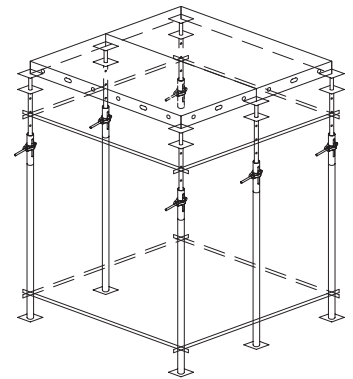


FORMWORK PRODUCT
TECHNICAL GUIDE

Acrow**Form**

General Technical and Application Manual



Genuine **Safety.**
Outstanding Service.



ACROWFORM

Product Features

ACROWFORM is a modular formwork soffit system using only two major components to form large areas of slab soffit in very quick time.

The soffit area is formed by the Panels which are supported on each of their four corners by a Prop and Bearing Assembly.

Ancillary components are available to cater for the small make-up areas encountered on most projects such as columns and perimeter walls. The system adapts to these areas with complete simplicity.

Each major size Panel covers an area of 1.62m² and is handled in place by one person, providing the speed and labour cost reduction that is the fundamental advantage of using ACROWFORM.

The Panel is a welded aluminium frame with a recessed top lip into which the plywood is located, this lip fully protects the edge of the plywood to give it a longer usable life.

Important

The erection and application instructions contained in this booklet are the recommended methods to be used for ACROWFORM products.

The technical instructions contained in this brochure must be accurately followed to achieve the correct function of the product. Any deviation from the recommended usage will require a separate design and/or verification by the Acrow Formwork & Scaffolding Engineering Department.

The safe use and application of the ACROWFORM system must be in accordance with AS3610, Occupational Health and Safety Regulations, approved industry codes of practice and relevant regulatory authority requirements.

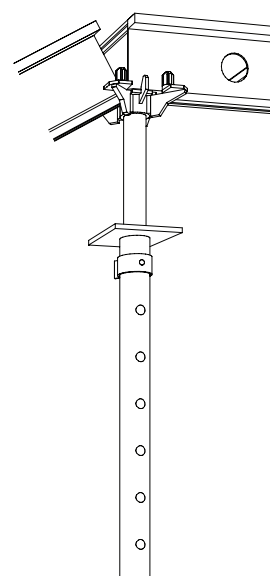
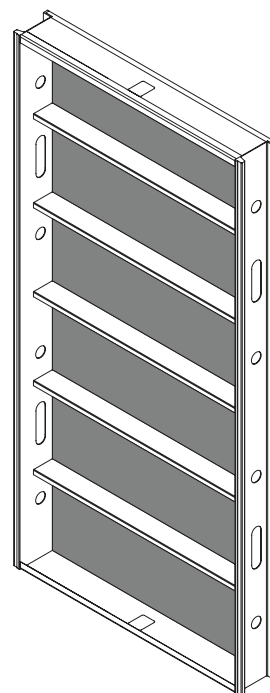
The illustrations in these assembly instructions are guidelines only. Maximum capacities are only applicable for equipment in good condition and free from defects.

The combined use of ACROWFORM with equipment from other suppliers may entail performance problems and therefore requires a design check and/or verification by Acrow Formwork & Scaffolding Engineering Department.

Safety Warning

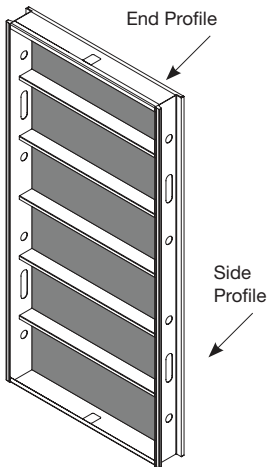
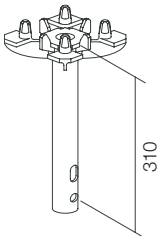
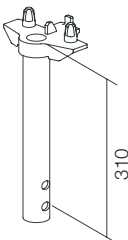
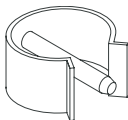


It is recommended that users of the ACROWFORM system employ and implement appropriate procedures and control measures to eliminate or control any risk of musculoskeletal disorder/injury while manually handling ACROWFORM components.

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.

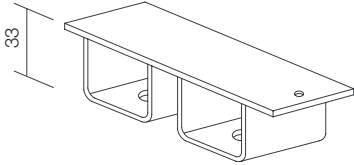
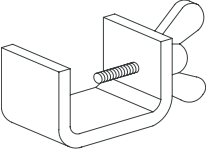
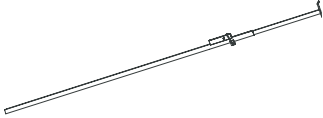
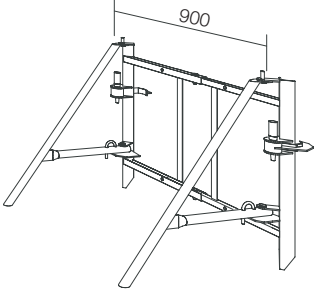
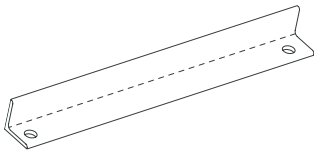
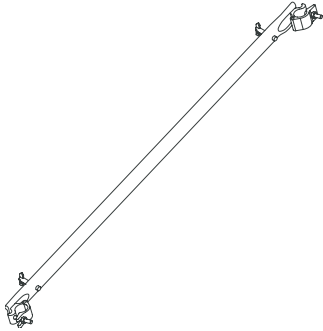



- 1 The photographs/illustrations shown within this brochure are intended as expressing the diversity and possible applications of the product and as such must not be used as assembly instructions.
 - 2 In line with Acrow Formwork & Scaffolding's commitment to continuous product development and improvement, the information contained in this brochure may be changed without notice.
 - 3 Every effort has been made to give appropriate guidelines for the use of this product, however, Acrow Formwork & Scaffolding Pty Ltd accepts no responsibility for any loss or damage suffered by any person acting or refraining from action as a result of this information.
- Should the users require any further information or guidance, they are encouraged to contact their local Acrow Formwork & Scaffolding outlet.

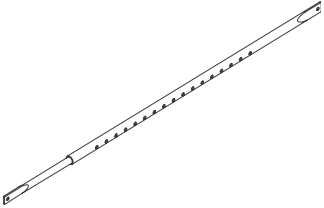
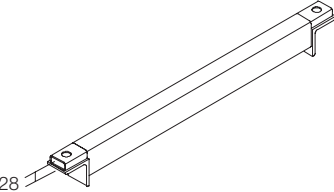
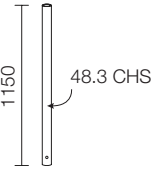
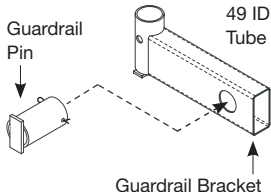
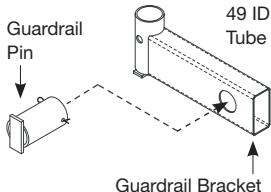
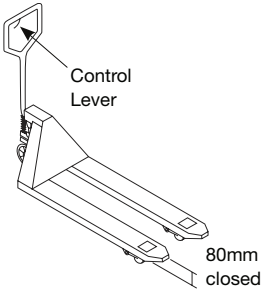




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Product	Description	Code No.	Mass kg (nom.)
	ACROWFORM Panel The ACROWFORM Panel is a robust aluminium frame fitted with a 10mm plywood face. The plywood sits within the frame so its edges are protected, ensuring a longer life span. Panels must be supported on corners or side Profile only. Panel depth 140mm.		
	ACROWFORM Panel 900 x 450	AFP945	7.1
	ACROWFORM Panel 900 x 600	AFP96	8.5
	ACROWFORM Panel 900 x 750	AFP975	9.7
	ACROWFORM Panel 900 x 900	AFP99	11.1
	ACROWFORM Panel 1800 x 450	AFP1845	13.4
	ACROWFORM Panel 1800 x 600	AFP1860	15.9
	ACROWFORM Panel 1800 x 750	AFP1875	18.1
	ACROWFORM Panel 1800 x 900	AFP1890	20.5
	ACROWFORM Bearing The ACROWFORM Bearing fits into the end of an Acrow Prop and is secured through the last hole in the Prop inner using the ACROWFORM Bolt or ACROWFORM Bearing Connecting Pin. The Bearing supports the corners of the Panels simultaneously with its protruding lugs locking the Panels tightly together.	AFB	2.4
	ACROWFORM Edge Bearing The ACROWFORM Edge Bearing fits into the end of an Acrow Prop and is secured through the last hole in the Prop inner using the ACROWFORM Bolt or ACROWFORM Bearing Connecting Pin. The Edge Bearing supports the corners of up to two Panels simultaneously with its protruding lugs locking the Panels tightly together. It is used generally where Panels are hard against walls.	AFEB	1.8
	ACROWFORM Bolt The ACROWFORM Bolt is used to secure the Bearing in the Prop inner.	AFBOLT	0.2
	ACROWFORM Bearing Connecting Pin The ACROWFORM Bearing Connecting Pin can be used in place of the ACROWFORM Bolt to secure the Bearing in the Prop inner.	AFTBOLT	0.2
	Acrow Props Acrow Props provide the vertical support for the ACROWFORM system. The Bearing fits through the hole in the head plate of the inner and is secured through the last hole in the Prop inner. Only Props size No 1, 2 & 3 are suitable for use with the system.		
	Acrow Prop No 1 (1.6m to 2.8m)	PF1	17.7
	Acrow Prop No 2 (1.9m to 3.4m)	PF2	19.1
	Acrow Prop No 3 (2.2m to 3.9m)	PF3	23.6

ACROWFORM

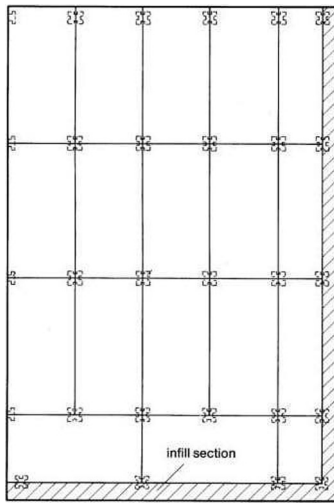
Product	Description	Code No.	Mass kg (nom.)
	<p>ACROWFORM Head Support Shoe</p> <p>The Head Support Shoe is used at make-up sections of the deck. It locates over the lugs on the Bearing and supports 90mm high timber which in turn supports 17mm make-up plywood. See Page 8.</p>	AFHSS	0.6
	<p>ACROWFORM Prop Retainer</p> <p>The Prop Retainer is used to prevent the Prop/Bearing assembly from moving along the Panel when it is placed inward from the end of the Panel. The Prop Retainer is fitted to the Panel side profile and held in place by the wing bolt on the retainer. One would be required each side of the Bearing to prevent movement in either direction. See Page 6.</p>	AFPR	0.2
	<p>ACROWFORM Erection rod</p> <p>The Erection Rod is used to assist in the erection of the Panels, it also acts as a temporary support until the Prop assemblies are in place.</p> <p>Range of adjustment 2.05m to 3.65m.</p>	AFER	5.7
	<p>ACROWFORM Support Frame</p> <p>The Support Frame is used to hold the first two Props in place at the start of an assembly. It's two vertical legs attach to the Props, positioning them at 900mm centres so that the Panel will fit precisely on the Bearings.</p> <p>The Support Frame is only to be used as an erection tool, it must not be relied on as a bracing member for the slab support structure.</p>	AFSF	20.2
	<p>ACROWFORM Spacer Bar</p> <p>The Spacer Bar is used to accurately space apart the Support Frames when starting the erection of an assembly.</p>	AFSB	3.0
	<p>ACROWFORM Horizontal Prop Brace</p> <p>The Horizontal Prop Brace is used to establish bracing towers (islands) within the formwork assembly.</p> <p>The brace has a half coupler welded at each end which clamps around the Prop. Two types are available to suit the 60mm OD Prop outer and to suit the 48mm OD Prop inner. Each brace also incorporates latch pins for connecting Diagonal Braces. To ensure the brace latch pins are the correct way up, the brace has a plate welded at the centre giving instructions.</p>		
			
	<p>ACROWFORM Horizontal Prop Brace 48 D</p> <p>ACROWFORM Horizontal Prop Brace 60 D</p>	<p>AFHPB48</p> <p>AFHPB60</p>	<p>7.8</p> <p>8.3</p>

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Product	Description	Code No.	Mass kg (nom.)
	ACROWFORM Telescopic Diagonal Brace The Telescopic Diagonal Brace is designed to attach to the latch pins on the Horizontal Prop Braces to provide the diagonal braces in a bracing tower. The brace is telescopic to cater for the varying heights at which the Props will be used.	AFTDB	17.3
	ACROWFORM Support Beam The Support Beam is used at sections in the deck where columns protrude. The holes in the end of the beam locate over the lugs on the Bearings and the beam spans from Prop to Prop. The Beam supports 95mm deep timbers which in turn support 17mm plywood. They are available in two sizes compatible with Panel length or width. ACROWFORM 0.9m Support Beam ACROWFORM 1.8m Support Beam MK2	AFSB09 AFSB18	5.9 12.3
	Guardrail Post Used in conjunction with Guardrail Bracket to provide connection for guard rails. It is secured in place with V-Shore Connecting Pin or 80mm long M16 Bolt & Nut.	SSHS12	4.6
	ACROWFORM Guardrail Bracket The Guardrail Bracket fits into the gap between adjacent Panels at the end of an assembly to provide the facility of fixing a guardrail. A Guardrail Post is fitted into the tube socket to provide the vertical post for the guardrail.	AFHB	2.7
	ACROWFORM Guardrail Pin (c/w R-clip) The Guardrail Pin fits through the last hole in the Panel side bar to lock the Guardrail Bracket in place. An R-clip is used to lock the Pin in place.	AFBP	0.5
	ACROWFORM 2 Tonne Forklift Pallet Truck The Forklift Pallet Truck is a hydraulically operated unit used for on site transportation of ACROWFORM Panels. Control Lever Operation Positions  Neutral Position  Up Position  Standard Down Position  Down Position for cleaning	AFPT	90.0

ACROWFORM

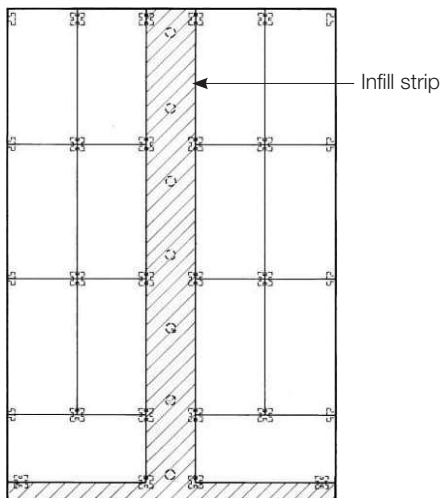
Planning the Form Assembly



Make-up area at edge of room

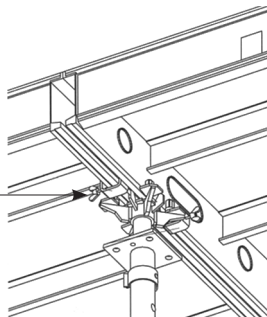
The layout of Panels should be planned to allow for the maximum use of 900mm wide Panels to obtain the highest erection performance. For areas confined by walls, a make-up section at the perimeter facilitates ease of stripping and allows for unexpected distortion in the wall profile.

The erection sequence should start in a transverse direction setting up each line of Panels from which the subsequent line of Panels are added to build the form assembly.



When early form removal is desired a central make-up area allows Props to remain under the make-up area whilst the remaining formwork is stripped.

ACROWFORM
Prop Retainer

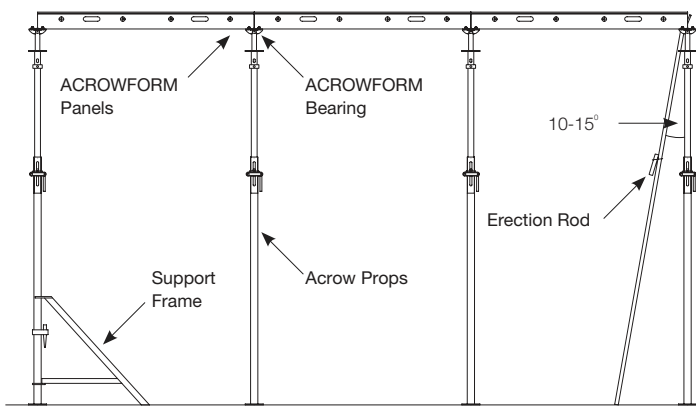


When Panels ends are required to fit hard against a wall the Prop and Bearing must be placed inward from the Panel end. An ACROWFORM Prop Retainer is used each side of the Bearing to prevent movement.

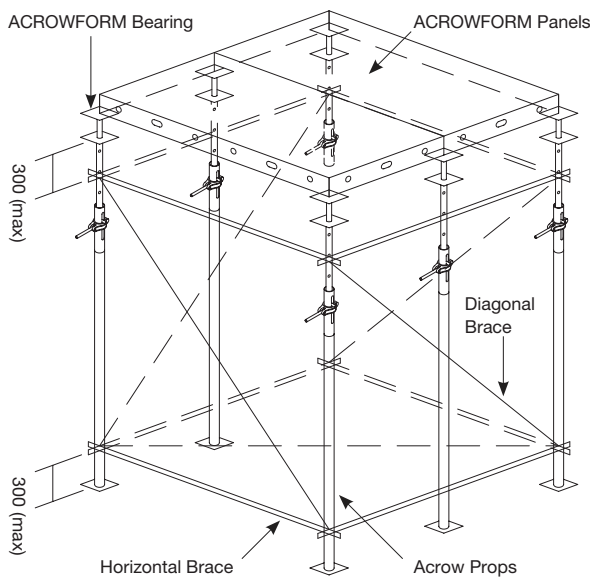


Longitudinal wall connection using Prop and ACROWFORM Edge Bearing assembly.

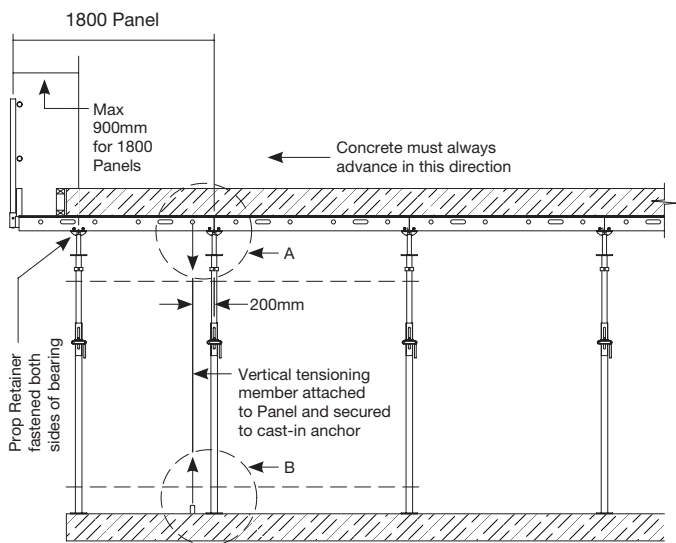
General Technical and Application Manual



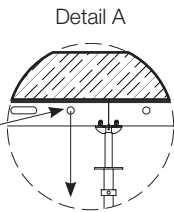
Typical first three bays
(see Page 10)



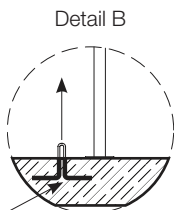
Bracing Tower
(Island)



Vertical tie must be connected to a suitable 48 OD tube passed through the holes in the Panel Side Profile.



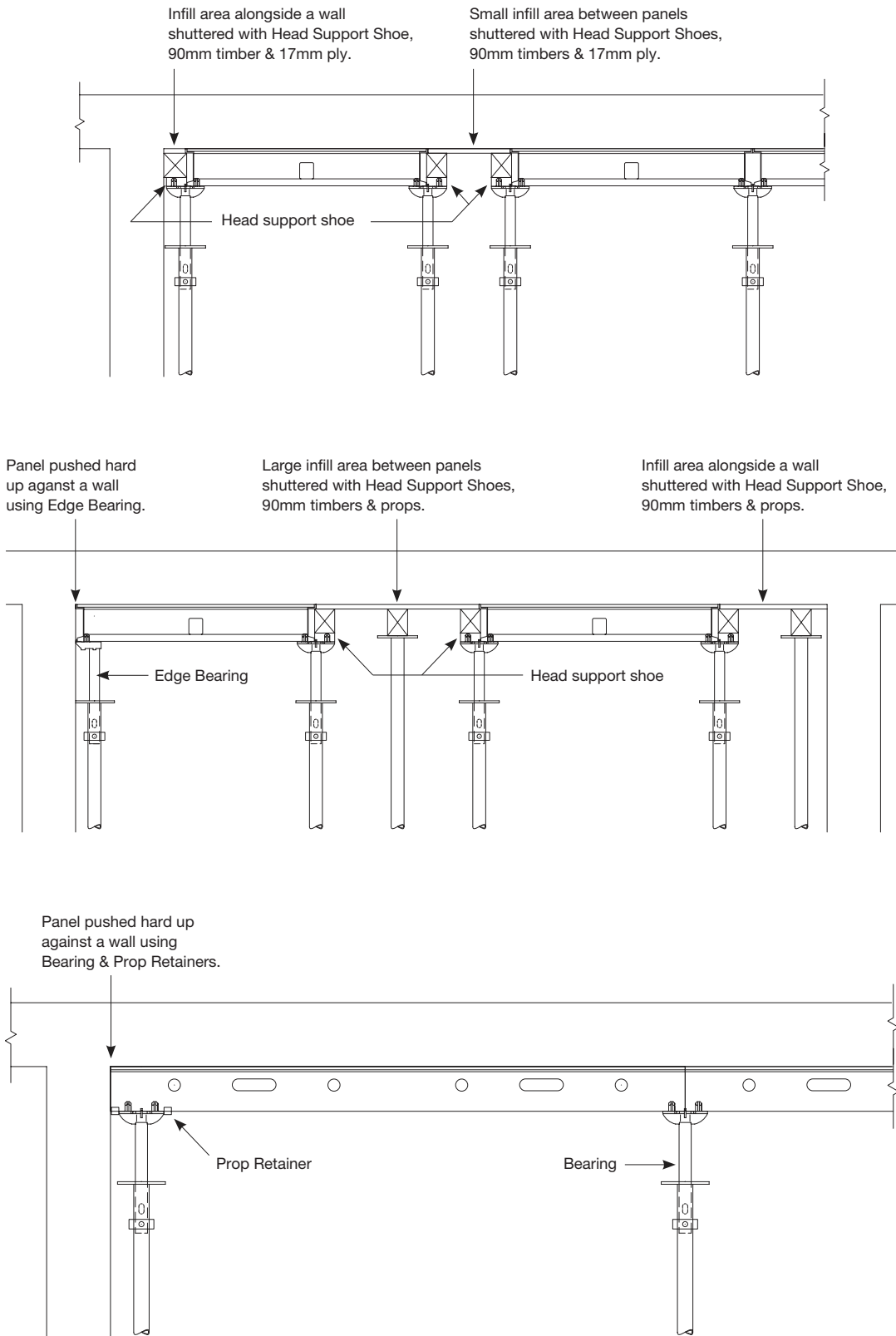
Note:
Position of tie must satisfy the design requirements.



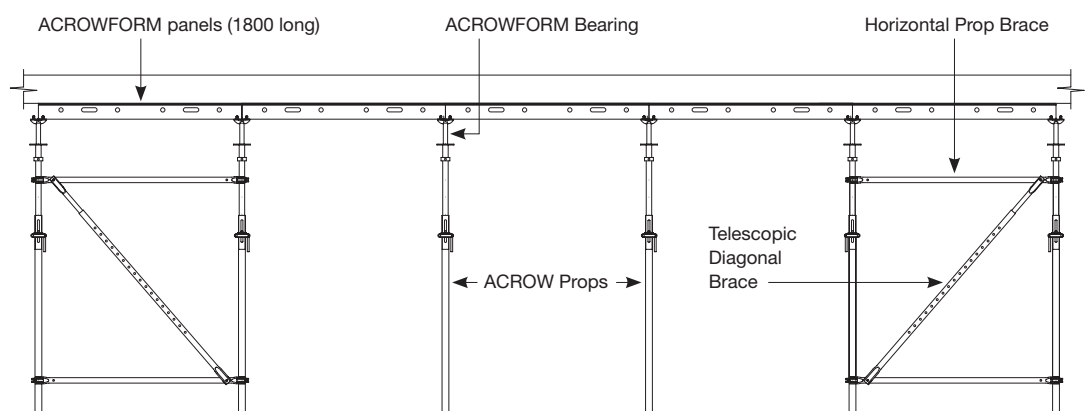
Anchor must be designed to meet the tension load of the vertical tie.

The Vertical ties, their connection to panels and the anchorage to the slab must be capable of satisfying the calculated design load imposed on the cantilevered portion of the Panel. Deflection of the Panel must also be taken into consideration.

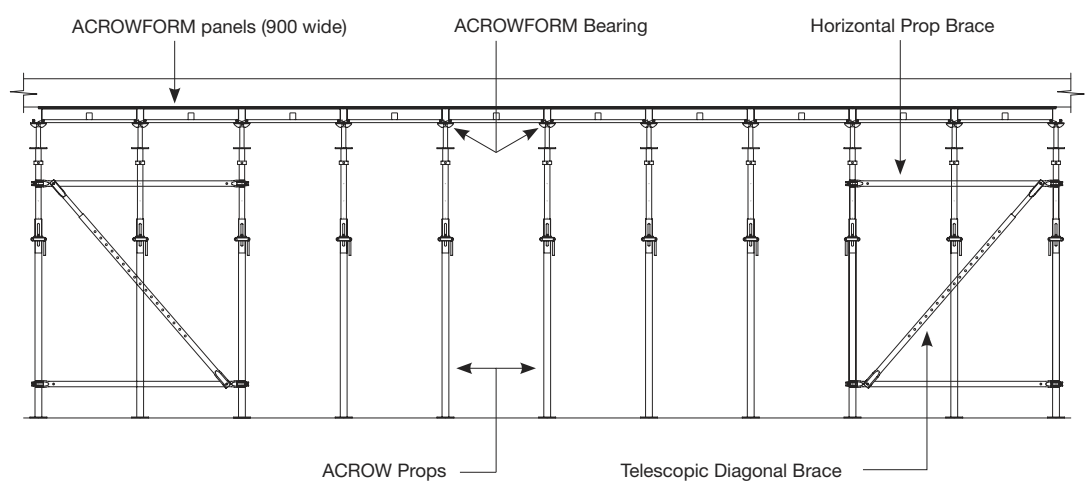
Typical Details



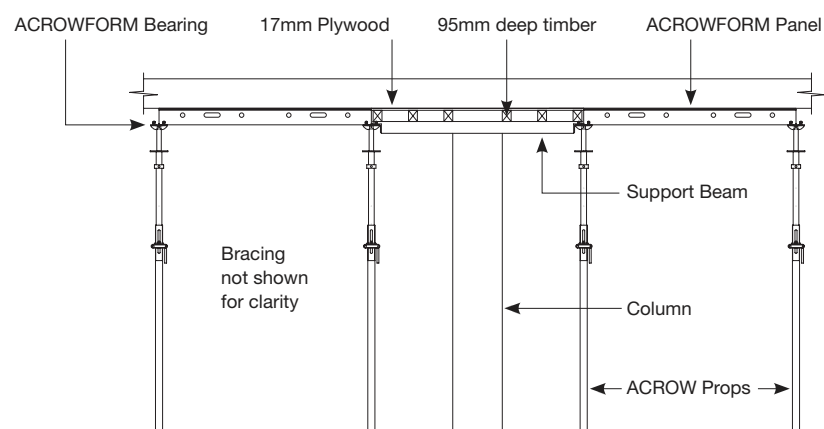
Typical ACROWFORM/Prop Arrangement (Longitudinal Elevation)



Typical ACROWFORM/Prop Arrangement (Lateral Elevation)



Typical Arrangement at Columns using Support Beams



ACROWFORM

Erection of Formwork

Simplicity of components makes ACROWFORM a quick, easy and precise system to form slab soffits. Only 3 basic components and 2 erection aids are used to form up the main slab areas. The make up areas around the perimeter or column areas are easily incorporated with the range of accessories specifically designed for that purpose.

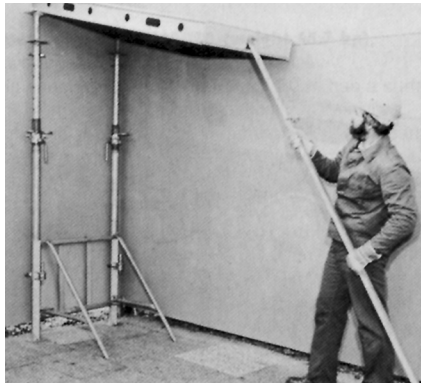
- Step 1 Insert and secure ACROWFORM Bearings into the Acrow Props and adjust to correct extension.
- Step 2 Secure 2 Props, with Bearings fitted, into an ACROWFORM Support Frame and position them at the commencement position indicated on the formwork arrangement drawing.
- Step 3 Fit the leading edge of a Panel onto the Edge Bearings.
- Step 4 Using an ACROWFORM Erection Rod attached to the rear end of the Panel swing the Panel up into a horizontal position and support in place with the Erection Rod.
- Step 5 A Prop with Edge Bearing is then placed at the outside rear corner of the Panel.
- Step 6 The next Panel is placed in position in the same manner (steps 3 & 4) and supported by an Erection Rod.
- Step 7 Place a Prop with Bearing at the junction of the two Panels supporting both Panels.
- Step 8 Repeat steps building the assembly in a transverse direction setting up the first line of Panels from which the progressive lines can be built.



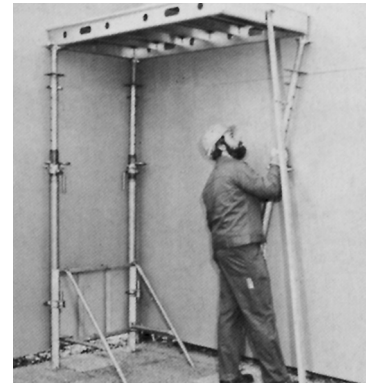
Step 1



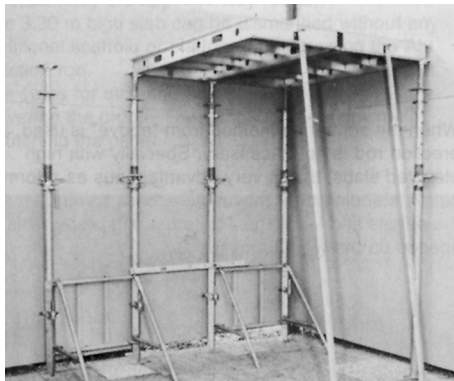
Step 3
Fit Panel onto lugs on the Bearing.



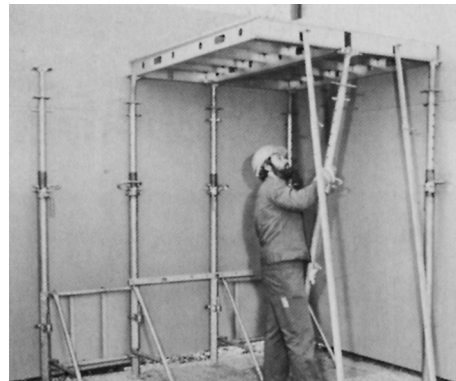
Step 4
Using an Erection Rod swing the Panel up into a horizontal position and support it with the Erection Rod.



Step 5
Support corner of Panel with Prop and Edge Bearing assembly.



Step 6
Swing next Panel into place and support with Erection Rod.



Step 7
Place Prop and Bearing assembly at junction of the two Panels.

General Erection Notes

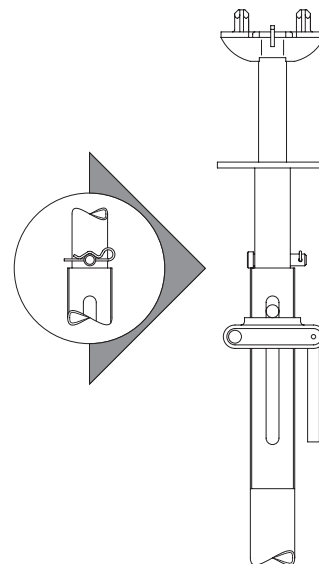
- 1 Formwork shall be erected and dismantled in a safe manner and in conjunction with an approved safe work method statement at all times.
- 2 With the ACROWFORM system, if any part of the formed area is to be loaded by material or accessed by personnel prior to the completion of the entire formwork in accordance with formwork drawings, the contractor must ensure that the formwork is sound and stable. This may require additional bracing in areas other than those shown on the formwork drawings.

A suitably qualified and experienced Engineer may need to be consulted in this regard.

- 3 The system supplier will provide on site training relating to the erection and dismantling of the system if required.
- 4 On completion of the formwork assembly, or part thereof, and prior to any loading (Materials, personnel, etc.) of the formwork deck, the following check list should be adhered to:
 - Check Props are plumb in accordance with AS3610 and that they are supported on a firm and sound base.
 - Check levels of soffit are correct.
 - Check all yoke ties around columns, wedging to walls and any bracing as per drawing or as instructed by the Engineer are complete.
 - Check all infill Panels are complete.
 - Check all handrails have been installed.
 - Check Props in access and egress passages have been tied with scaffold tubes and right angle couplers.
 - Check all stored material left in the formed area is stacked clear of all erected Props.
 - Check warning signs are in position.
 - Check that an Engineering certificate has been issued or a checklist has been completed and signed off by an engineer or a competent person.

Caution

When handling Props with a Bearing fixed in place, keep hands away from the end of the Prop outer. When the Prop inner is allowed to slide freely in the Prop outer, the Bearing Connecting Pin can strike the end of the Prop outer unless the Prop movement is controlled. This control is achieved by inserting the Chainless Prop Pin to lock the inner and outer together. When assembling the Bearing Connecting Pin the R clip should be inserted horizontally as shown. This will prevent the clip from being dislodged in the event of the Pin hitting the Prop outer.



Bracing

On reaching the nearest column or wall, or after reaching 9 metres in either direction, stop erecting additional Panels and provide stability to the system by one or a combination of the following bracing methods:

- a On reaching a column, the Props adjacent to the column are to be tied to the column using scaffold tubes and right angle couplers by creating a yoke around the four sides of the column at the top of Props.
- b On reaching a wall, any space between the wall and the Panels is to have temporary blocks/wedges inserted between the Panels and wall at every fifth Panel joint.
- c A 1.8 metre square bracing bay utilising scaffold tubes and couplers or Proprietary bracing system is to be completed at the locations shown on the formwork drawings. Top and bottom horizontal bracing members are to be within 300mm of the Prop endplates. See page 7.

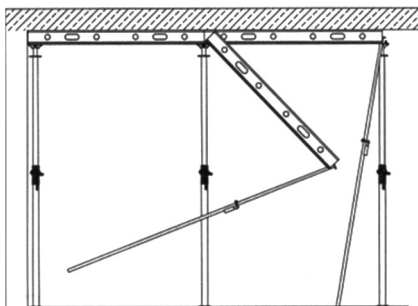
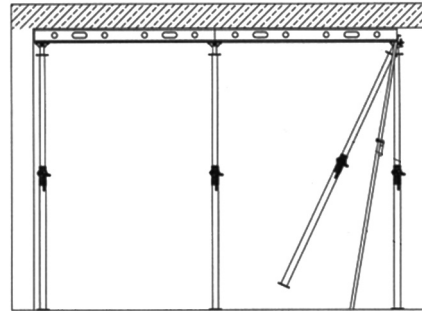
**A comprehensive Method Statement is available from
Acrow Formwork & Scaffolding Engineering Department.**

ACROWFORM

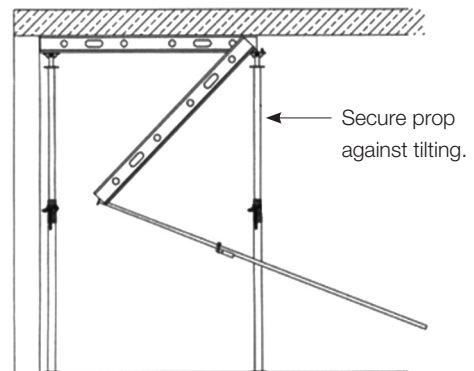
Dismantling Formwork

Commence stripping from the make-up/adjustment area. Remove all make-up area timber and plywood. Support the first two Panels with Erection Rods. Lower the lead Prop assemblies at the starting area approximately 35mm.

Lower the rear Prop assemblies approximately 10mm to give clearance for the Panel to rotate downwards then swing away the Prop assemblies supporting the first Panel.

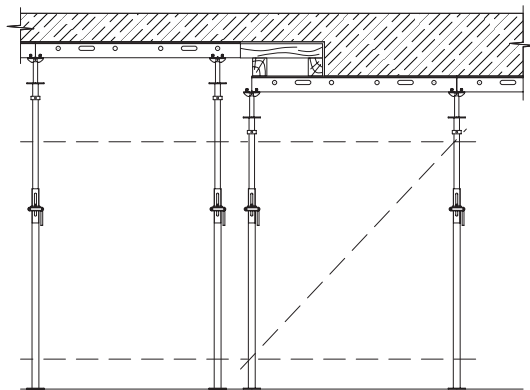


Swing the Panels down one at a time using the Erection Rod. Lift off swung down Panel and remove to storage area. Continue the stripping process in the same manner.

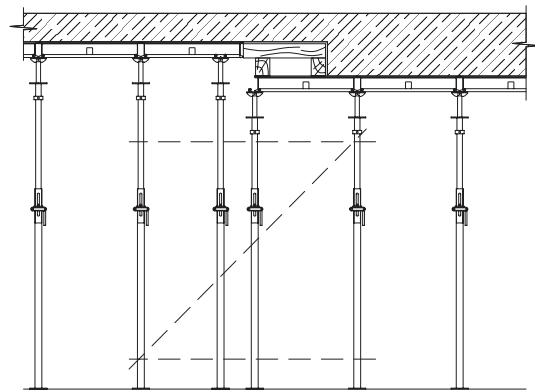


When stripping process reaches a wall, the Panel must be struck from the wall end first to allow space for the operator to gain access to lower the Panel.

Slab Step Downs



Longitudinal step down

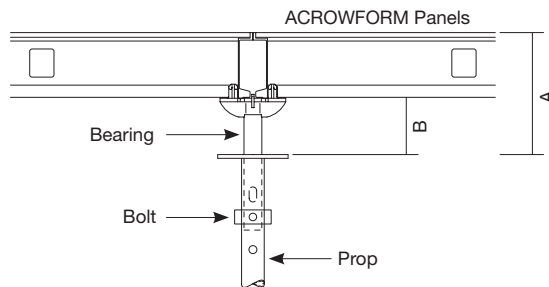


Transverse step down

Slab step downs (offsets) can be accommodated using timber and plywood make-up sections supported by the lower level Panels. Step downs require extra attention to bracing to cater for horizontal forces created by the vertical face of the step down.

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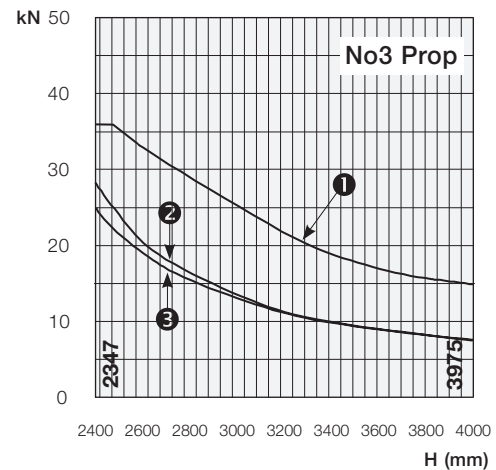
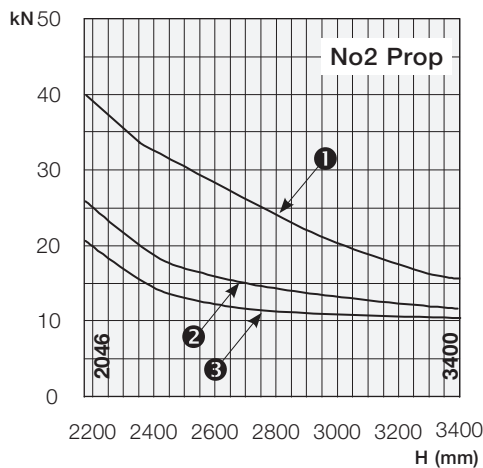
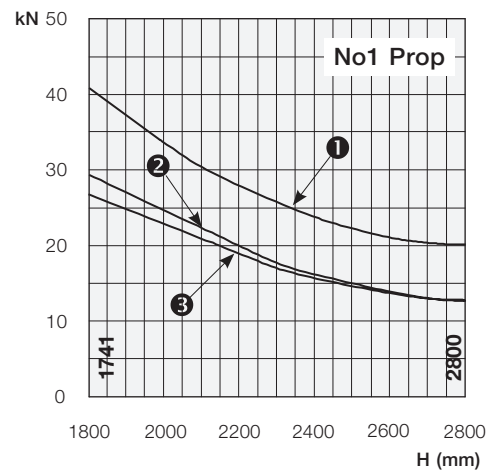
ACROW Props Setting Data



Prop Size	Dimension A mm	Dimension B mm
No 1	281	141
No 2	286	146
No 3	317	177

Working Load Limit for ACROW Props used as 'Vertical Shores'

The dimension shown on the left hand side of each chart indicates the minimum achievable closed height of the Prop and Bearing assembly. An allowance should be added to this height to allow for lowering the Prop assembly during dismantling.



1 Acrow Prop (Galtube or black)

Working Load Limit for concentric loads, $e=0$

2 Galtube plus Acrow Prop

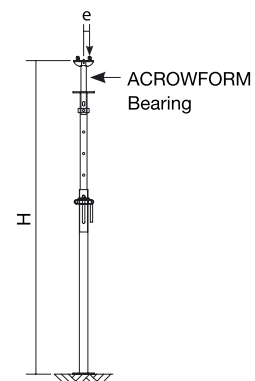
Working Load Limit to AS3610-1995 (LSCF = 1.5) ($e=25$ maximum)

3 Painted Acrow Prop

Working Load Limit to AS 3610 1995 (LSCF = 1.5) ($e=25$ maximum)
LSCF is Limit State Conversion Factor.

Notes:

- Maximum capacity may be limited by other components. See relevant data.
- Props must be erected plumb.
- Top & bottom of Prop must be restrained.



ACROWFORM

ACROWFORM Panel Section Properties

ACROWFORM Panel Working Load Limits and Deflections

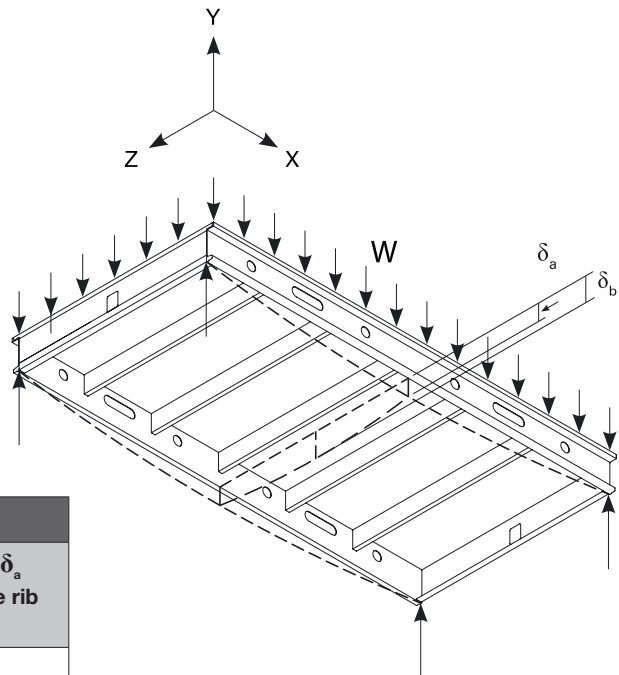
1 Uniformly Distributed Loads ($W = 11.3\text{kPa Max}$)

Max slab thickness for 1800 x 900 Panel = 400 mm

Case A: Deflection of side rib of 1800 x 900 Panel due to uniformly distributed load.

Case B: Deflection of middle rib of 1800 x 900 Panel due to uniformly distributed load.

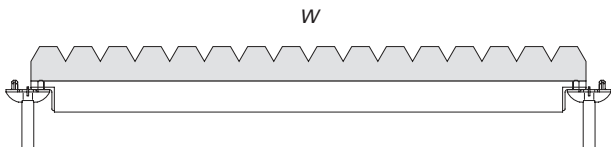
Note: Props must also be checked to satisfy loading condition.



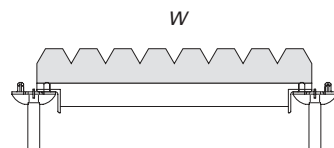
	Case A	Case B
Pressure W kPa	Deflection δ_a under side profile mm	Deflection δ_a under middle rib mm
5.00	2.5	2.8
6.25	3.1	3.5
7.50	3.7	4.2
8.75	4.3	4.8
10.00	4.9	5.5
11.30	5.6	6.2

Support Bearers

Support Bearer 1800mm
Working Load Limit: $W = 10.9$ kN



Support Bearer 900mm
Working Load Limit: $W = 10.9$ kN



Note:
Maximum capacities may be limited by other components.

ACROWFORM Panel Section Properties

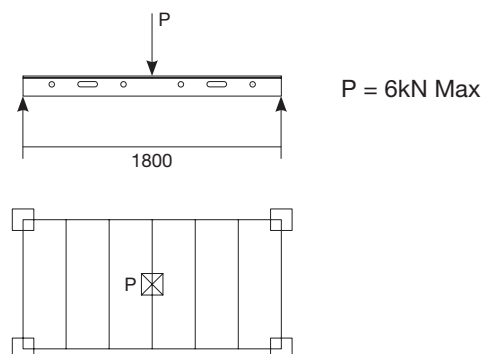
ACROWFORM Panel Working Load Limits and Deflections

2 Point Loads distributed over 150 x 150 area

Note: Props must also be checked to satisfy loading condition.

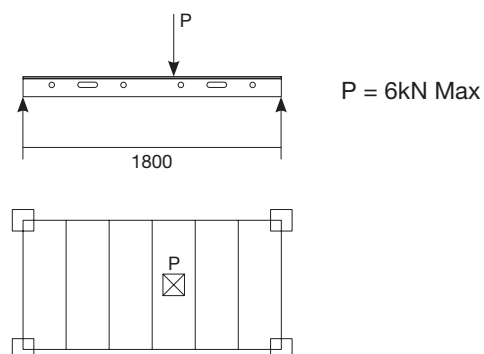
Case A: Load centred on middle rib.

Max P kN	Deflection mm
6	6



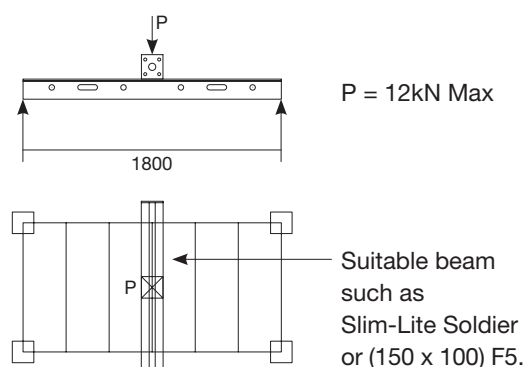
Case B: Load centred on plywood.

Max P kN	Deflection mm
6	10



Case C: Load centred on middle rib and distributed evenly on both side ribs as shown.

Max P kN	Deflection mm
5	2.4
10	4.9
12	5.8



Note:
Maximum capacities may be limited by other components.

▲ Formwork

▲ Scaffolding

▲ Industrial & Mining Scaffolding



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