NPWS CAMPING PLATFORMS

Guidelines & Construction Package

JANUARY 2015

prepare for

NSW National Parks and Wildlife Service

prepare by

Environmental Partnership
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DRAWING SCHEDULE

No	Drawings	Issue
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Parks Tasmania - Overland Track

Typical sizes: typically 4 x 6m for single tent but sizes were custom to suit sites including 4x3m, 4x5m for single and 5x5m, 5x6m for double tent decks

Materials: treated pine supports and decking

Fixing of tents:
- stainless steel cables attached to side of deck
- screws into side of decking board (usually at edge of deck)

Comments:
- first developed by Parks in the late 1990s after experimenting with compacted gravel and interlocking rubber matting
- intended to define spaces and reduce impacts
- shape is typically rectangular but sometimes 5 sided shapes are used
- stainless steel plate for stove
- often incorporated paths / decks to camping platform
- aside from being not overly environmentally friendly, the treated pine decking is subject to cupping which can channel water under tents when it is raining
- planned improvements to the design will consider better tent attachments and composite decking

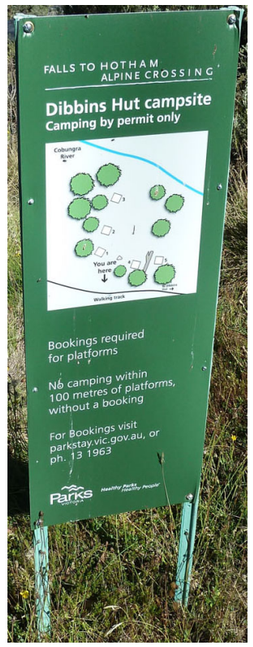
Park Victoria - Falls to Hotham Alpine Crossing

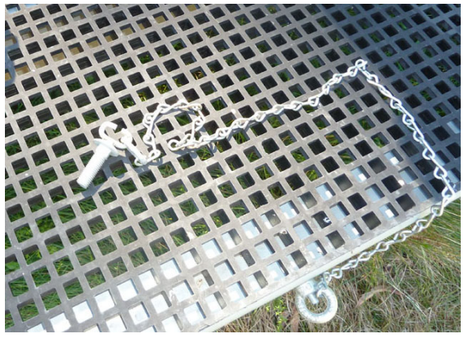
Typical sizes: 4 x 6m (approx)

Materials: galvanised steel supports with mini mesh deck (no grit)

Fixing of tents: bolts through deck to peg out tent, tie off to loops on side

Comments:
- designed for snow loads
- doesn't integrate well with the natural environment but could look better if the deck overhung the edge of the platform
- utilises stainless steel plate for stove



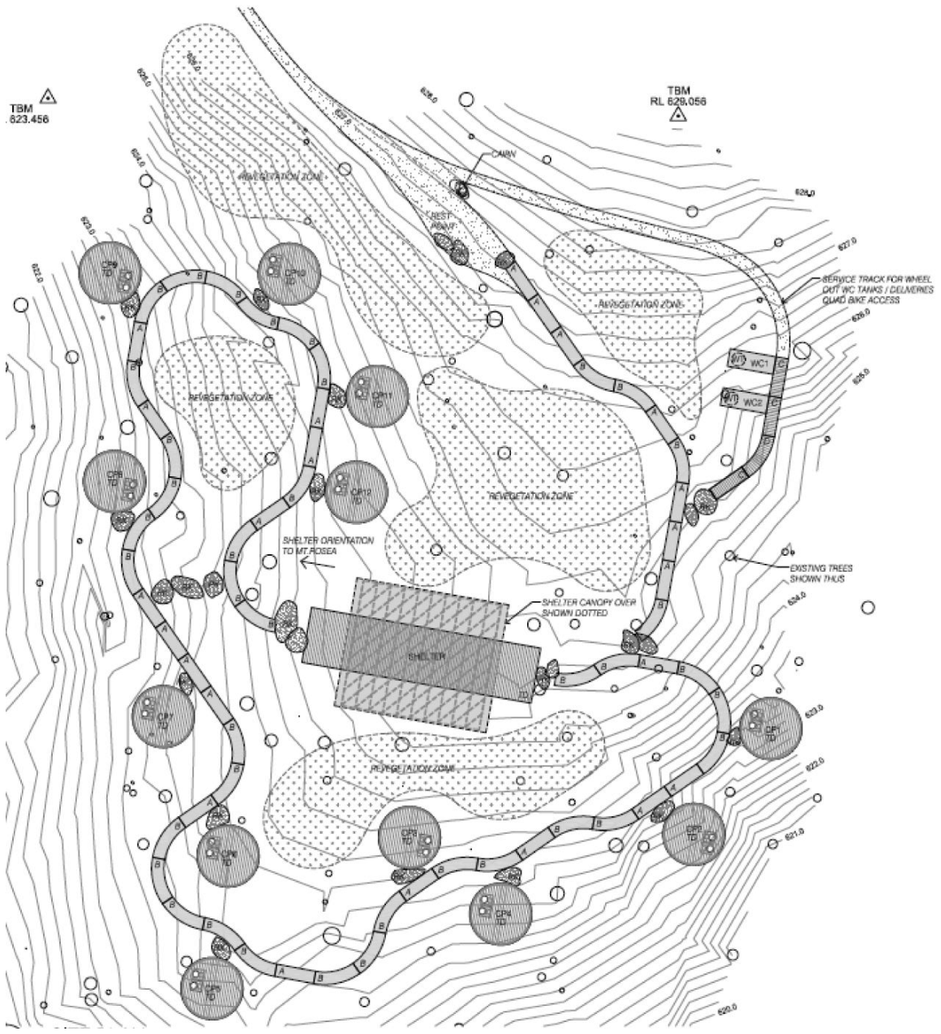


Typical sizes: 4m Ø

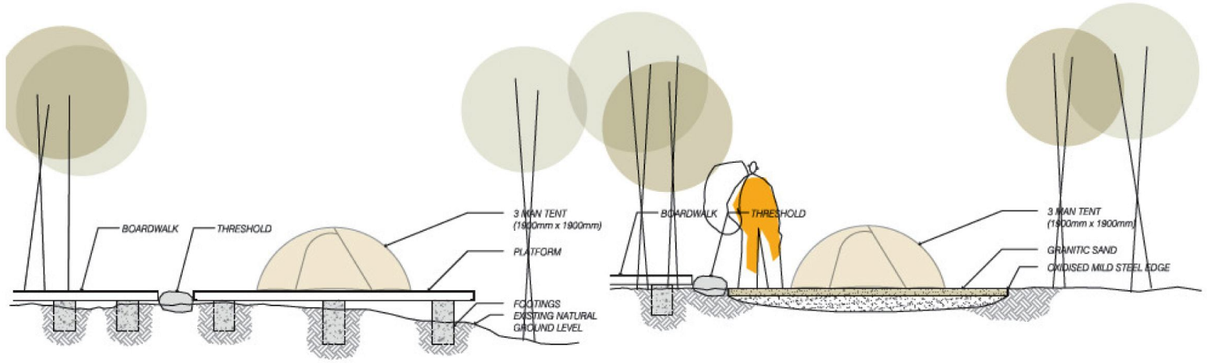
Materials: granite gravel or timber platforms

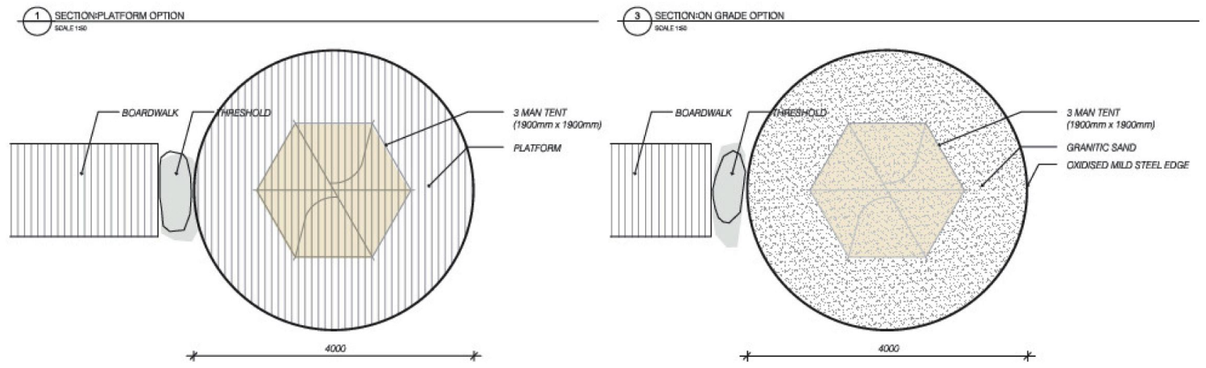
Fixing of tents: unknown

Comments: round shape is more diffiult to construct and wastes material - less environmentally sustainable

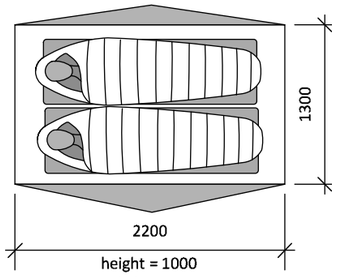


camp site - a place to pitch a tent / lay a swag
a controlled zone which is clearly delineated and defined to reduce camp site 'creep'
and therefore minimising impact on the park

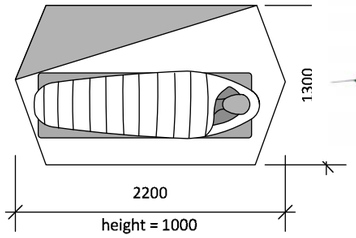




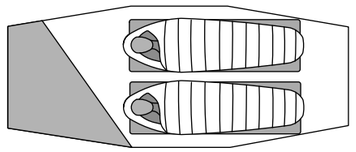
Popular Hiking Tents



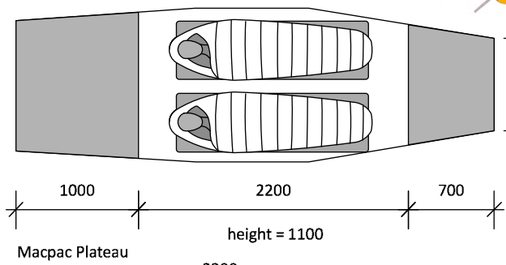
Macpac Macrolight



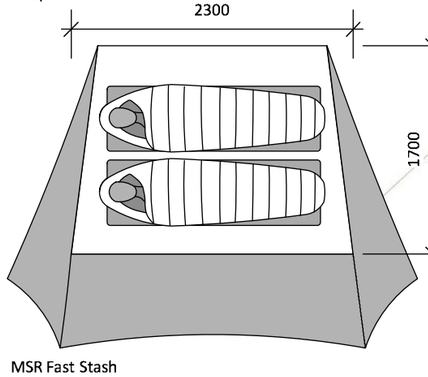
Macpac Microlight



Macpac Minaret

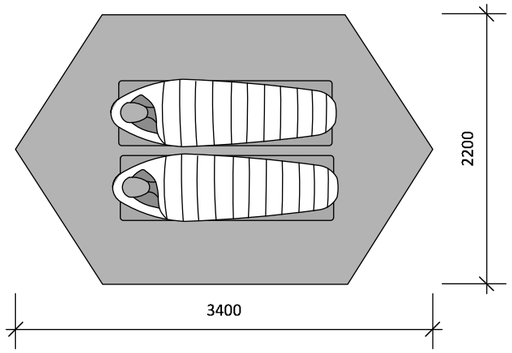


Macpac Plateau

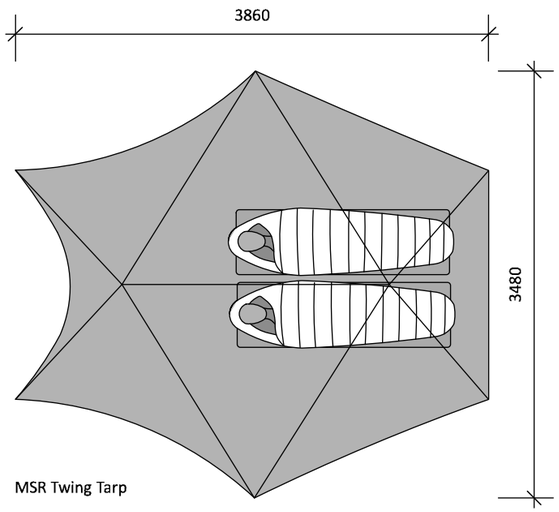


MSR Fast Stash

Popular Hiking Tarps

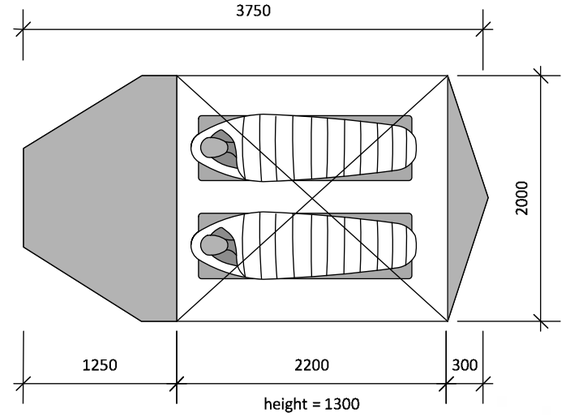


MSR E-wing Tarp

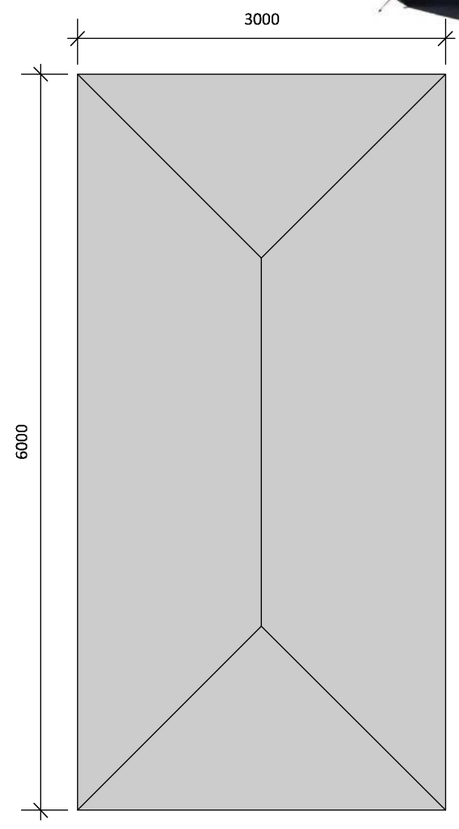


MSR Twing Tarp

Coastal Track Tour Operator Equipment



Black Wolf Tenami 3EV (used by Coastal Track Tour Operator)



3x6m Gazabo (used by Coastal Track Tour Operator)

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TITLE
Background/Spatial Requirements

NPWS Camping Platforms
design development

SCALE
1:50 at @ A3

DRAWING
3353.B03

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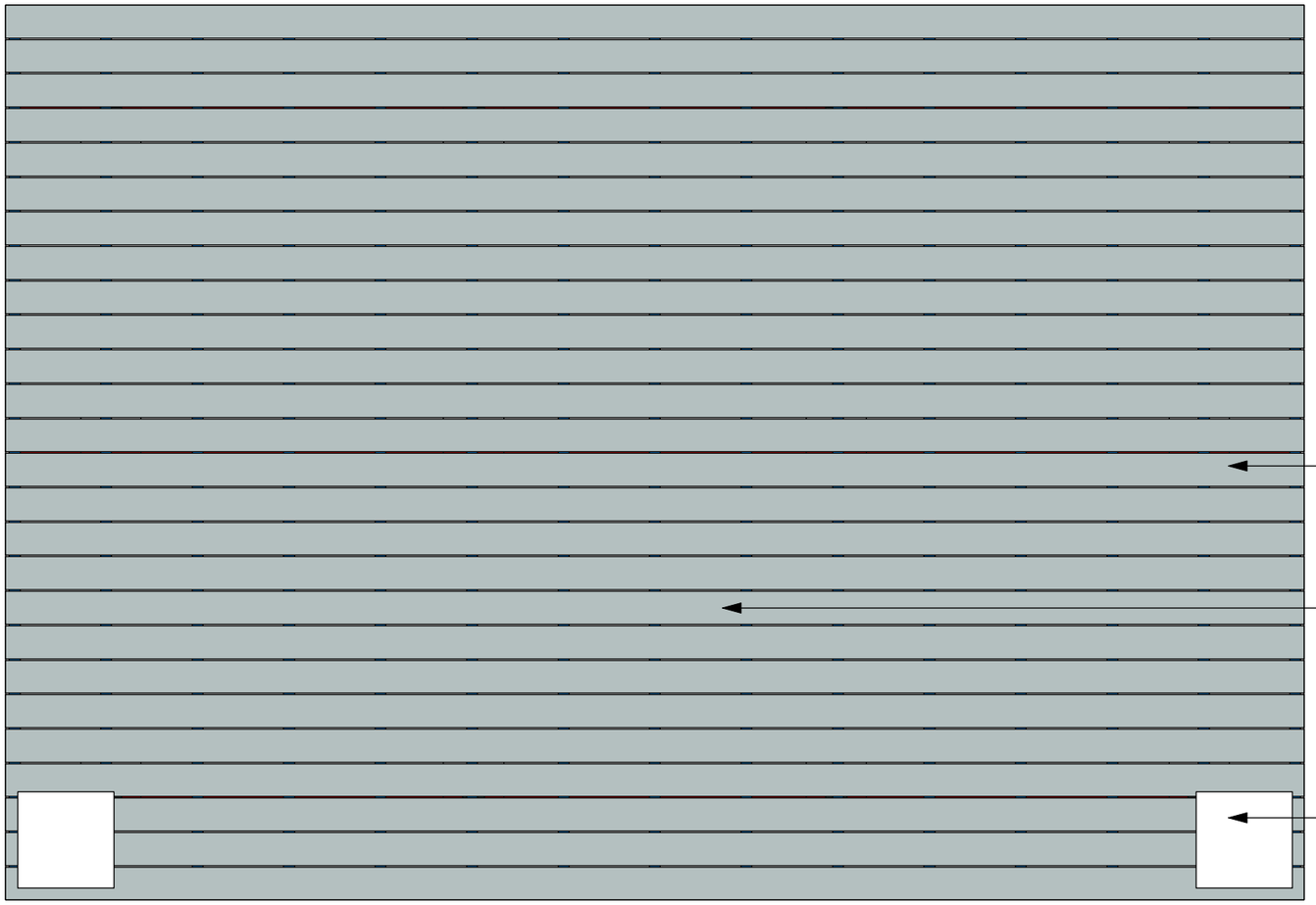
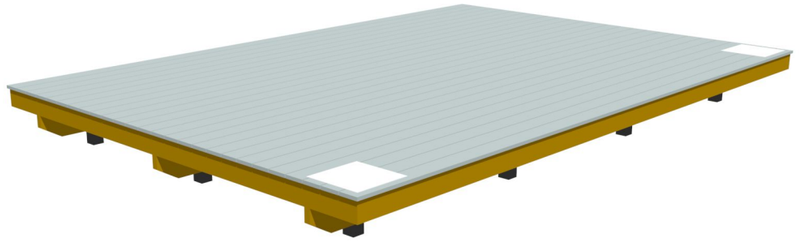




Decking boards
- Composite decking eg. Modwood; or
- Native hardwood timber

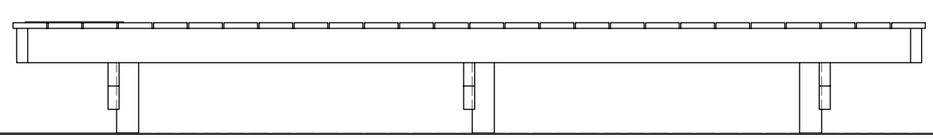
Tent attachment
- Tie offs around edges
- Peg holes drilled in decking boards
- Tent peg webbing through deck boards gap
- Refer drawing G06

Cooking plate
- 400x400x3 G316 stainless steel stove pad to prevent damage to deck while cooking

PLAN
1:25@A3

Structural support system
- Two options refer G03:
- Joist on bearer design (shown below)
- Joist hanger design

FRONT ELEVATION
1:25@A3



SIDE ELEVATION
1:25@A3

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SCALE
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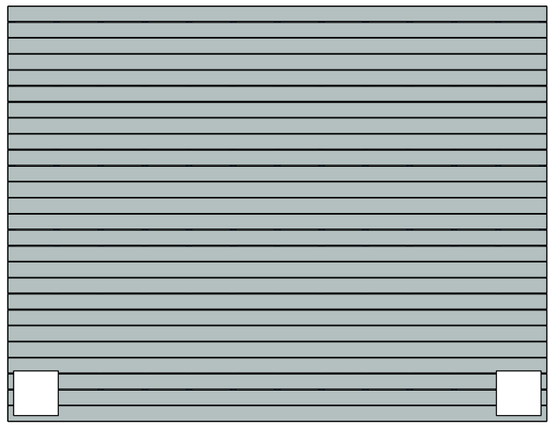
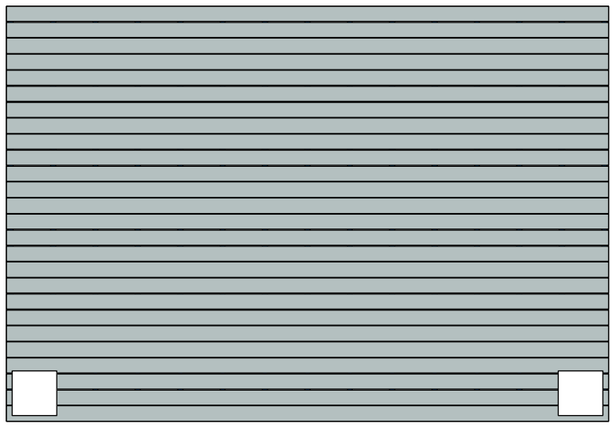
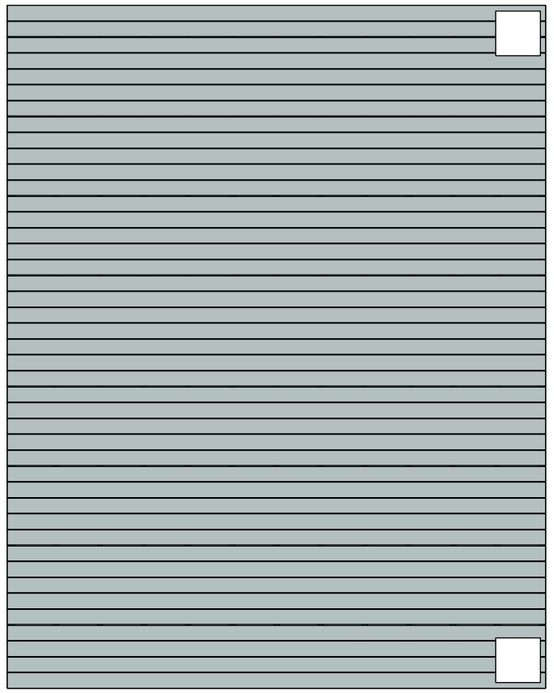
Size Options



Small 4.8 x 3.6
- Suitable for one large or two small hiker tents
- Small size integrates best with enclosed spaces
- Some wastage of Modwood decking which comes in 5.4m lengths



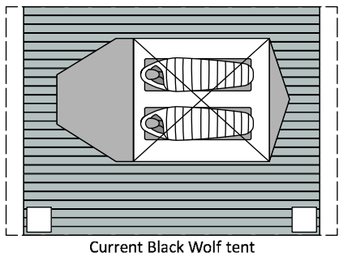
Medium 5.4 x 3.6
- Suitable for two hiker tents
- Similar cost to small size
- No wasted materials



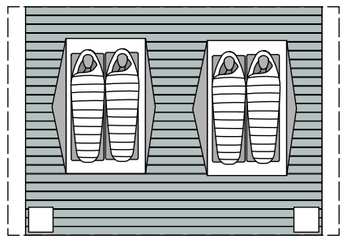
Large 6.0 x 4.8
- Suitable for two loarge or three small hiker tents
- Also suitable for guided tour gazebo and potential standing camp accommodation

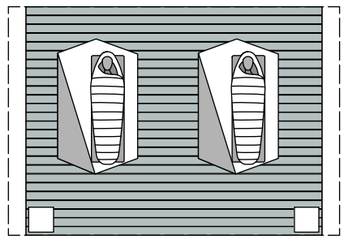
Tent Arragements

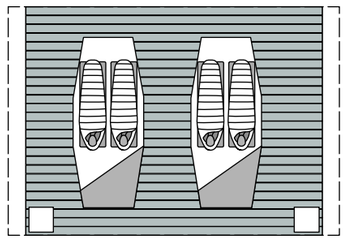
Small / Medium Platforms

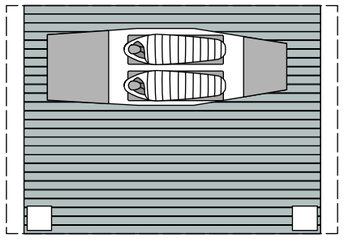


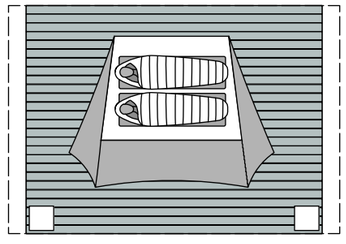
Current Black Wolf tent model used by operator



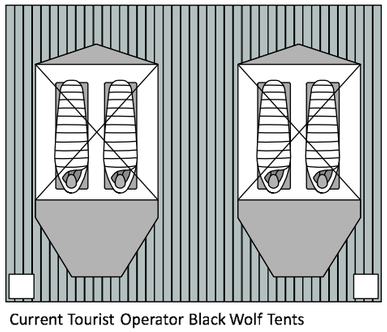




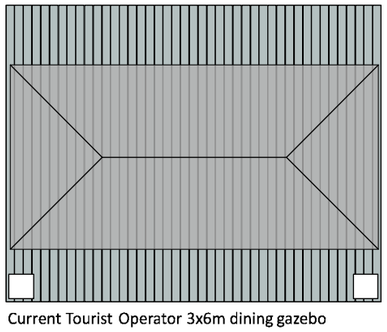




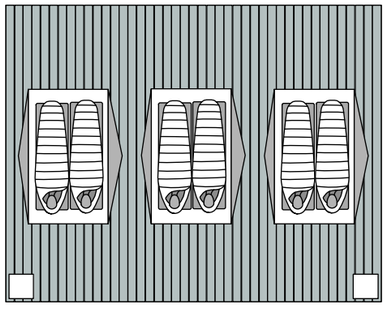
Large Platforms

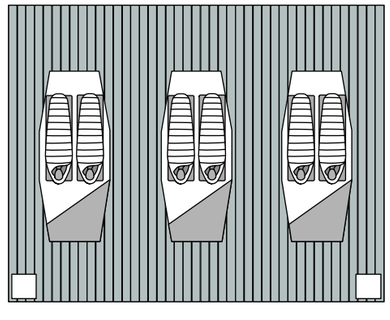


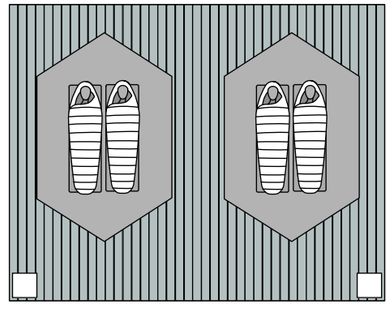
Current Tourist Operator Black Wolf Tents



Current Tourist Operator 3x6m dining gazebo







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II

SCALE
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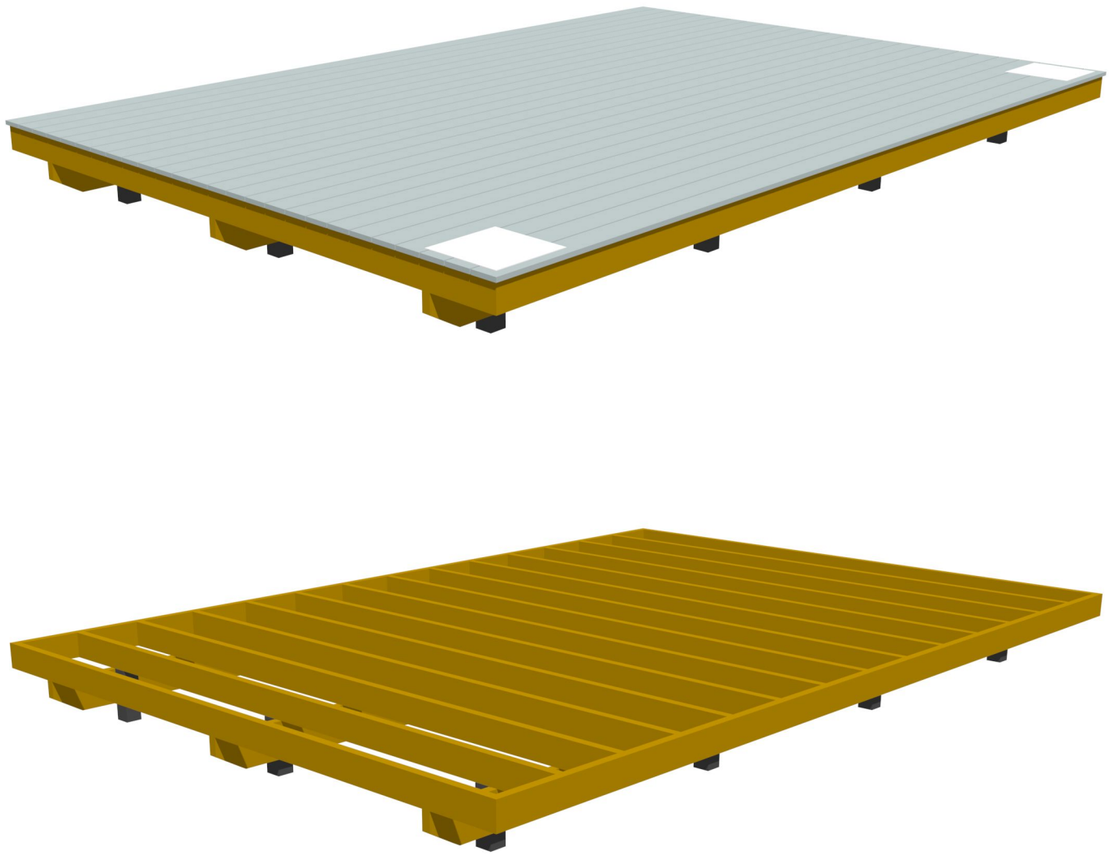
Joist on Bearer Structure



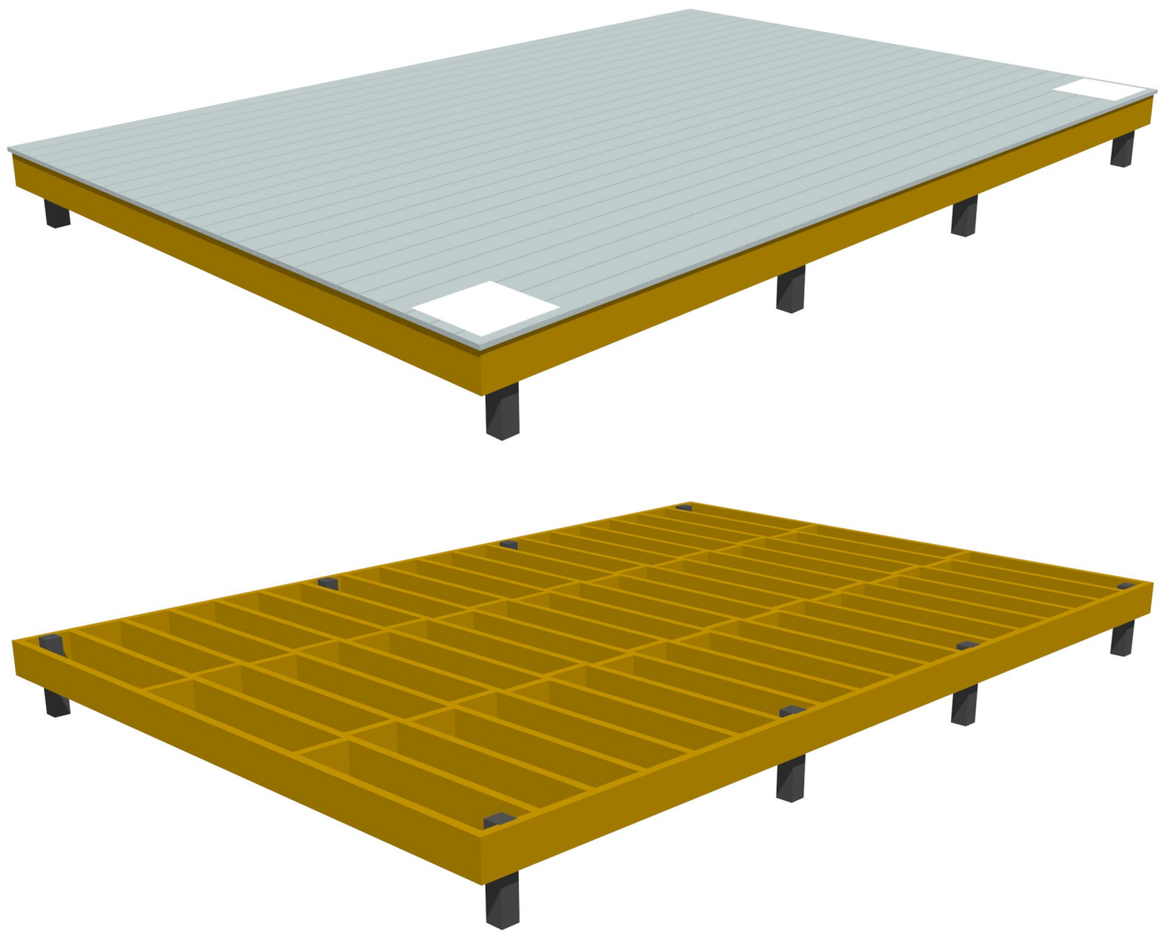
Advantages

- Traditional construction method for deck design
- Deck is very sturdy with joists sitting on top of bearers, which sit on top of the posts
- Bearers are closer together than the *Joist Hanger Structure* and therefore the joists can be smaller
- Posts not easily visible - deck looks to float above the ground

Disadvantages

- Potentially more difficult to install a pre-fabricated deck on site (with posts located under the structure)
- Requires more attachment plates than the *Joist Hanger Structure*
- The *Joist on Bearer Structure* gets quite thick with the use of treated pine (but is reasonably thin with hardwood)
- More difficult to construct a handrail barrier with this structure

Joist Hanger Structure



Advantages

- Simple design with bearers and joists in the same plane
- Structure is thinner and will typically provide more clearance underneath
- Posts located on the side of the deck make it easier to install a pre-fabricated deck
- Posts can easily be extended to create a handrail barrier if required

Disadvantages

- Posts are visible on the sides of the deck
- Relies on the strength of bolts and joist hangers for its structural integrity

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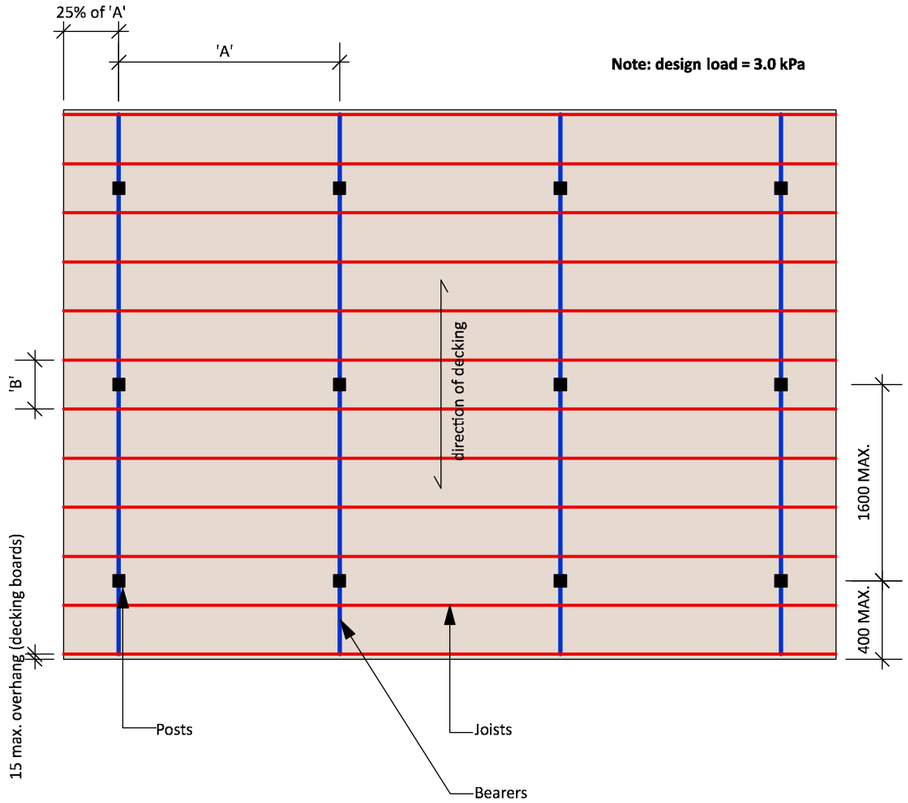
Indicative framing plan



Structure Member Options

Post options:
- 90x90 Integrated Recycling composite
- 90x90 Replas recycled plastic

Bearer options:
- 100x75 F11 hardwood
- 190x45 F7 waxwood treated pine
- 125x125x6.5 FRP SHS

Joist options:
- 100x50 F11 hardwood
- 140 x 45 F7 waxwood treated pine
- 100x75X5.3 FRP SHS

Decking options:
- 38mm hardwood
- 137x23x5400 Modwood
- 140x25x4880 Trex Transcend square edge board

Member Spacing Options

'A' - Bearer Spacing
- 1800 max for timber joists
- 2700 max for SHS composite joists

'B' - Joist Spacing
- 400 max. for composite decking boards & 20mm HW decking
- 450 max. for 38mm hardwood decking

Note:
Above design guidance is based on joists & bearers being fully continuous.

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TITLE
Guidelines / Joist on Bearer Structure

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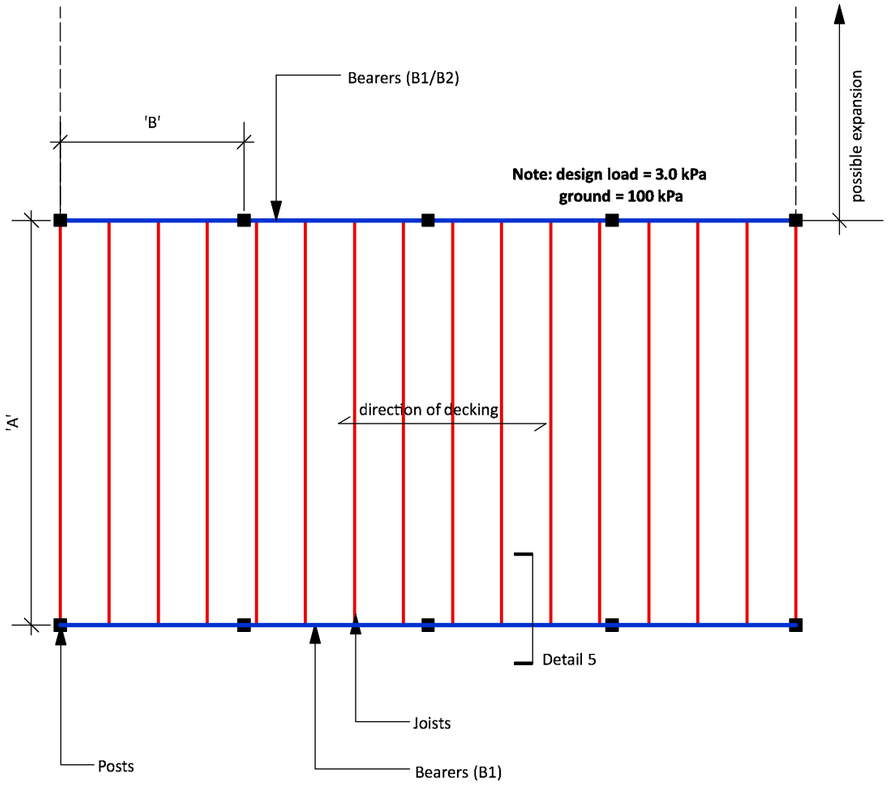
Indicative framing plan



Member Schedule

Post :
- 90x90 Integrated Recycling composite
- 90x90 Replas recycled plastic

Bearer :
B1:
- 190x45 F7 waxwood treated pine

B2 (expanded deck):
- 2 NO. 190x45 F7 waxwood treated pine

Joist :
- 190 x 45 F7 waxwood treated pine

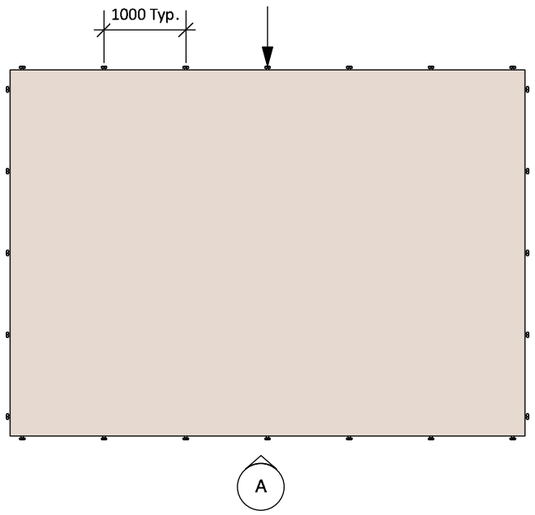
Bearing Plate:
- where expansion of deck if required, provide 500x500x50 replas sheet (under B2 double bearer)
- otherwise provide 250x250x50 bearing plate as per detail (Footing Option 1)

Member Spacing Options

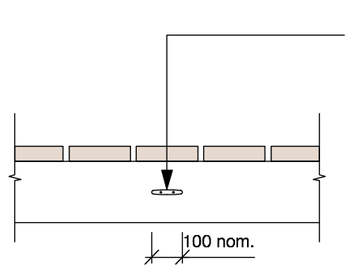
'A' - Bearer Spacing
- 3300 max. when joists are at 400 cts
- 3700 max. when joists are at 300 cts

'B' - Post Spacing
- 1800 max span for 'B' (assuming bearers are in one piece and continuous over the supports)

Perimeter Tie Offs

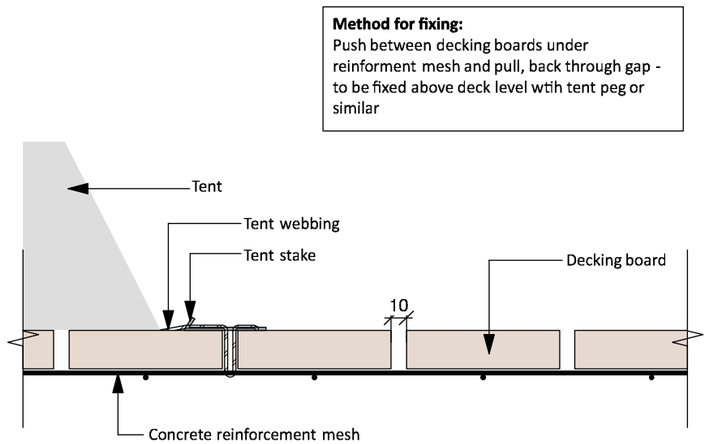


General Arrangement Plan

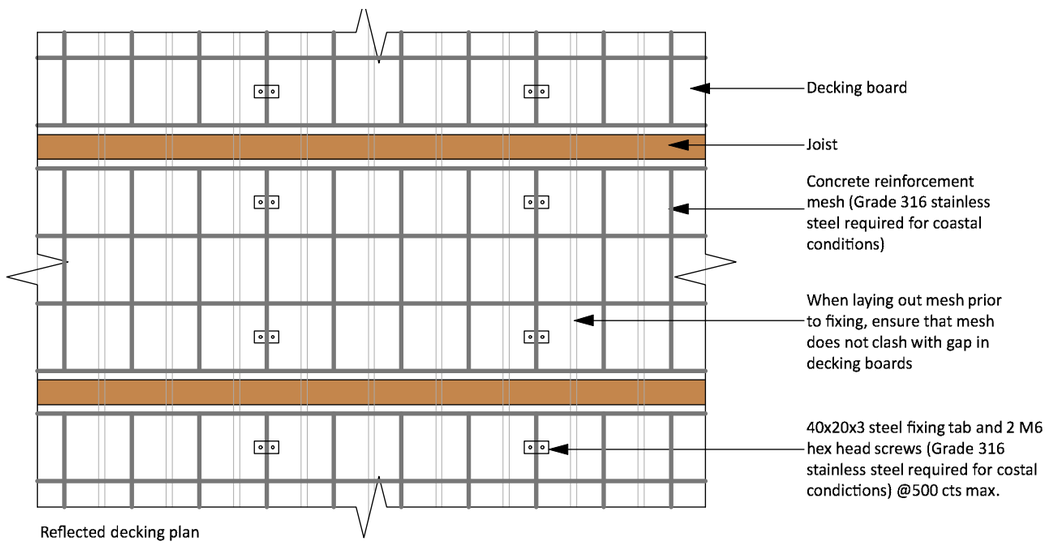


Elevation A

Webbing Through Deck Gap

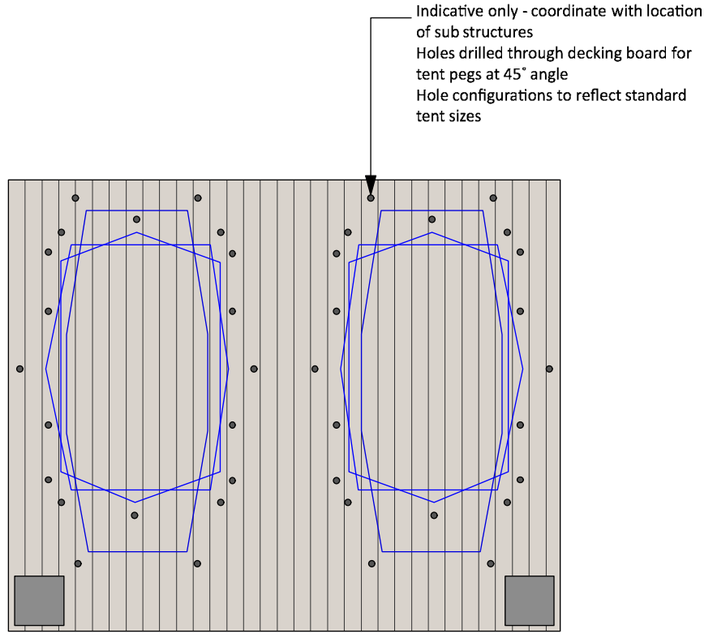


Section A



Reflected decking plan

Tent Peg Holes



Plan

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TITLE
Guidelines / Tent Attachment

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AS 2156 Walking Tracks

AS 2156 Walking Tracks outlines recommendations for fall heights and provision of barriers. The resulting allowable heights without barriers relate to Track Class, and condition of ground being fallen onto eg. soft vegetation is a "favourable" surface and there would enable the deck to be 500mm higher before requiring a barrier.

Handrails requirements (AS2156)

Barriers of the types given shall be provided on walking track structures where the effective fall height (heff) exceeds the appropriate value given in Table 2 below.

Table 2 Allowable barrier type for effective fall height

h_{eff}	Track class				
	1	2	3	4	5
1	B	C	D*	NONE	NONE
1.5	A	B	C*	D*	NONE
3	A	A	C	C*	E†

* Barriers may be provided on one side only in these cases.

† Type E handhold may be placed on the opposite side of the structure to the fall hazard and may not be continuous.

Notes:

1 Kick rails and kerbs may be provided where appropriate.
2 Barriers should be provided where an opening in a deck creates a fall hazard.
3 The provision of barriers as set out in Table 2 is a minimum requirement only. Barriers in excess of these requirements may be provided on the basis of a risk assessment.

Assessment of effective fall height:

Effective fall height (h_{eff}) shall be calculated from the following:

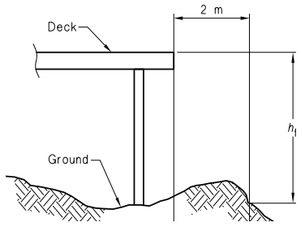
$h_{eff} = h_f + h_i$

where

h_f = maximum actual fall height within a distance of 2m from the barrier position (see Figure 3.1)

h_i = the impact surface value, as given in Clause 3.3

Figure 3.1 Illustration of actual fall height



Assessment of fall impact surface

The surface at which the height of fall (h_i) is measured shall be assessed for the likelihood of serious harm being caused by the impact (type of surface materials) by taking the value of h_i as given in Table 3.

Table 3 Fall surface assessment (h_i)

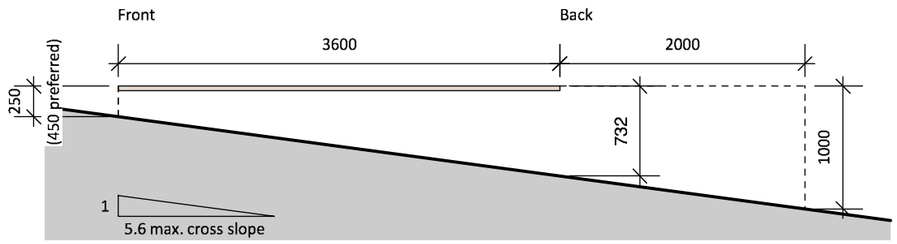
Category	Description	h_i, m	Examples
Benign	A surface presenting features that will tend to reduce the effect of impact.	-0.5	Deep moss Soft vegetation Shallow still water deep enough to cushion a fall (see note) Swamp
Favourable	A surface presenting features that neither reduce or amplify the effect of impact.	0	Loose gravel Sand Deep water with reasonable means of exit Grass
Unfavourable	A surface presenting features that will tend to amplify the effect of impact.	+0.5	Jagged stones Deep water without reasonable means of exit Sharp vegetation
Hazardous	A surface presenting features that will result in serious harm regardless of the effect of fall to the initial impact point.	+3.0	Swiftly flowing water without means of exit Boiling mud or water Extended falls arising from rolling or sliding, following initial impact, on terrain whose slope exceeds 35 degrees. Mitigating factors such as vegetation likely to arrest rolling shall be taken into account when assessing extended falls.

Note: The height of the fall should be taken into consideration when assessing the risk from falling into shallow water.

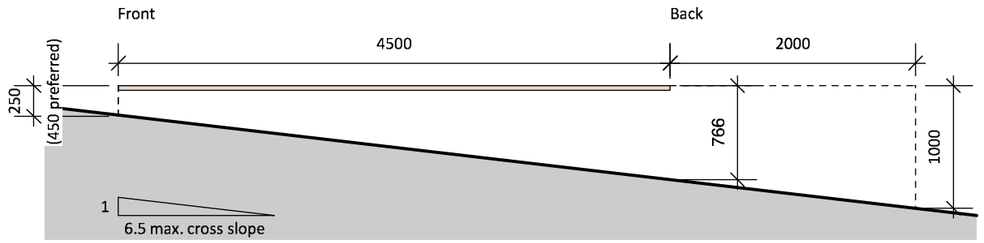
Implications for Camping Platforms

As a general rule it is recommended that the fall height 2m from the edge of the deck , in "Favourable" conditions is less than 1m to reduce the requirement for a barrier. A site specific assessment of conditions should be carried out to determine barrier requirements and if necessary a risk assessment may be prepared to document decisions for barrier provision (or non provision).

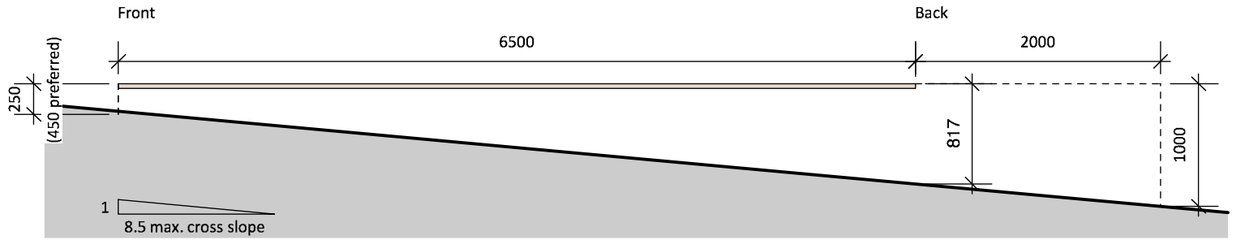
Examples of cross slope calculations for a "Favourable" surface



3.6m wide deck

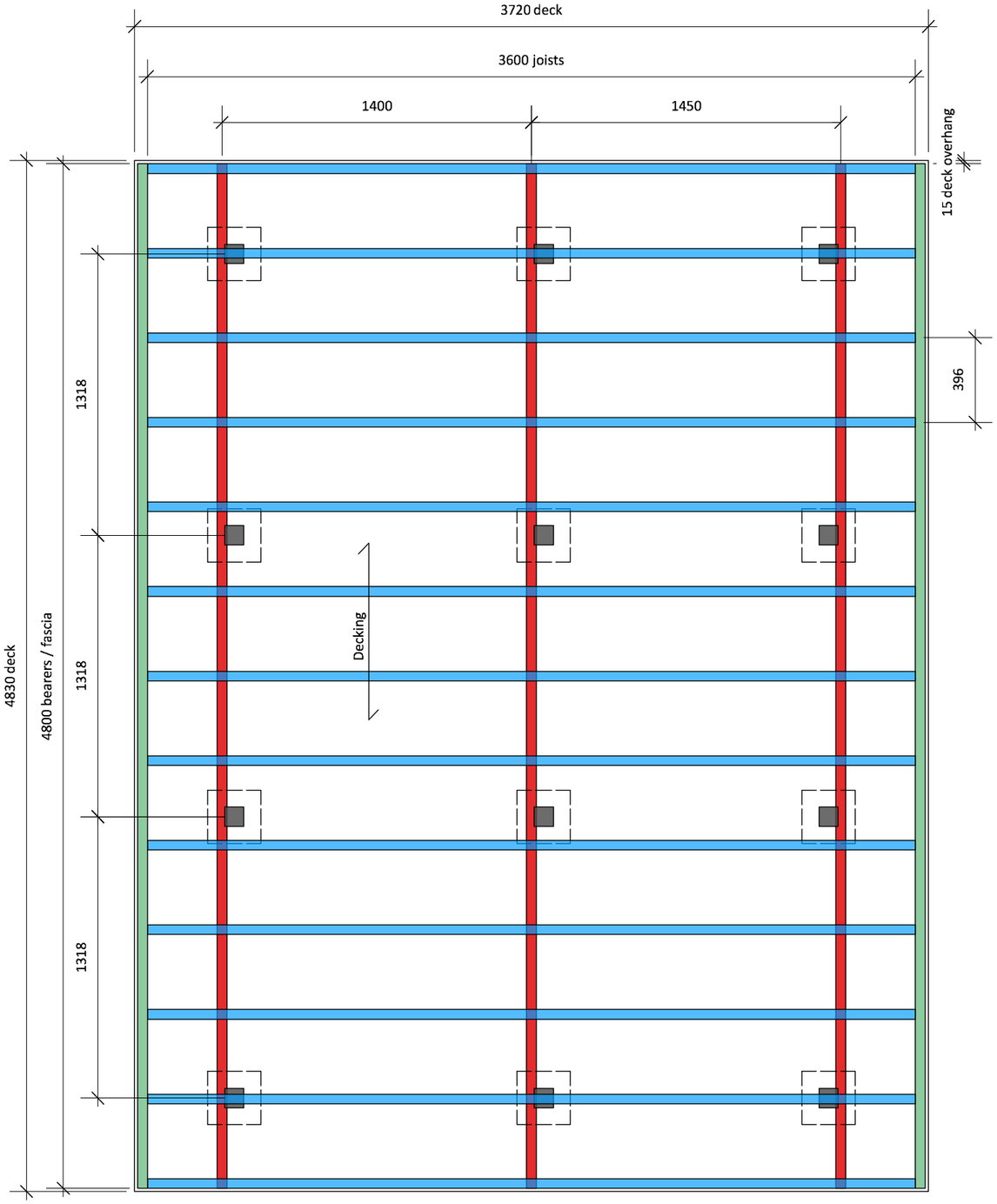


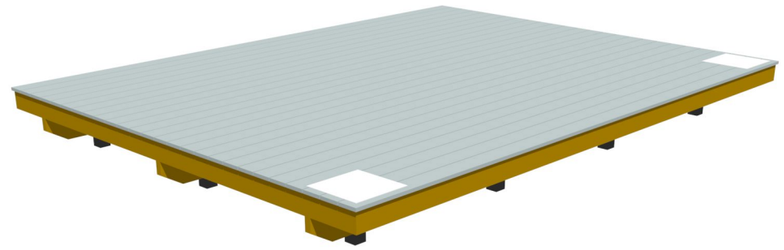
4.5m wide deck



6.5m wide deck

Examples of handrail barrier provided where effective fall height exceeds 1m





Members Schedule

90x90 IR posts		12 No.
190x45 F7 waxwood bearers	4.8m long	3 No.
140x45 F7 waxwood fascias	4.8m long	2 No.
140x45 F7 waxwood joists	3.6m long	13 No.
137x23 Modwood decking (6mm gap)	4.83 long	26 No.
250x250 Replas bearing plate		12 No.

Fasteners

- G316 stainless steel for marine conditions
- Hot dip galvanised for general conditions
- Zinc plated fasteners are not suitable for use with Waxwood treated timber

Modwood

- Modwood 137x23 composite decking
- Silver Gum or Black Bean colour
- Install with brushed surface (lighter side) to top, as this surface is the most scratch resistant
- Pre-drill all holes and fix to tiber joists with 8 guage x 50 countersunk head screws as per manufacturers specifications

General Notes

- Three deck size options and two deck structure options have been developed with consideration for spatial requirements, material efficiency (reduction in waste by use of standard sizes) and ease of installation
- Materials have been selected on the basis of sustainability, price, durability, maintenance requirements and appearance
- Drawings G04 and G05 outline the engineering requirements in building platforms generally and could be used to design alternative platform sizes

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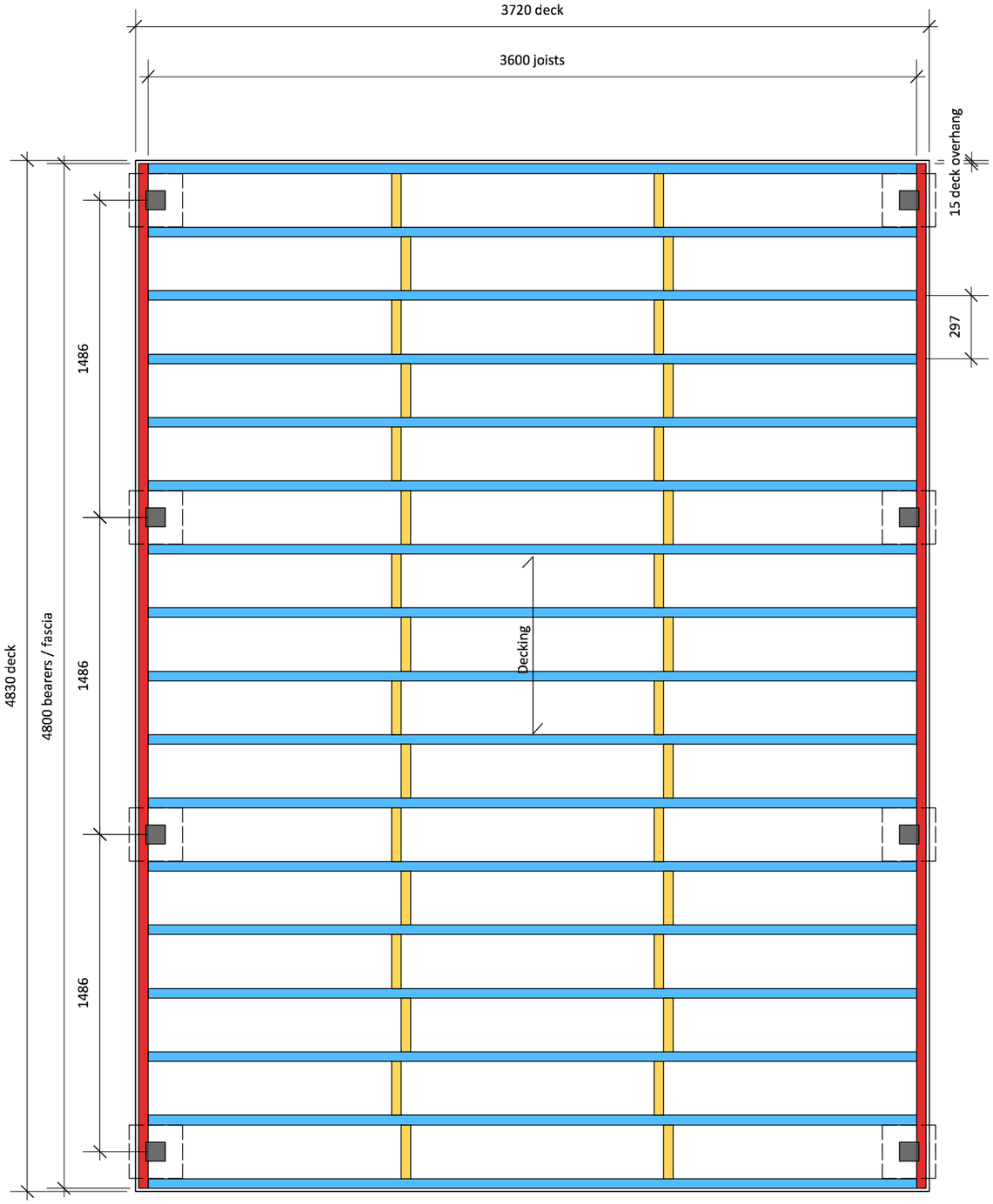

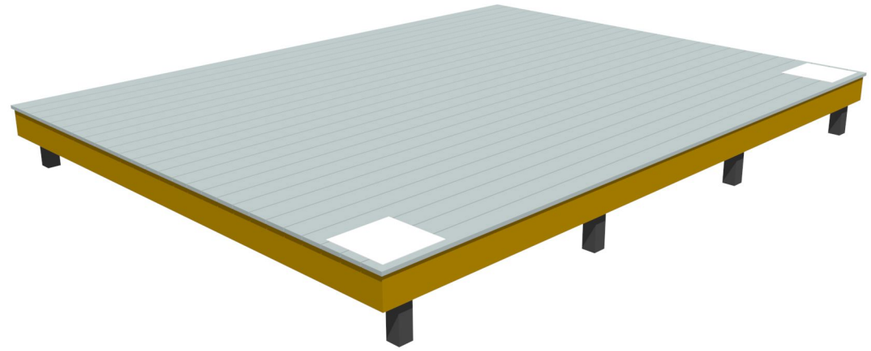

Members Schedule

90x90 IR posts		8 No.
190x45 F7 waxwood bearers	4.8m long	2 No.
190x45 F7 waxwood joists	3.6m long	17 No.
190x45 F7 waxwood blocking	0.252m long	32 No.
137x23 Modwood decking (6mm gap)	4.83 long	26 No.
250x250 Replas bearing plate		8 No.

Fasteners

- G316 stainless steel for marine conditions
- Hot dip galvanised for general conditions
- Zinc plated fasteners are not suitable for use with Waxwood treated timber

Modwood

- Modwood 137x23 composite decking
- Silver Gum or Black Bean colour
- Install with brushed surface (lighter side) to top, as this surface is the most scratch resistant
- Pre-drill all holes and fix to tiber joists with 8 guage x 50 countersunk head screws as per manufacturers specifications

General Notes

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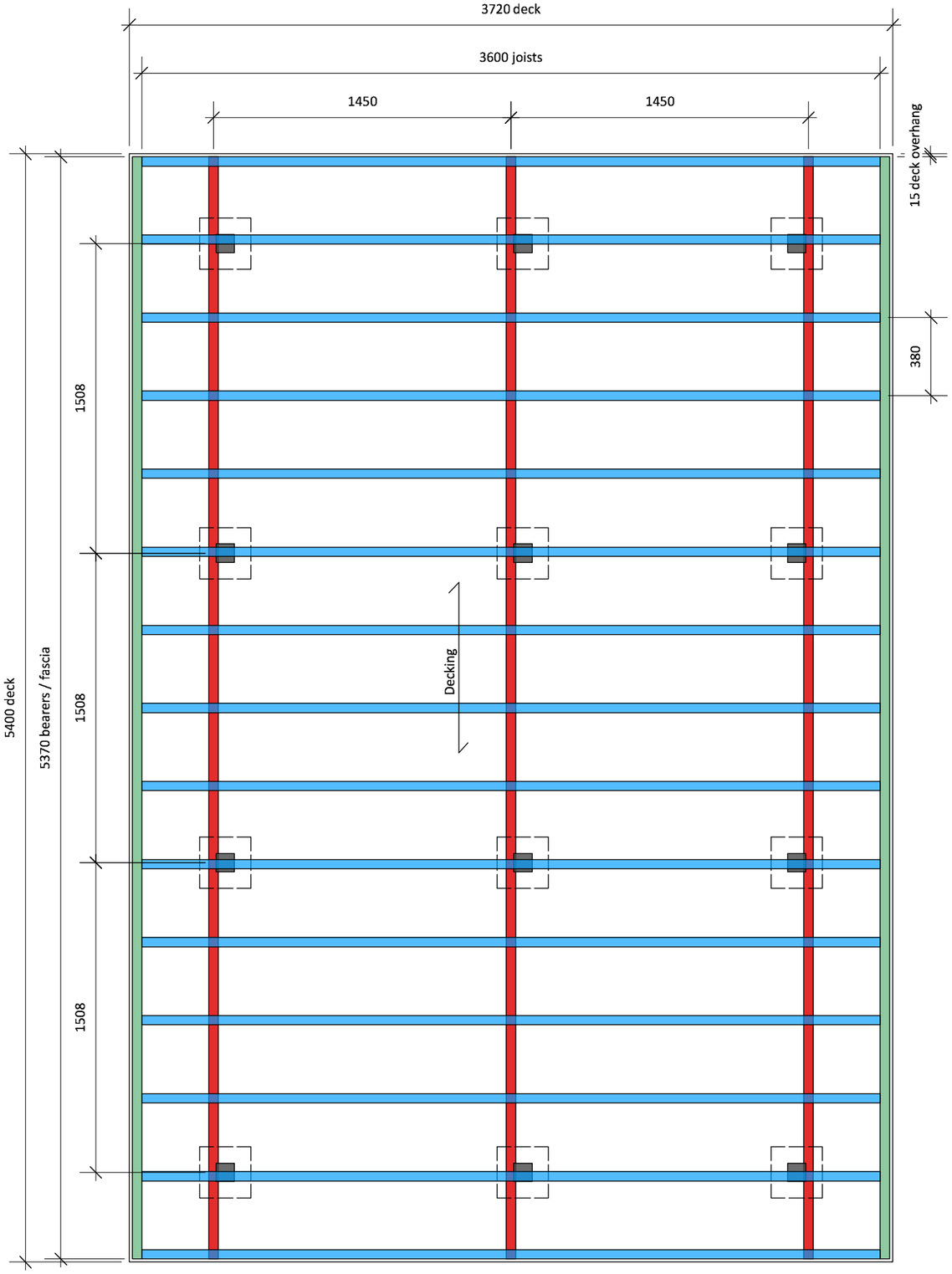

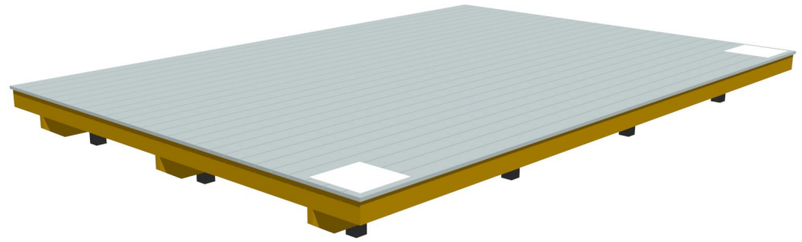

Members Schedule

90x90 IR posts		12 No.
190x45 F7 waxwood bearers	5.37m long	3 No.
140x45 F7 waxwood fascias	5.37m long	2 No.
140x45 F7 waxwood joists	3.6m long	15 No.
137x23 Modwood decking (6mm gap)	5.4m long	26 No.
250x250 Replas bearing plate		12 No.

Fasteners

- G316 stainless steel for marine conditions
- Hot dip galvanised for general conditions
- Zinc plated fasteners are not suitable for use with Waxwood treated timber

Modwood

- Modwood 137x23 composite decking
- Silver Gum or Black Bean colour
- Install with brushed surface (lighter side) to top, as this surface is the most scratch resistant
- Pre-drill all holes and fix to tiber joists with 8 guage x 50 countersunk head screws as per manufacturers specifications

General Notes

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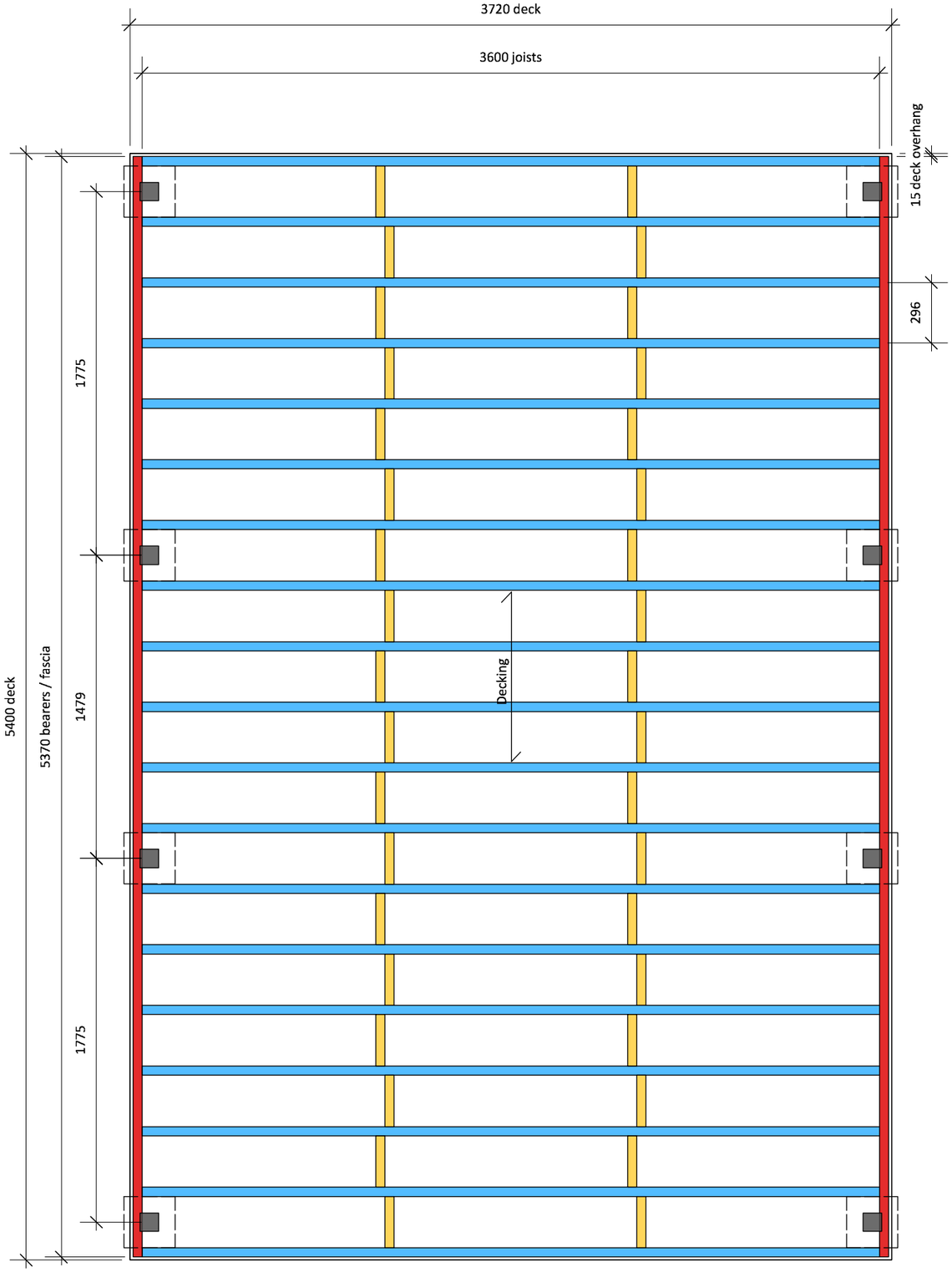

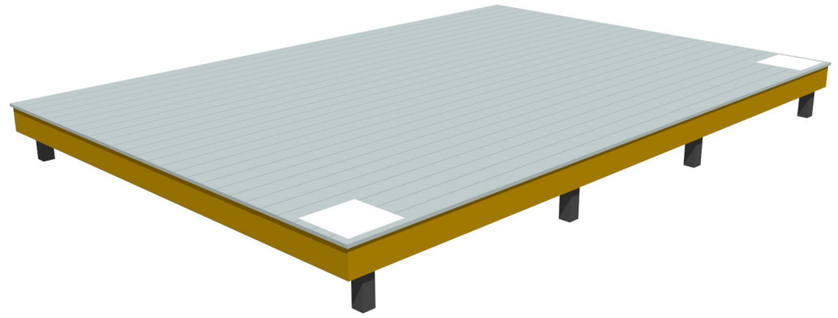

Members Schedule

90x90 IR posts		8 No.
190x45 F7 waxwood bearers	5.37m long	2 No.
190x45 F7 waxwood joists	3.6m long	19 No.
190x45 F7 waxwood blocking	0.251m long	36 No.
137x23 Modwood decking (6mm gap)	5.4 long	26 No.
250x250 Replas bearing plate		8 No.

Fasteners

- G316 stainless steel for marine conditions
- Hot dip galvanised for general conditions
- Zinc plated fasteners are not suitable for use with Waxwood treated timber

Modwood

- Modwood 137x23 composite decking
- Silver Gum or Black Bean colour
- Install with brushed surface (lighter side) to top, as this surface is the most scratch resistant
- Pre-drill all holes and fix to tiber joists with 8 guage x 50 countersunk head screws as per manufacturers specifications

General Notes

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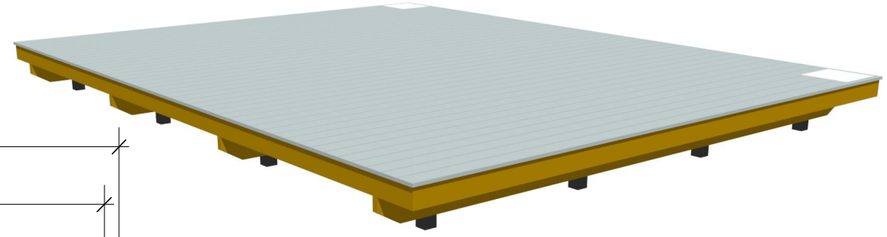

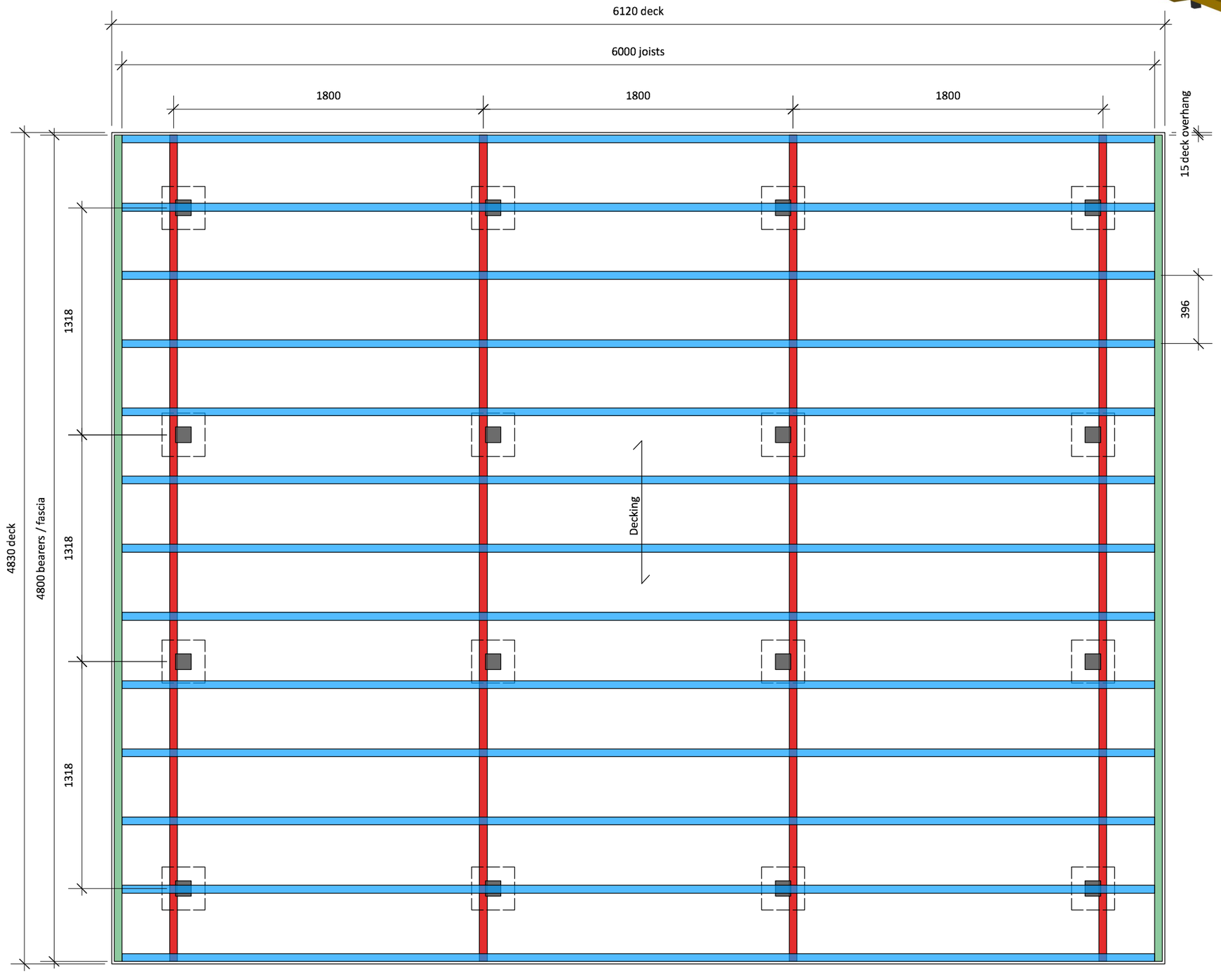

Members Schedule

90x90 IR posts		16 No.
190x45 F7 waxwood bearers	4.8m long	4 No.
140x45 F7 waxwood fascias	4.8m long	2 No.
140x45 F7 waxwood joists	6.0m long	13 No.
137x23 Modwood decking (5mm gap)	4.83 long	43 No.
250x250 Replas bearing plate		16 No.

Fasteners

- G316 stainless steel for marine conditions
- Hot dip galvanised for general conditions
- Zinc plated fasteners are not suitable for use with Waxwood treated timber

Modwood

- Modwood 137x23 composite decking
- Silver Gum or Black Bean colour
- Install with brushed surface (lighter side) to top, as this surface is the most scratch resistant
- Pre-drill all holes and fix to tiber joists with 8 guage x 50 countersunk head screws as per manufacturers specifications

General Notes

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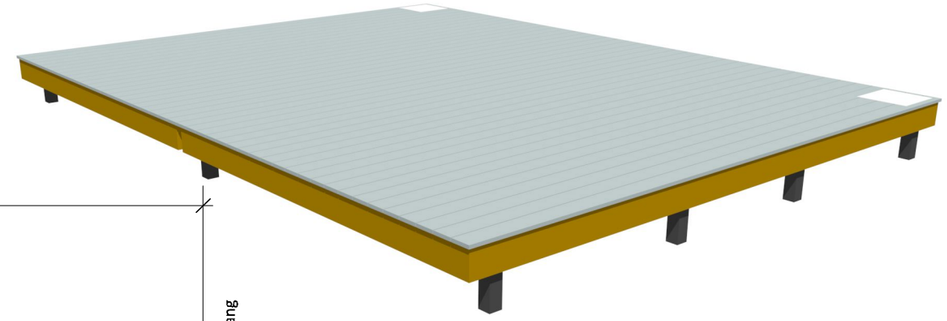

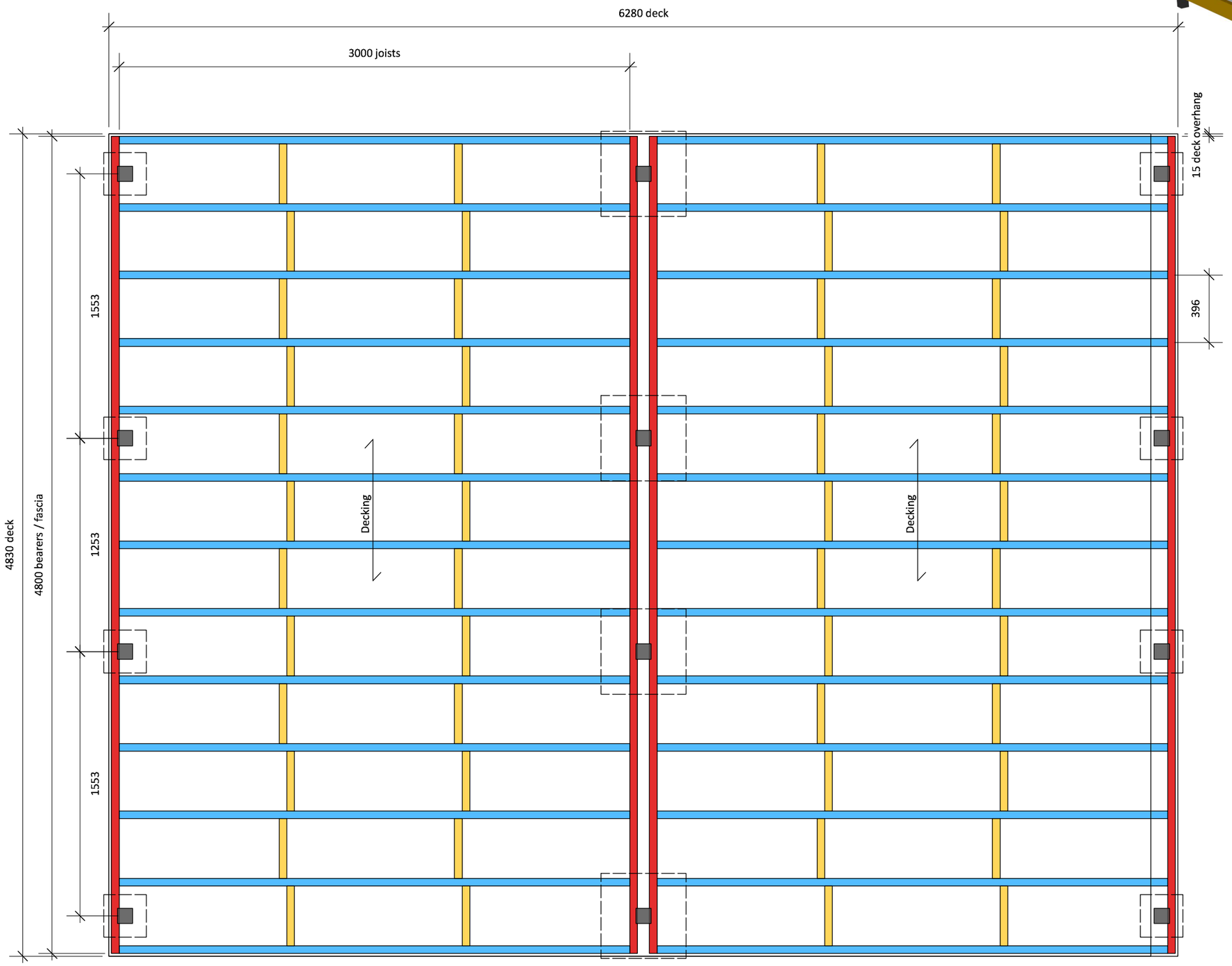

Members Schedule

90x90 IR posts		12 No.
190x45 F7 waxwood bearers	4.8m long	4 No.
190x45 F7 waxwood joists	3.0m long	26 No.
190x45 F7 waxwood blocking	0.351m long	48 No.
137x23 Modwood decking (6mm gap)	4.83 long	44 No.
250x250 Replas bearing plate		8 No.
500x500 Replas bearing plate		4 No.

Fasteners

- G316 stainless steel for marine conditions
- Hot dip galvanised for general conditions
- Zinc plated fasteners are not suitable for use with Waxwood treated timber

Modwood

- Modwood 137x23 composite decking
- Silver Gum or Black Bean colour
- Install with brushed surface (lighter side) to top, as this surface is the most scratch resistant
- Pre-drill all holes and fix to tiber joists with 8 guage x 50 countersunk head screws as per manufacturers specifications

General Notes

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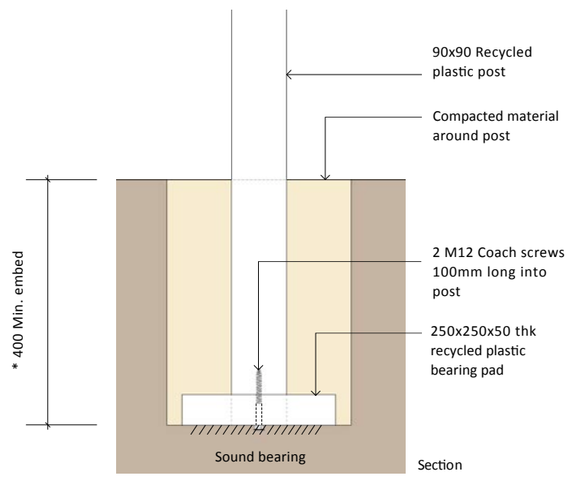
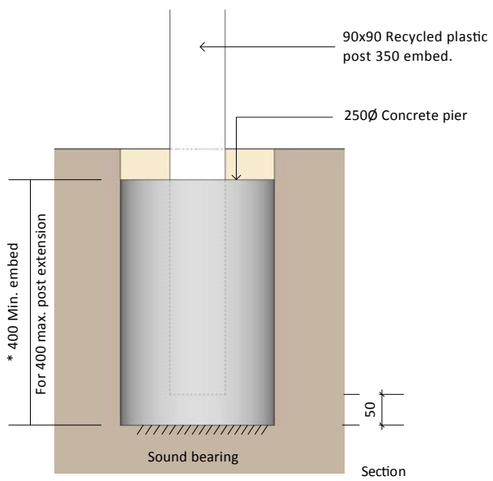
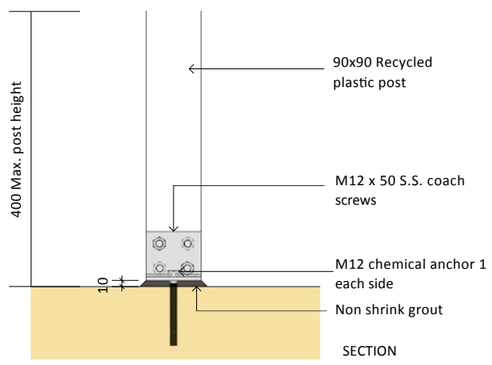


1 Back filled hole footing option
1:10



2 Concrete pier footing option
1:10



3 Rock outcrop footing option
1:10

Specification Notes

Fasteners
- G316 stainless steel for marine condition
- Hot dip galvanised for general coditions
- Zinc plated fastener are not suitable for use with waxwood timber

Post Footing
- 90x90 Solid recycled plastic post by Replas ;or
- 90x90 Integrated Recycling composite post
- 50 thick recycled plastic sheet bearing pad
- Colour black

Foundations
- Bear foundations on sound bearing strata
- * Contact engineer for alternative solution if embedment depth cannot be achieved.(e.g. if rock is encountered at shallow depth)

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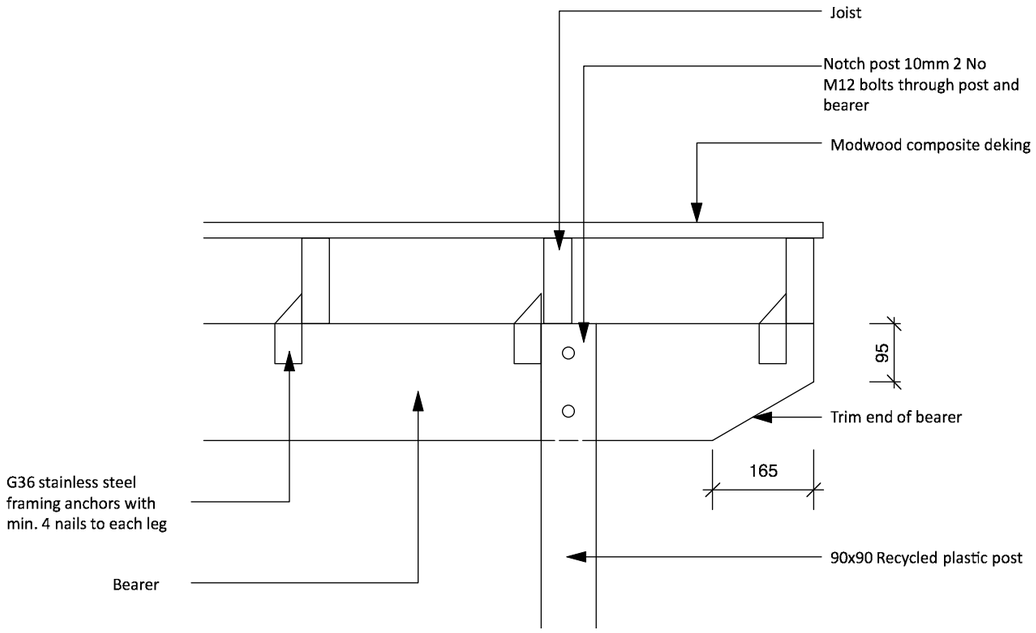
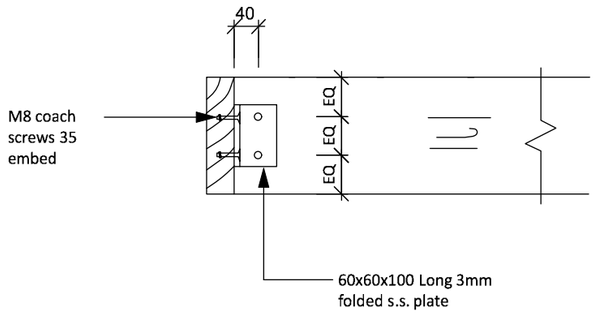
five sided platform



4 Joist on bearer structure connections
1:10

Note

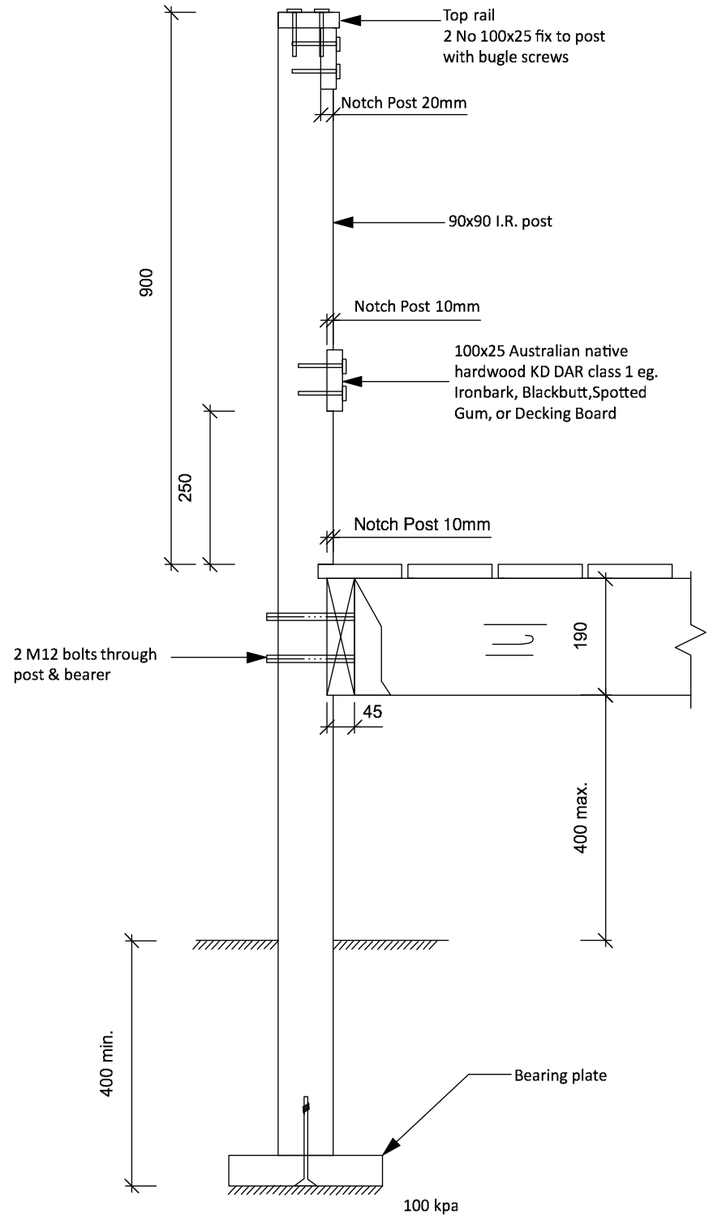
This detail is for the conners of a joist hanger structure so that the plate / hanger will not be visible



6 Joist to bearer corner detail
1:10

Note

Position post on inside of bearer generally or on outside of bearer if being used for a handrail post



5 Joist hanger structure connections
1:10

Specification Notes

Fasteners
- G316 stainless steel for marine condition
- Hot dip galvanised for general coditions
- Zinc plated fastener are not suitable for use with waxwood timber

Post Footing
- 90x90 Solid recycled plastic post by Replas ;or
- 90x90 Integrated Recycling composite post
- 50 thick recycled plastic sheet bearing pad
- Colour black

Foundations
- Bear foundations on sound bearing strata 100KPa min.
- * Contact engineer for alternative solution if embedment depth cannot be achieved.(e.g. if rock is encountered at shallow depth)

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