	Standard Operating Procedure		
	Procedure Name:	Assembly and Disassembly of modular buildings	
	Author:	Steve Smallman	
	Approved By:		
Version	1.0	With Effect from	7/2/14
Review Date	1/1/15	Document Number	SOP 20

1. Aim of procedure

To identify and formalise the risks and control processes involved in assembling and disassembling modular buildings including site sheds and school demountables.

We regularly work for clients where top lift eyebolts are fitted to modules butted together, necessitating dogmen to access the roof of buildings to attach chains and eyebolts to modular segments of the building. This access poses a risk of fall from heights on our personnel.

This work procedure is designed to address concerns of working at heights and to implement reasonably practicable methods of minimising so far as practicable the risks involved in removing chains and eyebolts from the rooves of modules.

2. Scope of application

This procedure applies to all Wheeler Cranes personnel involved in lifting and placement of modular building systems at any location and at any time. These procedures also apply to Wheeler Cranes personnel planning work involving the assembly or disassembly of modular building systems.

This process does not apply to modules being lifted using the handshaken chains under the awnings method.

This process does not apply to modules where bolts are accessible by ladder from the side of the building. In these cases, ladders are to be used and no person is to access the roof.

3. References

AS 2550

Managing the risk of falls at workplaces: Code of Practice (December 2011)

4. Pre-requisites

Crane Drivers undertaking this work must hold:

- A National Certificate of Competency/High Risk Work Licence for the size and type of crane used
- A vehicle drivers licence of a suitable class for the crane used.
- A Wheeler Cranes Verification of Competency as a crane driver

Dogmen undertaking this work must hold a National Certificate of Competency/High Risk Work Licence as a dogman, and where supplied by Wheeler Cranes a Wheeler Cranes Verification of Competency.

Crane crews must have access to ladder/ladders to provide safe access to the roof, footing timbers and may require a short ratchet strap and an eye bolt to prevent movement of the ladder

5. Procedure

Work Planning

Wheeler Cranes supervisors undertaking site inspections will assess sites and advise the allocator of required ladder sizes to permit access to the rooves of modular buildings. Ladder sizes are to be calculated on highest side, 1:4 slope and at least 1m extension above roof height (see fig.1)

The allocator will note the length of ladder(s) required to access rooves on the call order for the work crew.

Work preparation

In dealing with modular building systems, crane crews are:

- to review the call order and note the length of ladder(s) required for the task,
- select the ladder having an adequate SWL, ensuring the ladder has sufficient capacity for the expected total load.
- Inspect the ladder, stiles, rails, hinges, catches and releases for damage/defect/operation. Damaged or defective ladders must not be used.
- load the ladder (s) onto the crane/support vehicle along with:
    - at least one ladder strap (short light weight ratchet strap)
    - footing timber for the ladder(s)
    - spare eyebolt
- Where possible two people to carry the ladder horizontally. Where the ladder is carried by one person it is to be carried vertically, monitoring the head of the ladder for contact with overhead items including lights and electrical conductors.
- To tie down the ladder using an appropriate load restraint.
- Ladder to be inspected and SWL assessed for use by personnel.

Assembly of modules

Rigging of modules on trucks

1. Transport drivers generally use top mounted eyebolts as tie down points for modules. Transport drivers will remove tie downs from the load.

2. Dogmen may assist in removal of tie down chains from eyebolts, and are to access eyebolts using a ladder.
3. Ladders are to be placed at a 1:4 slope (1 out to 4 up) See fig.1
4. Ladders are to be placed on flat, solid ground. If flat, solid ground is not available, footing and packing timbers are to be used to provide a firm, level surface for the ladder.
5. Ladders are to be footed by another person to ensure stability.
6. Dogmen are to climb ladders using three points of contact at all times.
7. Dogmen are to only work while facing the ladder.
8. Dogmen are to only work within comfortable reach
9. Dogmen may need to fit eyebolts to modules to facilitate lifting.
10. When removing tie down chains or fitting eyebolts, chains are to be attached to the fitted eyebolts. In attaching chains, dogmen are to maintain three points of contact with the ladder at all time.
11. Dogmen are NOT to access the top of the module for the purpose of attaching chains.
12. At least one tag line is to be attached to the module for control during placement. Two tag lines may be used to provide finer control.

Fig 1. 1:4 ladder placement

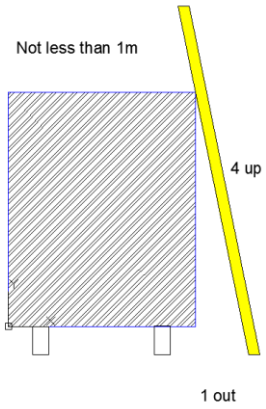
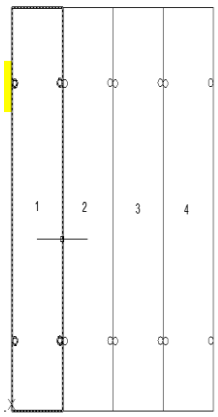


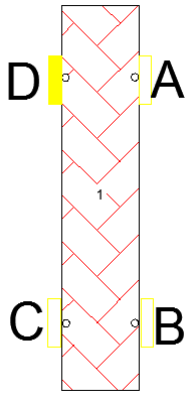
Fig 2. Typical assembled modules



Slewing and placement of modules

13. **Refer SOP 13 Slew Crane Operations for controls regarding the operation of slew cranes.**
14. **Module 1 is placed into position by the crane (see fig 3 below)**

Fig 3. Placement of module 1

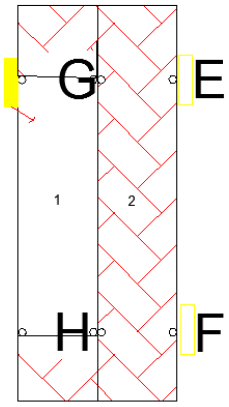


15. Dogman uses ladder with footing timber and footed by another person
16. Dogman ascends ladder, using three points of contact, to remove chains sequentially from eyebolts A, B and C.
17. Dogman will install footing boards to ensure a firm and level surface for the placement of ladder to remove eyebolt D.
18. Dogman to inspect ratchet ladder strap to ensure that it is in good condition and operates correctly.
19. Ladder is to be placed on the supporting surface and extended so that the top of the ladder extends more than 1m above the level of the roof line and is centred on the eyebolt D.
20. The ladder is to be footed by the transport driver on site.
21. Dogman will climb the ladder using three points of contact.
22. Dogman will remove the client's eyebolt and install a Wheeler Cranes eyebolt.
23. Dogman will install the ratchet ladder strap to ensure the ladder is secured at the top.
24. Dogman will NOT access the roof of the module at this time.
25. Where only one ladder is on site, steps 21-23 will be omitted from the procedure.

Fig 4. Placement of Module 2

26. Dogman will rig Module 2 similarly to module 1

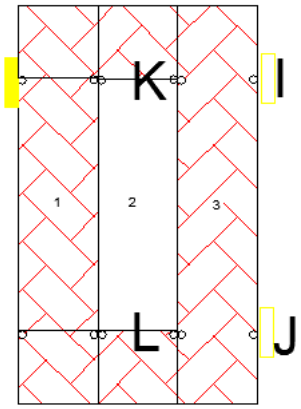
27. Module 2 will be put into place in accordance with SOP 13.



28. The following processes apply if a third or subsequent modules are to be placed.
    a. Dogman will use a ladder to remove chains from eyebolts E& F. Ladder to be footed and ladder to be climbed using three points of contact.
    b. Dogman to climb the ladder (secured to point D at step 22).
    c. Dogman is to access the roof from the ladder towards the centreline of module 1.
    d. Dogman is to proceed directly across module 1 to the eyebolts at G (see figure 4)
    e. Dogman is not to access module 2 at this time.
    f. Dogman is not to move outside the line of eyebolts at either end of the module
    g. Figure 4 shows no go areas as a Red Herringbone hatch.
    h. Dogman is to remove chains from module 2 at G & H.
    i. Dogman is to remove eyebolts from modules 1 & 2 at points G & H.
29. If there are two modules only, move to step 30

30. If there are four or more modules, the following processes will apply to all subsequent modules except the last module.

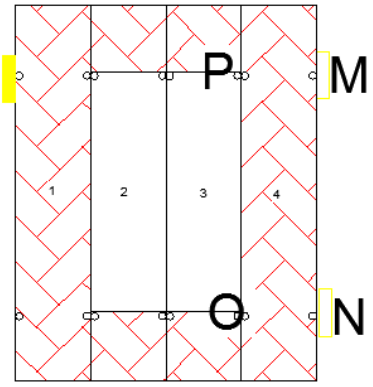
Fig 5. Placement of Module 3



a. Dogman will use a ladder to remove chains from eyebolts I & J. Ladder to be footed and ladder to be climbed using three points of contact.
b. Dogman to climb the ladder (secured to point D at step 22).
c. Dogman is to access the roof from the ladder towards the centreline of module 1.
d. Dogman is to proceed directly across module 1 & 2 to the eyebolts at K (see figure 5)
e. Dogman is not to access module 3 at this time.
f. Dogman is not to move outside the line of eyebolts at either end of the module
g. Figure 5 shows no go areas as a Red Herringbone hatch.
h. Dogman is to remove chains from module 3 at K & L.
i. Dogman is to remove eyebolts from modules 2 & 3 at points K & L.

31. **Regardless of the number of modules, this process applies to the final module in each sequence.**

Fig 6. Placement of final Module



a. **Dogman will use a ladder to remove chains and eyebolts from points M & N. Ladder to** be footed and ladder to be climbed using three points of contact.
b. Dogman to climb the ladder (secured to point D at step 22).
c. Dogman is to access the roof from the ladder towards the centreline of module 1.
d. Dogman is to proceed directly across module 1, 2 & 3 to the eyebolts at P (see figure 6)
e. Dogman is not to access module 4 at this time.
f. Dogman is not to move outside the line of eyebolts at either end of the module
g. Figure 6 shows no go areas as a Red Herringbone hatch.
h. Dogman is to remove chains from module 4 at P & Q.
i. Dogman is to remove eyebolts from modules 3 & 4 at points P & Q.

NOTE:

Access to and from the roof is NOT permitted until at least two modules are in place.
Dogmen are to cross Module 1 by moving between the line of eyebolts and the centreline of the module and directly away from or towards the ladder.
When climbing onto the roof, dogmen are not to release their grip on the ladder until they are sure of their footing on the roof of module 1.
When descending from the roof, dogmen are to take a firm grasp of the ladder and move one foot onto the ladder at a time. Descent of the ladder is not to commence until the dogman is able to again maintain three points of contact with the ladder.
Personnel are to complete the checklist attached as appendix 1 to this SOP prior to accessing the roof.

Disassembly of modules

Disassembly of modules follows the reverse procedure of assembly. Once Module 2 is rigged, there is to be no access to the roof of module one except for the dogman to vacate the roof.

6. Approval

Approved for introduction 7/2/14

Glenn Wilbow
General Manager

7. Acknowledgement

Name	Signature	Name	Signature

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Modular Building Roof Access

Checklist

No other practical means of access available? EWP/Scaffolding			
Ladder provided?	SWL of Ladder Kg	Ladder inspected	
Footing timbers provided?		Footing timber sufficient	
Ground inspected for placement of secured ladder			
Second ladder provided?	SWL of Ladder Kg	Ladder inspected	
Eyebolt provided?		Eyebolt Inspected	
Ladder restraint provided?		Restraint inspected?	
SOP Reviewed	Dogman	Driver	
Line of eyebolts identified on modular buildings?			
Work sequence discussed with transport drivers?			
No-go areas discussed?			
A person is nominated to foot the ladders for the dogman (the footer)?			
The footer understands their role?			

	Name	Signature	Date
Crane Driver			
Dogman			
Footer			