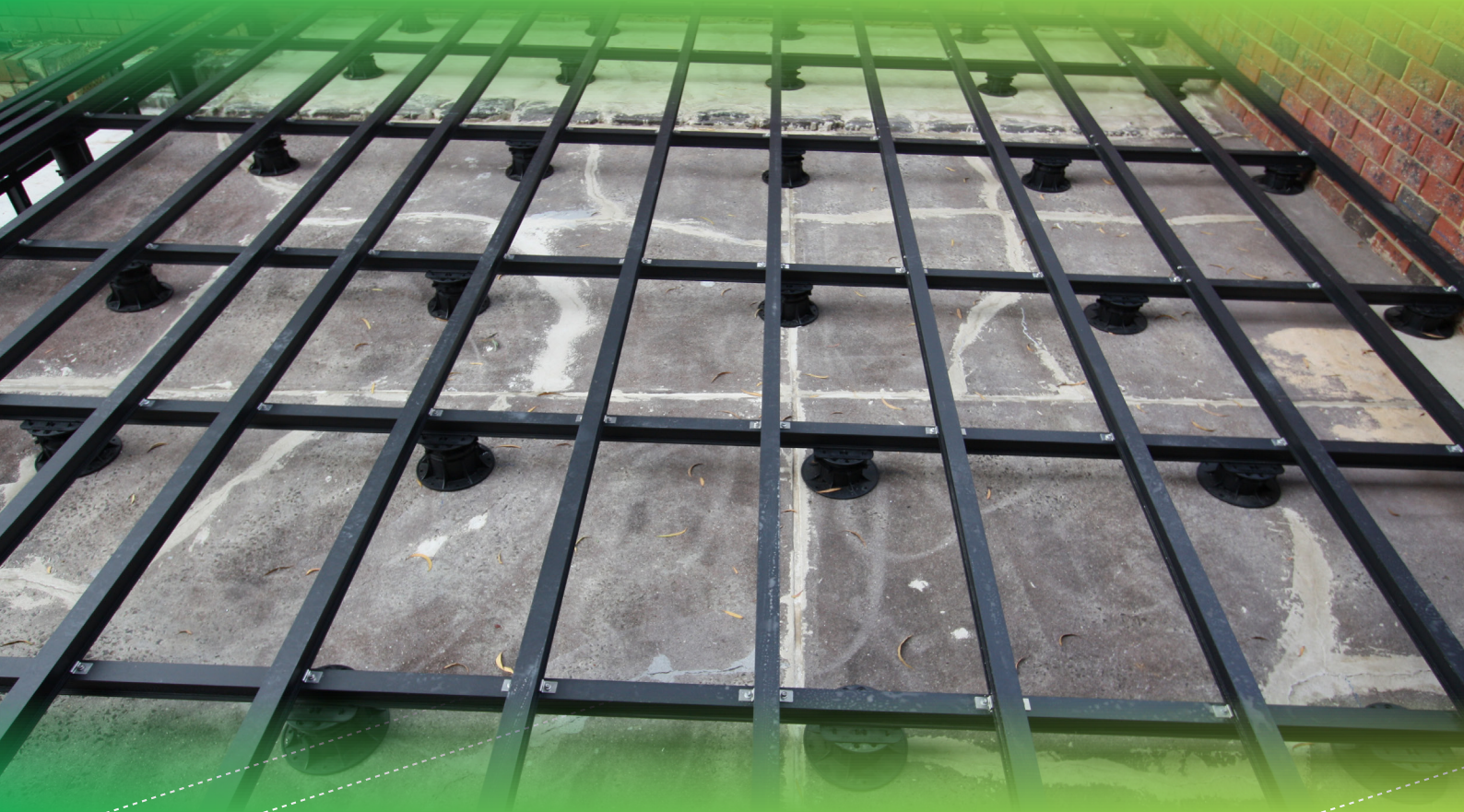


CleverDeck®

Aluminium Deck Frame System

Installation Guidelines



We **STRONGLY RECOMMEND** that these guidelines are read thoroughly before commencing the design and construction of a Futurewood CleverDeck subframe. These guidelines are suitable for decks with finished heights up to 500mm. For deck heights over 500mm concrete re-blocking stumps can be used instead of plastic pedestals.

Regulations regarding the deck installation may vary from council to council and it is the responsibility of the property owner to make sure that any permits and specific building requirements are adhered to.

These guidelines are for guidance only and do not overrule existing, relevant building codes.

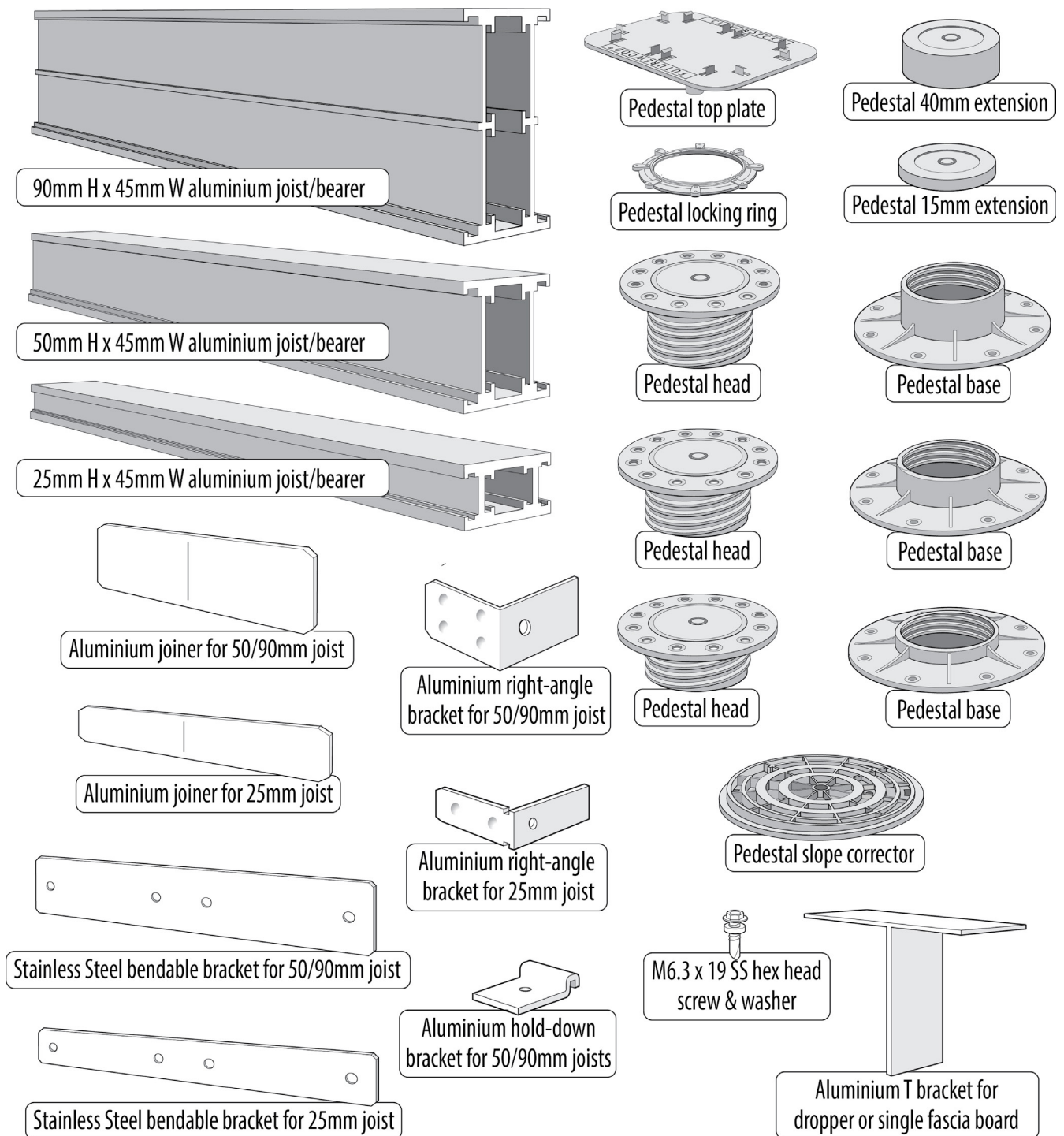
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Order Receipt and Storage

It is the responsibility of the person signing for the delivery of the CleverDeck Subframe to check off the items received against the delivery docket to ensure that all items are received.

Take care when handling CleverDeck Aluminium joists/bearers as the ends of the cut aluminium are quite sharp and can easily cut or mark any surfaces they contact. As the subframe system consists of long bearers/joists and smaller brackets, clips and screws be sure to store the components in such a way that the smaller items do not get lost on the building site.



Safety and Tools

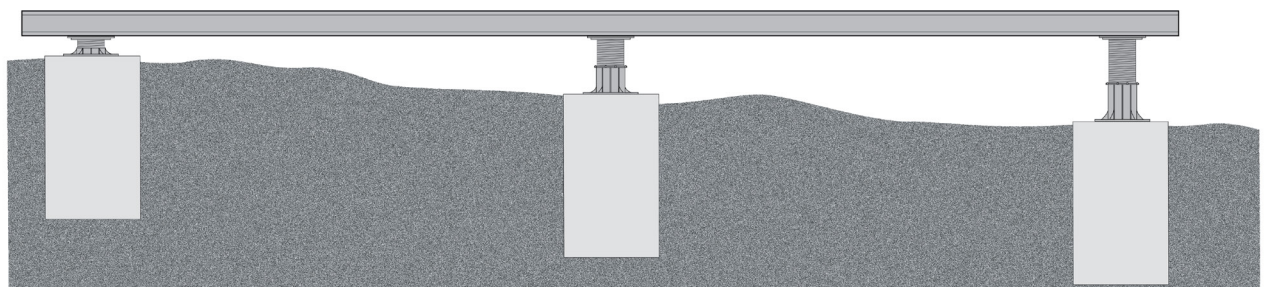
As with any building project you should ensure that the correct tools and proper protective equipment are being used. It is the responsibility of the user to follow safe practices when using any tools during the installation process. Remember that the CleverDeck Aluminium joists/bearers have sharp edges, appropriate protective equipment should be worn to protect eyes from swarf or hands from cuts and abrasions.

CleverDeck Aluminium joists/bearers should be cut with a special purpose aluminium cutting blade used in a drop saw or an angle grinder. All cutting tools used should be kept sharp.

Planned Deck Height and Ground Contours

Once the finished deck height is established it is critical to determine the slope of the ground under the deck area to ensure that the right combination of joist, bearer and pedestal sizes are provided.

The deck plan will be designed based on the different heights required due to the lay of the land across the total deck area. Measurements should be taken across and the length and width of the deck in various locations where there is uneven ground.



Deck Plan

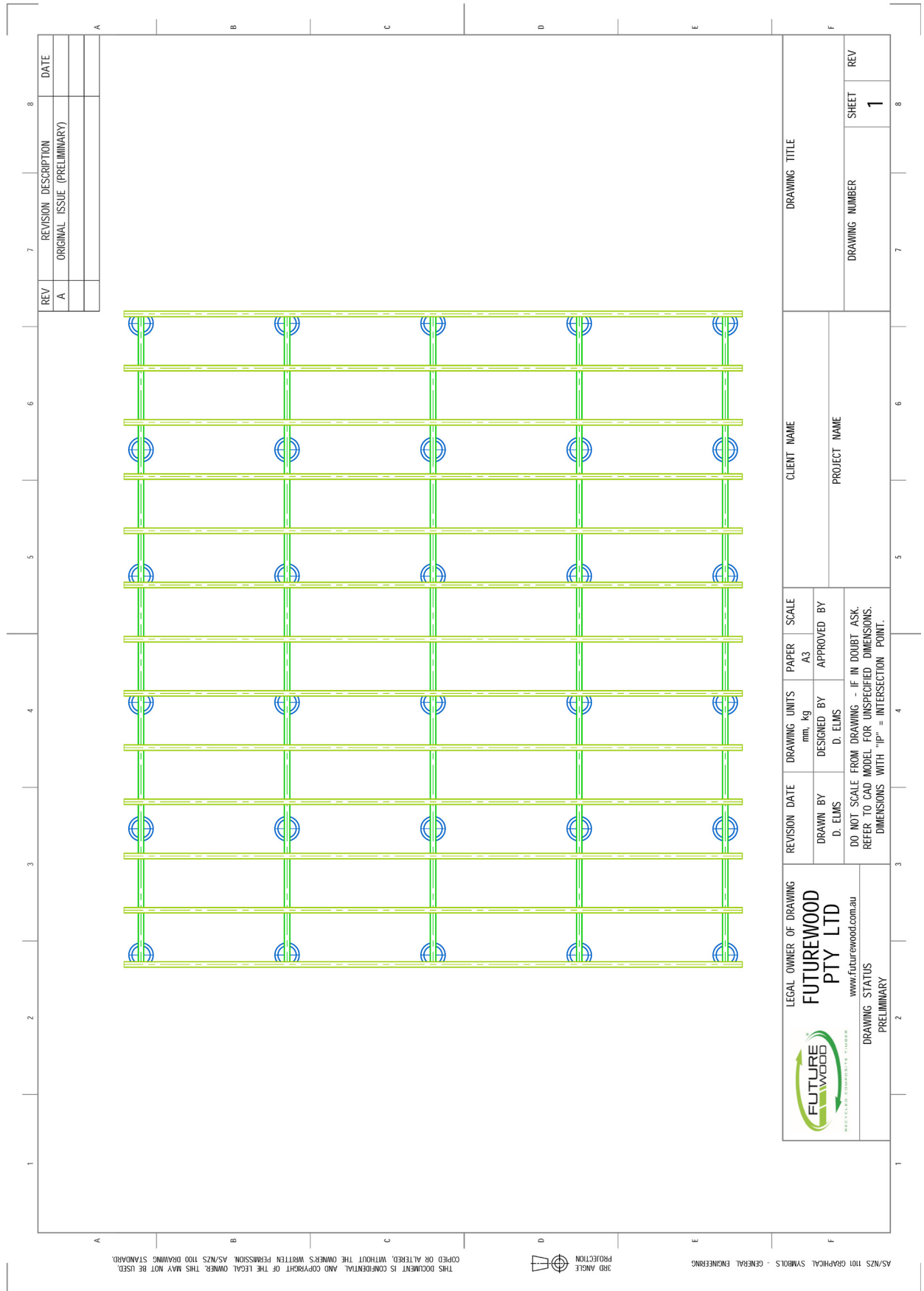
The Futurewood CleverDeck Subframe is a complete system made up of various components to suit a given deck plan. The deck plan should be designed based on the layout of the decking boards that are being fixed to the subframe so that the subframe fully supports all aspects of the deck board design.

A typical deck plan will consist of pedestals that are spaced at intervals to suit the joist or bearer that they are supporting (refer to span tables).

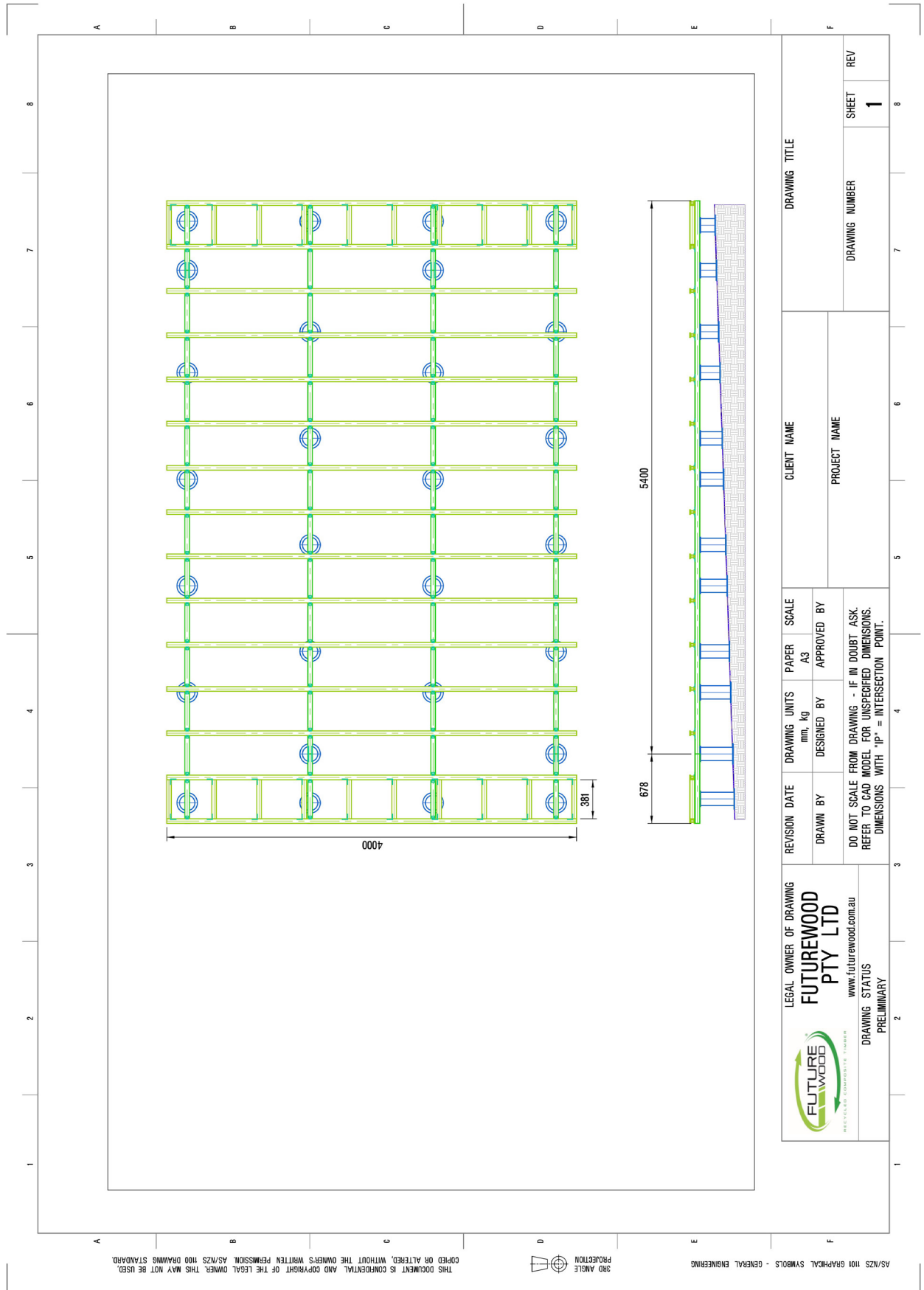
The deck plan will include all the joists, bearers, and pedestals along with any brackets, clips and screws required and will show the pedestal grid spacing and the positioning of each of the brackets/clips.

Deck plans can be certified by a licensed structural engineer for an additional cost.

This is an example of a simple 5.4m x 4.8m deck subframe.



Please note that the sample deck plan below was drawn up for a specific deck design that includes 2 breaker boards on each side of the deck, and the ground the deck is built on has a 5 degree slope. Individual deck plans can be created for each individual deck.



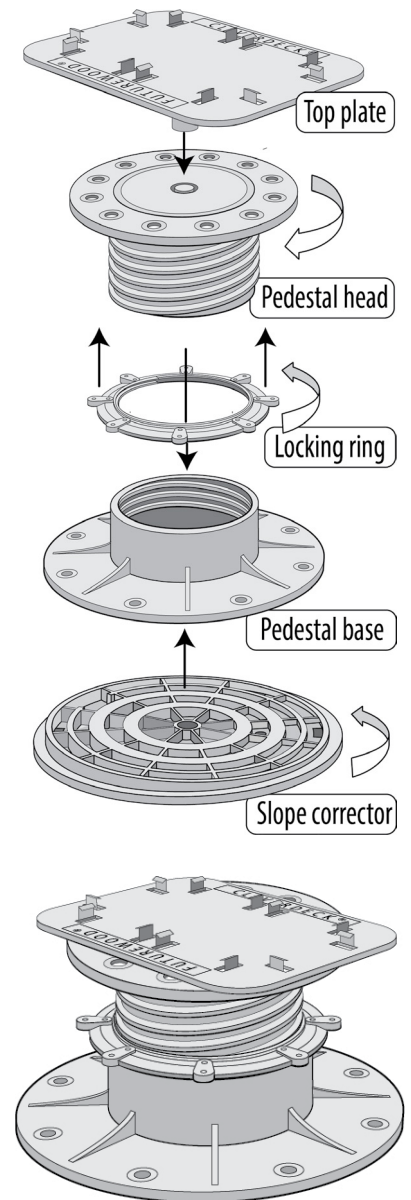
Pedestals

Standard pedestal sizes are 14-19mm, 19-30mm, 28-42mm, 40-65mm, 60-105mm, 90-185mm, 185-320mm.

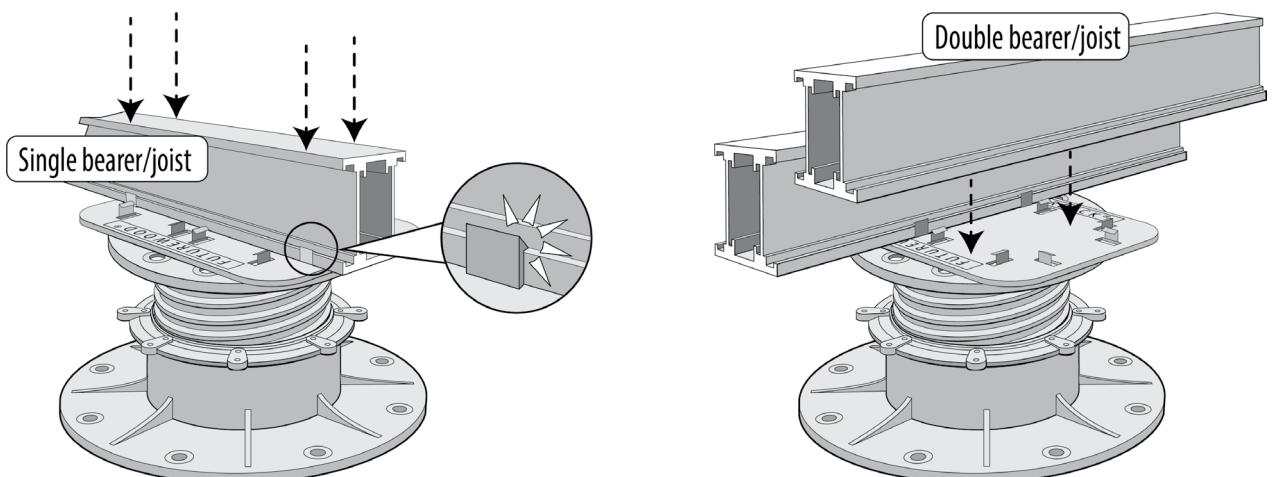
Once you establish your finished subframe height and levels you need to position the adjustable height pedestals in a grid pattern according to the subframe design/plan. Pedestals need to be positioned over an existing concrete slab or on footings that are constructed according to the local council regulations and soil conditions.

If the pedestals are being placed on an existing concrete slab that has a slope of up to 3 degrees, a slope corrector should be inserted under the pedestal base and adjusted between 0-3 degrees to level up the top of the pedestal. If the slope is greater than 3 degrees, the area under the pedestals will need to be levelled using a non-shrink structural grout.

The pedestals should be adjusted to achieve the rough height expected. The top plate should be inserted in the top of the pedestal and oriented for single or double bearer/joist use depending on your subframe plan. When using a single bearer/joist the longest side of the top plate is running in the same direction as the bearer or joist so the bearer/joist is sitting over the centre of the pedestal. For double bearer/joist use the top plate will be oriented so that the short side of the top plate is running in the direction of the bearer/joist.



Once all the pedestals are roughly in position, the bearers/joists should be lined up in the appropriate direction and pushed between the lugs on the top plate until they snap over the bottom edge of the bearer/joist. The pedestals can then be adjusted to the required height. No screws are required.



Once the joists or bearers are all in position and the correct spacing, height and levels are achieved the pedestal locking rings (if provided) should be tightened and the pedestal bases screwed to the substrate. Pedestals can also be glued in place or left unfixed so that the subframe becomes a “floating” subframe. If fixing over a waterproof membrane that cannot be punctured the subframe can be glued if an appropriate glue is used that will not damage the membrane and adheres to both the membrane and the pedestal base. The pedestals can also be left floating on the membrane.

Any gaps that are showing between the pedestal base and the substrate or the top of the pedestal and the top plate can be filled using an appropriate filler/glue.

As the pedestal bases are 200-220mm in diameter, pedestals that are positioned within 110mm of the edge of the deck will have the base of the pedestal extending past the outer edge of the deck.

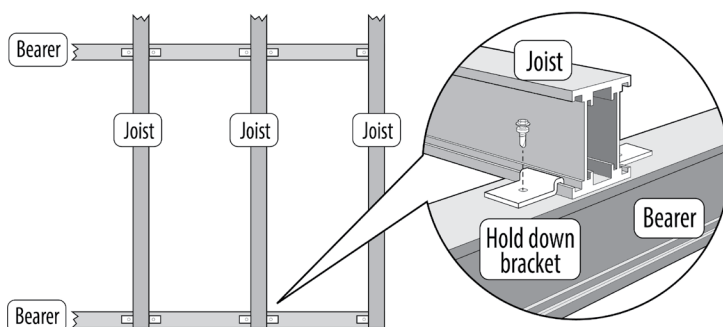
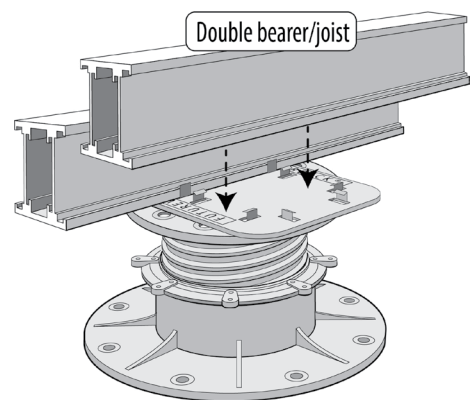
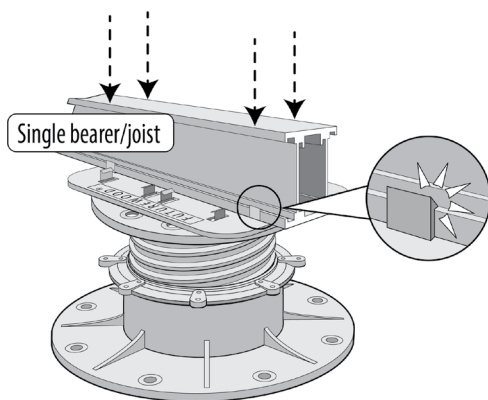
Where this is not practical as the edge of the deck is against a wall or the outer edge is being covered with base boards/fascia, a dropper should be used (refer to dropper section of the fixing guide).

Joists / Bearers

Standard joist/bearer sizes are 25mm x 45mm, 50mm x 45mm and 90mm x 45mm and all standard bearers/joists are 5400mm long. Any of the 3 profile sizes can be used as bearers/joists depending on the deck design, deck height, and the required span.

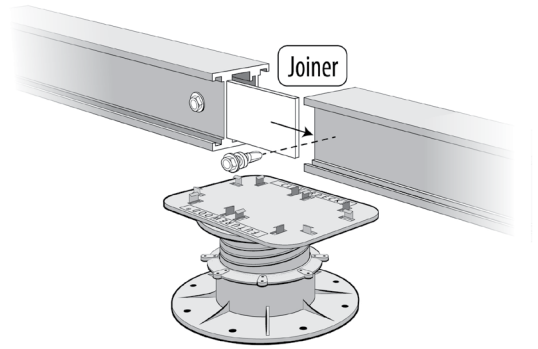
25mm joists can be fixed directly to the concrete to achieve a minimum deck height of 48mm.

The bearers/joists snap in place over the specially designed pedestal top plate.



Joists are fixed to the bearers using 2 “hold-down” brackets, one on either side of the joist, for continuous joists and 1 bracket if the joist finishes at the outside edge of a bearer.

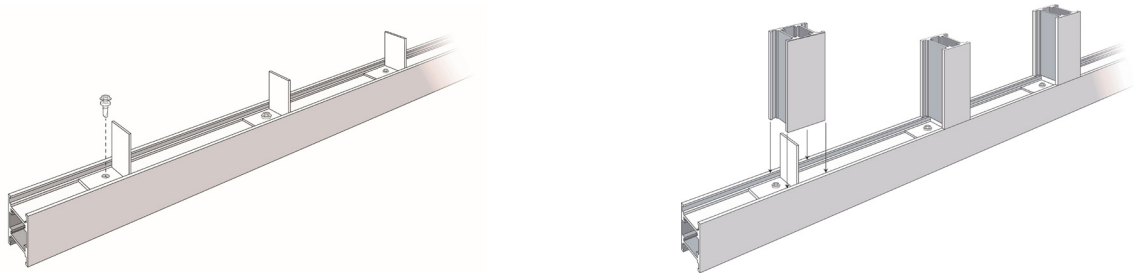
When joists need to be joined they need to be supported by a bearer or a pedestal under the join and then fixed with an aluminium joiner inside the joist using 2 screws per joiner. The joiners should be centred between the 2 joists and are designed to be fixed between the lugs and the wall of the joist, on the inside of the joist.



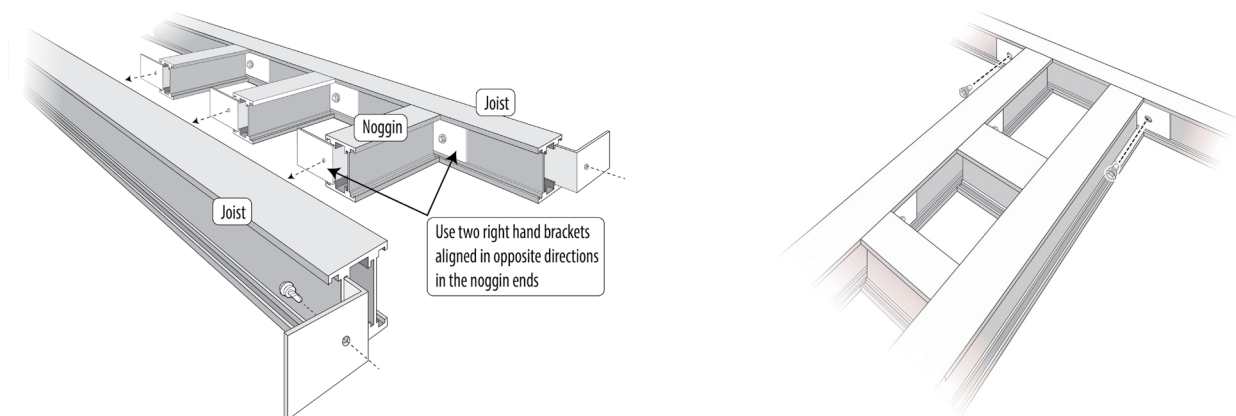
Where bearers need to be joined they need to be supported by a pedestal under the join, and then fixed with an aluminium joiner, centred between the two bearers on the inside the joist using 2 screws per joiner (for 90mm bearers use two joiners inside each bearer with one joiner in the upper position on one side of the bearer and in the lower position on the other side). The joiners are designed to be fixed between the lugs and the wall of the bearer, on the inside of the bearer.

In some instances where there is a cantilever at one end of the joist/bearer two joiners may be required (refer to deck plan).

Noggins fixed between joists can be used to support breaker boards and edge boards by making a “ladder joist”, rather than using 3 or 4 full length joists that are positioned close together.



When using one bracket at each end of the noggin the brackets should be oriented so that they are on opposite sides of the noggin at each end.

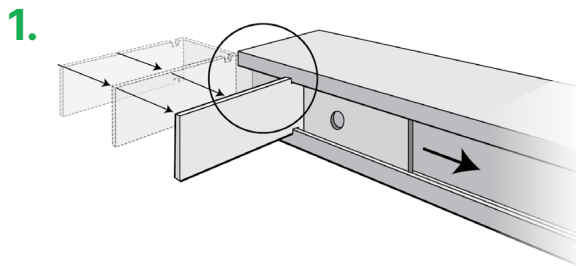


Depending on the deck design two brackets per noggin may be required (refer to specific deck plan). The ladder joist or full length joists will need to be supported by pedestals or droppers that are spaced according to the span tables.

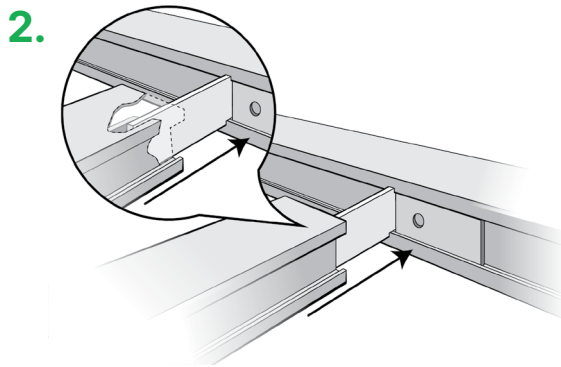
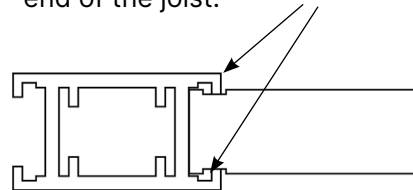
Where noggins or perimeter joists need to be attached to joists, they are fixed with a right-angle bracket.

The 25mm joist has a specific right-angle bracket with notches on one side of the bracket and a screw hole on the other side. This screw hole side of the bracket slides into place along one joist. The perpendicular joist slides over the other end of the bracket.

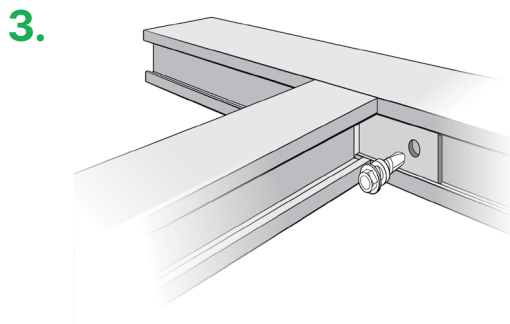
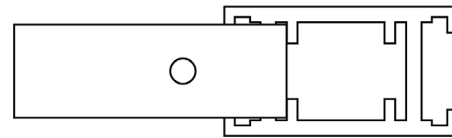
The screw hole side of the bracket is fixed in the recess on the outside wall of the joist. Care must be taken to make sure there is no swarf or other material caught between the back of the bracket and the joist wall so that the bracket sits flush against the joist wall and securely in the recess of the joist before it is screwed in place.



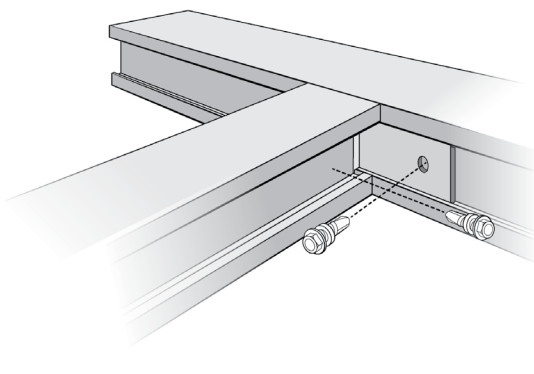
Slide notched bracket through lugs in the end of the joist.



Push the perpendicular joist over the bracket between the inner lugs of the joist.

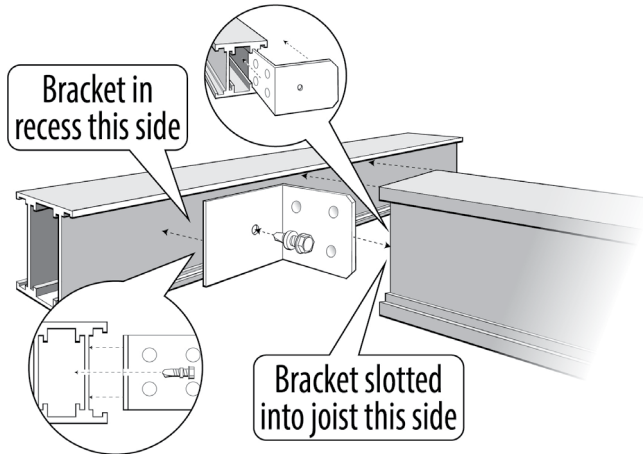


When in the desired position, secure the bracket in place with the Hex screw.



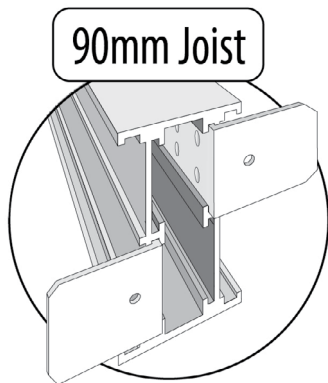
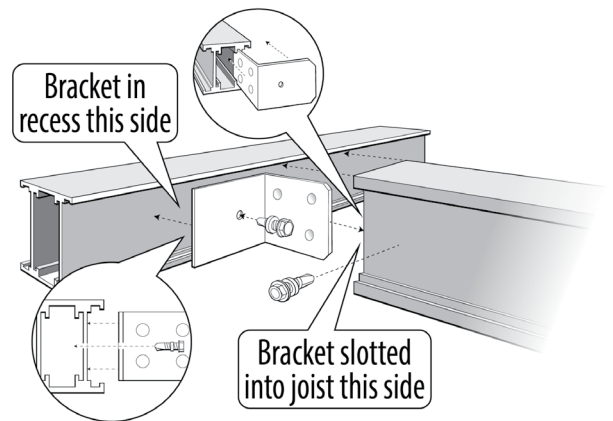
No screw is required for the side of the bracket that fits inside the joist if the perpendicular joist/noggin is fixed at the other end. If the perpendicular joist is not fixed at the other end, then a second screw should be fixed through the wall of the joist to secure the other side of the bracket within the joist.

The 50mm and the 90mm joist use the same right-angle bracket. The bracket has a screw hole on one side of the bracket, this side of the bracket is fixed in the recess on the outside wall of the joist. Care must be taken to make sure there is no swarf or other material caught between the back of the bracket and the joist wall so that the bracket sits flush against the joist wall and securely in the recess of the joist before it is screwed in place. The other side of the bracket is inserted inside the perpendicular joist between the side wall and the locating lug. The raised dimples on this face of the bracket are designed to go against the side wall of the joist to create a tight, interference fit.



Only 1 bracket per join is required to fix a 50mm joist to a 50mm joist for most residential deck loadings. Depending on the deck design two brackets may be required in some circumstances (refer to the specific deck plan for more details).

No screw is required for the side of the bracket that fits inside the joist if the perpendicular joist/noggin is fixed at the other end. If the perpendicular joist is not fixed at the other end, then a second screw should be fixed through the wall of the joist to secure the other side of the bracket within the joist.



90mm joists attaching to other 90mm joists should use 2 right-angle brackets with one bracket in the upper position on one side of the joist and in the lower position on the other side.

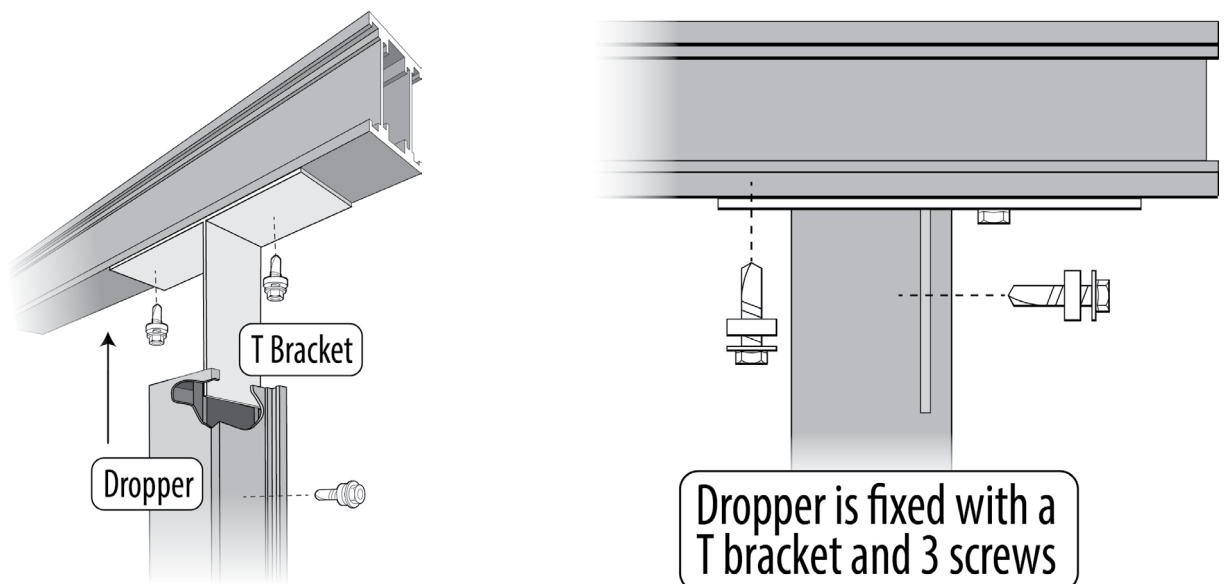
The bracket end without the screw hole should be inserted into the joist/noggin before fixing either side of the bracket so that the position of the outside screw is marked correctly.

Droppers

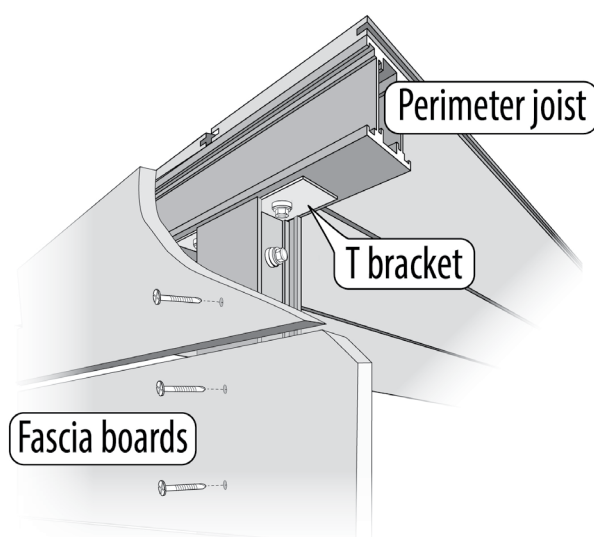
Droppers are used on the outside edge of a deck in place of pedestals if the pedestal base position would mean that it protrudes past the deck edge when fascia boards or base boards are being fitted to the vertical underside edge of the deck or the deck butts against a wall.

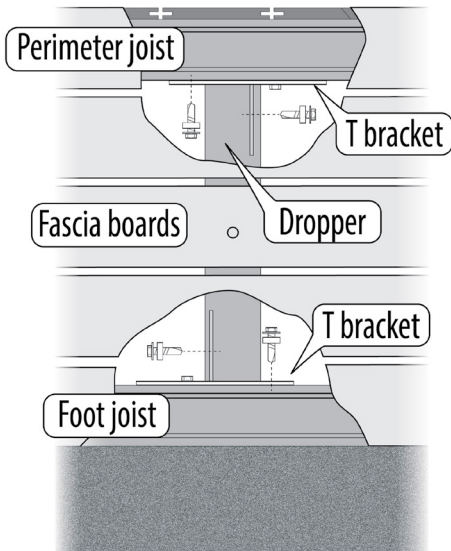
If droppers are used to support a ladder joist or deck edge they will need to be spaced according to the span tables. If droppers are not used then secondary cantilevered members may be required to provide the necessary support for the deck edge.

The dropper is fixed under the deck joist or bearer using a "T" clip. The "T" clip is fixed in place with 2 screws and the dropper slides up over the bottom of the "T" bracket and is fixed in place with one screw.



The dropper is also used as the frame to fix multiple fascia/base boards to.



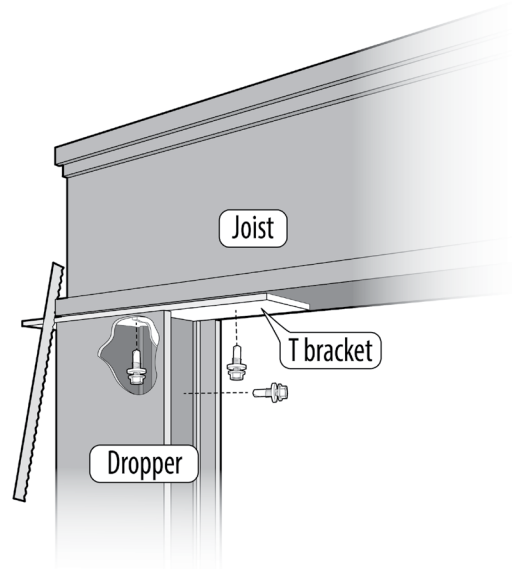
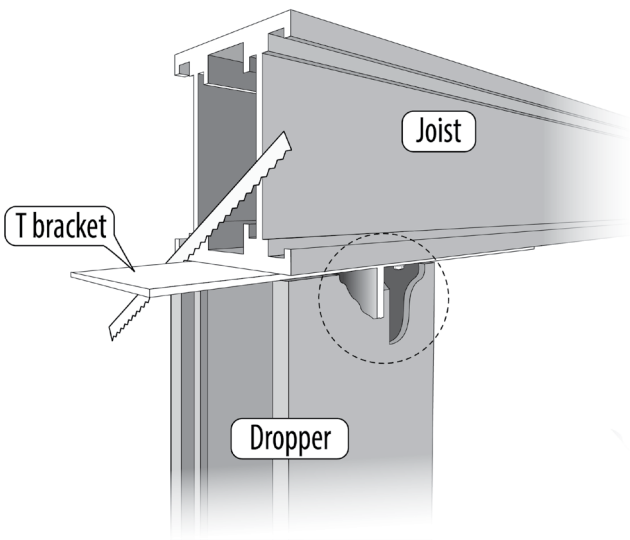


Droppers can also be used in place of a pedestal if the deck design requires no cantilever at the deck edge or to support cantilevers with a single back span configuration with no fixing/anchorage to the back span to prevent tip over.

A short section of joist can be used as a “foot” and attached to the bottom of the dropper if required.

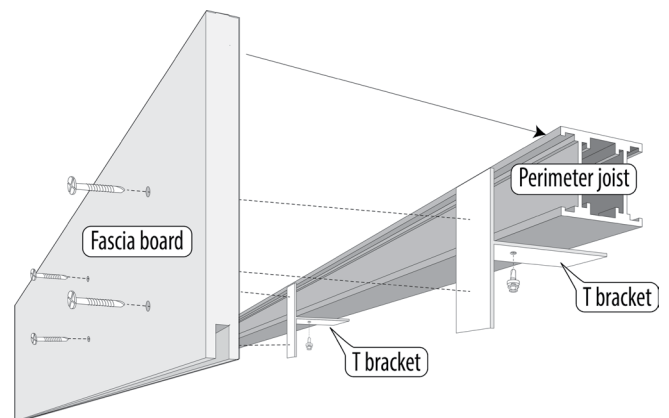
Droppers are fixed to the underside of the perimeter joist with a “T” bracket using 3 screws. The “foot” is also fixed to the dropper with a “T” bracket using 3 screws.

When the dropper is fixed to the end of a joist the “T” bracket is used and the protruding section of one side of the “T” is cut off. The “T” bracket is fixed using 3 screws. Care should be taken with the position of the screw that the dropper slides over so that the head of the screw fits within the hollow section of the dropper.



Fascias

The “T” bracket can be fixed to the underside of the perimeter joist with one screw to provide a support for fixing a single fascia board to the deck frame.



Steps

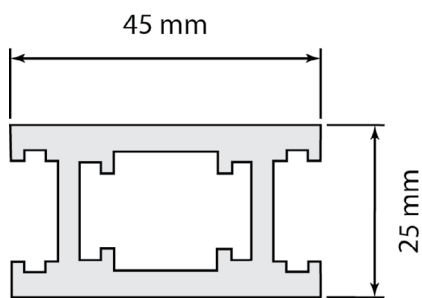
Please contact Futurewood for advice on how to build a frame for steps.

Balustrades

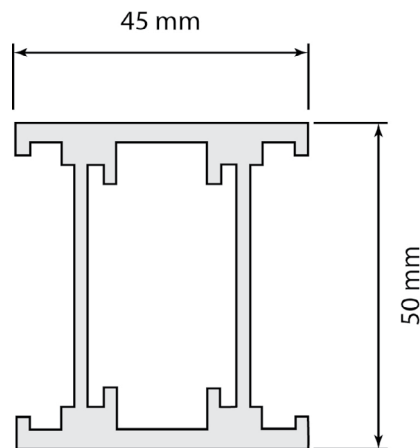
The Futurewood Aluminium Deck Frame System is not designed to support balustrades. Any balustrade design should be designed in conjunction with an engineer and would need to be supported from the ground up.

Futurewood Proprietary Aluminium Joist/Bearer Span Tables

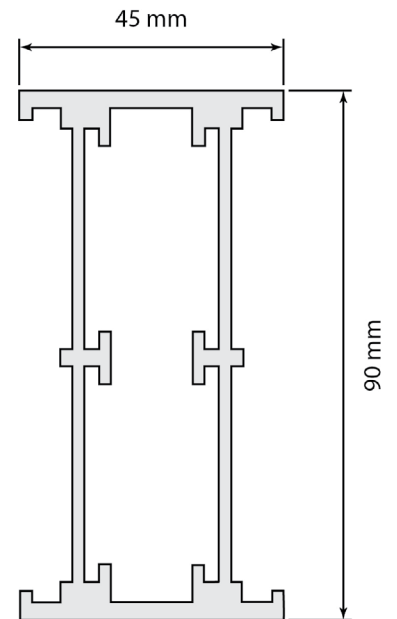
Appendix #01



25 X 45 SECTION



50 X 45 SECTION



90 X 45 SECTION

GENERAL NOTES:

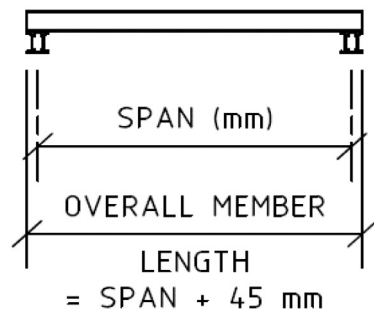
1. 6063-T6 Alloy and temper to all aluminium joist / bearer member material U.N.O
2. Span Tables (V1- June 2024) prepared and designed in accordance with AS1170.0; AS1170.1; AS1664.1 by Coulthard Shim Pty. Ltd.
3. Joists & bearers are to be used in conjunction with Futurewood's proprietary decking board system, brackets, splice, clip connectors and pedestal accessories U.N.O.
4. Span tables are based on all joists / bearers bending about the axis which is perpendicular to the web.
5. Span tables are based on the assumption that joists are fully supported by bearers or pedestals U.N.O.
6. Span tables are based on the assumption that bearers are fully supported by pedestals or stumps by others U.N.O.
7. Span Tables are for general use and information only and are not a substitute for professional engineering advice.
8. Copyright, design registrations and patents apply to these products and all related brochure / technical data.

Residential Loads (Design Live Load, Q = 2.0kPa / 1.8kN)

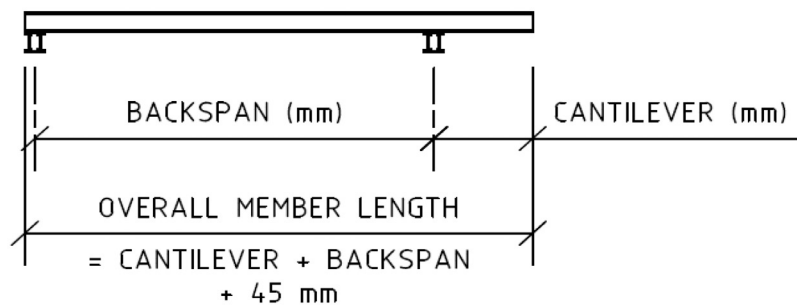
Joist Section Type	Max. Joist Spacing (mm)	
		450
Single Span	Max. Joist Span (mm)	Max. Cantilever (mm)
25 × 45	500	-
50 × 45	1100	225
90 × 45	1800	400

Bearer Section Type	Max. Bearer Spacing (mm)				Max. Cantilever (mm)
		600	1200	1500	
Single Span	Max. Bearer Span (mm)				Max. Cantilever (mm)
25 × 45	500	-	-	-	-
50 × 45	1100*	1100*	1100	1000	225
90 × 45	1800*	1800	1700	1600	400

Single Span



Cantilever



NOTES:

1. Table assumes max. decking mass of 27 kg/m² for joist members and combined decking and joist mass of 31 kg/m² for bearer members.
2. Serviceability deflection limit based on span/300.
3. Uniformly distributed and concentrated live loads not applied simultaneously.
4. Concentrated live load, **Q=1.8kN** is applied at midspan
5. Vibration check is based on < 2mm deflection when member is subjected to 1kN concentrated load applied at midspan.
6. Top of member is fully restrained by proprietary fixing to each side of decking boards for joist members.
7. Top of member is fully restrained by each joist via proprietary fixing for bearer members.
8. * Denotes max. bearer span is limited by serviceability and/or vibration limits.

NOTES FOR CANTILEVERS:

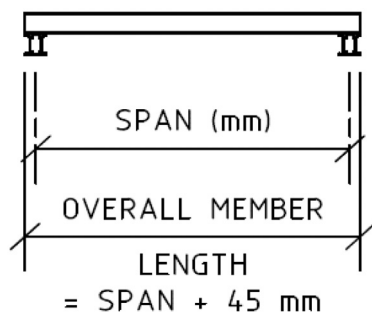
1. A min. backspan of 4 times the cantilevered length is required for all cantilevered members
2. Serviceability deflection limit based on < 5mm max. for cantilevers.
3. Backspan to all cantilevered members are to be positively fixed/secured/anchored for a single backspan configuration, otherwise a fascia board dropper shall be provided to directly support cantilevered ends for stability (to prevent tip-over).

Commercial Loads (Design Live Load, Q = 5.0kPa / 4.5kN)

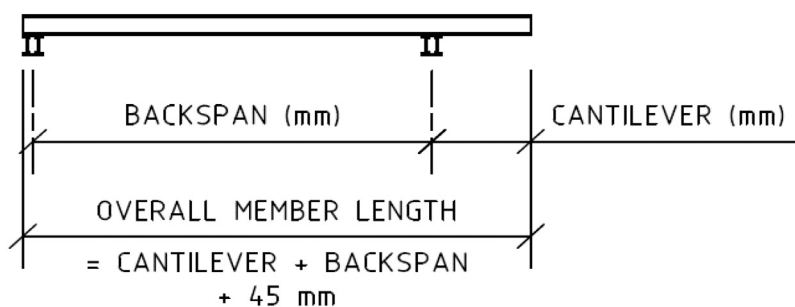
Joist Section Type	Max. Joist Spacing (mm)	
		450
Single Span	Max. Joist Span (mm)	Max. Cantilever (mm)
50 × 45	750	180
90 × 45	1500	320

Bearer Section Type	Max. Bearer Spacing (mm)					Max. Cantilever (mm)
		750	900	1200	1500	
Single Span	Max. Bearer Span (mm)					Max. Cantilever (mm)
50 × 45	750	-	-	-	-	180
90 × 45	1500	1450	1350	1250**	1200**	320

Single Span



Cantilever



NOTES:

1. Table assumes max. decking mass of 27 kg/m² for joist members and combined decking and joist mass of 31 kg/m² for bearer members.
2. Serviceability deflection limit based on span/300.
3. Uniformly distributed and concentrated live loads not applied simultaneously.
4. Concentrated live load, **Q=4.5kN** is applied at midspan
5. Vibration check is based on < 2mm deflection when member is subjected to 1kN concentrated load applied at midspan.
6. Top of member is fully restrained by proprietary fixing to each side of decking boards for joist members.
7. Top of member is fully restrained by each joist via proprietary fixing for bearer members.

NOTES FOR CANTILEVERS:

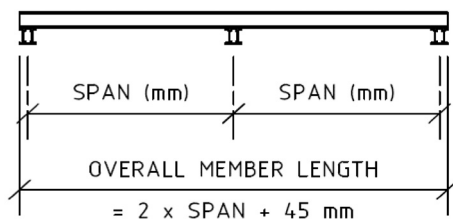
1. A min. backspan of 4 times the cantilevered length is required for all cantilevered members.
2. Serviceability deflection limit based on < 5mm max. for cantilevers.
3. Backspan to all cantilevered members are to be positively fixed/secured/anchored for a single backspan configuration, otherwise a fascia board dropper shall be provided to directly support cantilevered ends for stability (to prevent tip-over).
4. ** Cantilever to be limited to 300mm max.

Residential Loads (Design Live Load, Q = 2.0kPa / 1.8kN)

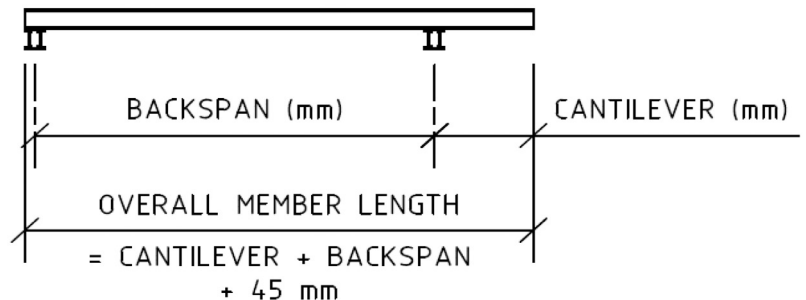
Joist Section Type	Max. Joist Spacing (mm)	
		450
Continuous Span	Max. Joist Span (mm)	Max. Cantilever (mm)
25 × 45	600	-
50 × 45	1200	225
90 × 45	1800	400

Bearer Section Type	Max. Bearer Spacing (mm)	
		600
Continuous Span	Max. Bearer Span (mm)	Max. Cantilever (mm)
25 × 45	600	-
50 × 45	1200*	1200
90 × 45	1800*	1800

Continuous Span



Cantilever



NOTES:

1. Table assumes max. decking mass of 27 kg/m² for joist members and combined decking and joist mass of 31 kg/m² for bearer members.
2. Serviceability deflection limit based on span/300.
3. Uniformly distributed and concentrated live loads not applied simultaneously.
4. Concentrated live load, **Q=1.8kN** is applied at midspan
5. Vibration check is based on < 2mm deflection when member is subjected to 1kN concentrated load applied at midspan.
6. Top of member is fully restrained by proprietary fixing to each side of decking boards for joist members.
7. Top of member is fully restrained by each joist via proprietary fixing for bearer members.
8. * Denotes max. bearer span is limited by serviceability and/or vibration limits.
9. Table assumes two (2) spans minimum (i.e. Three (3) permanent supports).
10. Ratio between adjacent spans shall be no more than 1.05 and no less than 1.00.

NOTES FOR CANTILEVERS:

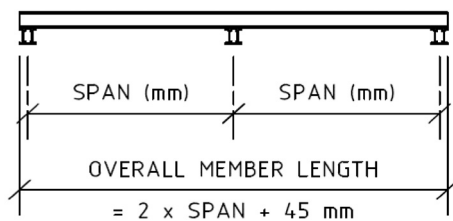
1. A min. backspan of 4 times the cantilevered length is required for all cantilevered members.
2. Serviceability deflection limit based on < 5mm max. for cantilevers.
3. Backspan to all cantilevered members are to be positively fixed/secured/anchored for a single backspan configuration, otherwise a fascia board dropper shall be provided to directly support cantilevered ends for stability (to prevent tip-over).

Commercial Loads (Design Live Load, Q = 5.0kPa / 4.5kN)

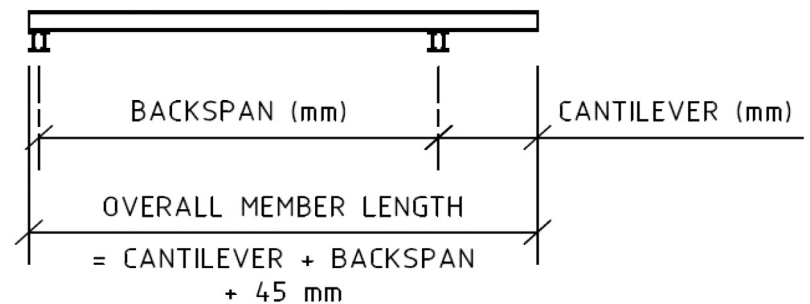
Joist Section Type	Max. Joist Spacing (mm)	
		450
Continuous Span	Max. Joist Span (mm)	Max. Cantilever (mm)
50 × 45	750	180
90 × 45	1800	320

Bearer Section Type	Max. Bearer Spacing (mm)					Max. Cantilever (mm)
		750	900	1200	1500	
Continuous Span	Max. Bearer Span (mm)					Max. Cantilever (mm)
50 × 45	900	850	800	750	-	180
90 × 45	1750	1700	1500	1350	1250**	320

Continuous Span



Cantilever



NOTES:

1. Table assumes max. decking mass of 27 kg/m² for joist members and combined decking and joist mass of 31 kg/m² for bearer members.
2. Serviceability deflection limit based on span/300.
3. Uniformly distributed and concentrated live loads not applied simultaneously.
4. Concentrated live load, **Q=4.5kN** is applied at midspan.
5. Vibration check is based on < 2mm deflection when member is subjected to 1kN concentrated load applied at midspan.
6. Top of member is fully restrained by proprietary fixing to each side of decking boards for joist members.
7. Top of member is fully restrained by each joist via proprietary fixing for bearer members.
8. Table assumes two (2) spans minimum (i.e. Three (3) permanent supports).
9. Ratio between adjacent spans shall be no more than 1.05 and no less than 1.00.

NOTES FOR CANTILEVERS:

1. A min. backspan of 4 times the cantilevered length is required for all cantilevered members.
2. Serviceability deflection limit based on < 5mm max. for cantilevers.
3. Backspan to all cantilevered members are to be positively fixed/secured/anchored for a single backspan configuration, otherwise a fascia board dropper shall be provided to directly support cantilevered ends for stability (to prevent tip-over).
4. ** Cantilever to be limited to 300mm max.

- Design and construction is to be strictly based on deck loads only, not to support balustrade, screen posts, fences, pergolas or line loads from load bearing walls etc.
- Regulations regarding the deck installation may vary from council to council and it is the responsibility of the property owner to make sure that any permits and specific building requirements are adhered to.
- These guidelines are for guidance only and do not overrule existing, relevant building codes.

For further information regarding CleverDeck Aluminium Deck Frame System, please visit the Futurewood website or contact the Futurewood Customer Service Team via email at info@futurewood.com.au. This entire document is protected by copyright.

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