



Climbing Bracket System

Boral Formwork & Scaffolding
ACROW CYCLONE

2 Climbing Bracket System – General Technical & Application Manual

Important

The erection and application instructions contained in this booklet are the recommended methods to be used for Acrow Climbing Bracket System

The technical function related instructions must be accurately followed to obtain the correct performance of the product. Any deviation from the recommended usage will require a separate design and/or verification by BF&S Engineering Department.

The safe use and application of the Acrow Climbing Bracket system must be in accordance with Australian Standard AS 3610 Formwork for Concrete, Occupational Health & Safety regulations, approved industry codes of practice and relevant regulatory authority requirements.

The illustrations in these assembly configurations are minimum guidelines only.

The combined use of the Acrow Climbing Bracket system with equipment from other suppliers may entail performance problems and therefore requires a design check and/or verification by BF&S Engineering Department

Safe Work Methods Statements and Hazard Identification/Risk Assessments for the erection and dismantling of the Acrow Climbing Bracket system are available from BF&S branches.

Site specific Hazard and Risk assessments may need to be generated for specific projects.

Safety Warning

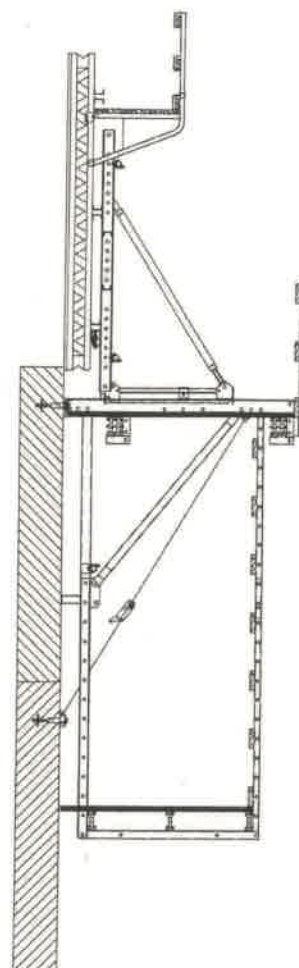
This warning is to draw the users attention to possible musculoskeletal disorder as a result of manual handling during assembly and dismantling of Acrow Climbing Bracket system.

It is recommended that users of the Acrow Climbing Bracket system employ and implement appropriate procedures and controls measures to eliminate or control any risk of Musculoskeletal disorder/injury while manually handling Acrow Climbing Bracket system.

Refer to Code of Practice on manual handling published by local Workcover Authority or other approved and recognised guidelines for correct and appropriate manual handling procedures.

Product Features

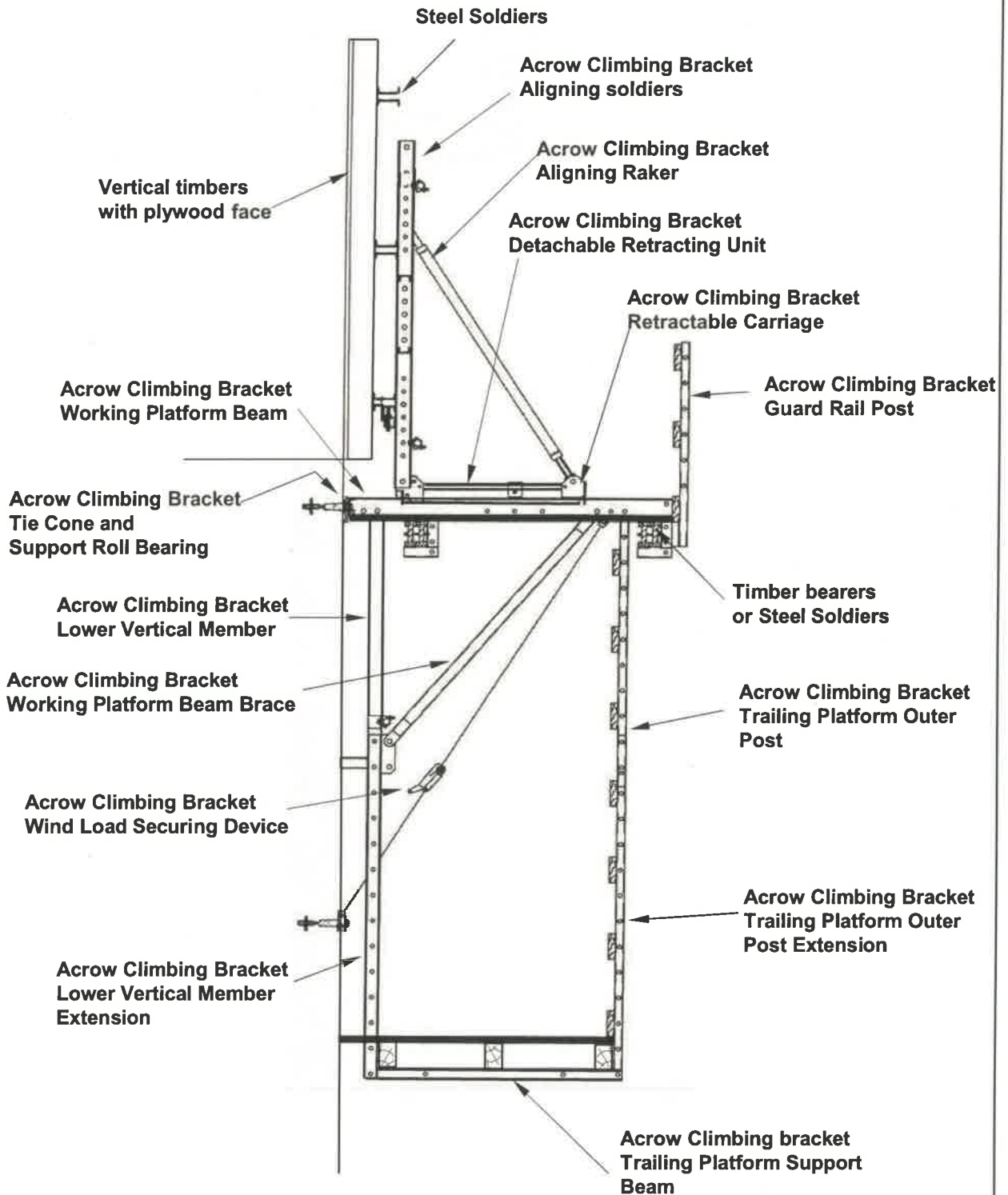
The Acrow Climbing Bracket system is a robust crane handled climbing formwork system with built-in access platforms and features a retractable formwork support carriage to enable easy stripping of the form face from the concrete. Vertical alignment of the formwork is achieved by turnbuckles to ensure perfect alignment. Once the third pour is reached a trailing platform is connected to allow access to anchors in the previous pour.



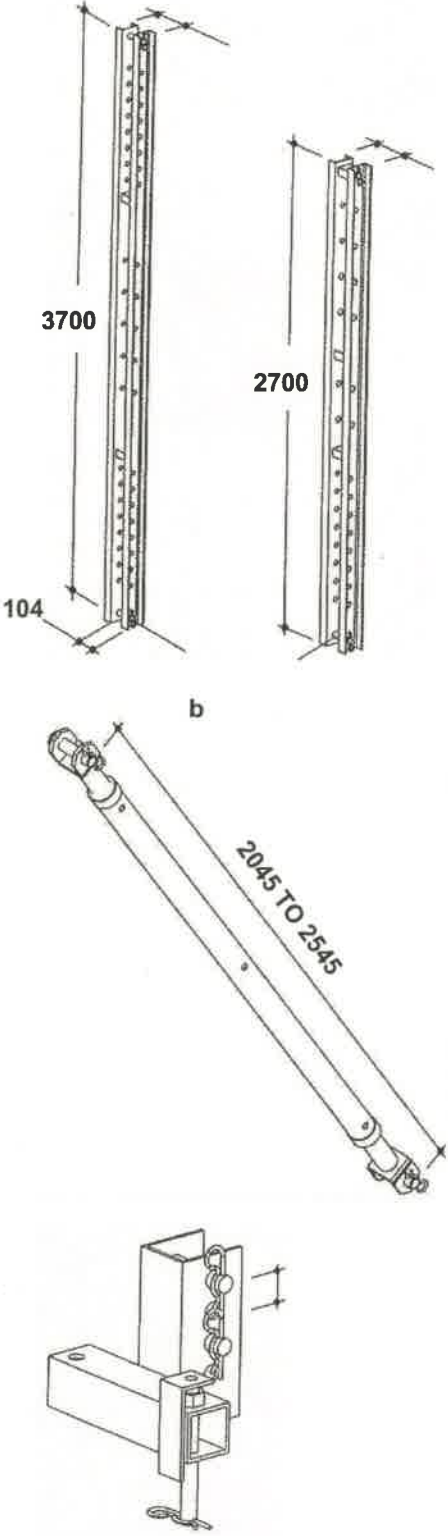
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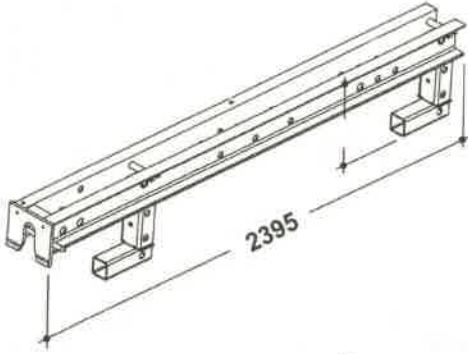
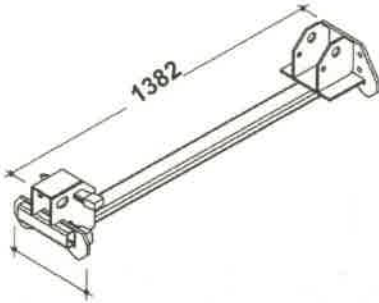
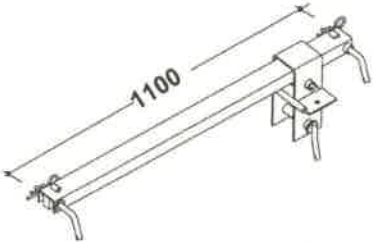
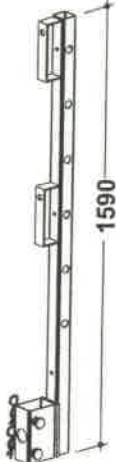
1. The photographs printed in this brochure show construction sites whose operation is not our responsibility. As a consequence, we cannot influence whether instructions for erection and/or use are properly observed or whether safety regulations are complied with, especially as these photographs are momentary and may not represent the final and definitive state of product use.
2. Consistent with the continued development and improvement of Boral Formwork & Scaffolding products, the details contained in this brochure may be changed without notice.
3. The safe use and application of the products must be in accordance with AS3610, Occupational Health & Safety Act, approved Industry Codes of Practice, and any other Regulatory Authority requirements.

Location of components

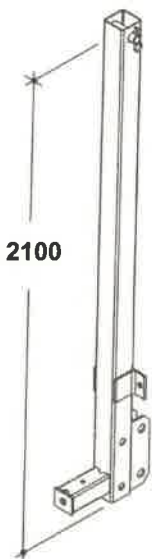

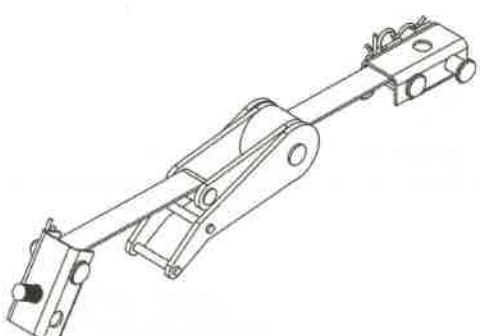


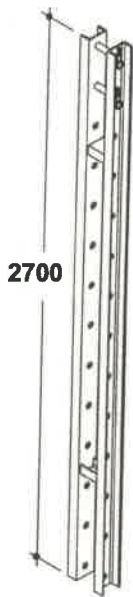
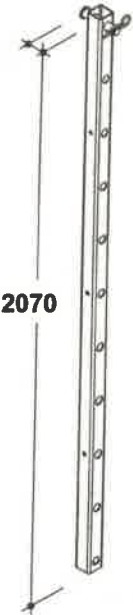

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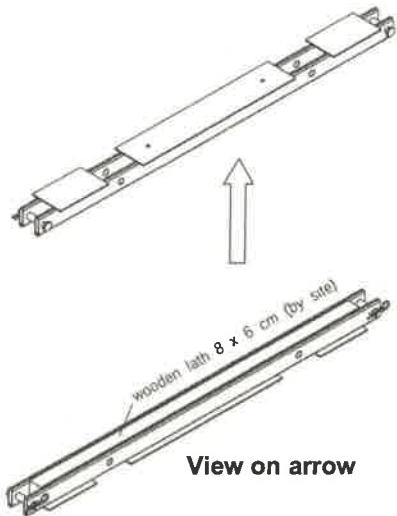
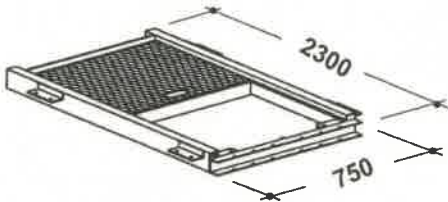
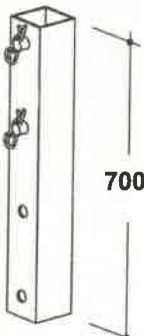
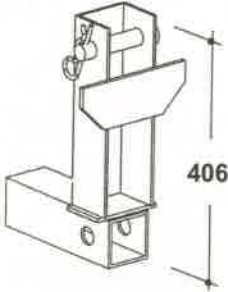
Product	Description	Product Code	Weight (kg)
	Acrow Climbing Bracket Aligning Soldiers The Aligning Soldiers provide the connecting link between the face formwork and the Climbing Bracket. The face formwork attaches to the Aligning Soldiers which totally supports it and holds it in position. The aligning Soldier is itself connected to the Move-off carriage which holds it in place during pouring and moves it away from the form face for stripping. The Climbing Bracket Aligning Soldier comes in two sizes 3700mm long which caters for form heights of 3.6m to 5.4m and 2700mm long which caters for heights up to 3.6m.		
	Acrow Climbing Bracket Aligning Soldier 2.7m	ACBAS27	78.9
	Acrow Climbing Bracket Aligning Soldier 2.7m	ACBAS37	106.2
	Acrow Climbing Bracket Aligning Raker The Aligning Raker attaches to the Aligning Soldier and the Move-off carriage to provide the vertical alignment of the form. It is a load bearing member supporting the Alignment Soldier during pouring. When stripping the form it is used to peel the form face away from the concrete before the Move-off carriage moves the formwork away from the concrete face. Allows the form face to be tilted to an angle of $\pm 15^\circ$.	ACBAR	27.4
	Acrow Climbing Bracket Levelling Adaptor The Levelling adaptor is connected to the Aligning Soldier by two 27mm \varnothing pins to support the face formwork at the required height. The position of attachment must be predetermined to obtain the correct vertical position of the face formwork.	ACBLA	8.9


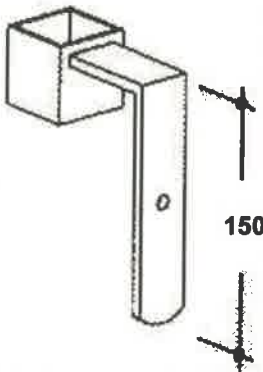
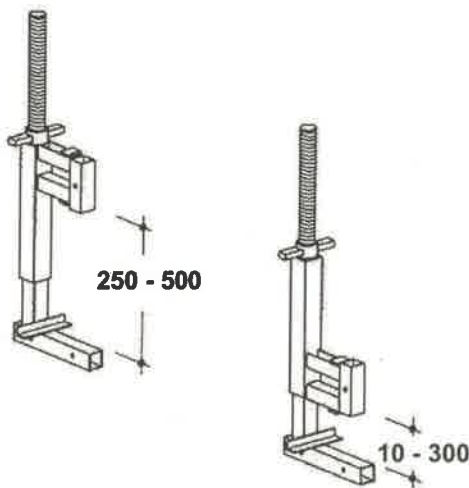
Product	Description	Product Code	Weight (kg)
	<p>Acrow Climbing Bracket Working Platform Beam The Working Platform beam is the main component in the climbing bracket. The other major elements attach to it.</p>	ACBWPB	98.4
	<p>Acrow Climbing Bracket Retracting Carriage The Retracting Carriage attaches to the Working Platform Beam and supports the Aligning Soldier and the Aligning Raker. When retracted by the Detachable Retracting Unit moves the formwork away from the concrete face when stripping.</p>	ACBRC	29.2
	<p>Acrow Climbing Bracket Detachable Retracting Unit This unit connects to the Working Platform Beam and the Retracting Carriage and is used to move the Retracting Carriage along the Platform Beam. The Detachable Retracting Unit is easily remove for use in another area when the form has been stripped, cleaned and moved back to it's original position.</p>	ACBDRU	19.8
	<p>Acrow Climbing Bracket Guard Rail Post The guard Rail Post attaches to the end of the Working Platform Beam to provide an external hand rail along the edge of the working platform level. It feature 2 brackets to locate timber hand rials.</p>	ACBGRP	15

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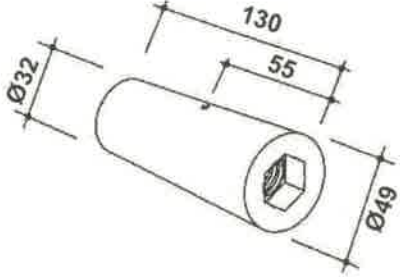
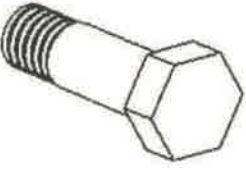
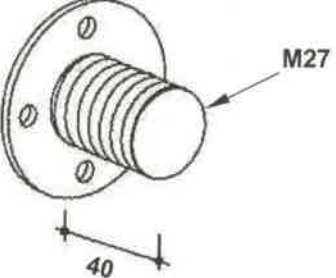
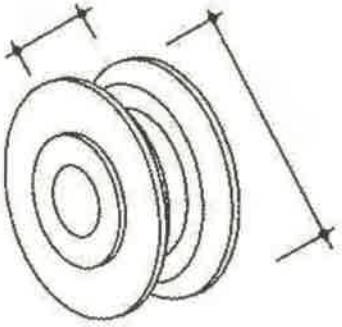
Product	Description	Product Code	Weight (kg)
	Acrow Climbing Bracket Lower Vertical Member The Vertical member connects to the underside of the Working Platform Beam and provides fixing for the Diagonal Member.	ACBLVM	34.9
	Acrow Climbing Bracket Working Platform Beam Brace The Diagonal Member attaches to the Working Platform Beam and the Vertical Member to link all three together to make the Climbing Bracket structural body.	ACBWPBB	27.7
	Acrow Climbing Bracket Wind Load Securing Device The Wind Load Securing Device is used to secure the climbing bracket against wind load. It is attached at one end to the Working Platform Beam and the other end to the bracket anchor of the previous pour. The webbing has a permissible tension load of max. 40 kN. The central section contains a tensioning mechanism to tighten and lock the webbing.	ACBWLS	8.0

Product	Description	Product Code	Weight (kg)
	Acrow Climbing Bracket Lower Vertical Member extension The Lower Vertical member Extension connects to the bottom of the Lower Vertical Member to form the inside support leg of the trailing platform.	ACBLVME	60.9
	Acrow Climbing Bracket Trailing Platform Outer Post The Trailing Platform Outer Post is bolted to the Working Platform Beam to form the top leg of the trailing platform outer support..	ACBTPOP	14.9
	Acrow Climbing Bracket Trailing Platform Outer Post Extension The Trailing Platform Outer Post Extension is attached to the Trailing Platform Outer Post to form the bottom leg of the trailing platform outer support..	ACBTPOPE	22.2

Product	Description	Product Code	Weight (kg)
	<p>Acrow Climbing Bracket Trailing Platform Support Beam The Trailing Platform Support Beam attaches to the lower vertical member extension and the trailing Platform outer post extension to provide the support for the platform longitudinal timber beams which can be bolted to the support beam. The support beam has provision for a timber to be inserted to which the longitudinal timbers can alternatively nailed to.</p>	ACBTPSB	27.0
	<p>Acrow Climbing Bracket Platform Access Hatch The Platform Access Hatch can be built into the upper platform to facilitate ladder access from the trailing platform.</p>	ACBWPAH	43.3
	<p>Acrow Climbing Bracket Trailing Platform Extension Adaptor The Extension Adaptor is used to attach an additional trailing platform</p>	ACBTPEA	11.7
	<p>Acrow Climbing Bracket Auxiliary Platform Support The Auxiliary Platform Support is used to additionally support the planks of the working platform</p>	ACBAPS	9.3

Product	Description	Product Code	Weight (kg)
	<p>Acrow Climbing Bracket Combi-post The Combi-post is used in conjunction with the Working Platform Multi Clamp to provide a handrail fixing between the Guardrail Posts when the gap between them is beyond the capacity of the timber guardrails.</p>	ACBCP	3.5
	<p>Acrow Climbing Bracket Working Platform Toe Board Retainer The Toe Board Retainer slips over the Combi-post to keep the toe board in place.</p>	ACBWPTBR	0.4
	<p>Acrow Climbing Bracket Working Platform Multi Clamp The Multi Clamp secures to the bottom of the main longitudinal beams and the top of the planks to provide a support for the Comb-post which provide the transverse handrail system.</p>	ACBWPMC	8.0

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Product	Description	Product Code	Weight (kg)
	<p>Acrow Climbing Bracket Steel Tie Cone The Tie cone attached to an embedded tie is set into the concrete at the top of the pour to facilitate the attachment of the Support Roll Bearing when the form is lifted to the next pouring position. The cone has a Ø15 thru tie thread at the nose section and a M27 thread at the large end.</p>	ACBSTC	1.3
	<p>Acrow Climbing Bracket Tie Cone Bolt M27 The Tie Cone Bolt is used to attach the Support Roll Bearing to the Tie Cone.</p>	ACBTCB	0.8
	<p>Acrow Climbing Bracket Nailable Cone Support Disc The Nailable Cone Support Disc is nailed to the plywood face to hold the Tie Cone in its correct position. The cone screws on to the M27 threaded stub.</p>	ACBNCSD	0.2
	<p>Acrow Climbing Bracket Support Roll Bearing The Support Roll Bearing is the primary support member for the Climbing Bracket. It is secured to the Tie Cone using the Tie Cone Bolt</p>	ACBSRB	0.9

Assembling the CS 240L Climbing Bracket System**Stages of assembly**

- Assembling the Working Platform base
- Assembling the bracket components to the working platform

Erection of climbing bracket

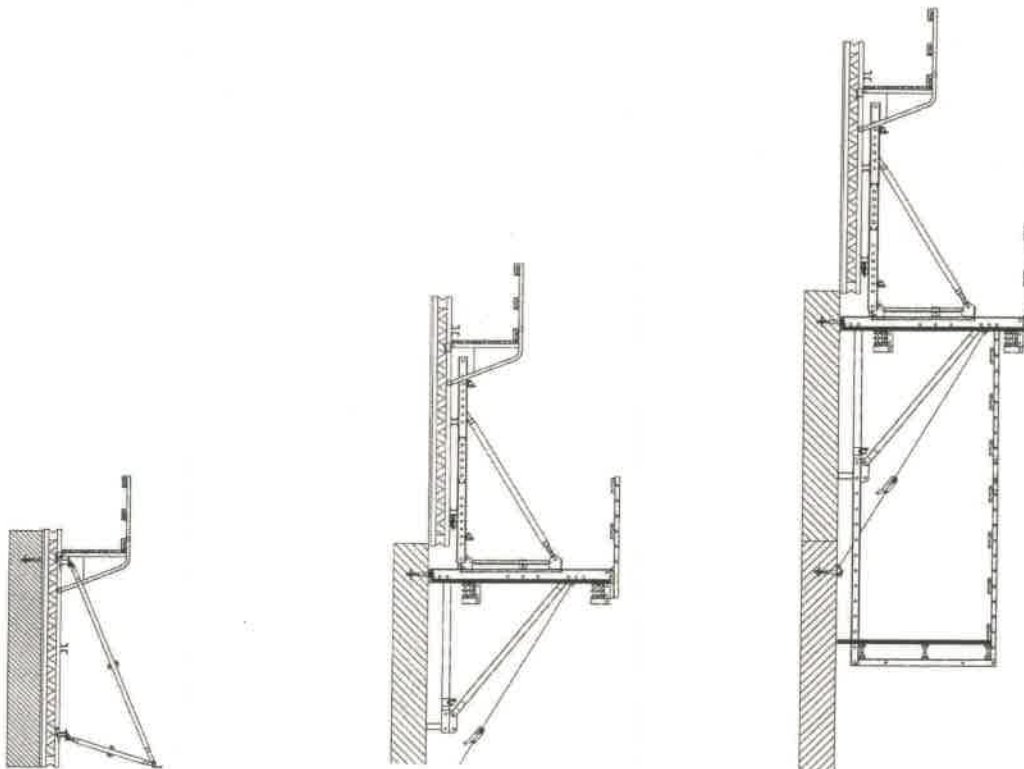
- Placing climbing bracket unit on 1st pour anchors
- Attaching the face form to the climbing bracket

Continuing use of the system

- Lifting climbing bracket and face form assembly to next pour position
- Attaching the trailing platform

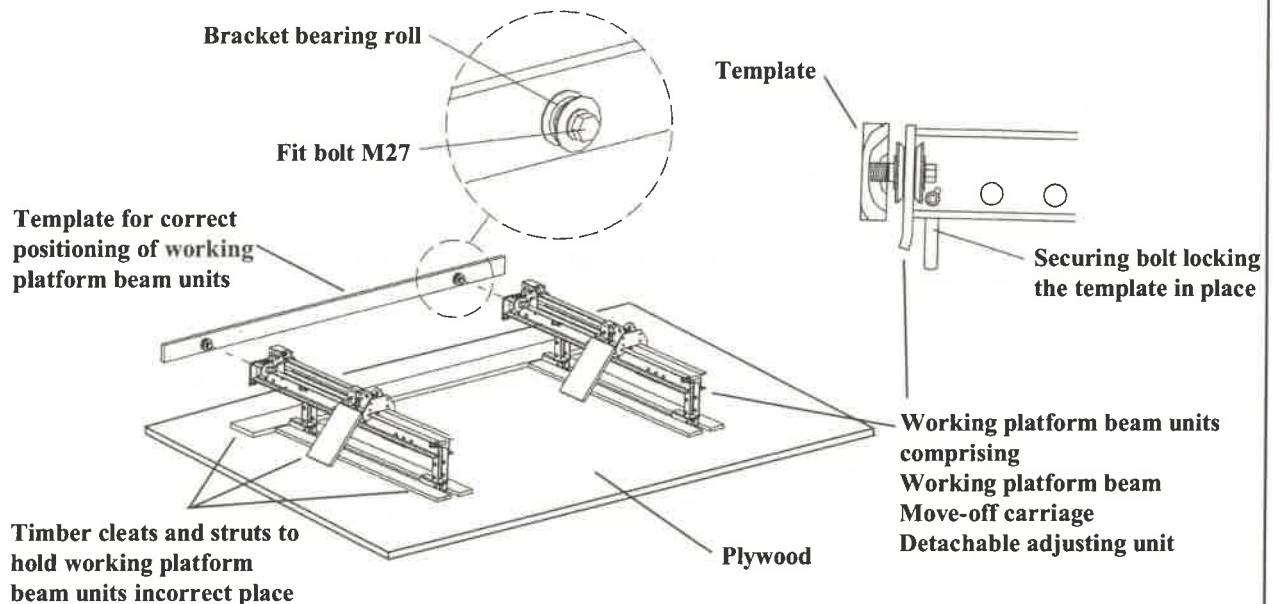
Important aspect of the system

The climbing bracket locates on preset anchors in the previous pour, it is therefore critical that the centre of the anchor positions in the face form and the centre of the working platform beams be perfectly in alignment with each other. Extreme care must be taken to set their positions accurately in their initial erection stage and to be precise in setting their alignment when attaching the face formwork to the climbing bracket after the 1st pour. (In the 1st pour the face form is used on its own and sets the anchor in place for the future attachment of the climbing bracket.

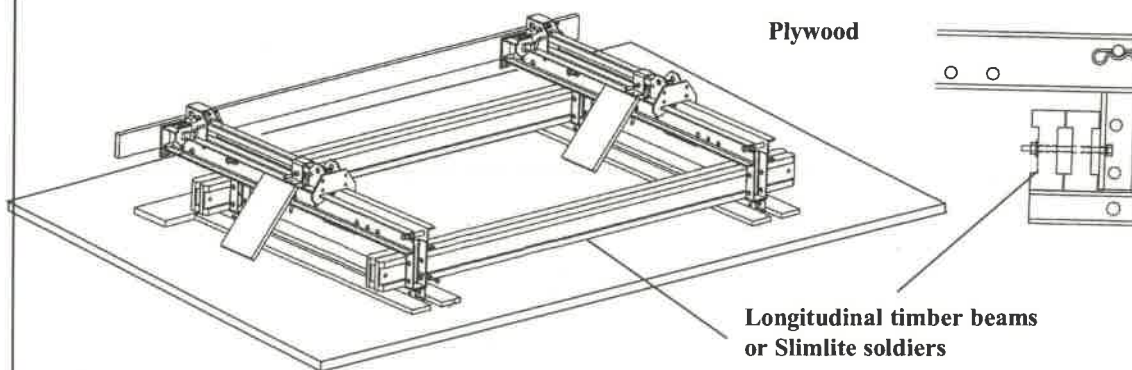


Assembling the Working Platform Base

1. The working platform beam, move-off carriage and the detachable adjusting unit are assembled together to form working platform beam units.
2 working platform beams units are to be positioned the exact distance apart shown on the drawing. To achieve this it is recommended that they be positioned on a flat nail-able surface such as a sheet of plywood (or 2 sheets of plywood depending on the distance apart the beams are). A timber template is setup containing 2 Bracket bearing rolls set the correct distance apart. This template is then attached to the working platform beam units to ensure they will be the correct distance apart in the final assembly. Timber cleats are nailed into the plywood to hold the beam units in place during the attachment of the other components of the working platform.

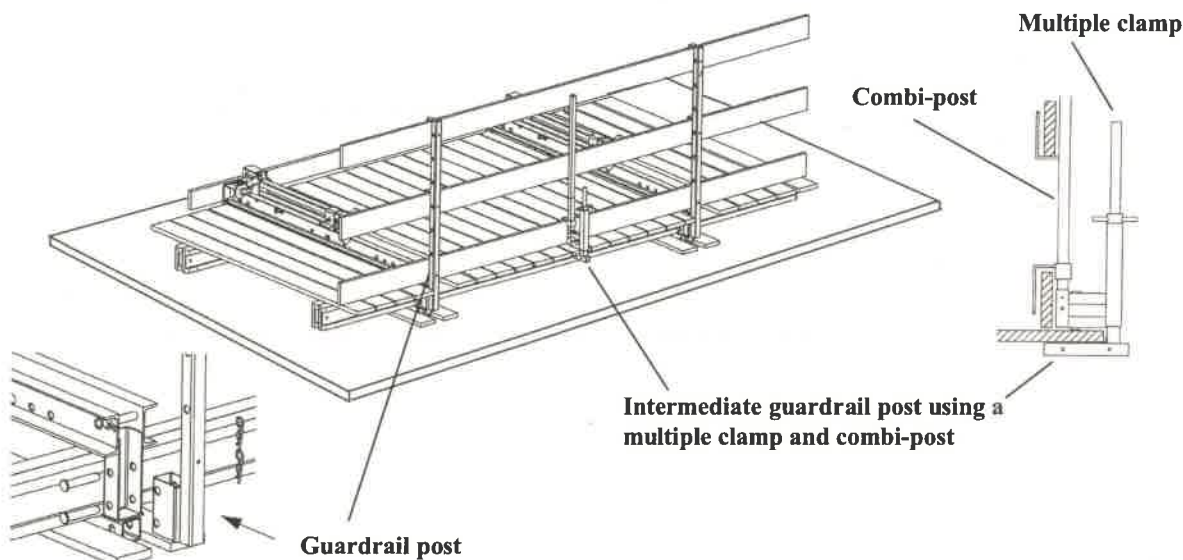


2. Longitudinal beams are attached to the underside of working platform beams and are securely fastened in place. This assembly becomes the main structure of the Working Platform Base.

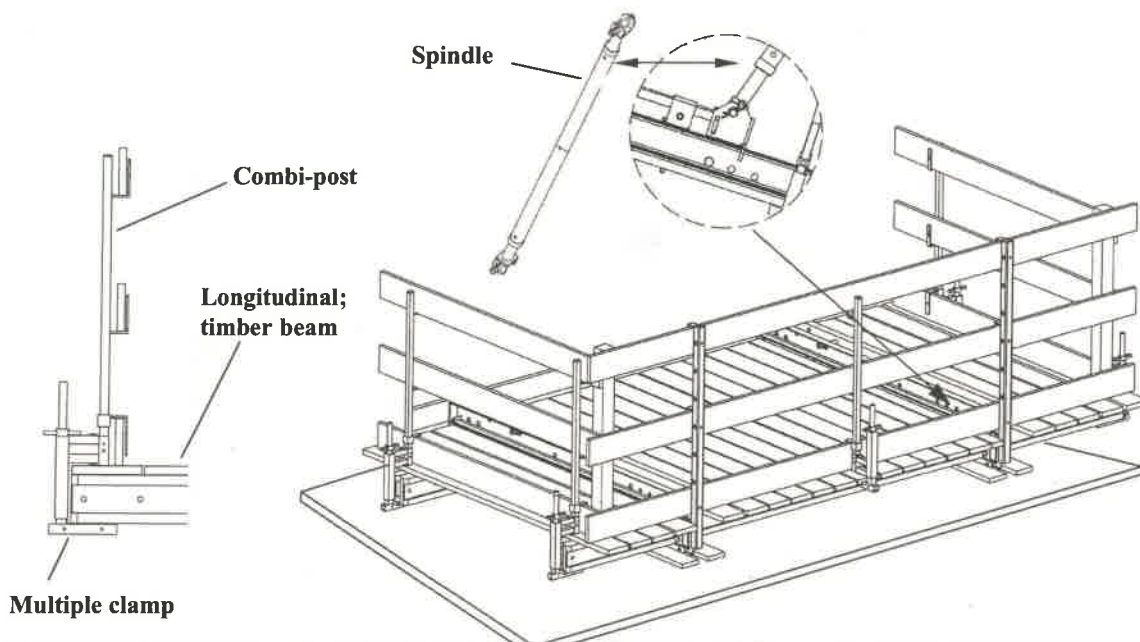


Assembling the Working Platform continued

3. Transverse planks are laid and secured across the longitudinal beams to form the decking. Guardrail posts are inserted into the end gaps in the working platform beams. If the distance between the beams is greater than 2.4m then a centre guardrail post must be attached. This is achieved by using a multiple clamp which clamps over the end of a transverse plank and when secured in place a combi-post is inserted into it.

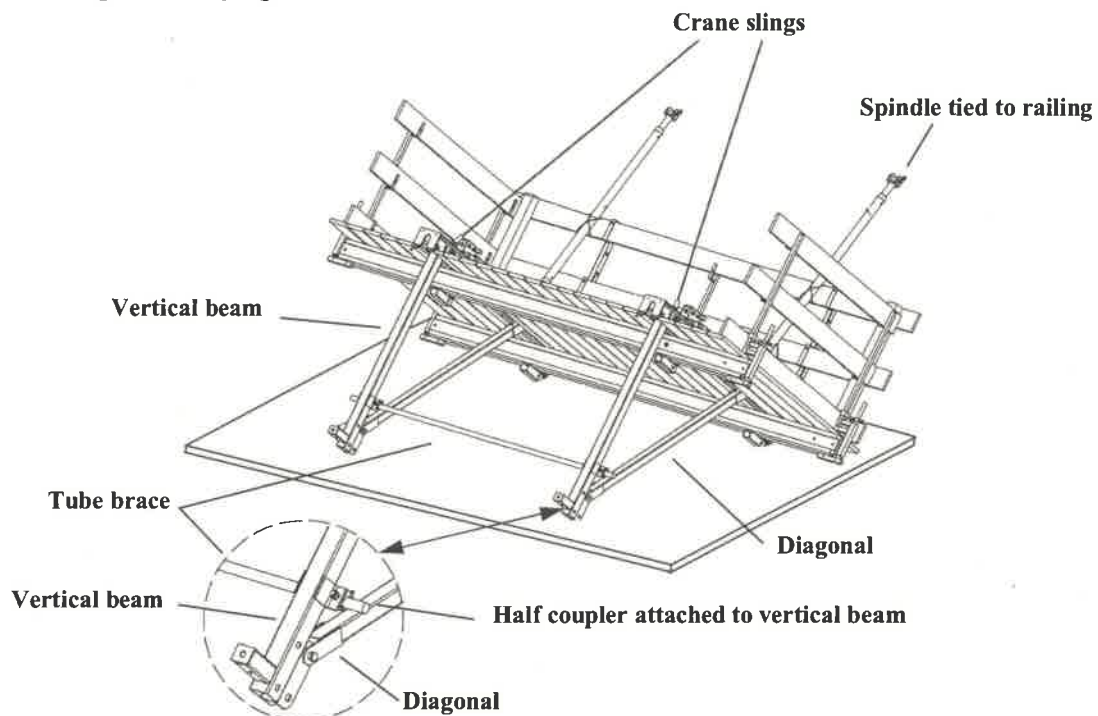


4. Guardrail posts are then added to the ends of the platform to form the transverse returns using the multiple clamps securing to the longitudinal beams. A spindle is then connected to the end of the move-off carriage of each platform beam unit and the end of it is tied to the top rail of the guardrail to prevent it from moving around during later transporting of the platform.

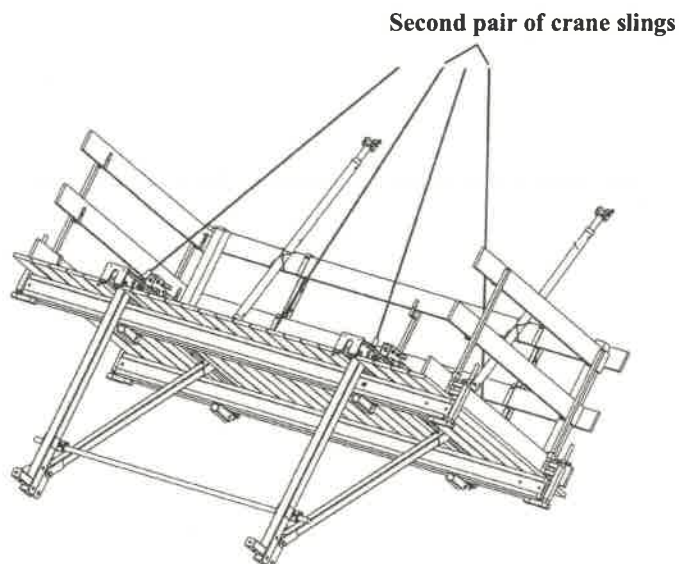


Assembling the Working Platform continued

5. After assembly of the platform, the under platform components are added. This is achieved by attaching crane slings to the front pickup points on the platform and tilting the platform at an angle of approximately 45°. Ensuring the unit is chocked at the rear pivot point of the platform to prevent movement while assembling the components, connect the vertical beams, diagonal and the longitudinal tying tube.

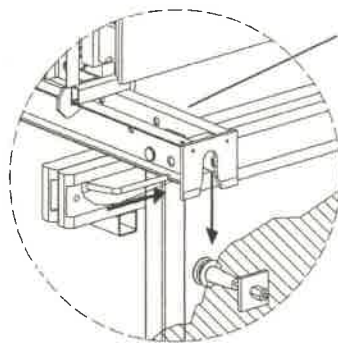


6. Connect additional crane slings to the rear pickup points on the platform and the Climbing Bracket Assembly is then ready for transportation to its position to support the formwork for the 2nd pour.

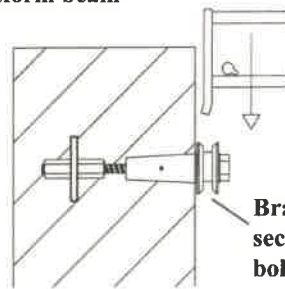


Positioning the Climbing Bracket assembly

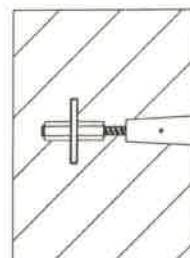
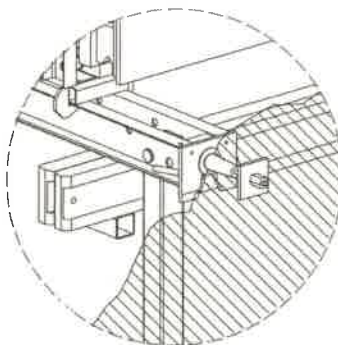
1. After the 1st pour is completed and the form panels removed the Climbing Bracket Assembly is lifted into position by the crane. Prior to lifting the form in position the Bracket Bearing Rolls must be secured by fit bolts to the tie cones that had been set into the top of the 1st pour. The Climbing Bracket Assembly is lifted into position and lowered down until the ends of the working platform beams slide down over the Bracket Bearing Rolls. When securely in place and the Bracket Bearing Rolls are supporting the ends of the working platform beams the securing bolt is passed through the end of the working platform beam preventing the Climbing Bracket Assembly from lifting off the rolls.



End of working platform beam



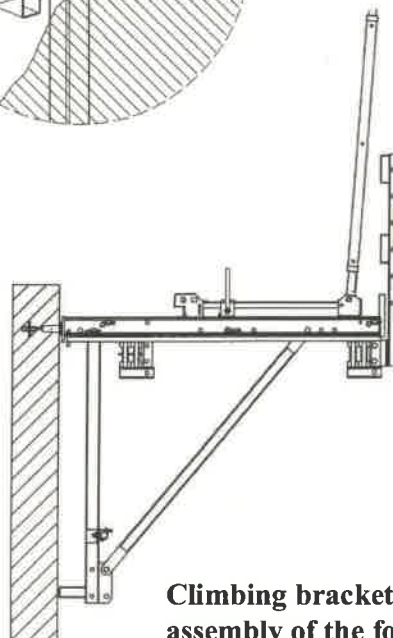
Bracket bearing roll secured to cone by fit bolt



Working platform beam

Securing bolt

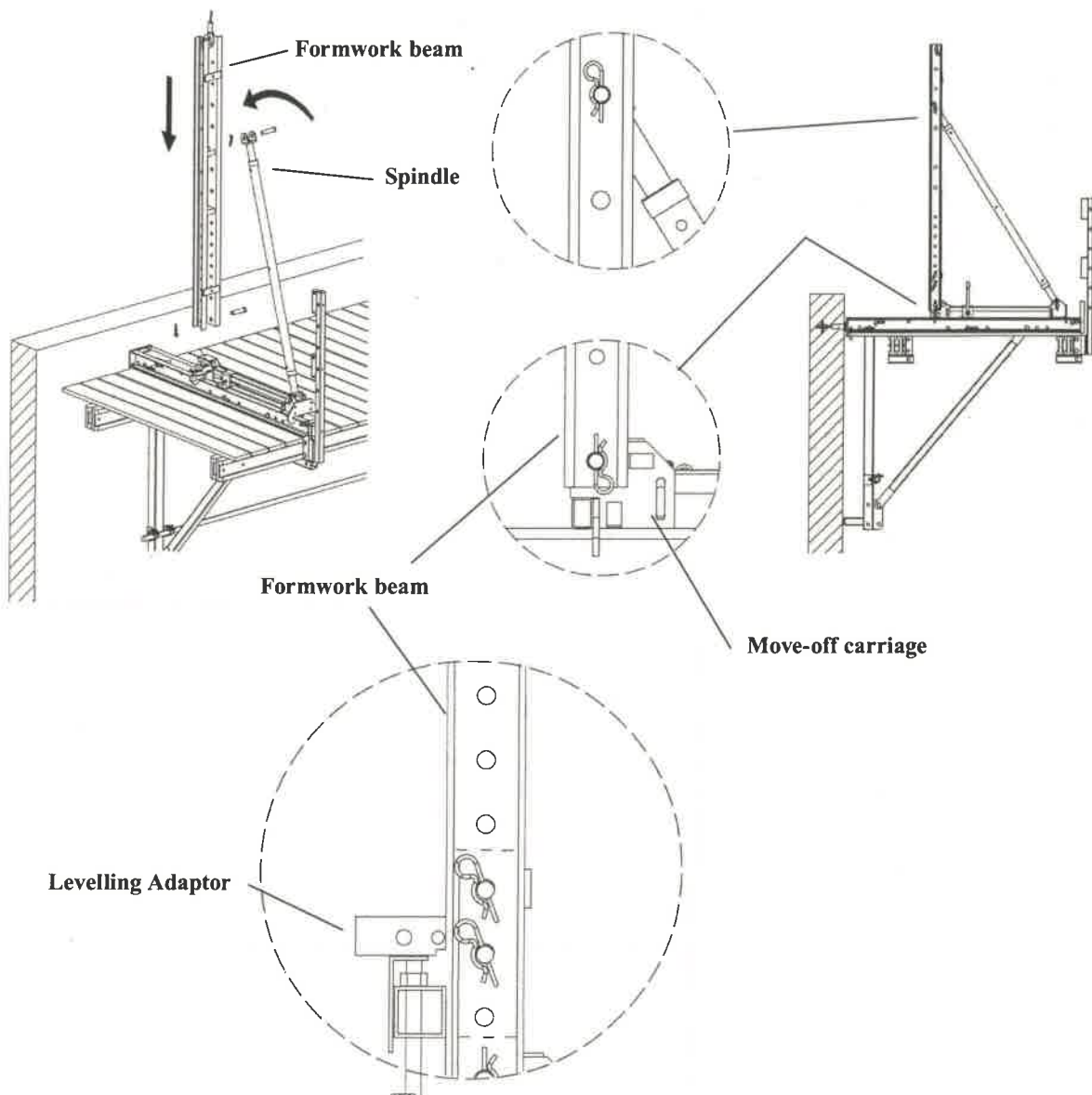
Platform beam locked in place over bearing bracket roll



Climbing bracket in place ready for assembly of the formwork beam

Assembling the Formwork Beam and Levelling Adaptor

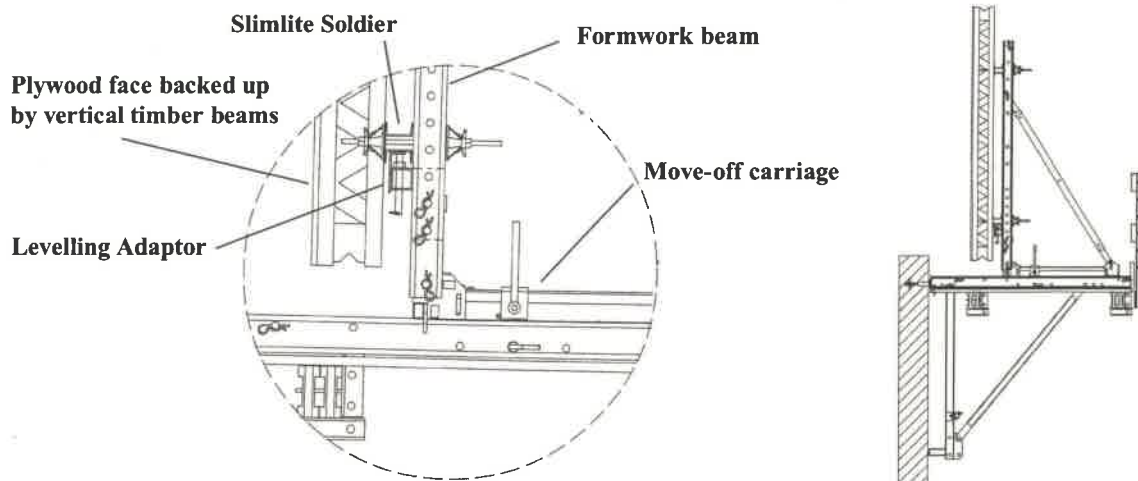
1. When the Climbing Bracket Assembly is locked in place at the top of the 1st pour the components to accept the formwork are added to it. A vertical formwork beam is connected to the front of the move-off carriage on each working platform beam units using a pin and R clip. To complete the formwork support structure, attach the end of the spindles to the top of the formwork beams using a bolt and R clip.
 2. Attach the levelling adaptor to the formwork beam to provide the support for the vertical formwork using pin and R clip. Care must be taken to determine the exact position required before attaching the levelling adaptor.
- The climbing bracket is then ready for the attachment of the vertical form.



Attaching the Vertical Formwork

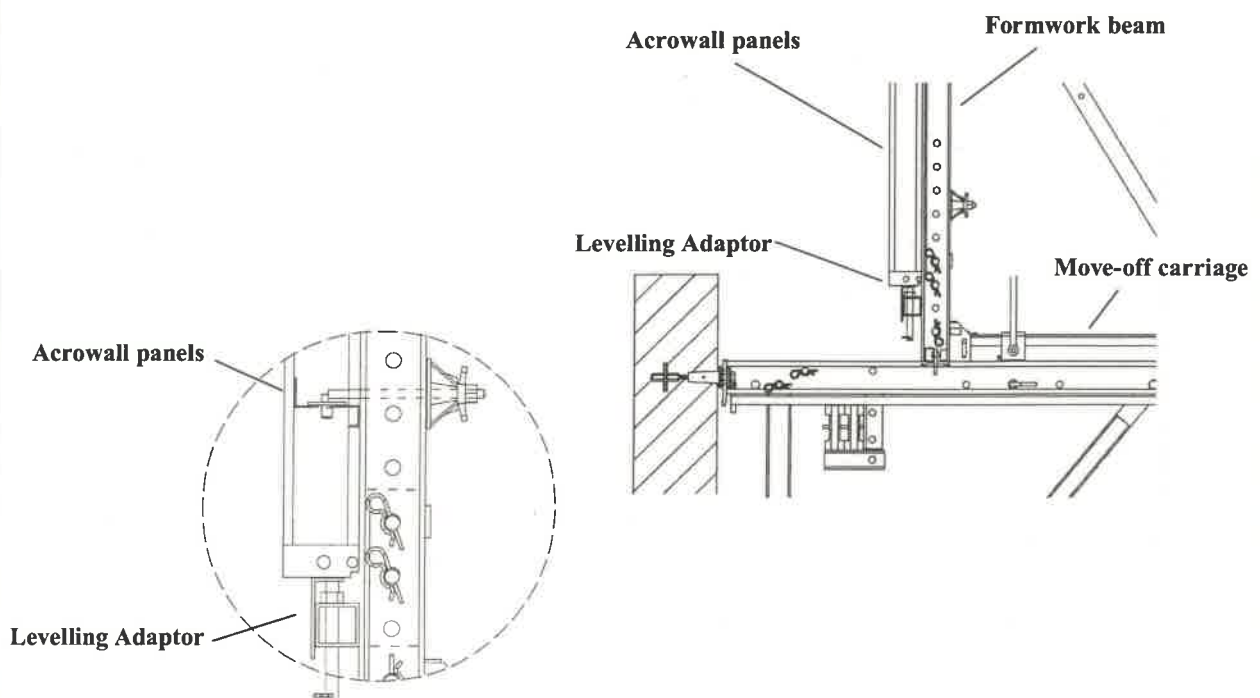
1 Attaching vertical form comprising plywood face supported by vertical timber and horizontal Slimlite soldiers.

Lift form in place using crane. Lower form until the bottom horizontal Slimlite Soldier sits on top of the levelling adaptor. Secure the Slimlite soldiers to the formwork beam using thru-tie bar, washers and wingnuts



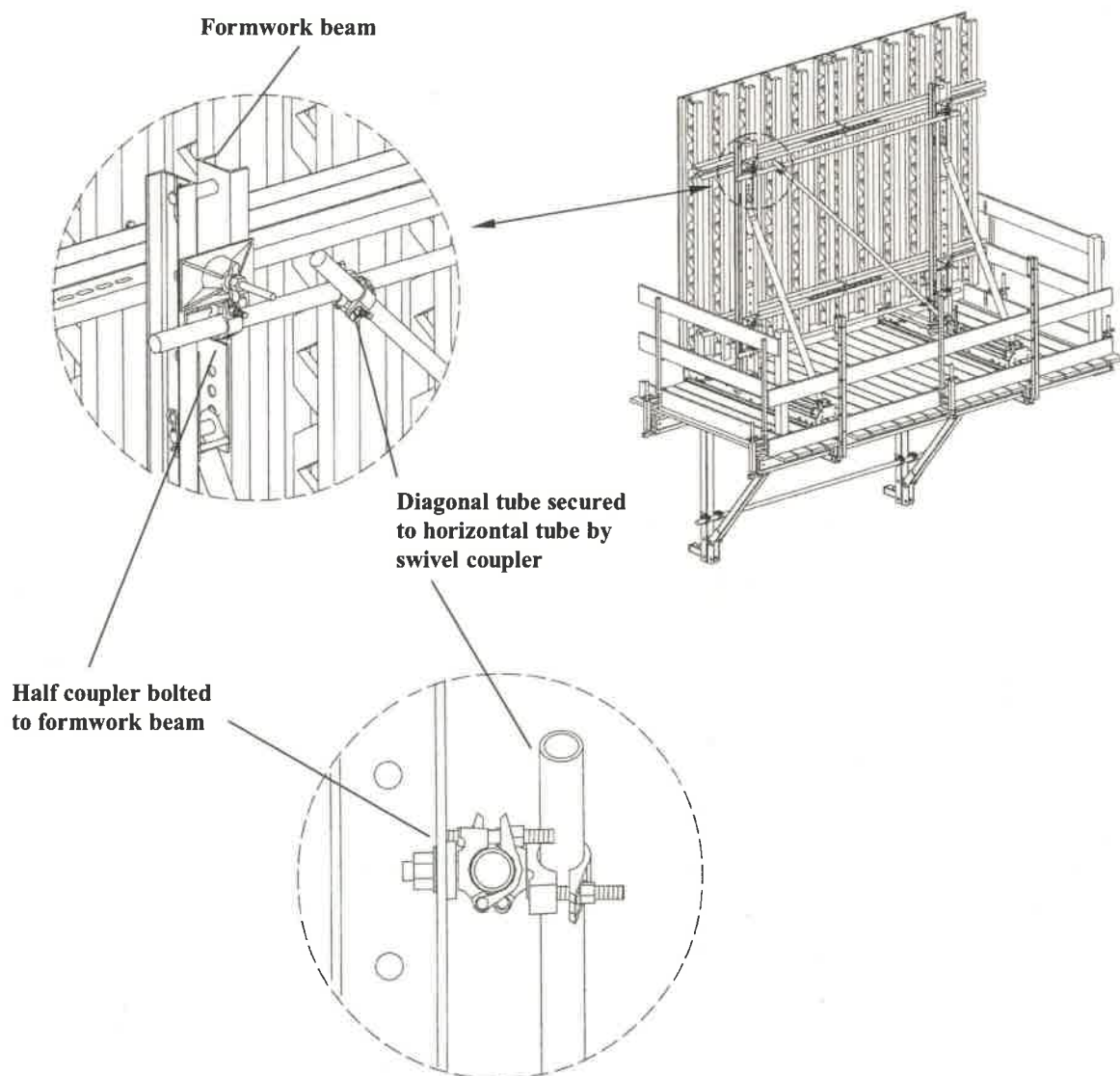
2. Attaching vertical form comprising Acrowall panels

Lift form in place using crane. Lower form until bottom of panels sit on top of the levelling adaptor. Secure the panels to the formwork beam using Acrowall waler connectors with washers and wingnuts.

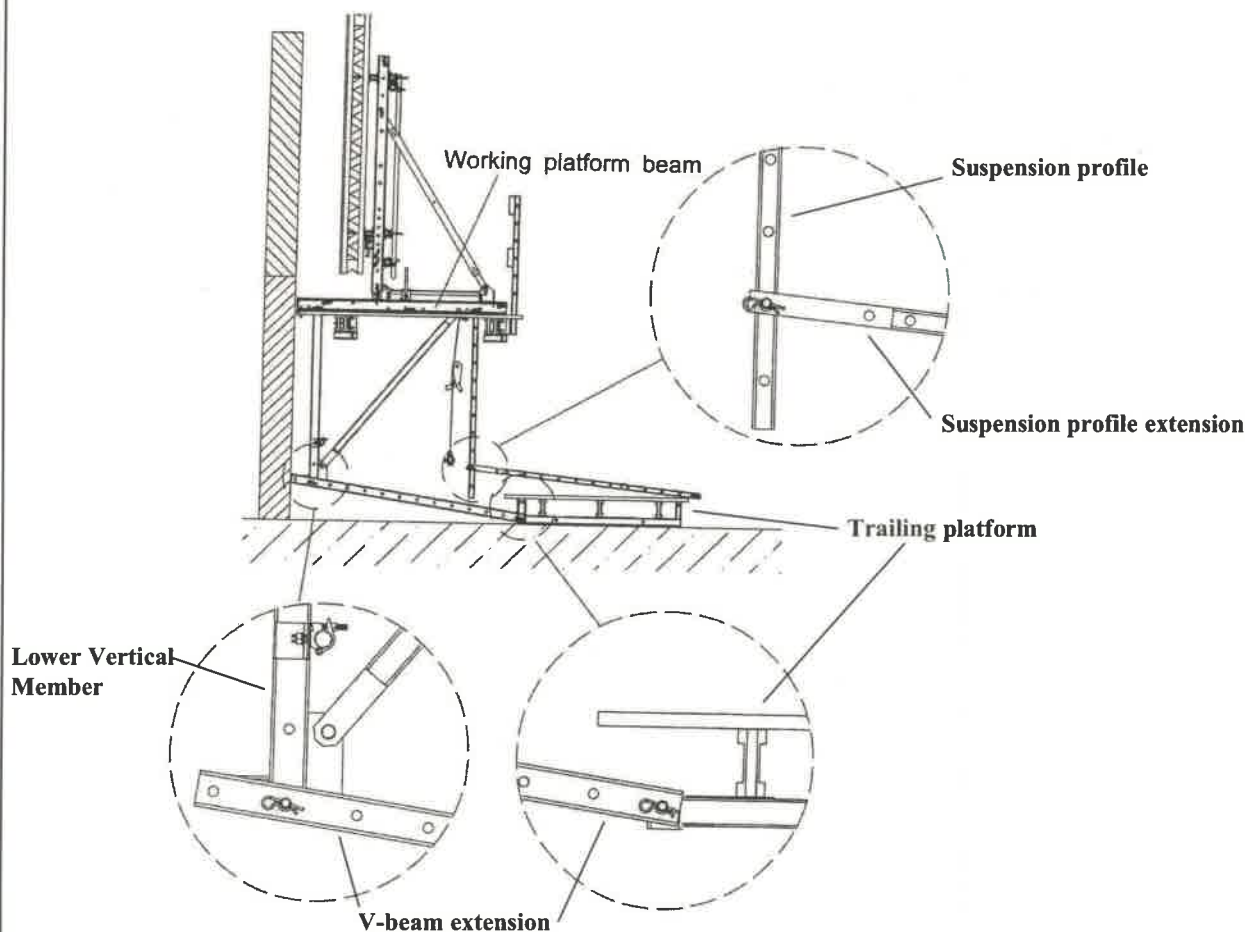


Installing Bracing

1. Longitudinal and diagonal bracing of the two formwork beams must be done to ensure rigidity of the form when moved backwards and forwards on the move-off carriage. This is achieved by fixing 2 half couplers to each formwork beam, a longitudinal tube is then connected at the top and bottom of the formwork beams and a diagonal bracing tube is connected between these tubes.

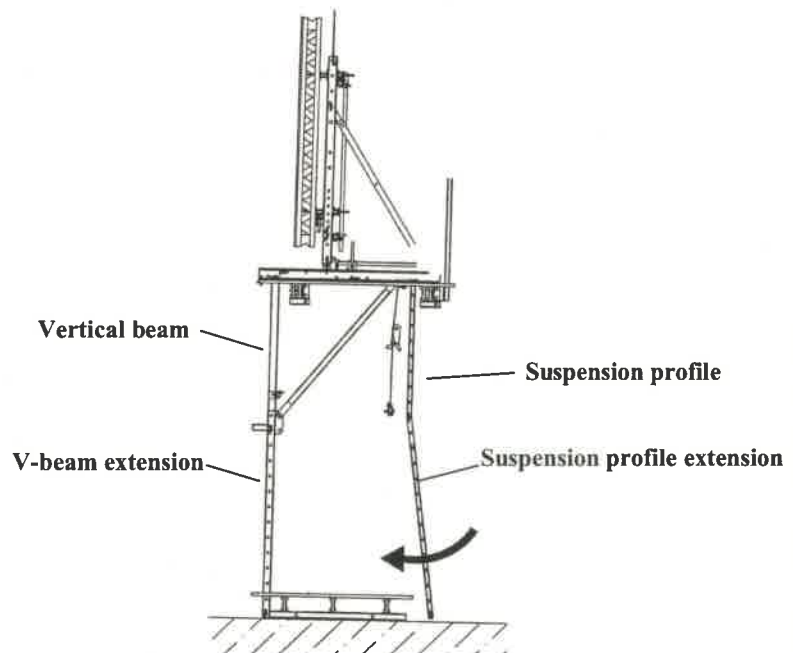


1. Whilst the climbing bracket assembly is in the 2nd pour position components of the trailing platform can be attached so that when the bracket is lifted to the 3rd pour position the completion of the trailing platform can be easily carried out.
2. On each vertical beam attach a v-beam extension to the end of the vertical beam using the second pin only.
Attach a suspension profile to each working platform beam and connect a suspension profile extension to it using the top hole in the extension and the second last hole in the suspension profile.
3. Construct the trailing platform unit using 2 trailing platform beams as the transverse members with 3 timber beams as the longitudinal members. Complete the platform with transverse planks and end guardrails made from multiple clamps and combi-posts.
4. Attach the end of the v-beam extension to the end of the trailing platform beam.



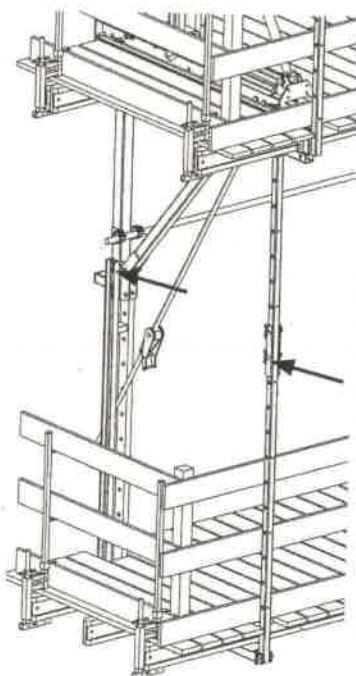
Mounting the trailing platform continued

5. When the bracket is lifted to be repositioned for the 3rd pour the v-beam extension will straighten out until it is in a true vertical position, it should then be locked by inserting a locking pin in the top hole. When the v-beam extension is locked the suspension profile extension can be attached to the outside end of the trailing platform beam. The second locating pin in the suspension profile extension must then be inserted and locked by springs clips before further lifting by the crane.

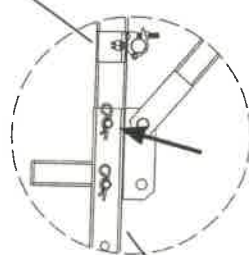


Climbing bracket assembly lifted until V-beam extension is vertical. Move suspension profile extension inwards and connect to trailing platform beam.

Connect all locking pins before further lifting of crane.

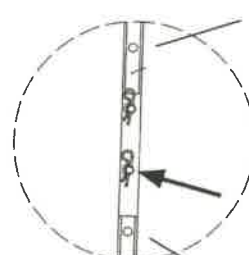


Vertical beam



V-beam extension

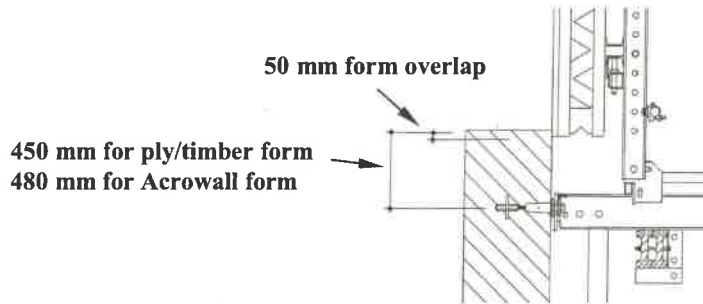
Suspension profile



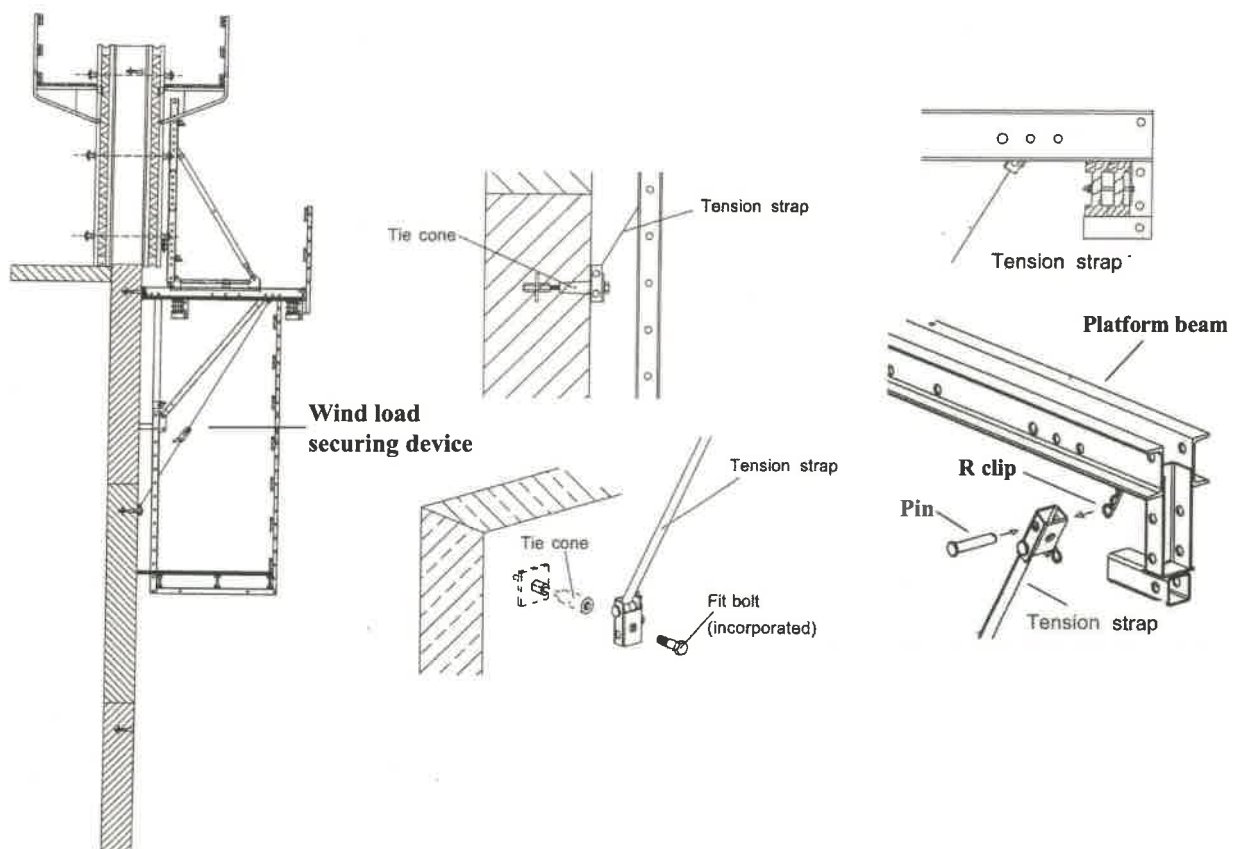
Suspension profile extension

Positioning of anchors and attachment of wind load securing device**1. Position of support anchors**

Supporting anchor must be positioned 450 mm from top of pour for plywood and timber beam construction and 480 mm from top of pour for Acrowall form.

**2. Attachment of wind load securing device**

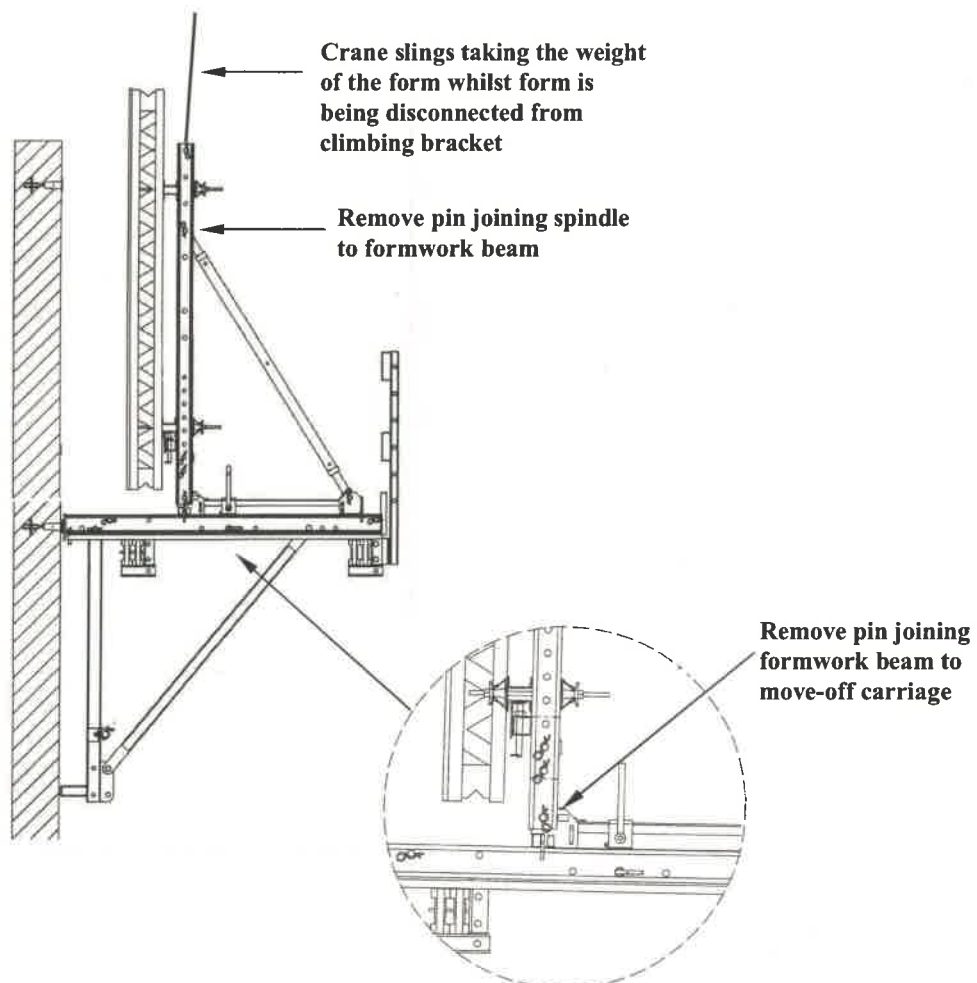
The wind load securing device attaches to the outer end of the platform beam and the anchor point of the previous pour. The device features webbing straps with attachment brackets at each end and an adjustment ratchet tightener centrally located.

**Wind load securing device**

Dismantling Form and Climbing bracket on completion of project

Dismantling the form

1. Before attaching the crane ensure the locking pins on the working platform beams securing the beams to the bracket bearing rolls are in place and secure.
2. Ensure all connections between elements of the form are in place and are tight.
3. Ensure a clear area exists for placement of the form after removal from the bracket.
4. Move form away from concrete face using the move-off carriage
5. Attach crane to the lifting points at the end of each vertical formwork beam
6. With the crane supporting the weight of the form remove the pin securing the spindle to the formwork beam. Move spindles back and secure to guardrail.
7. Remove pin securing the formwork beam to the move-off carriage. The form is now ready for the crane to lift it clear.



Dismantling the Climbing Bracket from the concrete face

1. Remove wind load securing devices from the wall.
2. Remove steel cone from concrete wall
3. Secure 2 crane slings to each working platform beam, one at front and one at rear.
4. Remove locking pins securing working platform beams to the bracket bearing rolls

Formwork & Scaffolding



ACROW CYCLONE

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