RYMAN HEALTHCARE

CRANES, HOISTS AND OTHER LIFTING ACTIVITIES

SAFELY CONTROLLING WORK
CRITICAL RISK CONTROL DOCUMENT

We are always licenced and competent when operating plant

We always isolate all energy sources before working on equipment and systems

We come to work free from impairment, alcohol and drugs

We ensure plant and equipment is safe to use

We work safely at height

We always observe walkways, safe zones and exclusion zones

We always make sure loads are secure and within safe working load limits before moving them

June 2022 | Version 2

DOCUMENT CONTROL			
Document Name	Cranes, Hoists and Other Lifting Activities		
Issue Date	01-June-2022		
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DOCUMENT REVIEW			
Date	Revision	Description of Change	Author
1-Dec-2021	1	First document	AE, MJ, OG
1-Jun-2022	2	• Included page numbers • Clarified wording around training and competency requirements. Removed old NZQA U/S (e.g. 3818) and replaced with the relevant current NZQA U/S • Added sentence confirming the requirement to use brick pallet cages when lifting bricks • Added the requirement to include blind lifts in the SWMS • Added the requirement that relief drivers to have 1hr familiarization in the Tower Crane prior to lifting operations • Included rigging activities for supervision works • Added the minimum control of using outrigger pads for truck mounted crane • Added that overseas training (e.g. Australia, UK) may be acceptable but subject to risk assessment • Adjusted sentence confirming the requirement for Contractors to notify WorkSafe for particular hazardous works	AE, MJ, OG, AVR, JB

Cranes, Hoists, and Other Lifting Activities

A crane is a type of machine, generally equipped with a hoist rope, wire ropes or chains, and sheaves, that can be used both to lift and lower materials and to move them horizontally. Types of cranes include tower cranes, crawler cranes, truck mounted cranes and mobile cranes. Other lifting activities covered by the definition of this document include the use of an electric or manual hoist and equipment used for lifting activities such as excavators and telehandlers.

Some activities on our construction sites that involve crane, hoist and other applicable lifting activities include:

- Lifting and installing pre-cast elements
- Loading and unloading
- Using a mobile crane
- Using a tower crane
- Using a truck-mounted crane (Hiab)
- Using an electric/manual hoist
- Lifting/shifting of equipment/structure/materials
- Lifting using an excavator
- Lifting using a telehandler
- Using a man cage

Related safely controlling work documents:

- Work at Height, dropped objects and temporary work platforms
- Excavations
- Underground and overhead services

Risks - What could go wrong?

- Tipping of crane or other lifting device due to structural failure, incorrect erection, unstable/uneven ground resulting causing fatality or major injury such as dislocation, crushing, strains/sprains, bruising/lacerations, fractures or serious head injuries
- Collapse or failure of hoist equipment resulting in dropped load causing property damage or a fatality or a potentially major injury such as dislocation, crushing, fractures or serious head injuries
- Adverse weather conditions causing unstable load or damage to structural integrity resulting in fatality or major injury such as dislocation, crushing, strains/sprains, bruising/lacerations, fractures or serious head injuries
- Crushing between loads, loads and structures, or under loads causing fatality or injury such as major injury such as dislocation, crushing, strains/sprains, bruising/lacerations, fractures or serious head injuries
- Communication breakdown between crane operator and Dogmen resulting in lifting error/dropped load causing property damage or a fatality or a potentially major injury such as dislocation, fractures or serious head injuries
- Electrocution or electric shock (from crane or external power supply)
- Fall from height (e.g. tower, or from being caught and lifted in tagline) causing a fatality or a potentially major injury such as dislocation, fractures or serious head injuries
- Failure of lifting equipment/dropped load due to incorrect rigging, equipment failure or crane overload causing a property damage, fatality or a potentially major injury such as dislocation, crushing, fractures or serious head injuries
- Mechanical failure resulting in unforeseen event such as dropped load or tip-over

- Injury from exposure to crane machinery causing fatality or major injury such as crushing, dislocation, amputation, de-gloving or fracture
- Operator fatigue/stress, Illness, impairment or complacency causing, operator error or medical event
- Multiple cranes colliding with each other when both are operating in close vicinity resulting in dropped loads, crane tip-over or fallings objects causing property damage, fatality or major injury such as crushing, fractures or serious head injuries

Controls – How do I keep safe?

The identification of risks associated with crane, hoist or other applicable lifting operations and appropriate control measures are to be fully detailed in a Safe Work Method Statement (SWMS) or similar risk-assessment document prior to commencing any work involving cranes, hoists or other lifting activities.

Can I eliminate the risk?
Wherever work can be completed without the need to lift loads, this should be the first consideration in eliminating risk.

The SWMS must be reviewed by an appropriate Ryman representative prior to any work commencing and following any changes to the task or environment

Selecting the right equipment for the job
When planning the use lifting equipment, the following things should be considered:

- What is the right lifting equipment for the job? Could another lifting device be used that poses less risk?
- What is the right lifting equipment for the job? Things to think about include:
    - The size of the load and weight of the loads
    - The direction of travel
    - The ground conditions
    - The space available on the ground and in the air for the lifting equipment

Crane, hoist and other lifting activity controls include but are not limited to:

	Control Type	Control Measure	Control Level
	Elimination	Remove risk by not requiring to complete lifting operations (e.g. consider safety in design for designing building without lifting equipment use)	Most Effective Control ↓
Minimization	**Substitution**	Substitute crane for other form of lifting appliance that present less risk (where applicable) – e.g. electric hoist Selection of crane, hoist or other lifting equipment that is most fit for purpose – e.g. type and size of equipment relevant to the task	

Control Type	Control Measure	Control Level
Isolation	Isolate the working area below control unauthorized personnel when lifting loads or when using erecting or dismantling a tower crane. Isolate with fencing where practicable, or cones, barriers, tapes, bunting etc.. Isolate tower crane base from unauthorized access (including after hours) using locks, fencing, barbed wire	Most Effective
↑ **WORK ABOVE THE LINE WHERE POSSIBLE TO CONTROL RISK** ↑		
Engineering	Warning devices such as warning lights and alarms, flashing work lights, stability sensors and a horn (where fitted by manufacturer) Use of outriggers/stabilizers with pads (e.g. mobile crane and truck-mounted crane) An emergency-stop control to stop all movement or the engine when pressed Anti-clash software operating when multiple cranes are working in a designated area	
Administrative	Communication and planning such as pre-start meetings, delivery schedules and lift plans Tagline and whistle used by Dogmen to steady loads and communicate load movements. When tagline is used, make sure material and body parts from are clear from entanglement prior and during the lift Maintenance and inspection including daily pre-start inspection, weekly inspections, scheduled maintenance and annual certification (annual certification for cranes) Spotters/Dogmen which may include spotting, ground operation of controls and participating in an emergency rescue Emergency rescue plans such as a tower crane emergency plan Anti-clash agreement when multiple cranes are working in a designated area	
PPE	This includes the use of PPE, task specific gloves, full body harnesses complying with AS/NZS 1891.1:2007, lanyards with integral shock absorbers complying with AS/NZS 1891.4:2009 and anchor point	Least Effective Control

NOTE: Where the risk cannot be eliminated, a combination of control measures may be appropriate.

Planning Lifting Operations

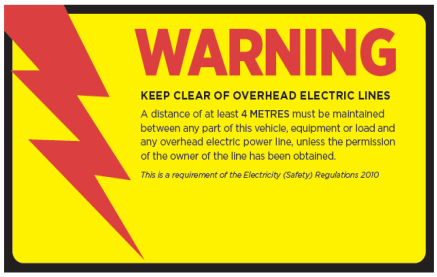
Geotechnical Assessments

Prior to any lifting using plant with outriggers (e.g. mobile cranes, truck-mounted cranes and concrete pumps), the operations shall be subject to geotechnical assessment and approval before commencing work.

Suitability of ground conditions must be validated in a report by a Geotechnical Engineer. A geotechnical assessment may not be required if one has already been done for the work area that confirms suitability of the planned operations, and there is no change in the ground conditions that could make the area unsafe. If in doubt, consult the Geotechnical Engineer who may suggest the requirement of a specific report. Factors to consider when determining in a specific geotechnical assessment is required include but are not limited to:

- Surface conditions – consideration of the weight of the plant, placement, and stability of outriggers and bearing support or shoring requirements (as applicable), uneven, unstable, or sloping of ground, including that affected by Crane slewing or movement
- Underground services or excavations that could affect stability and zone of influence (ZOI)
- Post Inclement weather conditions
- Soil test data reports
- Other relevant site information, such as underground service plans; environmental plans

Work Near Overhead Powerlines



Where lifting operations are in the vicinity of overhead powerlines, the New Zealand Electrical Code of Practice (NZECP 34:2001) requires that the distance between any live overhead electric line and any part of any mobile plant or load carried shall follow the Minimum Approach Distance (MAD) requirements stipulated in the guidelines. The operator may need to receive written consent from the overhead electric line-owner allowing the reduced MAD as stipulated in the guidelines.

All Mobile cranes on a Ryman Healthcare Construction site must display '*Warning Keep Clear of Overhead Electric Lines'* as required by the Electricity (Safety) Regulations 2010.

Environmental Conditions

Environmental conditions must be assessed before and during the lift operation and should include the following considerations relevant to the work area:

- Wind – The Crane Operator is accountable and responsible for crane operations during wind conditions. The Crane Operator must not use the crane at wind speeds greater than the manufacturers instructions and the wind limits defer depending on the lifting appliance
- Rain or moisture – including possible changes to surface conditions and Tower Crane electrical cabins
- Lightning or thunderstorm activity – if lightning is observed or thunder is heard in the vicinity, retract, and lower the boom and cease the lifting Operation

Considered planning including a lift plan is required for all lifts by lifting equipment.

Types of Crane Lift and Lift Plans

Crane lift require lift plans to ensure a lift is not outside the normal operating conditions of the lifting appliance to be used. They verify the lift in question has been planned and all safety requirements have been taken into account. See the type of lift below to determine the type of lift plan required.

Standard Crane LiftS

An initial lift assessment and planning must be completed before all lifting operations and acknowledged by the operator.

Initial lift planning includes a visual inspection of the operational area of the lift, ground and environmental conditions of the planned location of operations, potential hazards to lift crew or other personnel, chain variation details for different loads and the lift type assessment. Any additional hazards due to lifting (e.g. blind lifts) must be risk assessed by the crane crew and the risks associated is to be placed in the SWMS prior to starting the lifting operations.

Daily lift plans are used for most day-to-day lifts where a crane is operating within 80% of its safe working limit. Daily lift plans can be used for repetitive lifts of a similar nature, as long as the crane is in the same position and the lift plan is calculated on the greatest weight, radius, angle and/or length to be lifted. Load chart calculations in the Lift Plan to confirm lifting the heaviest item for the day at the maximum radius are still within contingency. If the crane is moved, or a heavier weight is lifted, another lift plan is to be completed and the ground conditions confirmed as safe (see 'Geotechnical Assessment' for information).

For generic lifts, a general lift plan must be completed, recorded and stored (in Assura) for these types of lifts.

Complex Crane Lifts

A 'complex lift' can be determined by the type of lift, the equipment used, and the lift's inherent risk.

Complex lifts:

1. Lifts made when the load weight is 80% or more of the rated capacity of the Crane
2. Lifts using more than one Crane.
3. Lifts involving personnel in a Mancage.
4. Lifts involving non-routine or technically challenging rigging arrangements: hoisting personnel with a crane or derrick (e.g. lifting from staging or temporary works, using glass suction lifter)
5. Lifts involving hazardous materials (e.g., explosives, highly volatile substances); Lifts involving submerged loads
6. Lifts without the use of outriggers (due to space or pick and carry operations) or on rubber load charts; Lifts where the center of gravity could change
7. Lifts, where the Crane is required to set up on a manmade suspended platform or structure; or
8. Any lift that the crane operator believes should be subject to a complex lift classification.

Complex lifts may require engineering approval and supervision by a competent Lifting supervisor. An engineer may be required to assess when the lift is outside basic load rigging principles:

1. Lift assembly that incorporates a pre-engineered lifting configuration or non-ordinary lift gear.
2. Analyze possible shifts to the center of the component of gravity
3. Analyze where the center of gravity of the lift is situated above the lift points.

A complex lift must be completed by a trained, competent, and authorized person and must be supervised by a Ryman Healthcare foreman associated with the task.

Any lift that is a complex lift requires careful planning. A general lift plan for generic lifts cannot be applied to complex lifts. A new lift plan must be completed. These must be recorded, kept on-hand for the duration of the work, and subsequently stored (in Assura).

Truck-Mounted Crane Lifts
Truck loader crane (e.g. hiabs) often deliver materials to our sites. The truck-mounted crane driver and any Dogmen must complete a lift plan. If operators are unfamiliar with a lift plan, sites are encouraged to contact the supply/delivery companies to advise of Ryman requirements and encourage training on lift plan requirements.

Any truck-mounted crane lift requires a Truck-mounted Crane Lift Plan to be completed.

See the following sections ‘Mobile Crane’ ‘Tower Crane’ and Truck-mounted Crane’ for minimum control requirements for types of cranes.

Crane and Lifting Equipment Inspection and Maintenance

All cranes and lifting equipment must have a preventative maintenance program, provided by the crane contractor. All Cranes operating on a Ryman Construction site (New Zealand) must be inspected and be issued with a certificate of inspection according to the Health and Safety in Employment (Pressure Equipment, Cranes and Passenger Ropeways) Regulations 1999 by an IANZ inspection body at intervals not exceeding 12 months. Ryman Healthcare shall be given a copy of the report or certificate of inspection that must contain the name of the equipment inspector who holds a current certificate appropriate for the type of crane.

All Lifting equipment must be uniquely identified with a code or number, inspected at intervals at a 12-month interval, and recorded in a lifting register. Lifting equipment owned by a Crane supplier or contractor and used on Ryman Healthcare sites shall display current testing and certification evidence.

The intervals for inspection are as follows:

Item	Frequency
Cranes	12 Months (Annual Inspection) Service Inspection (Hourly Intervals) as specified by Manufacturer. Post Incident Daily and Weekly - Pre-Operational Checks Weekly load testing for tower cranes
All Lifting Equipment	12 months – Certification and Load Testing Daily - Visual Pre-Operational Checks

Crane and Lifting Equipment Register

A register of cranes and lifting equipment must be established for each site and maintained by the equipment owner.

The register must be maintained and contain the following information:

- Equipment's unique identification number
- Type of crane and lifting equipment (e.g. crane, slings, shackles, brick cages, chains)
- Certifications Date of Expiry
- Maintenance carried out on lifting equipment

Non-Compliant Equipment

Any lifting device or equipment that is damaged, faulty, out-of-certification or compliance, must be removed from use immediately and an Out-of-Service tag attached. Non-compliant equipment must be segregated and tagged out of service from use until the equipment's status is determined and appropriate action is completed.

Cranes and lifting equipment must not be operated if defective or with an inoperable or defective safety-critical device, e.g., emergency stops.

Crane Requirements & Modifications

No modifications shall be carried out on any plant or lifting equipment on a Ryman Healthcare site without any engineer's written approval when the modification is required for complex lifting operations.

Training and Competency

Cranes

Any workers operating cranes or slinging loads must be trained and competent. The lifting and landing of loads must be overseen by a trained and competent dogman. The nature of the load may require additional support from workers involved with task e.g. landing pre-cast elements, fixing of frames. In these instances, all workers involved with the lifting task must attend the crane crew daily pre-start, read, acknowledge the SWMS and any other planning items prior to the lift. If using other mobile plant such as an excavator or telehandler for lifting activities the operator must have the relevant training and competency to operate that equipment. See ‘Mobile Plant’ for more information. All persons operating or working with a crane must hold the following applicable Unit Standards as a minimum qualification or overseas qualifications. Qualifications from the UK or Australia is acceptable. Contact the HSE Lead if other

qualifications are available from a different country. All certificates/licences for crane operations must have the original certificate sighted (either during the induction or alternative).

Unit Standards:

Unit Standard Number	Unit Standard Name
3790	Operate a cab controlled overhead crane and lift and place loads
3794	Lift and place loads with a tower crane
3795	Configure a mobile crane and lift and place loads
3818 (old)	Erect, climb and dismantle a tower crane
15757	Employ fall arrest systems on building and construction sites
16617	Operate a truck loader crane and lift and place loads
20208 (old)	Describe types of self-erecting tower cranes and lift and place loads
20208 (new)	Use a self-erecting tower crane to lift and place regular loads
20209	Erect, dismantle and reconfigure a self-erecting tower crane
20526 (old)	Configure a track crawler crane and lift and place loads
20875	Slinging, lifting, moving, and placing loads using mobile plant
23229	Use safety harness system when working at height
23351	Describe, set up, and use, fall arrest and rescue system in a tower crane environment
24511	Configure a non-slewing articulated crane, lift and place regular loads
27674 (new)	Erect and dismantle a tower crane, this NZQA replaces 3818
27675 (new)	Climb a tower crane, this NZQA replaces 3818
27676 (new)	Configure a lattice boom track crawler crane to lift and place regular and irregular loads
30072	Demonstrate and apply knowledge of slinging regular loads safely
3789	Sling varied regular loads and safely direct a crane during crane operations
3801	Prepare and sling complex loads for crane operations
6400	Manage first aid in an emergency situation
6401	Provide first aid
6402	Provide basic life support

See the New Zealand Unit Standards for Crane Operation Matrix below for information on the required unit standards for crane types.

Type of Crane	New Zealand Unit Standards for Crane Operation Matrix													
	30072	3789	3801	3790	3794	3795	3818 27674 27675	15757	16617	20208	20209	20526 27676	23351	24511
Mobile crane operation														
Tower crane operation														
Crawler crane operation														
Self-erecting tower crane operation														
Cab controlled overhead traveling crane operation														
Truck loader crane operation														
Erection of a self-erecting tower crane														
Erection, climbing, or dismantling of other tower cranes														
Slinging of regular loads (dogman)														
Slinging of complex load (dogman)														
Non-slewing articulated Crane, e.g., tractor crane														

Minimum Requirement for type of Crane being operated on a Ryman Healthcare Site

One or More of the Unit Standards must be held for this Operation

This Unit Standard is a prerequisite for new entrants into the Crane Industry

This Unit Standard is recommended, but not a mandatory requirement

It is preferable that persons operating cranes or slinging loads have the New Zealand Certificate in Cranes (Level3/Level4 below).
New Zealand Certificate in Cranes:

Crane Type	Qualification
Cab-Controlled Overhead Crane Pendant-Controlled Overhead Crane Self-Erecting Tower Crane Truck Loader Crane	New Zealand Certificate in Cranes (Level 3)
Crawler Crane Mobile Crane Non-slewing Articulated Crane Tower Crane Mini Crane	New Zealand Certificate in Cranes (Level 4)

Inspection Authority

- Inspectors must be an IANZ accredited inspection body.

If harness equipment is required persons using the equipment must be trained and competent and a working at height permit may be required. See the 'Work at Height' document for further information.

Hoists

Hoist Type	Training/Competency
Personnel hoists	The manufacturer/suppliers of the hoist to provide training for the hoist operator
Manual/Electric Hoists	Confirmation of operator competency is required. This may be achieved through internal training or training supplied by the equipment manufacturer/supplier

Supervision

A trainee, even where all equipment subcategory requirements have been met, would continue under supervision until attainment of the certificate of competence.

Persons training, or supervising inexperienced workers, must have a certificate of competence and be deemed able to train and supervise others by their company.

When assessing the level of supervision required by a trainee, the supervisor or trainer must assess several factors, including but not limited to;

- The worker's experience and competency
- The nature of the work
- The nature of the risks associated with the work including the worksite
- The control measures in place while the worker being supervised is carrying out the work

Inexperienced workers require 'close supervision', this means there must be direct and constant one-on-one management in place (e.g. If a trainee dogman is rigging a load and the trained dogman is landing the load, then the trainee dogman must have a trained dogman that is closely supervision the work with one-on-one management).

Approval must be sought from the Project Manager or delegated authority prior to any inexperienced workers operating cranes, hoists or other lifting devices, including rigging/dogman operations

Load lifting and rigging

Minimum control requirements (as per and in addition to Approved code of Practice Load Lifting and Rigging):
All lifting equipment should be:

- Registered onto an equipment register when it first arrives onsite. Contractors must supply equipment register with SSSP (Site Specific Safety Plan)
- Inspected before each use by the rigger
- Inspected periodically by a competent person (see table further above)
- Marked with a serial number, or other identifying number
- Have a tag or corresponding document identifying inspection dates
- Marked with Safe Working Load (SWL)/Working Load Limit (WLL)
- If damaged/unsafe/untagged, removed from use immediately
- Certified and tagged brick cages to be used when lifting brick pallets or similar pallets
- Ensure adequate number of dogman/spotters for the lifting requirements' e.g. blind lifts

Mobile Cranes

A mobile crane is a cable-controlled crane mounted on crawlers or rubber-tired carriers or a hydraulic-powered crane with a telescoping boom mounted on truck-type carriers or as self-propelled models.

Minimum control requirements (as per and in addition to Approved code of Practice for Cranes):

- Geotechnical input prior to crane erection to confirm ground stability for crane setup and riggers on mobile cranes (see the previous 'Geotechnical Assessments' section of this document for information)
- Operators must undertake a pre-operational safety check for each shift the crane or lifting equipment is used. Verify the equipment is in good condition (free from obvious signs of wear, damage/contamination). This includes a daily and weekly inspection
- Documented daily crane crew pre-start meeting involving all crane crew
- The seat belt must always be in working condition and used when in Operation
- A dry chemical powder (DCP) Fire Extinguisher must be located on Crane and functioning in the event of a fire
- Ensure the Crane is not left unattended with the engine running or with a suspended load
- Rated capacity limiter

- A person operating a mobile or slewing crane cannot undertake their dogging/rigging work or supervise a trainee Dogman/rigger
- Lift plan in place (general or critical lift plan as applicable) prior to day's activities (see the previous 'Planning Lifting Operations' section for details on required lift plans)
- Equipment maintained in accordance with the manufacturer requirements
- Rating and load charts kept in the cab at all times
- For all lifting operations, communications are required between the operator and other personnel, and only recognized signals can be used. All Lifts must use 2-way radio communication and Hand signals as stated in the ACOP Cranes 2010.
- Current 12 monthly major inspection (MI) certificate displayed in cab of crane
- Anti-two block system fitted
- Load indicators fitted
- Crane operator's manual in the cab
- Slew pins must be secured in place in slewing mobile cranes while traveling
- Boom is fully retracted when traveling, or when carrying a load retracted as much as practicable
- Check all lifting equipment and accessories are marked with a rated capacity - Working Load Limit (WLL) Lifting equipment must be inspected before use and any defective equipment removed from service
- All load-bearing hooks must have a safety latch fitted unless a specific working instruction indicates otherwise, and the weight being lifted must not exceed the capacity of the lifting equipment
- A Dogman or spotter is required to check areas for unauthorized personnel at levels dependent on the load and the barricading required
- Only taglines (minimum 16 mm natural fiber/non-conductive) are to be used for the task to prevent uncontrolled load movement, length of taglines must be relevant to the height of load lifted. If the tagline presents a hazard during the lift, the appropriate risk assessment process must be followed to remove taglines, e.g., working around electricity
- Persons not involved in the lift must not disrupt anyone with the lift
- Tracks or tyres in good condition
- Outriggers and stabilizers, where installed, must be engaged during lifting operations; and
- If the load is outside of the operator's view during the lifting Operation, the Operation must be directed by a person with a minimum qualification of Dogman
- Warning signals using horns or whistles to warn other workers of overhead loads.
- Where there is a risk of a load falling and striking a person or working around public, barricading or similar controls to prevent access must be in place
- Crane markings:
    - A mobile crane marking, and its lifting components must be clear and legible in English as specified in AS1418.5
    - All operator controls must be suitable marked to indicate their function and Operation

Tower Cranes

A rotatable cantilever jib on top of a fixed steelwork tower. This include luffing, hammerhead, self-erecting tower cranes and unmanned cranes.

Minimum control requirements (as per and in addition to Approved Code of Practice for Cranes):

- Foundation Certificate issued by a CPEng before Crane erecting on concrete foundations (see the previous 'Geotechnical Assessments' section of this document for information)
- Operators must undertake a pre-operational safety check for each shift the crane or lifting equipment is used. Verify the equipment is in good condition (free from obvious signs of wear, damage/contamination). This includes a daily and weekly inspection
- Documented daily crane crew pre-start meeting involving all crane crew
- Lift plan in place (general or critical lift plan as applicable) prior to day's activities (see the previous 'Planning Lifting Operations' section for details on required lift plans)
- Relief operators to have a minimum of 1-hour crane familiarization prior to operating the Tower Crane
- Equipment maintained in accordance with the manufacturer requirements
- For all lifting operations, communications are required between the operator and other personnel, and only recognized signals can be used. All Lifts must use 2-way radio communication via a channel designated specifically for tower crane operations. In addition, Hand signals can be utilized as stated in the ACOP Cranes 2010
- Training and competency register supplied by contractor for all persons engaged with crane operations
- Tower crane emergency rescue plan in place
- Rating and load charts kept in the cab at all times
- Current 12 monthly MI certificate displayed in cab of crane
- Taglines or similar devices must be attached to loads that require steadying as implemented by the Dogman
- Only taglines (minimum 16 mm natural fiber/non-conductive) are to be used for the task to prevent uncontrolled load movement, length of taglines must be relevant to the height of load lifted. If the tag line presents a hazard during the lift, the appropriate risk assessment process must be followed to remove taglines, e.g., working around electricity
- The electrical installation of every crane must be in accordance with the appropriate requirements of AS/NZS 3000: Electrical Installations
- Calibrated anemometer fitted to measure wind readings
- Aviation lighting installed on crane if in navigable air space and CAA permit if required (consult with crane supplier and ensure aviation notification in place). CAA process can be as long as 90 days
- Anti-clash agreement in place, considering additional cranes or concrete placing pumps and acknowledged by all crane crew and additional contractors
- Base of crane secured (e.g. locks, barbed wired, fencing, hoarding etc..) from unauthorized access when not in use and at the end of every day. Make sure access is safe and clear of obstruction for crane operator and in case of emergency.
- Weekly load indicator tests completed

- Check all lifting equipment and accessories are marked with a rated capacity - Working Load Limit (WLL) Lifting equipment must be inspected before use and any defective equipment removed from service
- All load-bearing hooks must have a safety catch fitted unless a specific working instruction indicates otherwise, and the weight being lifting must not exceed the capacity of the lifting equipment
- A Dogman or spotter is required to check areas for unauthorized personnel at levels dependent on the load and the barricading required
- Ensure the Crane is not left unattended with the engine running or with a suspended load
- Persons not involved in the lift must not disrupt anyone with the lift
- If the load is outside of the operator's view during the lifting operation, the operation must be directed by a person with a minimum qualification of dogman
- Warning signals using horns or whistles to warn other workers of overhead loads
- Where there is a risk of a load falling and striking a person or working around public (e.g. neighbours), barricading or similar controls to prevent access must be in place

Tower Crane Erection and Dismantlement:

- Erection/dismantle plan to be completed by a competent person (holding unit standard 3788 – erect and dismantle a crane) and provided to Site Management Team prior each erection and dismantlement
- 2-way radio communication
- The following must be addressed immediately after erection:
    - Crane assembly and configuration
    - Statement from qualified erection supervisor that the crane has been erected in accordance with the manufacturer’s recommendations, including the vertical alignment tolerances of the tower
    - Test weight certificates
- Inspection prior to testing is to include:
    - Crane access ladders and platforms
    - Tensile bolt installation
    - Rope anchors and dead ends
    - Pins washers, split pins and locking plates
    - Hydraulic installation
    - Electrical equipment, earthing and electrical Certificates of Compliance
    - Signage
- Testing is to include:
    - Crane operation
    - Operator’s cab and controls
    - Hoist, trolley and boom limit switches
    - Load-moment cutouts
    - Load test
    - Hoist speed limiters
    - Phase failure and rotation protection (where uncertified)
    - Calibration and testing of load-moment cutouts, SLIs and load indicators where fitted (refer to Appendix A) in accordance with the manufacturer’s instructions
    - Free slew

Further detailed in-depth inspections may be required depending on results of visual inspection.
Additional items may be identified by the crane owner for inspection.
For further information on the common hazards associated with tower crane erection, dismantling, and climbing work see Appendix G (page 101) of the Approved Code of Practice for Cranes.

Truck-Mounted Crane

A truck loader crane, truck-mounted crane, HIAB or 'crane truck' is a crane that is mounted to a truck, either just behind the cab or just behind the deck. The crane is only designed for self-unloading and loading. This also includes swing lift cranes.

Minimum control requirements (as per and in addition to Approved code of Practice for Cranes):

- Geotechnical input prior to crane erection to confirm ground stability for crane setup and riggers on mobile cranes (see the previous 'Geotechnical Assessments' section of this document for information)
- Equipment maintained in accordance with the manufacturer requirements
- Lift plan in place (truck-mounted crane) prior to lifting activities
- Rating and load charts kept in the cab at all times
- Vehicle Loading Crane Operators on a Ryman Healthcare site must hold Unit Standard 16617
- An E-stop button that is visible and operational
- The VLC must only be used with all stabilizers extended. Outrigger pads must be used
- The Crane must be leveled prior after extending the outriggers and prior to lifting operations following the crane manufacturers' specifications
- All VLC's manufactured after 2003 must be fitted with a rated capacity indicator (load warning >90% of rated capacity)
- For all lifting operations, communications are required between the operator and other personnel, and only recognized signals can be used
- During transit, the VLC should be stowed in the carry position or must be in accordance with the Manufacturer's operating instructions and local requirements
- During transit, stabilizers and footpads must be securely stowed and fastened
- Loads being delivered by suppliers to and from the site should comply with the New Zealand Truck Loading Code
- Check all lifting equipment and accessories are marked with a rated capacity - Working Load Limit (WLL) Lifting equipment must be inspected before use and any defective equipment removed from service
- All load-bearing hooks must have a safety catch fitted unless a specific working instruction indicates otherwise, and the weight being lifting must not exceed the capacity of the lifting equipment
- A Dogman or spotter is required to check areas for unauthorized personnel at levels dependent on the load and the barricading required
- Ensure the truck loader is not left unattended with the engine running or with a suspended load
- Only taglines (minimum 16 mm natural fiber/non-conductive) are to be used for the task to prevent uncontrolled load movement, length of taglines must be relevant to the

height of load lifted. If the tag line presents a hazard during the lift, the appropriate risk assessment process must be followed to remove taglines, e.g. working around electricity
- Persons not involved in the lift must not disrupt anyone with the lift
- If the load is outside of the operator's view during the lifting Operation, the Operation must be directed by a person with a minimum qualification of Dogman
- Where there is a risk of a load falling and striking a person, barricading or similar controls to prevent access must be in place

Workboxes/Mancage

A workbox or mancage is a crane lifted platform piece of equipment from which employees carry out their work which is either attached to the crane's hook or the head of the crane's boom.

Minimum control requirements:

- A Work at Height Permit must be in place. Refer to 'Work at Height' and/or 'Permit to Work Procedures' for further information
- The workbox complies with AS1418.17
- Only to be used with a tower crane or for an emergency
- Personnel suspended from a crane must wear a general-purpose fall arrest harness, complying with AN/NZS 1891.1, with the lanyard or lanyard assembly attached to anchorage points and on hook block. Refer to "Working at height" section for training and competency requirements
- No work shall commence until all parties have completed a Safe Work Method Statement and an Emergency Rescue Plan has been developed by the personnel involved in workbox operation
- The workbox, lifting attachments, and records must be inspected by a trained, assessed, and authorized person before use
- Be constructed with a floor that is free draining
- Mancage must have inward opening spring gate
- Check all man cages are marked with a rated capacity – Safe Working Load (SWL). Man cages must be inspected before use and any defective equipment removed from service
- Personnel and materials must be securely confined within the workbox and independently attached to the main hook
- The Crane must not be used to raise simultaneously, lower, or suspend any other load, and workbox movements should be controlled
- An appropriate procedure and control measures must be developed, documented, and implemented to transfer any work materials from the workbox
- The crane operator must always remain at the controls of the Crane
- At least one person in the workbox must hold a Dogman's US 3789 or US 3801 to ensure correct directions are communicated to and from the crane operator. Back up, radios/communication should be used.

Lifting Activities using Earthmoving Equipment

Earthmoving equipment that may be used as a crane such as excavators or telehandler must adhere to the below minimum control requirements.

Minimum control requirements:

- Lifting points and equipment used for rigging loads are to be certified by a Chartered Professional Engineer
- All excavating equipment to be removed prior placing lifting attachments
- In the case of new and used hydraulic excavators with an operating weight of seven tonnes or more, the following additional conditions apply:
    - the equipment is not to be modified to make it operate like a crane other than the provision of a lifting point
    - hose burst protection valves are required
    - operators and ground support personnel are to be adequately trained
    - operations are to be carried out following the Approved Code of Practice for Load-Lifting – Rigging; and a load chart available to operators
- Earthmoving equipment should not be used as a crane unless a SWMS/Lift Plan/ Risk Assessment has been compiled before lifting and lift is completed by a competent person
- WLL must be marked on lifting equipment
- A competent person shall be used when using earth moving equipment as a mobile crane
- All lifting points on earthmoving equipment must form a closed eye to which a load rated shackle may be attached

Manual / Mechanical Hoists

All manual and mechanical material hoists being operated on a Ryman healthcare construction site must meet the minimum requirements. Manual and mechanical material hoists include equipment e.g. gin wheels.

Minimum control requirements:

- Electric hoists must meet the requirements of AS1418.7 Cranes (including hoists and winches) Builders hoists and associated equipment
- WLL must be marked on Hoist, and certified / load tested annually
- The area below Lifting Area must be isolated using temporary barriers
- No person shall be positioned underneath a load being lifted
- Only competent persons shall operate an Electric Hoist. This may be achieved through formal external training, internal training or experience/knowledge.
- Electric Hoist must be inspected on a 3-monthly basis for electrical safety complying with AS/NZS3012
- Always refer to the Manufacturer's Instructions for operational checks
- Refer to Ryman Healthcare Information Sheet -Gin wheels and Hoists for further setup requirements and control measures

Notifiable Work:
Notify WorkSafe when using a lifting appliance where the appliance has to lift a mass of 500 kilogrammes or more a vertical distance of 5 metres or more. Notifications can be made via the WorkSafe website. Notifications must be made by Ryman and the contractor. Exclusions include:

- work using an excavator
- work using a forklift, or
- work using a self-propelled mobile crane

Notify WorkSafe where height work is 5 metres or higher notify WorkSafe if there is a risk of falling. Notifications can be made via the WorkSafe website. Notifications must be made by Ryman and the contractor. Exclusions include:

- Work in connection with a residential building up to and including 2 full storeys;
- Work on overhead telecommunication or electric lines;
- Work carried out from a ladder only; or
- Maintenance and repair work of a minor or routine nature

References and Resources:

- Approved Code of Practice for Cranes
- Crane Safety Manual Version 4
- Approved Code of Practice for Load-lifting Rigging (2012)
- Civil Aviation Rules Part 77 Objects and Activities Affecting Navigable Airspace
- The Pressure Equipment Cranes and Passenger Ropeway Regulations (PECPR Regulations) 1999
- Standard Operating Procedure – Precast Panel Installation Ryman Healthcare
- Information Sheet – Hoist and Gin Wheels - Ryman Healthcare
- Safe Work with Precast Concrete Good Practice Guidelines