Face-to-face

Emails

Phone

Face-to-face communication is the most direct and therefore the fastest and most efficient form of communication. Meetings provide a platform for group discussion that also allows for effective and immediate feedback and spontaneity, enables better development of project specific goals and objectives and facilitates better teamwork and collaboration.

Both **email** and **phone communications** are likely to exclude some parties as well as lacking the additional communication such as body language, cadence and tone that are used in face-to-face communication, potentially resulting in message content being misunderstood.

Information must also be sufficiently comprehensive to convey all that needs to be conveyed. For example, a reference to carry out work "in accordance with AS/NZS ..." may not provide sufficient site-specific information for workers to understand what needs to be done both correctly and safely.

Safety issues should be driven in a 'top-down' direction, i.e. they should originate from management and are most effectively enforced by management behaviour, including good communication and maintaining a culture of safety. The main contractor usually has the greatest control on site and the ability to influence and direct workers on site.

Each part on site has a responsibility for identifying risks, developing mitigation strategies and ensuring safer systems for their workers. Workers must not be left to resolve the safety issues without management involvement.

Discussion of safety issues must be across all levels and all parties are responsible for safety decision making and implementation. Communication between all parties involved fosters work environment where workers respect their colleagues and where health and safety are integrated into everyday practices, should be encouraged. A philosophy of shared responsibility across all groups is regarded as best practice and facilitates a culture of safety.

2 HEALTH AND SAFETY

2.1 HEALTH AND SAFETY AT WORK ACT 2015 (HSWA)

The following section contains an overview of HSWA but is not intended as a substitute for that legislation or regulations, or legal advice.

Everyone has the responsibility to ensure the health and safety of people in a workplace under the Health and Safety at Work Act 2015 (HSWA). The Act defines the workplace as 'a place where work is being carried out...' and 'includes any place worker goes, or is likely to go, while at work' and defines the roles of different duty holders in the workplace as:

- a person conducting a business or undertaking (PCBU)
- an officer
- a worker

See Table 1 and Figure 2

DUTY HOLDER	DEFINITION
PCBU	A person conducting a business or undertaking
Officer	Where a PCBU is a company, partnership, body corporate, etc. the officer is the director or person occupying the position comparable to the director, i.e. a person with significant influence over the management of the business
Worker	The employee, contractor, subcontractor employee of a contractor, subcontractor or hire company, apprentice or trainee, volunteer worker, person on a work trial

Table 1: Definitions of duty holders

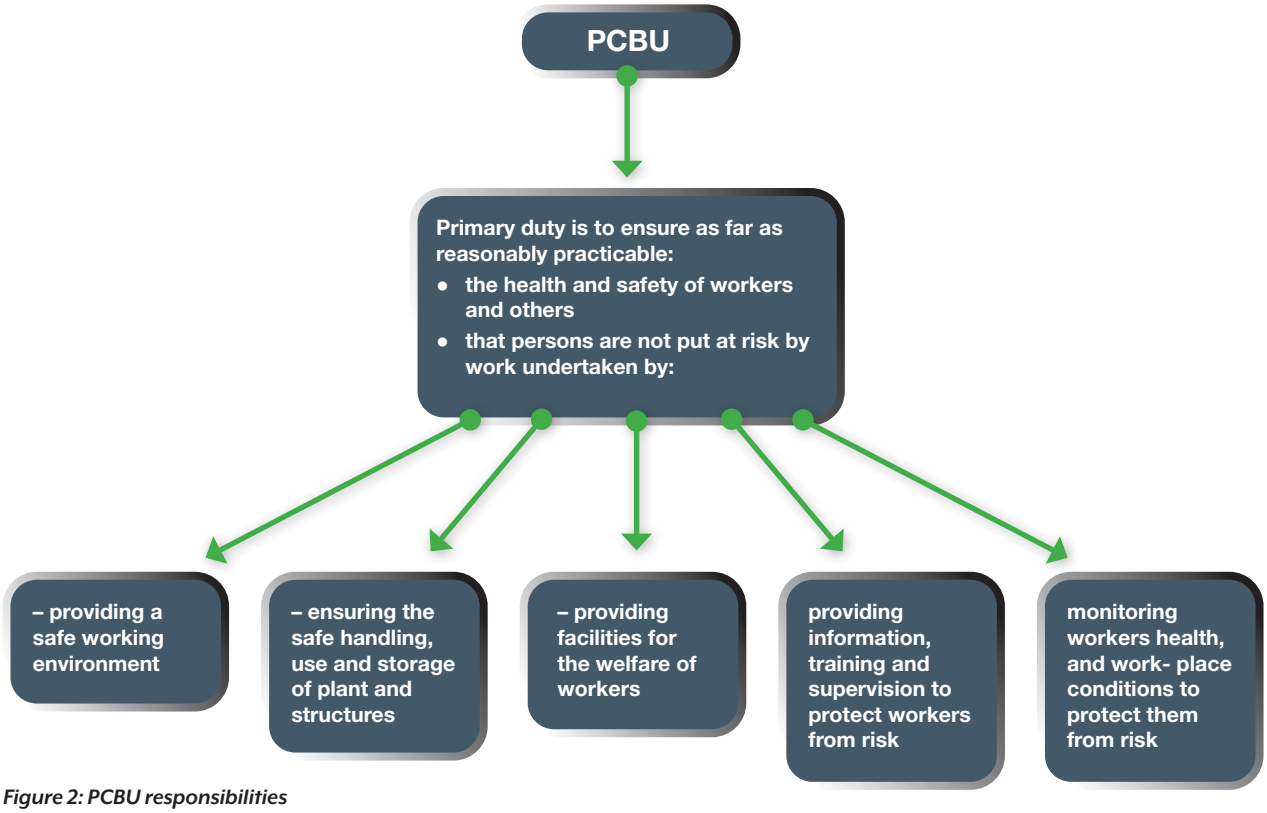


Figure 2: PCBU responsibilities

The primary duty of a PCBU is to ensure the health and safety of workers and anyone affected by the work. This includes providing and maintaining:

- a work environment without risks to health and safety
- safe plant and structures
- safe work systems.

There may be more than one PCBU in a workplace with overlapping duties, that is, more than one PCBU can have a duty in the same workplace. For example, on a building site the client, the main contractor, subcontractors and self-employed people are all PCBUs.

Section 34 of HSWA requires that where there is more than one PCBU in the same workplace, each PCBU must consult, cooperate with and coordinate activities with all other PCBUs so far as reasonably practicable.

See Figure 3 for overlapping PCBU duty holders.

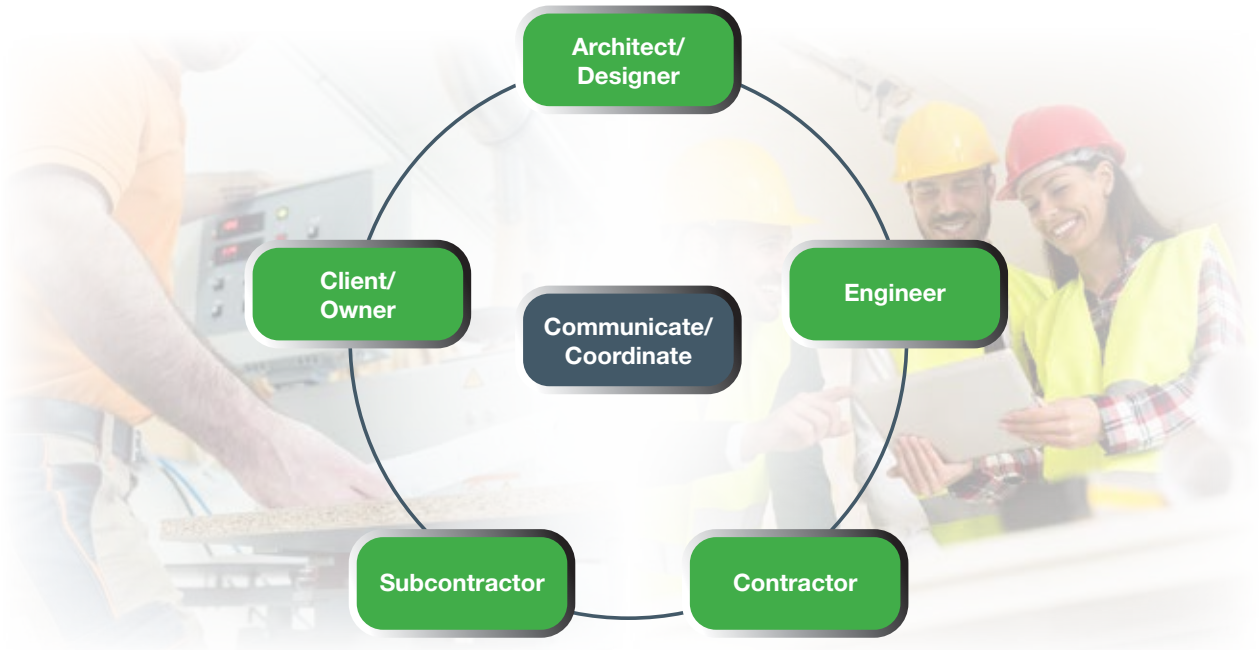


Figure 3: Overlapping PCBU duties

2.2 NOTIFIABLE EVENTS

If a notifiable event occurs, the PCBU must notify the health and safety regulator. A guide providing information about what the PCBU must do is described in a WorkSafe quick guide, *What events need to be notified?* – refer to Appendix J.

3. RISK MANAGEMENT

3.1 RISK MANAGEMENT SYSTEMS

PCBUs are required to provide and maintain safe systems of work so far as reasonably practicable. SiteSafe[1] recommends that as a minimum the following systems should be in place:

- **plans and procedures** for dealing with health and safety
- **worker engagement** in health and safety
- **risk management** by having processes in place to identify hazards, assess the level of risk and control and monitor the hazards
- **training and induction** to ensure that workers have the training and knowledge they need to be able to work safely
- **accident and emergency procedures** including preventative measures and methods of recording, investigating and reporting workplace incidents.

3.2 MANAGING RISK

HSWA requires a person to eliminate risks to health and safety, so far as is reasonably practicable. If f it is not reasonably practicable to eliminate risks to health and safety, a person must minimise those risks so far as is reasonably practicable. The level of compliance required depends on the extent to which the person has, or would reasonably be expected to have, the ability to influence and control the matter to which the risks relate.

The Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 sets out a hierarchy of control measures, including a process of identifying and managing risk including:

- identifying hazards
- assessing the level of risk for each hazard
- selecting appropriate control measures to eliminate or minimise risks
- employing methods of monitoring the performance of control measures

3.2.1 Identifying the hazards

The risk of harm from hazards when dealing with prefabricated timber framing can occur from framing falling or toppling while being transported, during lifting, being handled into position, or while being temporarily braced. *Table 2* describes some of the hazards associated with lifting, transporting and erecting prefabricated timber framing.

[1] The new Health and Safety at Work Act – A practical guide for small business owners, First Edition: April 2016.
Available online at: https://www.sitesafe.org.nz/guides--resources/the-new-health-and-safety-at-work-act---our- free-guide/

UNDERTAKING	HAZARD	POSSIBLE CAUSE
Erection/Lifting	Frames falling or collapsing causing crush injuries	• load falling from vehicle • incorrectly slinged • poorly secured to sling • incorrect sling used • failure of temporary bracing • insecure footing of base of frame • adverse weather conditions
	Injury or death as a result of: • untrained or poorly-trained workers • inexperienced workers	• inadequate training for required tasks • training not understood by workers • lack of refresher training • inexperienced workers without suitably qualified supervisors • inexperienced/improperly trained workers in use of signals/communications • malfunction of signalling system
	Injuries causing sprains, strains, and back injuries when handling framing	• using inappropriate lifting techniques during handling • using the correct equipment for lifting
	Falling from height	• inappropriate or no equipment used to reduce the risk of a fall • equipment not being inspected or well- maintained
	Rigging failure	• rigging design of insufficient capacity • damaged or incorrectly assembled rigging • lifting in a way that causes rigging to fail
	Underground or overhead services stuck or damaged	• weight of vehicle crushing underground services and causing vehicle instability • striking overhead powerlines
Vehicle use	Vehicles injuring workers	• inadequate site traffic management plan • lack of designated loading/unloading areas • vehicle not easily seen or heard e.g. no rotating light/no reversing alarm • unstable vehicle on uneven ground • ground conditions unable to support vehicle/load
	Load falling from vehicle injuring workers	• poor/uneven stacking • improperly secured • loads exceeding safe weight limits
	Unstable vehicle	• uneven ground • ground conditions unable to support vehicle/load
	Crane tips over or falls	• crane is set up on soft or unstable ground • crane is not set up level • outriggers are not fully extended • insufficient counterweights used • wind effects • load is too heavy i.e. incorrect calculation of weight
	Objects from load or the entire load falls injuring workers	• load is not rigged correctly • load is not properly secured • lifting equipment is not fit for purpose • exclusion zone is not maintained
	Frames falling or collapsing causing crush injuries	• improperly secured/fixed/supported/braced • insecure footing of base of frame

Table 2: Hazards associated with prefabricated timber framing

How to identify hazards

Hazards may be identified by:

- carrying out site inspections
- being aware of site practices, workplace behaviour and how equipment is used
- being aware of site accidents and incidents that may occur
- keeping resources such as guidance, instruction manuals and safety data sheets current.

3.2.2 Assessing the risk

When a hazard is identified, the risk must be assessed and control measures to reduce the risk should be determined. The control measures should be listed in a hierarchy of effectiveness from the most to the least effective. A job safety analysis (JSA) to document how risks will be eliminated or minimised should be prepared.

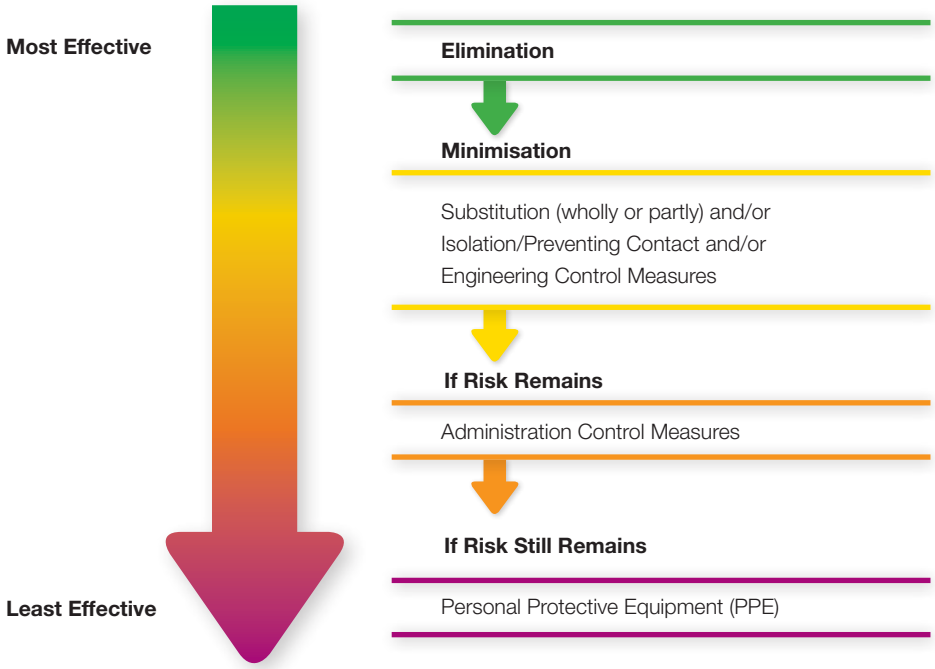


Table 3 ranks control measures from the most to the least effective.

3.2.3 Selecting appropriate control measures

When a hazard is identified, the risk must be assessed and control measures to reduce the risk should be determined. The control measures should be listed in a hierarchy of effectiveness from the most to the least effective.

Eliminate the risk

Elimination is the most effective control measure and, where possible, should be employed first.

Minimise the risk

If elimination is not reasonably practicable, the risk should be minimised by:

- **SUBSTITUTION** – use different equipment, change the design, change the work practices
- **ISOLATION** – prevent contact or exposure to the risk
- **ENGINEERED CONTROL** – design smaller frame sizes and/or different shapes.

Administrative control measures

If the risk still remains, use safe methods of work or processes designed to minimise the risk such as:

- a lift plan[2]
- policies to deal with workloads, fatigue and emergency situations
- procedures for carrying out the work safely[3].

Ensure that all workers know the risks

Ensure that all workers involved in a task understand their role and responsibilities in undertaking the task and that they know:

- the potential risks
- the control measures to manage risks and how to apply them
- why control measures are important
- all emergency procedures.

3.2.4 Personal protective equipment (PPE)

Personal protective equipment (PPE) is any equipment worn by a person to minimise the risk to their health and safety. When handling prefabricated timber frames, PPE includes safety helmets, steel-capped boots, high-vis vests, hearing protection, safety glasses, gloves. PCBUs must provide PPE and ensure that workers know how to wear, use and care for it.

3.2.5 Monitoring and reviewing control measures

The procedures and control measures for working safely must be monitored regularly to confirm they are working. HSWA includes a proactive duty on directors and officers of a PCBU to exercise due diligence to ensure these control measures are effective, and are monitored and audited. Monitor control measures by:

- involving and engaging with workers and observing work practices
- reviewing work activities on an on-going basis
- identifying new risks that may arise
- having scheduled audit dates to review processes to ensure they are being followed and still fit for purpose.

3.2.6 Worker competence and training

Training ensures that each worker and the team as a whole can operate safely. PCBUs must:

- ensure that every worker has appropriate qualifications and/or levels of training
- assess the competence of new workers and provide appropriate training as required
- ensure that all workers are provided with information (in a form they can understand), instruction and supervision
- provide ongoing training to all workers to ensure skills and knowledge are kept up-to- date.

WorkSafe recommends that PCBUs keep training records to monitor workers' training.

Worker participation

PCBUs must also provide reasonable opportunities for their workers to participate effectively in improving work health and safety in the business or undertaking on an ongoing basis.

[2]Lift planning: Your guide to crane association lift plans, Crane Association of NZ: April 2018
– Available online at http://www.safecrane.nz/uploads/2/0/5/7/20572552/ crane_association_lift_planning.pdf
[3]Managing contractors: Your guide to good contractor management, First Edition: April 2018
– Available online at: https://www.sitesafe.org.nz/globalassets/guides-and-resources/safety-blog/managing-contractors-27-march-2018-nocropscompressed.pdf

3.3 EMERGENCY PLAN

Having assessed the hazards and risks on a building site, there must be an emergency plan in place that covers any emergencies that could occur. The emergency plan should be jointly developed by the PCBU and workers to ensure that workers are involved in health and safety matters that affect them. Workers must be familiar with and trained in the emergency plan. It must be available to all workers at all times and must be maintained, tested and updated as required.

When preparing an emergency plan, consider whether it:

- covers all possible emergency situations
- covers what must be done in an emergency
- clearly defines the roles and responsibilities of managers and workers
- identifies the location of the first aid kit
- identifies the locations of escape routes and assembly points.

3.4 SITE-SPECIFIC DOCUMENTATION

All documentation and systems describing safe work processes and procedures must be site specific.
The documentation may include any or all of the following as required:

- a health and safety policy
- a workplace safety plan
- an emergency plan
- a visitor induction procedure including a register of all visitors onto the site
- an site incident and injury register
- a Job Safety Analysis (JSA) – refer to Appendix F for an example of a JSA
  a task analysis (TA)/safe work method statement (SWMS) – refer to Appendix G for an example of a TA/SWMS
- standard operating procedures documentation
- construction drawings – contract drawings, shop drawings.

3.5 SITE ASSESSMENT

The first step in hazard identification and risk assessment for any building project is to carry out a site assessment.

A site assessment will identify hazards and issues that may arise and must be undertaken before work begins. The site assessment should consider the:

- site conditions – ground conditions, access onto the site, site gradient (flat, sloping, steep), space for manoeuvring, space for storage of materials and plant
- building platform – the type of building platform e.g. concrete slab; timber floor on timber subfloor framing at ground floor level or first/second floor level; flooring requiring protection with polythene sheet or other protective material; wall framing (for truss installation)
- weather conditions during the time work is to be undertaken
- vehicle access – how do trucks access the site? is there a requirement for a traffic management plan? is there room for vehicles to manoeuvre?
- site safety and security – how do workers access the site? are there exclusion zones while particular tasks are being undertaken? is public protection required (e.g. covered walkways, barriers or fencing)? how is the site protected from unauthorised access?
- services to site – are locations of underground services known so they can avoid being damaged by heavy vehicles? are overhead services (cables, power lines) or trees likely to cause obstructions?

Refer to Appendix B – Site assessment checklist.

4. DESIGN

4.1 ROLE OF THE ARCHITECT/DESIGNER

Plans and specifications for the design, application of building consent and the construction of a building are prepared by the architect or designer. The plans and specifications are used by the frame and truss detailer to design the frames and trusses for the building. The architect or designer should therefore have a good understanding of the frame and truss design requirements and possible limitations associated with their manufacture, transport, handling and erection. They should also have a good understanding of the site and any implications and limitations there may be on the design of the frames and trusses such as:

- topography and site access,
- the ability for vehicles and lifting equipment to move around the site
- workers' movements around the site
- whether there is space on site for off-loading,
- handling requirements of the frames and trusses, and how these may impact on the design of the building.

4.1.2 Designing for safety – architect/designer responsibilities

Under the HSWA, architects and designers are required to ensure their building design does not risk the health and safety of anyone who uses the building or is involved in its construction. They must consider how their design will affect the health and safety of everyone who will interact with the building throughout its life, including during construction, maintenance and demolition.

The best time to eliminate potential hazards in a structure is during the design stage of a building project. Control measures to eliminate, or if elimination is not reasonably practicable, to minimise risks to health and safety, including during construction, should be integrated early in the design process. Designers should:

- identify and eliminate the hazards (where reasonably practicable) or manage the risks relating to their design of the structure
- determine how the design can be constructed safely
- provide information and instruction to protect workers during construction
- consider innovative approaches to the building design to eliminate or minimise risk.

4.2 ROLE OF THE DETAILER

The detailer translates the architectural design into detailed shop drawings for the frames and trusses to be manufactured. They must take into consideration the impact of the site on vehicle access, handling and lifting, and consider factors such as:

- the size and shape (length, width, height) of frames for transportation
- the weight of frames and bundles of frames for lifting and transport (refer to section – Calculating timber weights)
- the size of truck required to transport frames
- transport restrictions on length, width and height of framing, e.g. keeping the truss profile low if upright transportation is required
- manufacturing restrictions
- how frames and trusses will be stacked safely on the truck
- off-loading sequence of frames and trusses at the site
- site accessibility for a truck or a HIAB loader crane.

4.2.1 Shop drawings

Shop drawings are drawings, prepared by the detailer, that provide all the information needed for the manufacture of the frames and trusses.

The shop drawings are used by the:

- architect/designer to confirm the building design has been accurately interpreted
- frame manufacturer to cut, fit, assemble and bundle the frames
- transport operator for loading, delivery and off-loading on site
- erection supervisor to ensure dimensional accuracy and for the correct installation sequence and location of each component
- erection crew for the installation sequence and location of each component.

The shop drawings should describe the number and dimensions of frames and trusses and where each frame and truss is to be located on the building plan. They should also identify the project name location of the site.

4.2.2 Designing for safety – detailer responsibilities

Detailers must also design for safety with regard to access, handling, transport and erection. Design considerations and solutions must be building and site-specific.

Ideally, the detailer should be involved in a building project at the pre-planning stage with early communication between all parties involved including the main contractor, frame and truss manufacturer, detailer, transporter operator and the erector. In reality however, there is generally no direct communication between the architect/designer and the detailer, which means there is no opportunity for the detailer to be involved in the early stages of the building design or advise on limitations or restrictions that may be imposed on the building design as a result of site access, manoeuvrability and handling. The detailer also typically has no direct knowledge of the building site.

Refer to Appendix E – Detailers checklist.

4.2.3 Communication

Communication is key to safe work practices in all aspects of construction. There must be open communication so that all parties have all the information that they require to carry out their specific tasks. The detailer, main contractor/builder, frame and truss manufacturer and the erector must liaise and agree on the erection sequence and procedures.

4.2.4 Design of frames and trusses

Frames and trusses must be designed in accordance with NZS 3604: 2011 Timber-framed Buildings for earthquake, wind and snow loadings. Wall frames and beams that are to support additional roof loads such as roof-mounted solar units, hot water tanks and air conditioning units may require specific design.

4.3 ROLE OF THE MAIN CONTRACTOR/BUILDER

The main contractor or builder has the primary responsibility for the building project and generally for maintaining the communications between all the parties involved in the project including the parties involved in the manufacture and supply of prefabricated framing.

The main contractor typically communicates with the framing detailer who prepares the shop drawings for the manufacture of the frames and trusses. The detailer typically has no site knowledge so information about the site so the main contractor should provide all relevant site and construction information including:

- plans, specification and detailed building design information for the project
- wind, earthquake and snow zones and design loads
- site information – access, topography, ground bearing capacity, obstacles such as overhead power lines and low hanging trees, location of underground services
- transport and traffic issues – size of loads, size and number of trucks required, manoeuvrability for vehicles, whether there is space on site for offloading and storage, of framing or whether an on-road offloading area is required, whether traffic management is required
- required delivery date for frames and on-site contact details.

The main contractor is also responsible for ensuring that all relevant information about the frames such as spans, pitches, profiles, quantities and loading design requirements is provided to the frame and truss manufacturer and detailer when the framing is ordered.

Confirmation of dimensions and details should be made prior to manufacture.

When frames and trusses are delivered to site, the main contractor is responsible for providing where required:

- reasonable site access – including tree and other obstacle removal if necessary
- traffic management[4]
- temporary storage on site
- exclusion zones during lifting and handling
- public protection.

Refer to Appendix C – Main contractor checklist.

[4] Refer to WorkSafe Factsheet, Workplace traffic management at: https://worksafe.govt.nz/dmsdocument/686- workplace-traffic-management

4.4 INFORMATION FROM THE DETAILER

Once shop drawings have been prepared and the framing is to be manufactured, the detailer should provide to the main contractor:

- scheduled dates for manufacture and delivery
- floor plan showing location of each frame
- sequence for off-loading and placing bundles placement
- erection sequence documentation.

The main contractor should sign-off that the information has been provided and that it has been communicated to the transport operator and the erector.

4.4.1 Bundling and stacking

Bundling and stacking are determined by the detailer who must consider how packs of frames are best assembled for safe stacking and transport on the truck. In order to achieve the safest bundling and stacking configuration, frames are not always arranged in the best sequence for erection e.g. the frame to be erected first may be at the bottom of a bundle because the size and shape means that it must be at the bottom rather than the top of the bundle. (Note that it is not intended to annoy the builders!) The detailer should aim for the best compromises between design, loading the truck, transport and off-loading at the site.

5. HANDLING AND LIFTING

Frames and trusses need to be loaded for transport, offloaded on site (sometimes to a temporary storage area), and finally lifted into position and erected. Large components will require the use of a lifting device such as a mobile crane or a truck loader crane.

Multiple handling should be minimised as much as possible. If a stage in the handling sequence can be eliminated, the risks involved in handling large components are reduced, making the handling process safer. For example, a handling sequence can be eliminated by requesting delivery of frames when they are due to be installed removing the need for temporary on-site storage; or handling can be reduced by offloading frames as close as possible to their final installation location.

5.1 RIGGING

Rigging describes the use of all equipment and associated gear to lift, move, place or secure a load. The transport driver (for truck loader cranes) or crane operator (for cranes) must ensure that rigging is set up as designed.

5.1.1 General safety requirements for rigging

Load-lifting is a hazardous activity. General safety requirements include:

- **never** walk beneath a suspended load
- only trained and experienced people in rigging should undertake rigging activities
- establish an exclusion zone beneath a lifting area
- keep loads as low as possible
- use a tag line where possible
- before lifting a load, check that the rigging is appropriate for the task
- one person only should give standard signals
- a “Stop” command can be given by anyone and must be obeyed instantly.

Frames and trusses should be capable of being able to support the loads imposed on them during the various stages of the lift, including where rotation of an element may be required. If a frame or truss design requires a particular sling length or lifting system, this should be communicated by the detailer to the rigger or the crane operator.

5.1.2 Rigging plan

A rigging plan should be prepared that:

- identifies the proposed lifts
- provides calculations of the weight of the lifts
- identifies the hazards associated with rigging
- provides a visual representation of the proposed lifts.

5.1.3 Working load limit (WLL)

The working load limit (WLL) is the maximum designed load the crane can safely lift, raise, lower or suspend under specified conditions. It is the lifting operator's responsibility to establish the weight and centre of gravity of the load being lifted. The centre of gravity (CoG) is the point at which a load, if suspended, is in balance and stable. The crane hook must be directly over the centre of gravity for the load to be stable.

5.1.4 Establishing the weight of a load

The weight of the load may be established in a number of ways. It may be:

- indicated on the load
- stated on the documentation
- established by weighing the truck
- calculated based on commonly accepted weights of timber.

5.1.5 Calculating timber weights

Commonly accepted and used weights of timber in the timber industry are:

- 1,000 kg/m^3 for green or wet timber
- 450 kg/m^3 for treated, kiln-dried and machined timber.

Using these weights, Table 4 shows the weights of kiln-dried timber based on the timber dimensions.

Dry framing timber size (mm)	Weight (kg per linear metre)
70 x 45	1.4
90 x 45	1.8
140 x 45	2.8
190 x 45	3.8
240 x 45	4.8
290 x 45	5.8

Table 4: Weight of kiln-dried, finished timber based on timber dimensions.

Other weights for timber are given in kg/m^3 as follows:

- The approved Code of Practice for Load Lifting Rigging[5]
- The Crane Association also publish lifting weights for various materials.

[5] *Approved Code of Practice for load-lifting rigging, 5th Edition, published by MBIE, Dec 2012*

5.1.6 Lifting devices for frames and trusses

Polyester web slings are recommended for lifting timber frames and trusses. Chains and hooks should not be used for lifting as these can damage the timber.

Lifting framing depends on a number of factors including the frame length and shape. Framing must not be lifted at connections as this may damage joints and compromise the frame integrity. Trusses must not be lifted by the apex joint. Spreader bars with attachment to framing points should be used when spans exceed 9.0 m, or in accordance with manufacturer's instructions.

5.1.7 Factor of safety

The minimum factor of safety is the ratio between the working load limit (WLL) and the minimum breaking load. The factor of safety set out in Approved Code of Practice for load- lifting rigging for web slings is 6:1.

5.1.8 Slings

Slings should have the following information permanently and legibly marked on them:

- an identification mark
- the WLL at given angles
- any other information called for by the standard being worked to.

For two-leg slings with the sling legs at an angle to each, the load on each leg increases as the angle between the legs increases. See Figure 4.

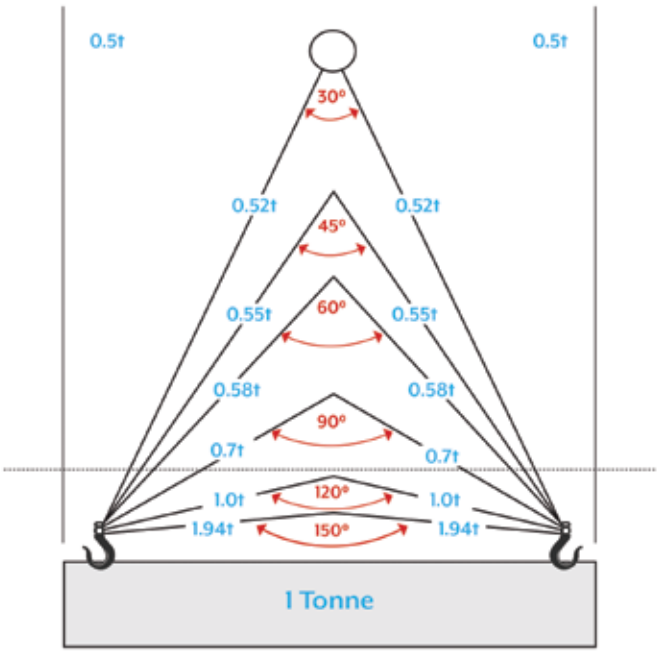


Figure 4: Angle load factors for two-leg sling

An angle load factor must be used to calculate the load on each leg using the following formula:

W x F = L, where W = the weight of the load in tonnes, F = included angle factor on each leg, and L = the load on each leg.

Example: For a 12-tonne load and sling angle of 60° the load on each leg is 12 x 0.55 = 6.6 tonnes per leg.

The angle between the sling legs must not be 120° or greater. The area below the dotted line in Figure 4 indicates where the load is excessive due to the extreme angle of the sling legs.

5.1.9 Weather conditions

Weather conditions must be considered during any of the lifting, handling and erecting operations of prefabricated timber framing. Lifting operations should not be carried out in adverse weather conditions such as high wind, rain or snowfall, or an electrical storm. The transport operator (HIAB) or the crane operator should make the final decision about whether a lifting operation should be postponed due to adverse weather conditions.

Wind

High winds may cause frames to rotate and make lifting operations unsafe. Before carrying out lifting operations, the operator must consider:

- the wind speed
- the wind resistance of the load being lifted, and
- the weight of the load being lifted.

Lightning

Lifting operations must never be carried out during an electrical storm as a crane boom can become a lightning rod.

All lifting and crane work should stop during an electrical storm and should not resume again until 30 minutes after the last audible thunder or visible lightning flash[6].

High rain or snow fall

Lifting operations should not be carried out if there is a significant risk of high rainfall or a large snow fall as these can affect the stability of the ground conditions.

[6] Recommended by SafeCrane, a website created by the Crane Association of NZ; available online at: http://www.safecrane.nz/

6. TRANSPORTATION

Although the detailer makes decisions about frame and truss sizes for transport, stacking for safety of loading and off-loading, it is ultimately the transport operator's responsibility to load, transport and off-load the frames safely.

6.1 ROLE OF THE TRANSPORT OPERATOR

Transportation of frames and trusses must be carried out by a transport operator with appropriate qualifications, vehicle and equipment including the appropriate Transport Service Licence (TSL).

All transportation must comply with New Zealand Transport Agency (NZTA) requirements under the:

- Land Transport Act 1998
- Land Transport Rule: Heavy Vehicles 2004
- Land Transport Rule: Vehicle dimensions and mass (VDAM) 2016
- Land Transport Rule: Work time and logbooks 2007
- The Official New Zealand Truck Loading Code
- Load Pilot Driver Code 2017
- Code of Practice for Temporary Traffic Management (CoPTTM).

Transport operators must have documented standard operating procedures (SOPs) and ensure that all parties understand their responsibilities.

Planning and communication between the main contractor, detailer/manufacturer, transport operator, and erector are essential for safe transport and delivery of frames.

The transport operator's responsibilities include:

- planning the delivery route
- planning for any contingencies that may arise
- obtaining any necessary permits
- communicating with the supplier for pickup and delivery dates
- ensuring that the load for transportation is securely fastened.

6.2 INFORMATION FOR THE TRANSPORT OPERATOR

Good communication between the main contractor, frame and truss detailer and manufacturer, the transport operator and the crane operator (if a crane is required) must be maintained in order to coordinate the loading, delivery, and offloading of the frames and trusses.

The frame and truss manufacturer should advise the transport operator about transport and delivery requirements such as the height, width, length, weight and weight distribution of the frames to be transported so that a suitable vehicle can be scheduled. A minimum 48 hour delivery timeframe should be allowed for adequate scheduling.

The main contractor must advise the transport operator of on-site hazards such as:

- restricted access
- overhanging trees/power lines
- uneven or poor ground bearing conditions.

The main contractor should also coordinate the delivery time to ensure that there are workers on site when the delivery is made. If framing must be stored temporarily on-site before erection, the location of the storage area must be clearly communicated with the transport operator and the lift operator if lifting is required.

6.3 TRANSPORTATION REQUIREMENTS

Transport considerations include:

- type of truck – flat-deck trailer or HIAB[7] loader crane
- truck requirements – truck must have headboard and load space and condition of platform must be suitable for the size and type of the load, and anchor points for the securing devices)
- lifting equipment e.g. a mobile crane
- securing devices – webbing straps; chains; certificate of fitness for load restraints (restraint systems must be able to prevent forwards and backwards deceleration, and sideways and vertical acceleration), dunnage if required
- required permits and documentation for transport and delivery
- the transport route taking into account bridges, winding roads, power lines
- the size, shape and weight of load which must be within the weight limit and vehicle dimension
- load arrangement, distribution and stability which must be:
  - spread to keep the centre of gravity as low as possible
  - on or as near as possible to the centreline of the vehicle to maintain lateral stability
  - arranged to give the correct axle distribution and even distribution
  - have larger, heavier components at the bottom of the stack
- site access limitations
- a site-specific traffic management plan
- delivery sequence and timing
- offloading location on site.

Vehicles must have a certificate of fitness (CoF) covering all aspects of vehicle condition including:

- certificate of loading which is issued to a vehicle that requires verification of its loading and weight limits
- load restraints (e.g. chains, webbing) that must meet the requirements of *The Official New Zealand Truck Loading Code*.

[7] Published by NZTA and available online at https://www.nzta.govt.nz/vehicles/choosing-the-right- vehicle/choosing-and-operating-a-heavy-vehicle/safe-loading/

Drivers must:

- be suitably qualified/experienced
- keep a log book recording work/driving time
- be aware of hazards, risks, and control measures
- have the required documentation before loading
- have a delivery transport plan
- be inducted onto supplier and delivery sites.

6.4 LOADING REQUIREMENTS

Vehicle loading must comply with *The Official New Zealand Truck Loading Code*[8]. Vehicles should be on firm, level ground while being loaded. Uneven ground can create a risk of the load tipping over.

When loading a vehicle, the truck operator should ensure that:

- identification marks are visible before and during unloading
- if possible, unloading can be carried out in the required sequence for erection
- weight is evenly distributed and the load is stable
- the vehicle is not overloaded
- the load is properly secured.

Loads must be adequately secured and restrained so that they do not move while being transported, fall from the vehicle during unloading or become unstable when the restraint system is released before unloading.
Frames are transported either horizontally or vertically. They must be fully supported and care must be taken when securing the load to ensure that no strain is put on the timber. Timber or metal angle protectors are recommended to protect the timber from damage.

6.5 DELIVERY

6.5.1 Traffic management plan

A site traffic management plan[9] should be prepared by the main contractor that describes:

- site conditions and load
- on-site traffic flow layout
- vehicle access e.g. all-weather, limited, obstacles (power lines, trees), underground services
- other vehicles on site
- on-site speed management
- on-site signage to guide traffic
- designated areas for loading/unloading and vehicle manoeuvring
- designated safe area for driver while loading/unloading
- provision for temporary on-site storage
- safety of workers on-site
- barriers, walkways, hoardings, fences for the public adjacent to site (as required).

[8] Published by NZTA and available online at https://www.nzta.govt.nz/vehicles/choosing-the-right- vehicle/choosing-and-operating-a-heavy-vehicle/safe-loading/

[9] Refer also to WorkSafe Factsheet, Workplace traffic management at: https://worksafe.govt.nz/dmsdocument/686-workplace-traffic-management

6.5.2 Unloading

The main contractor, transport operator and erection supervisor (if he is not the main contractor) should decide the offloading sequence together. Unloading should:

- consider the loading sequence
- consider how to offload without causing instability of either the vehicle or the load
- occur in the designated offloading area

6.6 TRANSPORT OPERATOR'S CHECKLIST

The transport operator should check that:

- access is suitable for the size and weight of the vehicle
- all road surfaces are suitable for the vehicle to drive on, including the loading and delivery sites
- all hazards have been identified
- all documentation relating to the load has been provided
- a signature on the Proof of Delivery document has been obtained.

Refer to Appendix I – Example of Safety control sheet for site deliveries

6.7 MAIN CONTRACTOR'S CHECKLIST[10]

Refer to Appendix B – Main contractors checklist

Before a delivery of framing is made, the main contractor should ensure that:

- traffic management systems and control are in place and operating
- there is suitable access for the delivery vehicle and crane if required
- hazards have been identified (e.g. trees, overhead powerlines)
- risks have been identified
- areas that should be restricted have been identified
- all loads can be accommodated
- temporary storage is available if required
- ground conditions can support loads of vehicles and loads
- all workers know the erection sequence and procedures
- the weather forecast is satisfactory during the scheduled delivery time.

6.8 Unloading checklist

Before unloading, check that:

- the load has not moved or destabilised during the journey to site
- there is an exclusion zone around the loading/unloading area to keep people who are not involved away from the work
- there is a lift plan and the method of unloading has been planned
- the lifting equipment has a valid certificate of inspection
- the preparation work can be done at ground level or that there is safe access to the tray of the truck.

[10] See also the WorkSafe website: worksafe.govt.nz/topic-and-industry/building-and-construction/absolutely-essential-toolkit. (Also available as a flip book – Small construction sites: The absolutely essential health and safety toolkit.

6.9 Crane operations and safety[11]

If a crane is required the main contractor must consult with the crane controller to determine requirements for safe access to and working area on the site.

Considerations include:

- Is the ground where the crane will be set up level and compacted?
- How will access be managed, e.g. other traffic, separation of plant and workers?
- Is there enough space to deploy outriggers (if required) and extend the boom?
- Is the work area a safe distance from excavations, shoring, trenches, buried utilities and foundations?
- Will the crane and/or load encroach on power lines?
- Who will contact relevant utility services if required?
- How will an emergency be managed?
- Is there a documented lift plan?
- Are the crane operator and dogman/rigger qualified and competent? (Qualifications may include a national certificate or crane manufacturer training.)

[11] See also WorkSafe Factsheet, Crane safety for construction site managers/supervisors, available online at: https://worksafe.govt.nz/topic-and-industry/cranes/crane-safety-construction-managers-supervisors-fs/

7. ERECTION

Before the erection of prefabricated timber frames and trusses begins, the hazards associated with erecting framing must be determined and the risks assessed. Even if there is only one large frame, a risk assessment is still required.

7.1 HAZARD IDENTIFICATION

Hazards that can occur during offloading and erection of frames include:

- frames falling from the truck or while being lifted
- frames falling or collapsing onto workers while being manually handled or tilted into upright position
- workers suffering musculoskeletal injuries (e.g. strain, back injury) while manually handling frames
- workers falling from height during roof truss installation
- rigging failure during offloading or lifting
- underground or overhead services or structures being damaged during lifting or manual handling.

7.2 RISK ASSESSMENT

A significant risk to workers' health and safety comes from the manual handling of frames. By the time the frames arrive on site, the decision should have been made, based on the size, shape and weight of the frames, as to whether a crane is required to assist with offloading and erection. Where a HIAB truck or a crane is not provided, all the framing will need to be physically handled.

A 'rule of thumb' to determine whether frames and trusses are oversize or overweight requiring a crane or lifting equipment is:

- Is any framing over 3.0 m high?
- Is any framing over 5.0 m long?
- Are any of the framing members larger than ex 100 x 50?

If the answer to any of these questions is yes, crane and lifting equipment should be used.

Alternatively, the weight of framing may be provided by the detailer or it may be calculated using recommended weights of dry framing timber – refer to section *Calculating timber weights*.

Other risks to workers' health and safety include:

- tight time-frames which can put workers under pressure
- poor weather conditions which create dangerous working conditions

7.3 ROLE OF THE ERECTION SUPERVISOR

Refer to Appendix D – Erection supervisor checklist.

The erection supervisor is a PCBU under the definition in the Act, and therefore has a duty as far as reasonably practicable, to make sure that the framing erection procedure can be carried out with risk to the health and safety of workers erecting the framing.

The role of the erection supervisor (who may also be the main contractor) includes:

- communicating with the detailer, manufacturer, transport operator and crane operator (if involved) to decide on the erection sequence for the framing and safe working practices
- verifying and signing off that the required information has been provided from the detailer/manufacturer
- preparing a health and safety plan
- ensuring that the erection crew know how frames will be handled, including rigging and propping requirements and handling instructions
- ensuring that the erection crew is familiar with the erection plan
- ensuring that the erection crew is familiar with the emergency plan
- checking the frames for damage when they arrive on site
- ensuring that the frames are lifted and handled safely
- ensuring that the frames are secured in accordance with the erection plan
- monitoring weather conditions during erection.

7.4 RESPONSIBILITY OF THE MAIN CONTRACTOR

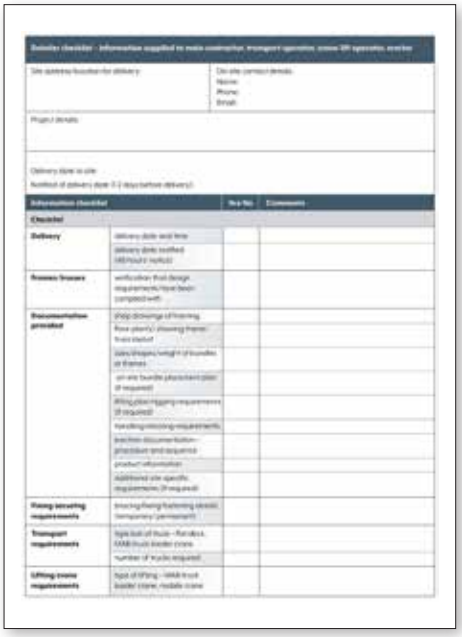
The main contractor also has responsibility to ensure that all provisions of the HSWA are complied with during framing installation, alongside other PCBUs who share the same health and safety duty.

7.5 INFORMATION FROM THE DETAILER TO MAIN CONTRACTOR

Refer to Appendix E – Detailer checklist.

The detailer should provide to the main contractor:

- delivery date and time
- floor plan(s) of the building showing location of frames and trusses
- bundle contents, i.e. which frames are bundled together
- bundle placement plan, which should as far as possible, be arranged to facilitate the erection of frames.



Prior to frame delivery, the detailer/manufacturer should advise the main contractor of the manufacturing time frame and confirm that this suits the required delivery date. The delivery date and time should be advised 1-2 days before delivery to ensure that there will be workers on site when delivery is made.

7.6 COMMUNICATION IS ESSENTIAL

Good communication about how to handle and erect framing is essential between erector/main contractor, the frame and truss detailer/manufacturer and the transport operator.

Examples of problems that can arise as a result of poor or lack of communication include:

- the foundation layout plan is not consistent with the wall framing assembly
- the layout provided to the truss and frame manufacturer does not align with the as-built foundation, which can lead to frames overhanging or falling short of the slab
- the finished foundation is not within the required dimensional tolerances resulting in the slab and wall framing not aligning.

7.7 BEFORE FRAMING ARRIVES ON SITE

Before the framing arrives, the erection supervisor or main contractor should check that the following information has been provided by the detailer/manufacturer:

- date of delivery to site
- site address for delivery
- a lift plan and the information required to erect the framing.

7.8 LIFT PLAN

A lift plan should address:

- the hazards, risks and control measures
- health and safety management systems
- erection sequence
- site limitations and features (access, overhead obstructions, underground services)
- mobile or truck loader crane size, configuration, mobility, access and working radius (if used)
- visual inspection of rigging and associated lifting equipment (if used)
- height access equipment (for framing above ground floor level and for trusses)
- temporary propping and bracing requirements
- permanent fixing system of frames.

See Appendix H for a lift plan example provided by the Crane Association of New Zealand.

7.9 PLANNING THE ERECTION SEQUENCE

Before erecting framing, the main contractor or erection supervisor, the detailer, the transport operator and crane operator (if involved), should have prepared an erection plan which sets out the framing erection sequence and procedures. The erection plan also contains the information about how the frames are to be handled, lifting and rigging requirements, and temporary propping and any other handling restrictions.

The main contractor or erection supervisor should:

- ensure that the erection crew have been given and are familiar with the erection plan
- monitor the weather and take appropriate action as required
- ensure that the site is accessible, clear and safe for vehicles and cranes (including outriggers as required)
- ensure there is adequate manoeuvring/operating space for a crane to operate and the area is clear of overhead obstructions
- have an exclusion zone set up
- have a traffic management plan in place (if required)
- there is a compacted hardfill level area for offloading and storage
- ensure that the erection plan addresses all aspects of the erection procedure
- confirm all required rigging is appropriate and ready for use
- confirm all required fixing gear is appropriate and ready for use
- ensure that all hazards and control measures have been communicated to workers and anyone else who may be affected
- inspect frames and trusses for damage when they arrive on site and report any damage to the manufacturer
- ensure that the erection crew has all information about how frames will be handled on site, rigging requirements, temporary pinning or propping requirements, and specific handling restrictions
- ensure there enough properly trained erectors to do the work
- ensure there control measures in place for working at height.

7.9.1 Temporary on-site storage

If possible, the framing should be delivered when it is scheduled for erection so that it can be lifted directly into the final position, reducing manual handling and the need for temporary storage.

However, if frames and trusses must be stored on site for a period of time before being installed, they must be protected from the effects of weather and ground moisture.

To avoid distortion framing should be stored flat on a level base. It must be covered for protection against the effects of the weather and air must be able to circulate freely around the framing. Pre-packed bundles should not have the protective wrapping removed until the framing is ready to be erected.

Framing must be stored off the ground to protect it from ground moisture evaporating and condensing onto the timber. Lay polythene over the ground immediately under the stacked framing to protect it from the moisture.

Do not store timber frames or trusses over a newly poured slab or wet sheet floor.

7.10 ERECTION PROCEDURE

When framing arrives on site it should be inspected for damage and any damage reported immediately to the manufacturer.

The method of erection must take into account the:

- the size and shape of the frames and trusses
- the weight of the frames
- the support required, both temporary and permanent
- the requirement for temporary support
- the permanent fixing procedure.

Erection of frames should start at the furthest location from the vehicle (if being installed immediately), or from the stacked framing. When the first frame is upright, in position and secured, the next frame should be erected at right angles, then fixed temporarily or permanently. Framing and fixing can continue to be erected in the sequence described by the erection plan.

7.10.1 Footing frames

When manually lifting frames upright into position, the bottom plate must be prevented from sliding out. This is made more difficult if a protective sheet material such as polythene has been laid over the floor as protection.

Footing is the process of securing the bottom plate of a frame against a fixed object (typically another frame) during lifting upright into position. When footing a frame, the frame or fixed object being footed against, must be pinned securely to the floor or other part of the building structure so that it cannot move.

Options for securing a fixed object to foot against include:

- offcuts fixed to joists on a timber floor
- a steel angle fixed against the slab rebate for the brick veneer cladding or the side of the slab if there is no rebate.

7.11 ERECTING TRUSSES

Trusses are usually designed to be supported on external walls while internal walls are generally non-loadbearing. Internal walls may be used to control bottom chord deflections or reduce the camber of the bottom chord. In some cases internal walls are load bearing, in which case they should be clearly indicated on the plans.

The prefabricated wall frames must be secured, plumb and fully braced before truss placement can begin. If possible, roof trusses should be delivered and unloaded when they are due to be installed in order to minimise the amount of handling. They should be lifted onto the wall framing by the truck loader crane or mobile crane. This means the HIAB or crane must have access and be within reach of the building.

If possible, mark truss positions on the wall plates before lifting trusses into position. Trusses should be lifted onto the wall framing in such a way so that the erectors can access the next required truss from the top of the truss stack.

Temporary braces should be ready to be installed as the trusses are erected. Offloading should be planned in the correct sequence to follow the installation of the ground-floor wall framing, first-floor framing, flooring, upper-floor wall framing and roof framing.

When installing the trusses at different levels, there must be enough room for the workers to move around and handle the stacked trusses as well as ensuring there are enough workers at the level the trusses are raised to.

7.11.1 Working at height

All erectors working at height must be protected from the risk of a fall[12]. Erecting upper-floor framing and trusses is classified as working at height so protective measures must be implemented to ensure that the work can be carried out safely. Protective measures for working at height include:

- edge protection such as scaffolding
- fall protection or restraint
- barriers at upper-floor levels.

[12] Refer to WorkSafe publications available online at: https://www.sitesafe.org.nz/globalassets/guides-and- resources/best-practice-guides/best_practice_guidelines_for_working_at_heightnz.pdf; and https://worksafe.govt.nz/topic-and-industry/working-at-height/roofs/

APPENDICES

APPENDIX A: GLOSSARY

Before the erection of prefabricated timber frames and trusses begins, the hazards associated with erecting framing must be determined and the risks assessed. Even if there is only one large frame, a risk assessment is still required.

Centre of gravity (CoG)	The point at which a load, if suspended, is in balance and stable.
Duty	A moral or legal obligation (under the HSWA).
Exclusion zone	A defined area or zone, that only people involved in the particular task being carried out may enter.
Factor of safety	The factor of safety is the ratio between the working load limit (WLL) and the minimum breaking load.
Footing	The process of securing the bottom plate of a frame against a fixed object (typically another frame) during lifting upright into position.
Hazard	Anything that has the potential to cause death, injury or illness.
Mobile crane	A mobile mechanical plant which is for lifting or carrying suspended loads.
Obligation	An act or course of action to which a person is morally or legally bound (under the HSWA).
Outrigger	A structural members used to provide stability during crane operations.
PCBU	Person conducting a business or undertaking.
Rigger	A person qualified to sling loads and direct the lifting and placing operations of a crane.
Rigging	All the equipment and associated gear used to lift, move, place or secure a load.
Shop drawings	Detailed drawings of prefabricated timber frames and trusses that are produced solely for the manufacture the prefabricated framing.
Spreader bar	A bar that spreads the lifting slings or ropes to alter the angle of the load imposed on the lifting points of a component while it is being lifted.
Tag line	A rope attached to a load being lifted to control the load during lifting or positioning.
Truck loader crane	A load carrying truck with an articulated or luffing/slewing/ telescoping jib crane to lift goods on or off the vehicle.
WLL	Working load limit which is the maximum designed limit the crane can safely lift.

APPENDIX B: SITE ASSESSMENT CHECKLIST

Assessment		Checked	Comments
Site conditions	ground conditions/ bearing capacity		
	access onto the site topography/site gradient (flat, sloping, steep)		
	space for manoeuvring/ offloading		
	space for storage of materials and plant		
	obstacles such as overhead power lines and low hanging trees		
Building platform	type of building platform e.g. concrete slab, timber floor on timber subfloor framing at ground floor level or first/second floor level		
	flooring requires protection with polythene sheet or other protective material		
	wall framing (truss installation)		
Weather conditions	high wind rain snow		
Vehicle access	truck access onto site		
	a traffic management plan required		
	vehicle manoeuvrability		
	on-road offloading area required		
Site safety and security	workers have safe access		
	exclusion zones established while particular tasks are being undertaken		
	public protection required/ provided (e.g. covered walkways, barriers, fencing)		
	unauthorised access onto site prohibited		
Services to site	locations of underground services known		
	overhead obstacles (cables, power lines, trees)		

APPENDIX C: MAIN CONTRACTOR CHECKLIST

Main contractor checklist – information to be supplied to frame and truss manufacturer/ detailer, transport operator, erector	
Site address/location for delivery:	On-site contact details: Name: Phone: Email:
Project details:	
Delivery date to site:	

Information checklist		**Yes/No**	**Comments**
Site/transport checklist			
Site information	topography, site gradient (flat, sloping, steep)		
	access onto the site		
	ground bearing capacity for offloading/storage		
	manoeuvrability for vehicles		
	crane access (if required)		
	space for offloading/ temporary storage		
Transport and traffic issues, vehicle access	size of loads		
	number of trucks required		
	traffic management plan required/in place		
	obstacles/traffic issues on the route to the site		
Obstacles on site	underground services that could be damaged by heavy vehicles		
	proximity to overhead cables, power lines, trees		
Site safety and security	workers have safe access onto site		
	all hazards/risks communicated to workers and others who may be affected		
	public protection required/ provided (e.g. covered walkways, barriers or fencing)		
	site security –unauthorised access prohibited		

Continued next page...

Information checklist		Yes/No	Comments
Manufacturer/detailer checklist			
Frame and truss design requirements provided	wind zone/design load information		
	earthquake zone/design load information		
	all relevant information about frames including spans, pitches, profiles, quantities		
Detailed design building information provided	plans, specification, engineer/specialist calculations		
Before manufacture	final confirmation of dimensions/details		
Delivery/offloading checklist			
Before framing arrives	required delivery date		
	correct site address		
	confirm with transport operator an erector will be on site to receive delivery		
When framing arrives	all required information for erection has been provided		
	damage to framing		
Erection	erection plan/sequence provided		
	lift plan provided		
	appropriate lifting/fixing equipment available		
	all handling, rigging, and temporary/permanent fixing procedures communicated to workers		
	worker numbers sufficient to carry out erection		
	exclusion zones in place during lifting		
	safety measures for working at height		

APPENDIX D: ERECTION SUPERVISOR CHECKLIST

Erection supervisor checklist	
Site address/location for delivery:	On-site contact details: Name: Phone: Email:
Scheduled delivery date to site (notified 1-2 days before delivery):	

Information checklist		**Yes/No**	**Comments**
Checklist			
Health and safety	compliance with Health and Safety at Work Act requirements		
	health and safety plan in place		
Communication	erection sequence for the framing/safe working practices discussed with detailer, manufacturer, transport operator and crane operator (if involved)		
	lift plan provided		
	erection plan/sequence provided		
	erection crew familiar with erection plan		
	all handling, rigging, and temporary/permanent fixing procedures communicated to workers/erection crew		
	erection crew familiar with emergency plan		
	information from detailer/ manufacturer verified and signed off		
Delivery onto site	check frames for damage		
	monitor weather conditions during erection		
	worker numbers sufficient to carry out erection		
	appropriate lifting/fixing equipment available		
	exclusion zones in place during lifting (if required)		
	safety measures for working at height		
	frames erected in accordance with erection plan		

APPENDIX E: DETAILER CHECKLIST

Detailer checklist – information supplied to main contractor, transport operator, crane/lift operator, erector	
Site address/location for delivery:	On-site contact details: Name: Phone: Email:
Project details:	
Delivery date to site: Notified of delivery date (1-2 days before delivery):	

Information checklist		**Yes/No**	**Comments**
Checklist			
Delivery	delivery date and time		
	delivery date notified (48 hours' notice)		
Frames/trusses	verification that design requirements have been complied with		
Documentation provided	shop drawings of framing		
	floor plan(s) showing frame/ truss layout		
	sizes/shapes/weight of bundles or frames		
	on-site bundle placement plan (if required)		
	lifting plan/rigging requirements (if required)		
	handling/stacking requirements		
	erection documentation – procedure and sequence		
	product information		
	additional site-specific requirements (if required)		
Fixing/securing requirements	bracing/fixing/fastening details (temporary/ permanent)		
Transport requirements	type/size of truck – flat deck, HIAB/truck loader crane		
	number of trucks required		
Lifting/crane requirements	type of lifting – HIAB/truck loader crane, mobile crane		

APPENDIX F: EXAMPLE – JOB SAFETY ANALYSIS

Job safety analysis (JSA)

Documenting your chosen control measures can assist with planning work that is healthy and safe for workers and others

1. Details

Job number:

Date: DD / MM / YEAR

Prepared by: (name and title)

Approved by: (name and title)

Job description:

2. JSA team members

Print name and sign below to confirm that you have read, understood and agreed to the procedures and control measures in this JSA.

Name:

Signature:

Name:

Signature:

Name:

Signature:

Name:

Signature:

Name:

Signature:

Are work permits required? ○ Yes ○ No

If yes, provide details:

Notes:

Job safety analysis (JSA)

For each step of a job, identify the hazards, the risks to deal with and their priority, and the control measure/s

JOB STEP	HAZARD/S	IDENTIFY RISKS YOU NEED TO DEAL WITH	PRIORITY/URGENCY Pay close attention to your high priority risks	CONTROL MEASURE First try to eliminate risk	CONTROL MEASURE If elimination not possible: – substitute and/or – isolate and/or – use engineering control measures	CONTROL MEASURE If any risk remains: – use administrative control measures and/or – PPE (PPE is least effective; should not be first or only control measure considered)

Identify plant, equipment and tools required for healthy and safe work for this job	
Identify worker skills, training and/or supervision required for healthy and safe work for this job	

For further information, refer to:

1. Material Safety Data Sheets
2. HSWA and relevant regulations
3. WorkSafe resources such as guidance (see worksafe.govt.nz)
4. Industry-specific guidance
5. Permit attachments

APPENDIX G: EXAMPLE – TASK ANALYSIS/SAFE WORK METHOD STATEMENT

Date:			Company	Site Name		
1	1	17	Paint by Numbers Ltd	6 Green St	☑ Complete pre-start	☑ Onsite

SITESAFE

Task Analysis (TA) and Safe Work Method Statement (SWMS)

Use the Risk Assessment Matrix and Hierarchy of Controls tools to complete this document.

This Task Analysis (TA) has an Emergency Response Plan	○ Yes ○ N/A	Site name	6 Green St
Subcontractor company name	Paint by Numbers Ltd	Site address	6 Green St, Petone, LOWER HUTT
Name of subcontractor	John Green Phone 021 1133 2244	Work activity - task description	Paint the Side of a Building (Residential)
Office address	25 Jarden Mile, Ngauranga, WELLINGTON	PPE required for activity/task	Hard hats with chin straps, safety glasses, respirators, long sleeved clothing.
Date	27.12.16	Administrative Controls	Movement plans, TA/SWMS for this task, pre-site meetings.

Task Analysis/Safe Work Method Statement sign-on

All workers must sign this register to show that they have been trained in the processes and will work to the requirements of this TA/SWMS.

Worker name	Worker signature	Worker name	Worker signature
John Green			
Jake Blue			
James Orange			
Jack Purple			

Sequence of basic steps *Describe each step in the activity – most will have 4-8 steps. Follow the flow of the product or process.*	Potential hazards and risks *Describe the key hazards and risks for each step – there will normally be more than one per step. Number each hazard e.g 1a, 1b, 1c; 2a, 2b, 2c.*	Initial risk assessment *Before the controls are in place. Refer to the risk assessment matrix.*	Control methods and level of control *Describe the key/significant way to control the risk and then refer to the hierarchy of controls*		Residual risk assessment *After all controls are in place. Refer to the risk assessment matrix.*
			Control method	*Level*	
1 Pre-site inspection *Step No.*	1a) Loose surfaces, gravel etc. (Equipment instability)	HIGH	Raise this issue at pre-site meetings.	3	MODERATE
			Set up signage to inform of loose surfaces.	3	
			Hard hats to be worn complete with chin straps.	4	
	1b) Paving box setups for concreting. (Trips and falls)	HIGH	Highlight the boxing with hi-viz paint to identify trip hazards.	3	MODERATE
			Hard hats to be worn complete with chin straps.	4	
	1c) Upright stakes on boxing setups. (Falling onto stakes)	HIGH	Saw the stakes to box height level, ensure operator is trained.	1	MODERATE
			Operator to wear safety glasses or visor, hearing protection and		
			long sleeved clothing. RCD for power supply.	4	
	1d) Other contractors working on site and in the subdivision. (Roll over and Run overs)	HIGH	Conduct site co-ordination meetings.	3	MODERATE
			Establish vehicle movement plan including parking, this also		
			includes foot traffic around and on site.	3	
2 Set up task site. *Step No.*	2a) Site clutter and obstructions. (Trips, falls, roll overs and run overs)	HIGH	Ensure all equipment is placed in a tidy fashion to ensure ease of		MODERATE
			movement on site. Unnecessary equipment stored away.	2	
			Site co-ordination with other contractors.	3	
	2b) Other contractors working on site and in the subdivision. (Vehicle and pedestrian movement)	HIGH	Re-liaise with other contractors to ensure initial vehicle movement		MODERATE
			plan still in action, and establish site movement plans.	3	
			Ensure plan(s) are communicated at pre-site meetings.	3	
	2c) Establish equipment locations. (Trip hazards and obstructions)	HIGH	Ensure all equipment locations are established, not to impede.		MODERATE
			other contractors.	3	
			Equipment not used stored away off site.	2	
	2d) Prepare height access system. (Unsecure and non compliant equipment)	HIGH	Ensure height system is compliant & appropriate to task.	3	MODERATE
			Ensure height system is stable and secured.	3	
			Ensure hard hats with chin straps are worn.	4	

Sequence of basic steps *Describe each step in the activity – most will have 4-8 steps. Follow the flow of the product or process.*	**Potential hazards and risks** *Describe the key hazards and risks for each step – there will normally be more than one per step. Number each hazard e.g 1a, 1b, 1c; 2a, 2b, 2c.*	**Initial risk assessment** *Before the controls are in place. Refer to the risk assessment matrix.*	**Control methods and level of control** *Describe the key/significant way to control the risk and then refer to the hierarchy of controls*	*Control method*	**Residual risk assessment** *After all controls are in place. Refer to the risk assessment matrix.*
3 Conduct task. *Step No.*	3a) Working at height during task. (Falls and trips)	HIGH	Ensure height systems are compliant & checked daily/weekly.	3	MODERATE
			Use rollers rather than brushes to help speed up the process.	2	
			All height equipment taken down at the end of the day.	1	
	3a) Working at height during task continued. (Falls and trips)	HIGH	Ensure height systems are isolated from public i.e. barriers.	3	MODERATE
			Ensure height systems are checked during task for stability.	3	
	3b) Trips and falls at ground level.	HIGH	Ensure that the pre site meetings cover the pre identified trips.	3	MODERATE
			Adhere to areas where hi-viz markings are apparent.	3	
			Wear hard hats with chin straps & safety boots.	4	
	3c) Clutter on site. (Falls, trips and obstructions)	HIGH	Ensure all equipment locations are used & clutter minimized.	3	MODERATE
			Equipment not used to be stored away off site.	3	
4 Site clean up *Step No.*	4a) Cleaning equipment on site. (Falls and exposure to contaminants)	HIGH	All equipment to be cleaned at ground level and when using		MODERATE
			cleaning products in open areas (outside) & all waste taken away.	3	
			Cleaning waste not to be discarded in public drain system.	3	
	4b) Prompt dismantle of all equipment and gear from site. (Falls and trips)	HIGH	Where possible equipment or height access equipment taken down		MODERATE
			at ground level.	2	
			Equipment moved off site in accordance with movement plan.	3	
	4c) Prompt removal of all equipment and gear from site. (Falls, trips and obstructions)	MODERATE	Liaise with other contractors to establish movement plan off site.	3	LOW
			All equipment not needed to be stored away off site.	3	
			Inform all contractors that you have cleaned/vacated the site.	3	

Sequence of basic steps *Describe each step in the activity – most will have 4-8 steps. Follow the flow of the product or process.*	**Potential hazards and risks** *Describe the key hazards and risks for each step – there will normally be more than one per step. Number each hazard e.g 1a, 1b, 1c; 2a, 2b, 2c.*	**Initial risk assessment** *Before the controls are in place. Refer to the risk assessment matrix.*	**Control methods and level of control** *Describe the key/significant way to control the risk and then refer to the hierarchy of controls*	*Control method*	**Residual risk assessment** *After all controls are in place. Refer to the risk assessment matrix.*
5 Leaving task site. *Step No.*	5a) Equipment stowed into vehicle. (Unsecured equipment causing injury)	MODERATE	Ensure all equipment is accounted for & stowed/secured.	3	LOW
			Ensure movement plan is adhered to.	3	
			Ensure final check of site is conducted.	3	
	5b) Equipment transportation. (Unsecured equipment causing injury & property damage)	HIGH	Ensure all equipment is secure in vehicle.	2	MODERATE
			Ensure all containers are sealed and secured.	2	
			All equipment loads to be checked during transportation.	3	
	5c) Manual Handling. (Sprains & strains)	MODERATE	Conduct warm exercises.	3	LOW
			Do not exceed personal limits, equipment to be loaded by 2 people		
			where possible.	3	
Step No.					

crane ASSOCIATION OF NEW ZEALAND (INC)

lite Lift Plan

single crane

5. Acknowledge*

Crane Operator	Dogman

Site Representative / Customer

Sign to show you have read and understood the Lift Plan and all Hazard Checks including Hazards and Controls that maybe on the back of this plan.

4. Lift Sketch**

Wind Log m/s

0	11
1	12
2	13
3	14
4	15
5	16
6	17
7	18
8	19
9	20
10	21
11	22
12	23
	24

1. Lift Plan Details

Customer:

Site Representative:

Crane Supplier:		Crane ID:	
Crane Make/Model:		FirstAider:	
Crane Operator:		Dogman:	
Date & Time of the lifts:		Location:	

Communication: radio | hand signals | other

Lift Description:

HAZARDS MUST BE IDENTIFIED BEFORE CRANE OPERATIONS COMMENCE

New setup position = New lift plan

Tick to indicate OK and Checked. Safe to continue. A Cross indicates further controls are required see reverse. A line through indicates n/a

2. Hazard Checks*

Workplace hazards:		**Hazard notification required:**	
Crane Hazards:		WorkSafe NZ: hazard notification	
Crane Operator ticketed:		Crane setup as per lift plan:	
Dogman ticketed:		SLI configured and working:	
Fatigue managed:		**Electrical hazards:**	
PPE correct:		power lines / load attached to power	
Crane cert correct:		power lines must be at least 4m away unless you have a permit	
Lifting equip certs correct:		Crane is earthed:	
Rating charts correct:		Ground conditions checked:	
Counterweight correct:		flat, can support crane, access without slipping etc	
Reeving correct:		Underground services are clear:	
Outriggers Ext / Pinned:		water, power, storm water, waste water, septic tanks etc	
Vision conditions checked:		Obstructions checked:	
sun strike / bad lighting / dark / fog / obstructed		slew structures, trees, overhead buildings etc	
control, sunglasses / lighting / radios / spotter		Rigging methodology discussed:	
Weather conditions checked:		Load support checked:	
		The lift will use a tag line:	
Traffic managed:		Loose objects removed from load:	
people and vehicles		No simultaneous operations:	
Radio's checked:		Mancage checks:	
Airport notified:		Confined space checked:	
		Environment checked:	

STOP - Have you missed anything? Take the time to have a second look. Remember Safety has Priority

Additional Hazard Controls on Reverse if Required

Address Hazards Identified on Left. Eliminate Isolate Minimise on Reverse

Draw the crane and the load. Show distances (radius) and load movement - direction. How close are Power Lines or hazards?

3. Lift Details**

	Lift # _____	Lift # _____	Lift # _____	Lift # _____
Weight of the load:	kg	kg	kg	kg
Weight of rigging:	kg	kg	kg	kg
Weight of hooks: main and auxiliary	kg	kg	kg	kg
Total:	kg	kg	kg	kg
	Crane Operator to calculate. Dogman to initial below as checked.			
Boom length:	m	m	m	m
Pick up radius:	m	m	m	m
Set down radius:	m	m	m	m
Max radius:	m	m	m	m
SWL at max radius:	kg	kg	kg	kg
Communication:				
Lift checked initial:				

Further hazard controls and lift details on reverse (Hazard Management)

* See inside cover for further details. Take the time to read and understand the hazards before ticking above or signing. Use reverse to document further controls.

** Only use one plan per setup position. Document maximum / worst case lifts / max radius / max weights. Lifts that are the same but of a lesser weight are covered by max weight calculations.

APPENDIX I: EXAMPLE – SAFETY CONTROL SHEET FOR SITE DELIVERIES

SAFETY CONTROL SHEET FOR SITE DELIVERIES

Customer Name _____ **Date:** _____

Delivery Address _____

_____

RESOURCES ALLOCATED TO JOB

Truck Rego:_____ Staff Name:_____

SAFETY EQUIPMENT (tick required)

☐Safety Cones ☐Hard Hat ☐Site Identification ☐Hi-Visibility Uniform

BEFORE LEAVING ORIGINAL SITE (tick)

Does the customer need notification of the delivery? **YES NO** ☐ Phone call made

☐Product on Truck has been checked – quantities and quality ☐ Truck has been secured

☐Map of driving instructions/planned route has been identified

ON SITE SAFETY

☐Customer has been taken through Hazards we take onto customer sites

	HAZARD	YES	NO	CONTROL	YES	NO
TRUCK ACCESS				**Use a Spotter**		
1	Driveway with restricted access			Carefully guide truck into access		
2	Low overhanging wires			Contact Dispatcher		
3	Other delivery obstructions			Contact Dispatcher		
OBSTRUCTIONS						
4	Building Waste			Delivery access should be clear of waste		
5	Restricted Access			Assess alternate delivery access points with site supervisor		
6	Protruding objects			Remove or protect it		
7	Scaffolding			Discuss with site supervisor or contact dispatch		
8	Weather Conditions			Create weather protection barrier or contact dispatcher		
9	Slippery, wet, muddy conditions			Take extra care – build travel path if unable to contact dispatcher		
10	Machinery is operating on site			Ensure machine operator is aware of your movements		
11	Open trenches			Create a safe and secure travel route		
12	Unsecured planks			Secure planks into position		
MANUAL HANDLING						
13	Carrying/unloading materials manually			Adhere to safe carrying/lifting limits		

☐Notify dispatch if there are hazards preventing delivery. Photos sent to (email):

BEFORE LEAVING SITE (circle YES/NO)

1	Have you met all the customer's requirements?	YES	NO
2	Has the product been left damage free?	YES	NO
3	Are there any incidents to report?	YES	NO
4	Have you left a customer copy of dispatch docket on site?	YES	NO
5	Did you feel this was a safe site to work on?	YES	NO
6	Was there a Health & Safety system on site?	YES	NO
7	Have you been inducted onto the site?	YES	NO

SIGN

Customer Sign (for product and service):	Truck Driver:

APPENDIX J: WORKSAFE – WHAT EVENTS NEED TO BE NOTIFIED

WORKSAFE

HSWA

QUICK GUIDE

January 2018

What events need to be notified?

The health and safety regulator must be notified when certain work-related events (notifiable events) occur. This guide provides information about what a person conducting a business or undertaking (PCBU) needs to do if a notifiable event occurs.

What must a PCBU do?

A PCBU must ensure the regulator is notified as soon as possible after becoming aware that a notifiable event arising out of the conduct of the business or undertaking has occurred.

This allows the regulator to immediately investigate or follow up on events that cause, or have the potential to cause, death, serious injury or illness (serious health and safety risks).

Who is the regulator?

The regulator is either WorkSafe New Zealand (WorkSafe), or another government agency designated to carry out health and safety regulatory functions for certain work.

For ships and workplaces and work aboard ships, the regulator is Maritime New Zealand.

For work preparing aircraft for imminent flight and aircraft in operation, the regulator is the Civil Aviation Authority (CAA).

See the WorkSafe website: www.worksafe.govt.nz/about-us/who-we-are/role-and-responsibilities for information on how to contact these agencies.

WSNZ_2108_JAN18

New Zealand Government

Note: While this guide describes the notification requirements under the Health and Safety at Work Act 2015 (HSWA), for certain work, there are other notification requirements prescribed in regulations, for example:

- the Health and Safety at Work (Petroleum Exploration and Extraction) Regulations 2016
- the Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016
- the Health and Safety at Work (Major Hazard Facilities) Regulations 2016.

See the WorkSafe website: www.worksafe.govt.nz/notifications for information about these requirements.

What is a notifiable event?

A notifiable event is any of the following events that arise from work:

- a death
- a notifiable illness or injury or
- a notifiable incident.

Only serious events are intended to be notified. These trigger requirements to preserve the site, notify the regulator and keep records.

The notifiable incident, illness, injury or death must arise out of the conduct of the business or undertaking. It could be due to the condition of the work site, the way the work activity is organised, or the way equipment or substances are used.

Notifiable events may occur inside or outside the actual work site.

Deaths, injuries or illness that are unrelated to work are **not** notifiable events, for example:

- a diabetic worker slipping into a coma at work
- a worker being injured driving to work in his or her private car when the driving is not done as part of their work
- injuries to patients or rest home residents that are triggered by a medical reason (eg injuries from a fall caused by a stroke)
- a worker fainting from a non-work related cause.

What is a notifiable illness or injury?

These are specified serious work-related illnesses or injuries.

All injuries or illnesses that require a person to be admitted to hospital for immediate treatment are notifiable.

The other types of injuries and illnesses that also require notification are set out in the following table (Table 1).

TRIGGER	EXAMPLES
An injury or illness that requires (or would usually require) the person to be admitted to hospital for immediate treatment	'Admitted to a hospital' means being admitted to hospital as an inpatient for any length of time – it doesn't include being taken to the hospital for out-patient treatment by a hospital's A&E department, or for corrective surgery at a later time, such as straightening a broken nose.
The amputation of any part of the body that requires immediate treatment (other than first aid)	Amputation of: – a limb (eg an arm or leg) – other parts of the body (eg hand, foot, finger, toe, nose, ear).
A serious head injury that requires immediate treatment (other than first aid)	– fractured skull – a head injury that results in losing consciousness – blood clot or bleeding in the brain – damage to the skull that may affect organ or facial function – a head injury that results in temporary or permanent memory loss.

TRIGGER	EXAMPLES
A serious eye injury that requires immediate treatment (other than first aid)	– injury that results in, or is likely to result in, the loss of an eye or vision (total or partial) – injury caused by an object entering the eye (eg metal fragment, wood chip) – contact with any substance that could cause serious eye damage. Does not include: – exposure to a substance or object that only causes discomfort to the eye.
A serious burn that requires immediate treatment (other than first aid)	A burn that needs intensive or critical care such as a compression garment or skin graft. Does not include: – a burn treatable by washing the wound and applying a dressing.
A spinal injury that requires immediate treatment (other than first aid)	– injury to the cervical, thoracic, lumbar or sacral vertebrae, including discs and spinal cord. Does not include: – back strain or bruising.
Loss of a bodily function that requires immediate treatment (other than first aid) (eg through electric shock or acute reaction to a substance used at work)	Loss of: – consciousness (includes fainting due to a work-related cause eg from exposure to a harmful substance or heat) – speech – movement of a limb (eg long bone fractures) – function of an internal organ – senses (eg smell, touch, taste, sight or hearing). Does not include: – fainting not due to a work-related cause – a sprain, strain or fracture that does not require hospitalisation (except for skull and spinal fractures).
Serious lacerations that require immediate treatment (other than first aid)	– serious deep cuts that cause muscle, tendon, nerve or blood vessel damage, or permanent impairment – tears to flesh or tissue – this may include stitching or other treatment to prevent loss of blood or bodily function and/or the wound getting infected. Does not include: – superficial cuts treatable by cleaning the wound and applying a dressing – minor tears to flesh or tissue.
Skin separating from an underlying tissue (degloving or scalping) that requires immediate treatment (other than first aid)	– skin separating from underlying tissue where the tendons, bones, or muscles are exposed.
Contracting a serious infection (including occupational zoonoses) to which the carrying out of work is a significant contributing factor including any infection due to carrying out work: – with micro-organisms – that involves providing treatment or care to a person – that involves contact with human blood or bodily substances – that involves handling or contact with animals, their hides, skins, wool or hair, animal carcasses or waste products or – that involves handling or contact with fish or marine mammals.	– diseases caught from animals (eg leptospirosis) or *E. coli* infections – Legionnaire's Disease caught from working with soil, compost or potting mix.

TRIGGER	EXAMPLES
An injury or illness that requires (or would usually require) medical treatment within 48 hours of exposure to a substance (a natural or artificial substance in any form eg solid, liquid, gas or vapour)	Burns from skin exposure or inhalation of toxic chemicals that require medical treatment.
An illness or injury declared in regulations to be a notifiable injury or illness	Any illness or injury listed in Schedule 5 of the Health and Safety At Work (Mining Operations and Quarrying Operations) Regulations 2016.

In this table:

- 'Medical treatment' is considered to be treatment by a registered medical practitioner (eg a doctor).
- 'Immediate treatment' is urgent treatment, and includes treatment by a registered medical practitioner, registered nurse or paramedic.
- Note that if immediate treatment is not readily available (eg because the injury happened at a remote site), the notification must still be made.

TABLE 1: Notifiable injuries and illnesses[1]

What is a notifiable incident?

A notifiable incident is an unplanned or uncontrolled incident in relation to a workplace that exposes the health and safety of workers or others to a serious risk arising from immediate or imminent exposure to:

- a substance escaping, spilling, or leaking
- an implosion, explosion or fire
- gas or steam escaping
- a pressurised substance escaping
- electric shock (from anything that could cause a lethal shock, for example it would not include shocks due to static electricity, from extra low voltage equipment or from defibrillators used for medical reasons)
- the fall or release from height of any plant, substance, or thing
- damage to or collapse, overturning, failing or malfunctioning of any plant that is required to be authorised for use under regulations
- the collapse or partial collapse of a structure
- the collapse or failure of an excavation or any shoring supporting an excavation
- the inrush of water, mud, or gas in workings in an underground excavation or tunnel
- the interruption of the main system of ventilation in an underground excavation or tunnel
- a collision between two vessels, a vessel capsize, or the inrush of water into a vessel
- any other incident declared in regulation to be a notifiable incident, for example those listed in:
  - regulation 6 of the Health and Safety At Work (Asbestos) Regulations 2016
  - Schedule 5 of the Health and Safety At Work (Mining Operations and Quarrying Operations) Regulations 2016
  - regulation 33 of the Health and Safety At Work (Major Hazard Facilities) Regulations 2016
  - regulation 70 of the Health and Safety at Work (Petroleum Exploration and Extraction) Regulations 2016.

[1] Based on the SafeWork Australian document *Incident Notification Information Sheet November 2015*.

Note: There are two more pages available for this appendix...

APPENDIX K: REFERENCES

STANDARDS

NZS 3604: 2011 Timber-framed Buildings

LEGISLATION

Health and Safety at Work Act 2015 (HSWA)
Land Transport Act 1998

NZTA PUBLICATIONS

Code of Practice for Temporary Traffic Management (CoPTTM)	NZTA: November 2012
Land Transport Rule: Heavy Vehicles 2004	NZTA: April 2005
Land Transport Rule: Vehicle dimensions and mass (VDAM) 2016	NZTA: November 2016
Land Transport Rule: Work time and logbooks 2007	LTNZ: October 2007
The Official New Zealand Truck Loading Code	NZTA: 1985

OTHER PUBLICATIONS

Approved Code of Practice for Cranes	3rd Edition: Department of Labour: November 2009
Approved Code of Practice for load-lifting rigging	5th Edition, MBIE: Dec 2012
Crane safety for construction site managers/ supervisors	WorkSafe Factsheet: October 2014
Lift planning: Your guide to crane association lift plans	Crane Association of NZ: April 2018
Managing contractors: Your guide to good contractor management	SiteSafe: 1st Edition: April 2018
Safe work with precast concrete	WorkSafe: October 2018

ABOUT THE AUTHOR

With a background in architectural design, **Alide Elkink** was a tutor at the Open Polytechnic where she taught construction and architectural drawing for approximately 14 years before moving into the field of freelance technical writing for the building industry since 2006. Since this time much of her writing has been for BRANZ (Building Research Association of New Zealand) and has included articles for Build magazine, bulletins and a range of BRANZ publications series (Level, Renovate, Building Basics, Good Practice Guides, Good Repair Guides) and their associated websites. Alide has done freelance writing for other organisations including BCITO, AWCI and WorkSafe.

She was asked to write this guideline, *Working Safely with Prefabricated Timber Frames and Trusses*, in collaboration with the various groups working in the prefabricated timber framing industry with the aim of helping raise awareness of the risks to everyone involved in this industry.

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