

ENGINEERED WOOD PRODUCTS



**FORMrite®**



## Formwork Solutions Guide



**truFORM®**



**edgeFORM®**

The natural solution for you.

**CarterHoltHarvey**  
Woodproducts Australia



## Trust our formwork solutions

Trust FORMrite®, truFORM® and edgeFORM® to perform time and time again, trust they will be straight and true and give you a quality off-form finish. Trust that they have been independently audited and are available FSC® chain of custody certified. Trust our formwork solutions will not only do the job, but do it well.

### Benefits

- Economical – thanks to their durability and reusability
- Lighter, straighter and more uniform than traditional alternatives
- Faster and easier to install – enhancing productivity reduces forming costs
- Improved concrete finish
- Engineered Wood Products Association of Australasia (EWPPA) ‘Product Certified’ for peace of mind
- Available FSC® ‘Chain of Custody’ certified upon request for Green Star credits





## Product and purpose

Our formwork solution consists of FORMrite, truFORM and edgeFORM and can be used as a complete solution or individually to produce a quality concrete finish.

### Product range

FORMrite is untreated plywood that provides strong support for the forming of concrete walls, floors, roofs, frames and civil engineering structures. Overlaid with a hard durable resin impregnated paper providing a form face suitable to produce a class 2 concrete face. FORMrite is tough and dimensionally stable making it ideal for the rigours of formwork construction.

truFORM is structural Laminated Veneer Lumber (LVL) specially manufactured for use in structural concrete formwork applications.

edgeFORM is a LVL which has been specially produced for use as edge boards for concrete slabs.

### A better environmental choice

Carter Holt Harvey ensures that its wood is legally sourced from managed forests and offers FSC® 'Chain of Custody' certified product upon request. FORMrite, truFORM and edgeFORM achieve less than 0.3mg/l Formaldehyde (equivalent to Super E0) emissions from the final product.

### Compliance and standards

FORMrite formwork plywood is 'Product Certified' for peace of mind by the Engineered Wood Products Association of Australasia and is suitable for use meeting requirements of the Building Code of Australia as follows:

FORMrite is structural plywood specifically manufactured for use in formwork to AS6669. FORMrite can be designed using AS 1720 Timber Structures code to meet the performance requirements of AS3610 formwork for concrete.

Quality control for truFORM and edgeFORM is independently audited and product quality certified by the EWPA. These factors are important considerations where safety and reliable performance are paramount.



### Storage, handling and maintenance

For best durability and longest re-use potential of FORMrite, truFORM and edgeFORM:

- Store under cover in well ventilated area
- Handle and stack with care to avoid damage
- Stack flat clear of ground on at least three evenly spaced bearers
- Re-seal cut edges with acrylic paint
- Wet members (and sheets) should have spacers between layer to allow to dry out

All statements in this manual shall be read subject to the members being properly stored, handled, installed, used and maintained as appropriate to each application in accordance with this brochure, and subject to the governing codes of practice.

### FORMrite product range

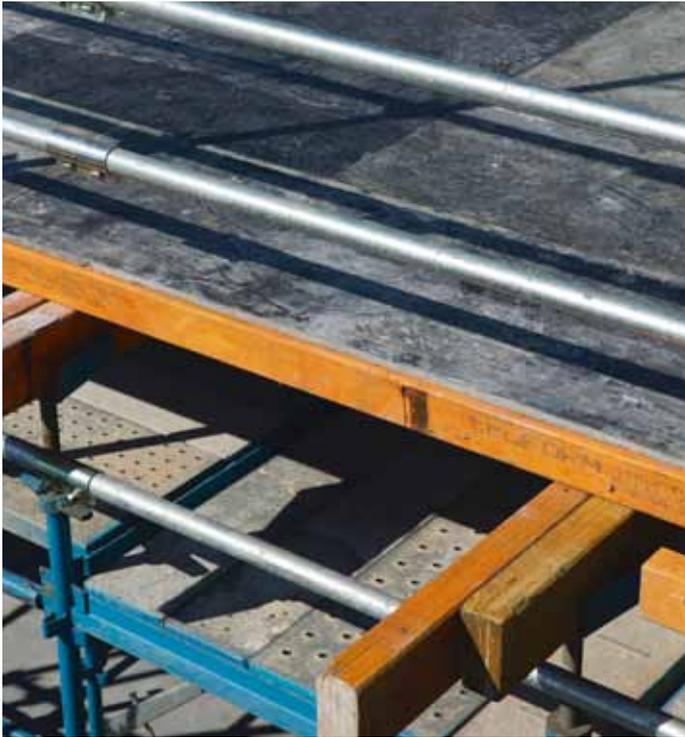
Product Identification Code	Nominal Thickness (mm)	Length (m) +/- 2 mm	Width mm +/- 2 mm	Sheets per pack
12-24-5	12	2400, 1800	1200	55
17-10-7	17	2400, 1800	1200	40
17-15-7	17	2400, 1800	1200	40
17-24-7	17	2400, 1800	1200	40

### truFORM product range

Depth (mm)	Width (mm)	Length (m)	Pieces per pack
95	47	Selected lengths of 2.4 m to 6 m (in 600 mm increments)	84
95	65		66
130	77		40
150	77		35

### edgeFORM product range

Depth (mm)	Width (mm)	Length (m)	Pieces per pack
100	36	Lengths of 4.8 m or 6 m	50
150	36		40
170	36		35
200	36		30
240	36		25
300	36		20



## Trust FORMrite

FORMrite is a high quality plywood panel produced predominantly from graded Pinus radiata veneers. These are glued with phenol formaldehyde resin and overlaid with a hard durable resin impregnated paper to give concrete a smooth finish. With a durable A-Type Marine bond, FORMrite can withstand the rigours of construction moisture. Its hard phenolic surface and high quality outer veneers make it durable and reusable.

FORMrite gives builders a better surface for pouring concrete and offers a class 2 finish on the first pour (when used in accordance with Carter Holt Harvey installation details and AS 3610 recommendations).

FORMrite is a cost effective solution:

- Significant number of re-uses
- Can be used in modern optimised form systems such as table forms and jump forms
- Suits a range of frame spacings, concrete slab thicknesses and surface tolerances
- Can be used on steel or timber form frame systems
- Lighter in weight than typical imported or rainforest hardwood products
- Available FSC® ‘Chain of custody’ on request for Green Star credits



FORMrite has a cross-laminated construction, so the panel is less likely to expand or contract when exposed to rain and temperature changes, making it easier to lay forms for large decks.

## Specification

FORMrite is plywood manufactured and structurally characterised specifically for use in Formwork to the requirements of AS 6669-2007

<b>Adhesive</b>	Phenolic
<b>Bond</b>	Type A (Marine) AS/NZS 2098 and AS 2754
<b>Length and Width</b>	+/- 1.5 mm
<b>Thickness</b>	Tolerance +/- 4% (Overlay not included)

## Pack colour code

All FORMrite packs are colour coded for easy identification.

Product Stencil / Corner Marks	
Yellow	F22
Green	F17
Red	F14
Black	F14

## Standard FORMrite sheet sizes and weights

### Table 1

Sheet size (mm)	Thickness* (mm)	Weight** (kg)
1800 x 1200	12	14.7
	17	20.6
2400 x 1200	12	19.6
	17	27.5

\* Tolerance: As per AS/NZS 6669

\*\* Tolerance: +/- 2%

## Stress Grades and Section Properties for Standard FORMrite constructions

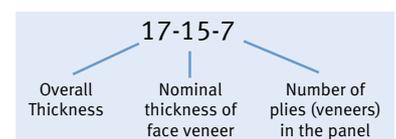
Table 2

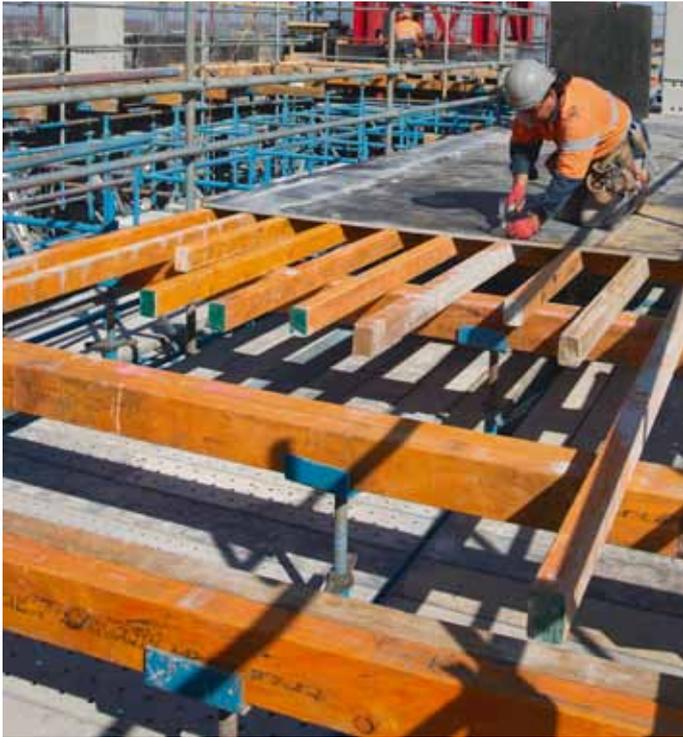
Nominal Thickness mm	Identification Code	Surface Overlay <sup>1</sup> gsm	Available Stress Grade	Parallel to face grain		Perpendicular to face grain	
				Moment of Inertia	Section Modulus	Moment of Inertia	Section Modulus
				I (mm <sup>4</sup> /mm)	Z (mm <sup>3</sup> /mm)	I (mm <sup>4</sup> /mm)	Z (mm <sup>3</sup> /mm)
12	12-24-5	205/450	F11	115	19	33	8.3
17	17-15-7	45/130	F14, F17	220	25.5	190	26.5
17	17-24-7	205/450	F11, F17	285	33.5	120	19

1. Phenolic impregnated paper

## Understanding Identification Codes

In the example, 17-15-7 is a 17 mm nominal thick panel with a 1.5 mm face veneer and 7 plies.





### Formwork assembly

The objective of fixing the elements of a formwork assembly is to provide an appropriately strong rigid form that has ease of handling, erection and stripping. The formface fixing should be designed to:

1. Hold joints tightly together;
2. Fix the plywood and framing so the formwork assembly becomes a cohesive structure for handling and stripping; and
3. Enable easy dismantling and maximum material recovery.

Following are some additional tips that will assist the formwork designer to achieve the required finish:

1. Used with proper release agents, edge and face tapes and solid perimeter fixing, FORMrite formply can achieve a Class 2 finish. Class 2 finish can only be assured for one pour per face as the subsequent condition of the face after the first pour depends on the handling of others;
2. It is a mandatory requirement of AS 3610 to provide test panels if a Class 2 finish has been specified;
3. Allow for expansion and contraction of the panels to avoid possible buckling. Moisture uptake can increase the dimensions of the panel and an expansion gap of approximately 2 mm is recommended; and
4. To avoid staining of concrete if forms are used often, use hot dip galvanised, stainless steel or alloy nails or screws as required.

## Installation

### Framing and plywood thickness

Framing centres depend on the F grade, plywood identification code and the direction of the face grain for a given thickness of wet concrete, as well as the design limit decided by the designer.

### Sheet layout

Maximum joist spacings are provided in Table 3 below for FORMrite sheets laid with the face grain (long edge) across and joists. Allow a 2 to 3 mm expansion gap on all sheet edges. Use polystyrene filler or joint sealer in the expansion gaps if required. **For maximum sheet performance sheets to be laid with face grain perpendicular to the span (across joists).**

### Maximum allowable joist spacing for FORMrite for slab soffits

Table 3

PLYWOOD IDENTIFICATION CODE	STRESS GRADE	CONCRETE SLAB THICKNESS (mm)						
		100	150	200	300	400	600	1000
		FACE GRAIN PERPENDICULAR TO SPAN (ACROSS JOISTS)						
MAXIMUM ALLOWABLE JOIST SPACING (mm)								
12-24-5	F11	450	400	400	300	300	300	225
17-15-7	F11	480	480	480	450	400	400	300
17-15-7	F14	600	480	480	480	450	400	300
17-15-7	F17/F14	600	480	480	480	480	400	300
17-24-7	F14	600	600	480	480	480	450	300
17-24-7	F17							

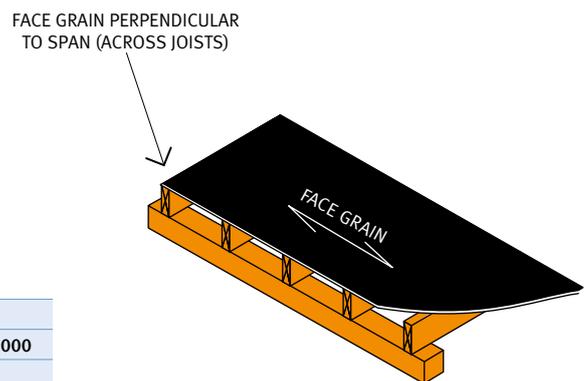
Note:

1. FORMrite plywood is manufactured and characterised to AS6669:2007 for design using AS1720.1:2010
2. In preparation of the above table, deflections were limited to the lesser of span/270 or 3 mm. (Class 2 finish to AS3610) Finish quality however is dependent upon combinations of sheeting, joist, bearer, support deformation and the accuracy and alignment in set-up. The use of the table should not therefore be interpreted to necessarily guarantee achievement of a class two finish.
3. The design has assumed, (a) the most consecutive of two or three span, (b) all spans equally loaded, and (c) all spans equal

### Release agents

Apply sparingly. Heavy application may cause runs and colour variation in the concrete.

### Indicative sheet layout



## Trust truFORM

truFORM is structural LVL manufactured in a controlled process to meet the requirements of AS/NZS 4357. Quality control is independently audited and the product quality certified by Engineered Wood Products Association of Australasia.

### Benefits

- Painted bright orange for moisture protection and product identification
- Easy length identification on site – ends are colour coded by length
- Lighter and stronger than traditional timber alternatives
- Faster and easier to install – enhances productivity and reduces forming costs
- Use results in an improved concrete finish – straight and true
- Sourced from managed plantation forests – available FSC® ‘Chain of custody’ on request for Green Star credits

### Suitable applications

- Formwork bearers and joists
- Soldiers and walers



### Use of publication

The tables and other technical data provided in this publication apply only for truFORM. The data provided for truFORM does not apply to lookalike substitution products. Use of the truFORM data for substitution products may be unsafe or result in unsatisfactory performance.

### Specification

#### Veneer

Species	Radiata Pine	
Thickness	3.5 mm	
Joints	Face	scarf
	Other	scarf/butt

**Adhesive** Phenolic

**Bond** Type A (Marine) AS/NZS 2098 and AS 2754

**Density** 580 kg/m<sup>3</sup> approximately

**Finish** Arris’s removed – (approx. 3 mm chamfer) painted orange

**Branding** truFORM  
PAA and JAS-ANZ logos

<b>Tolerances</b>	Depth	-0 mm, +2 mm
	Thickness	-2 mm, +2 mm
	Length	-0, +10 mm
	Spring	< (L/1000)



### Length colour code

The ends of all truFORM pieces are colour coded for easy length identification.

Ends are colour coded by length			
Yellow	2.4	White	4.2
Grey	3.0	Green	4.8
Purple	3.3	Black	5.4
Red	3.6	Blue	6.0

### Structural design

The tabular data and standard designs provided in this publication have been prepared in accordance with the following Australian Design Standards: AS3610:1990 Formwork for Concrete. AS1720.1:2010 – Timber Structures using design characteristic values determined in accordance with AS/NZS 4063.2:2010 Section 4. truFORM is manufactured, tested and has characteristic values determined in accordance with AS/NZS 4357:2005 Structural Laminated Veneer Lumber.

### Standard truFORM Sections and Mass

truFORM Section d x b (mm)	Mass kg/m
95 x 47	2.6
95 x 65	3.6
130 x 77	5.8
150 x 77	6.7

Readily available in standard lengths (m) 3.6, 4.2, 4.8, 5.4 and 6.0. Other lengths available on request.





## Joist Table for Forming Slab Soffits

CONCRETE SLAB THICKNESS (mm)	truFORM SECTION (mm)	JOIST SPACINGS (mm)											
		225	300	400	450	480	600	225	300	400	450	480	600
		MAXIMUM SINGLE SPAN (m)						MAXIMUM MULTIPLE SPAN (m)					
100	95 x 47	1.8	1.7	1.5	1.5	1.4	1.3	2.3	2.1	1.9	1.8	1.8	1.6
	95 x 65	2.1	1.9	1.7	1.6	1.6	1.5	2.5	2.3	2.1	2.0	2.0	1.8
	130 x 77	3.0	2.7	2.5	2.4	2.3	2.2	3.7	3.4	3.0	2.9	2.9	2.7
	150 x 77	3.4	3.1	2.8	2.7	2.7	2.5	4.3	3.9	3.5	3.4	3.3	3.1
150	95 x 47	1.7	1.6	1.4	1.4	1.4	1.3	2.2	2.0	1.8	1.7	1.7	1.6
	95 x 65	2.0	1.8	1.6	1.6	1.5	1.4	2.4	2.2	2.0	1.9	1.9	1.7
	130 x 77	2.8	2.6	2.3	2.2	2.2	2.0	3.5	3.2	2.9	2.8	2.7	2.5
	150 x 77	3.3	3.0	2.7	2.6	2.5	2.4	4.0	3.7	3.3	3.2	3.1	2.9
200	95 x 47	1.7	1.5	1.4	1.3	1.3	1.2	2.1	1.9	1.7	1.6	1.6	1.5
	95 x 65	1.9	1.7	1.5	1.5	1.4	1.3	2.3	2.1	1.9	1.8	1.8	1.7
	130 x 77	2.7	2.5	2.2	2.1	2.1	1.9	3.3	3.0	2.8	2.6	2.6	2.4
	150 x 77	3.1	2.8	2.6	2.5	2.4	2.2	3.8	3.5	3.2	3.1	3.0	2.8
300	95 x 47	1.5	1.4	1.3	1.2	1.2	1.1	1.9	1.7	1.6	1.5	1.5	1.3
	95 x 65	1.7	1.6	1.4	1.4	1.3	1.2	2.1	1.9	1.8	1.7	1.7	1.5
	130 x 77	2.5	2.3	2.1	2.0	1.9	1.8	3.1	2.8	2.5	2.4	2.4	2.2
	150 x 77	2.9	2.6	2.4	2.3	2.2	2.1	3.6	3.2	2.9	2.8	2.8	2.6
400	95 x 47	1.4	1.3	1.2	1.1	1.1	1.0	1.8	1.6	1.5	1.4	1.4	1.2
	95 x 65	1.6	1.5	1.3	1.3	1.3	1.2	2.0	1.8	1.7	1.6	1.6	1.4
	130 x 77	2.3	2.1	1.9	1.9	1.8	1.7	2.9	2.6	2.4	2.3	2.3	2.1
	150 x 77	2.7	2.5	2.2	2.1	2.1	2.0	3.3	3.0	2.8	2.7	2.6	2.4
600	95 x 47	1.3	1.2	1.1	1.0	1.0	0.9	1.6	1.5	1.3	1.2	1.2	1.1
	95 x 65	1.5	1.3	1.2	1.2	1.1	1.1	1.8	1.6	1.5	1.4	1.4	1.3
	130 x 77	2.1	1.9	1.8	1.7	1.7	1.5	2.6	2.4	2.2	2.1	2.0	1.9
	150 x 77	2.5	2.2	2.0	1.9	1.9	1.8	3.0	2.8	2.5	2.4	2.4	2.1
1000	95 x 47	1.1	1.0	0.9	0.9	0.9	0.8	1.4	1.3	1.1	1.1	1.0	0.9
	95 x 65	1.3	1.2	1.1	1.0	1.0	0.9	1.6	1.4	1.3	1.2	1.2	1.1
	130 x 77	1.9	1.7	1.5	1.5	1.4	1.3	2.3	2.1	1.9	1.8	1.7	1.5
	150 x 77	2.1	1.9	1.8	1.7	1.7	1.5	2.6	2.4	2.2	2.0	2.0	1.8

- Design for the joist table presented above includes a 4 kPa allowance for stacked materials in accordance with AS 3610. Where the stacked material load is reduced in accordance with AS 3610, then spans used may be larger than those given above - refer formwork designer.
- In the preparation of the above table, deflections were limited to the greater of span/270 or 3 mm (Class 3 to AS 3610). Finish quality is however also dependant upon combinations of sheeting, joist, bearer and support deformations and upon the accuracy of alignment in set-up. The use of the table should not therefore be interpreted to necessarily guarantee the achievement of a Class 3 finish.
- For multiple spans, the design has assumed (a) the most conservative of two or three span use, (b) all spans equally loaded, and (c) all spans equal.
- truFORM used in accordance with the above table need not be provided with intermediate lateral restraint.
- Span values may be interpolated for intermediate slab thicknesses.

## Bearer Table for Forming Slab Soffits

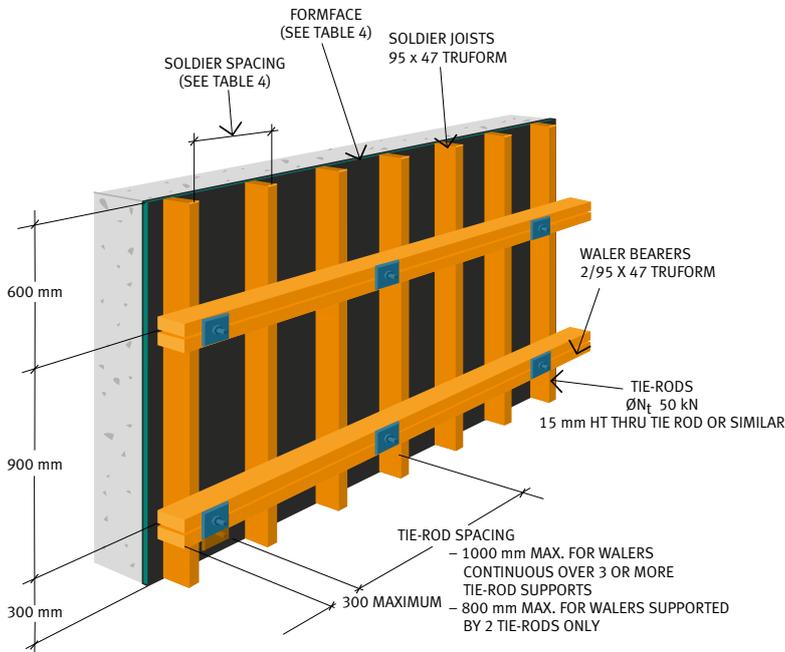
CONCRETE SLAB THICKNESS (mm)	truFORM SECTION (mm)	BEARER SPACINGS (m)											
		900	1200	1500	1800	2100	2400	900	1200	1500	1800	2100	2400
		MAXIMUM SINGLE SPAN (m)						MAXIMUM MULTIPLE SPAN (m)					
100	95 x 65	1.3	1.2	1.1	1.0	1.0	0.9	1.6	1.4	1.2	1.1	1.0	1.0
	130 x 77	1.9	1.7	1.6	1.5	1.4	1.4	2.3	2.0	1.8	1.7	1.5	1.4
	150 x 77	2.2	2.0	1.8	1.7	1.6	1.6	2.7	2.3	2.1	1.9	1.7	1.6
150	95 x 65	1.2	1.1	1.0	1.0	0.9	0.9	1.5	1.3	1.2	1.1	1.0	0.9
	130 x 77	1.8	1.6	1.5	1.4	1.3	1.3	2.2	1.9	1.7	1.6	1.4	1.3
	150 x 77	2.1	1.9	1.7	1.6	1.6	1.5	2.5	2.2	1.9	1.8	1.6	1.5
200	130 x 77	1.7	1.5	1.4	1.4	1.3	1.2	2.1	1.8	1.6	1.5	1.4	1.3
	150 x 77	2.0	1.8	1.7	1.6	1.5	1.4	2.4	2.0	1.8	1.7	1.5	1.4
300	130 x 77	1.6	1.4	1.3	1.3	1.2	1.1	1.9	1.6	1.5	1.3	1.2	1.2
	150 x 77	1.8	1.7	1.5	1.4	1.4	1.3	2.1	1.9	1.7	1.5	1.4	1.3
400	130 x 77	1.5	1.3	1.2	1.2	1.1	1.1	1.7	1.5	1.3	1.2	1.1	1.1
	150 x 77	1.7	1.6	1.4	1.4	1.3	1.2	2.0	1.7	1.5	1.4	1.3	1.2
600	130 x 77	1.3	1.2	1.1	1.1	1.0	0.9	1.5	1.3	1.2	1.1	1.0	0.9
	150 x 77	1.5	1.4	1.3	1.2	1.1	1.1	1.7	1.5	1.3	1.2	1.1	1.1
1000	130 x 77	1.2	1.1	1.0	0.9	0.8	0.8	1.3	1.1	1.0	0.9	0.8	0.7
	150 x 77	1.3	1.2	1.1	1.0	0.9	0.9	1.4	1.2	1.1	1.0	0.9	0.9

- Design for the bearer table presented above includes a 4 kPa allowance for stacked materials in accordance with AS 3610. Where the stacked material load is reduced in accordance with AS 3610, then spans used may be larger than those given above - refer formwork designer.
- In the preparation of the above table, deflections were limited to the greater of span/270 or 3 mm (Class 3 to AS 3610). Finish quality is however also dependant upon combinations of sheeting, joist, bearer and support deformations and upon the accuracy of alignment in set-up. The use of the table should not therefore be interpreted to necessarily guarantee the achievement of a Class 3 finish.
- For multiple spans, the design has assumed (a) the most conservative of two or three span use, (b) all spans equally loaded, and (c) all spans equal.
- truFORM used in accordance with the above table need not be provided with intermediate lateral restraint.
- Span values may be interpolated for intermediate slab thicknesses.

# Installation

## Standard Vertical Forms

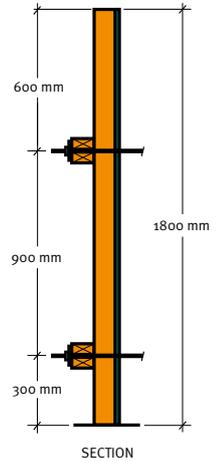
Up to 1.8 metres high  
 – Soldiers supporting formface



Soldier Spacing for walls up to 1.8m high  
**Table 4**

	Soldier spacing (mm)	
	300	360
17-10-7	F11	F17/F14
17-15-7	F11	F17/F14

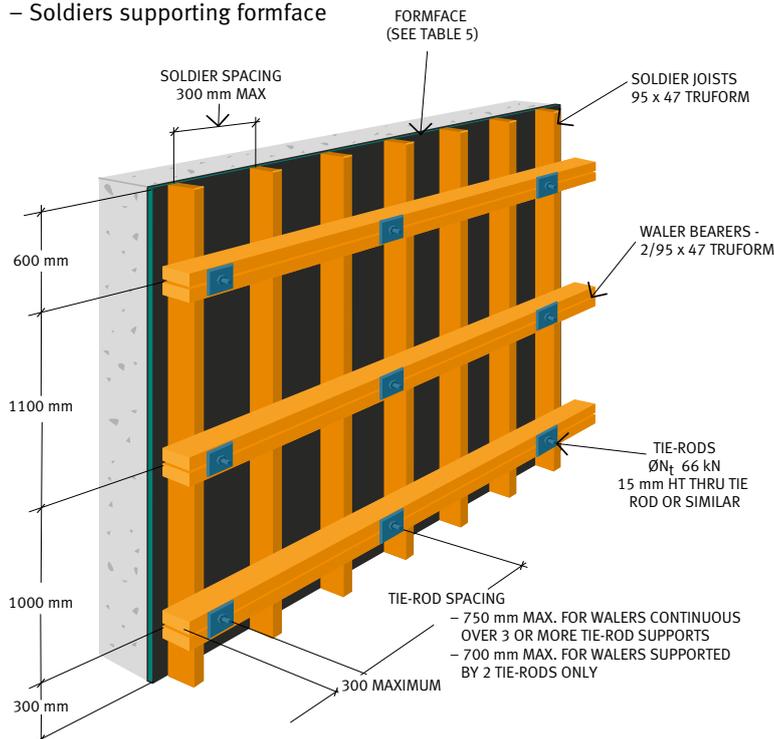
(Maximum unfactored Concrete Pressue 43kPa)



**General Notes for Standard Vertical Forms**

1. Specifications intended for achievement of Class 3 finish
2. Designs based upon hydrostatic pressure distribution
3. Formface specifications assume plywood continuous over 3 or more spans except where noted otherwise
4. Holes for tie bolts must not be bored through soldier or waler joists

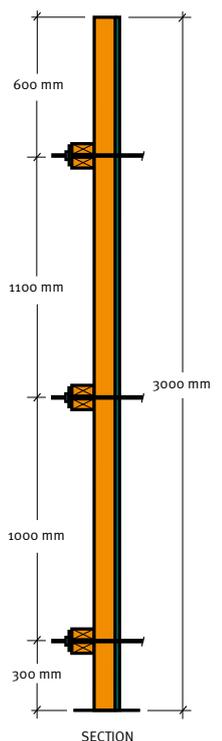
Up to 3.0 metres high  
 – Soldiers supporting formface



Soldier Spacing for walls up to 3.0m high  
**Table 5**

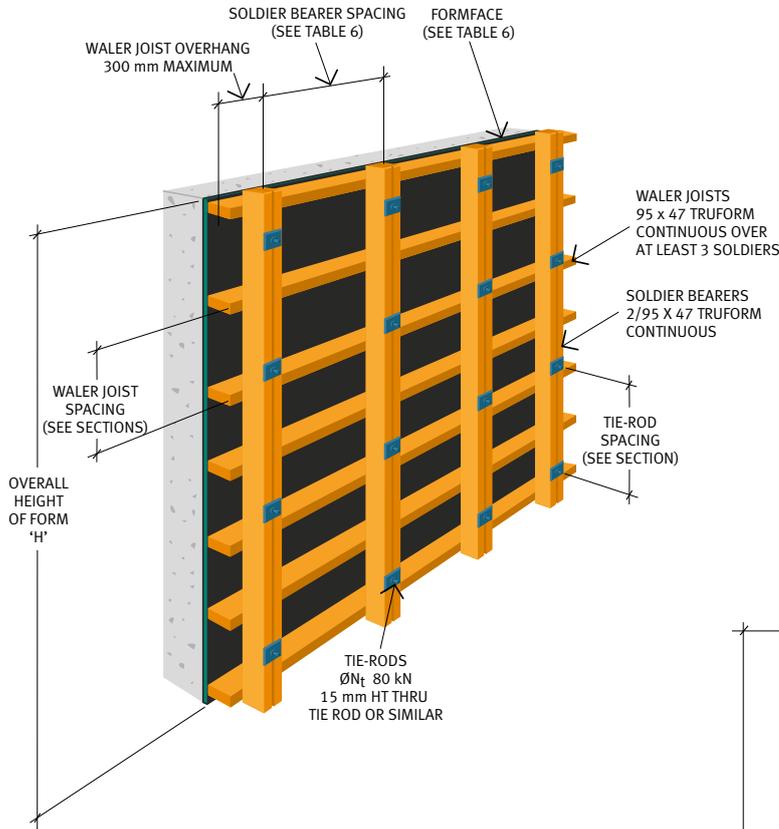
	Soldier spacing (mm)
	300
17-10-7	F17/F14
Face Grain Orientated Vertically Only	
17-15-7	F17/F14
Face Grain Orientated Horizontally Only	

(Maximum unfactored Concrete Pressue 72kPa)



## Standard Vertical Forms (cont)

### 2.8 to 3.9 metres high – Wales supporting formface



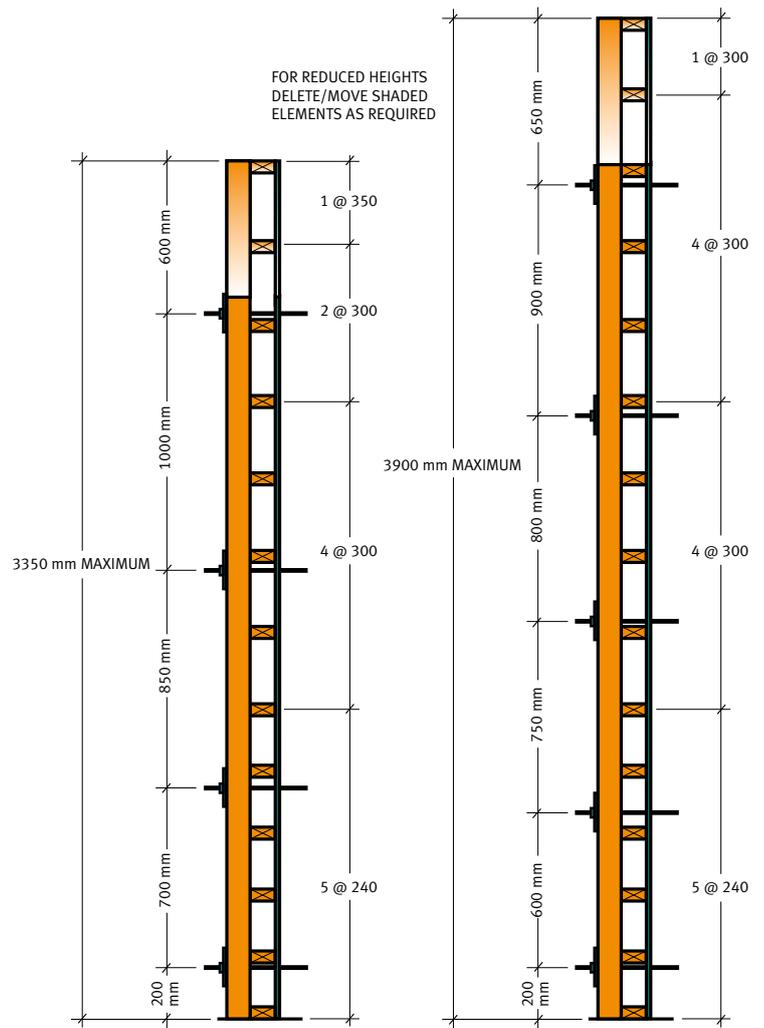
#### General Notes for Standard Vertical Forms

1. Specifications intended for achievement of Class 3 finish
2. Designs based upon hydrostatic pressure distribution
3. Formface specifications assume plywood continuous over 3 or more spans except where noted otherwise
4. Holes for tie bolts must not be bored through soldier or waler joists

**Table 6**

Overall form Height 'h'	Solder Spacing	Plywood Construction Code & Stress Grade	
$3.35 < h \leq 3.9\text{m}$	850 mm max	17-10-7	F17/F14
		17-15-7	F14
$h \leq 3.35\text{m}$	900 mm max	17-10-7	F14
		17-15-7	F11

Plywood at top of form may be single span, supported by top 2 walers or 2 span continuously supported by top 3 walers - elsewhere ply must be continuous over 3 or more spans





## Trust edgeFORM

edgeFORM is manufactured from timber veneers assembled in a predefined pattern to be lighter, straighter and more uniform than traditional alternatives.

### Benefits

- Arrised and painted red for moisture protection and easy on-site identification
- Straight and true, lightweight and versatile – faster to install than traditional alternatives
- Sourced from managed forests – available FSC® ‘Chain of Custody’ certified upon request for Green Star credits
- Third party audited process control for peace of mind



### Suitable Applications

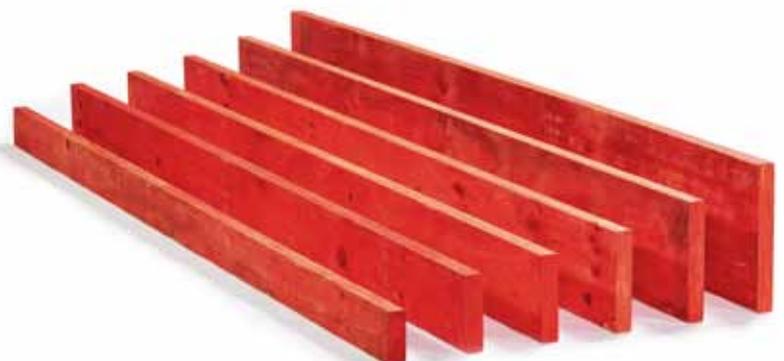
- Edge boards in concrete formwork framing projects
- Boxing for residential slabs

## Specification

### Veneer

Species	Radiata Pine/Douglas Fir	
Thickness	3.5 mm	
Joints	Face	scarf
	Other	scarf/butt
Adhesive	Phenolic	
Bond	Type A (Marine)	AS/NZS 2098 and AS 2754
Density	580 kg/m <sup>3</sup> approximately	
Finish	painted red	
Branding	edgeFORM	
Tolerances	Depth	-0 mm, +2 mm
	Thickness	-2 mm, +2 mm
	Length	-0, +10 mm

STANDARD edgeFORM SIZES (mm)					
100 x 36	150 x 36	170 x 36	200 x 36	240 x 36	300 x 36



## Trust our formwork solutions



### Forward thinking

Our timber products are a better environmental choice for building. They're natural, renewable and sustainable.

As Australia's leading timber and engineered wood products supplier, Carter Holt Harvey is committed to conserving the natural environment and actively protecting Australia's flora and fauna.

Carter Holt Harvey ensures that all timber is legally sourced from sustainably managed forests. Production uses natural resources efficiently and actively minimises waste.



### Plywood Mill upgrade

Our Myrtleford facility has been redeveloped to be a 'world-class' plywood mill. By utilising state of the art technology, this upgraded mill ensures our plywood business is competitive and sustainable into the future. The facility is now more energy efficient, produces less emissions, and has lower water usage and better air quality. And ultimately provides better, more sustainable products.

## Save time and money with better support



### Fast technical support ☎ 1800 808 131

For quick, clear product answers, our technical support phone line **1800 808 131** links you to our expanded, engineering support team. Our experienced support team can assist with enquiries ranging from sizing and design to installation advice.

**It's fast, easy and it's free.**

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Technical Support

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