



# Good Practice Guide to Hut Building

Prepared by Reforesting Scotland's Campaign for a Thousand Huts

(5th Draft)

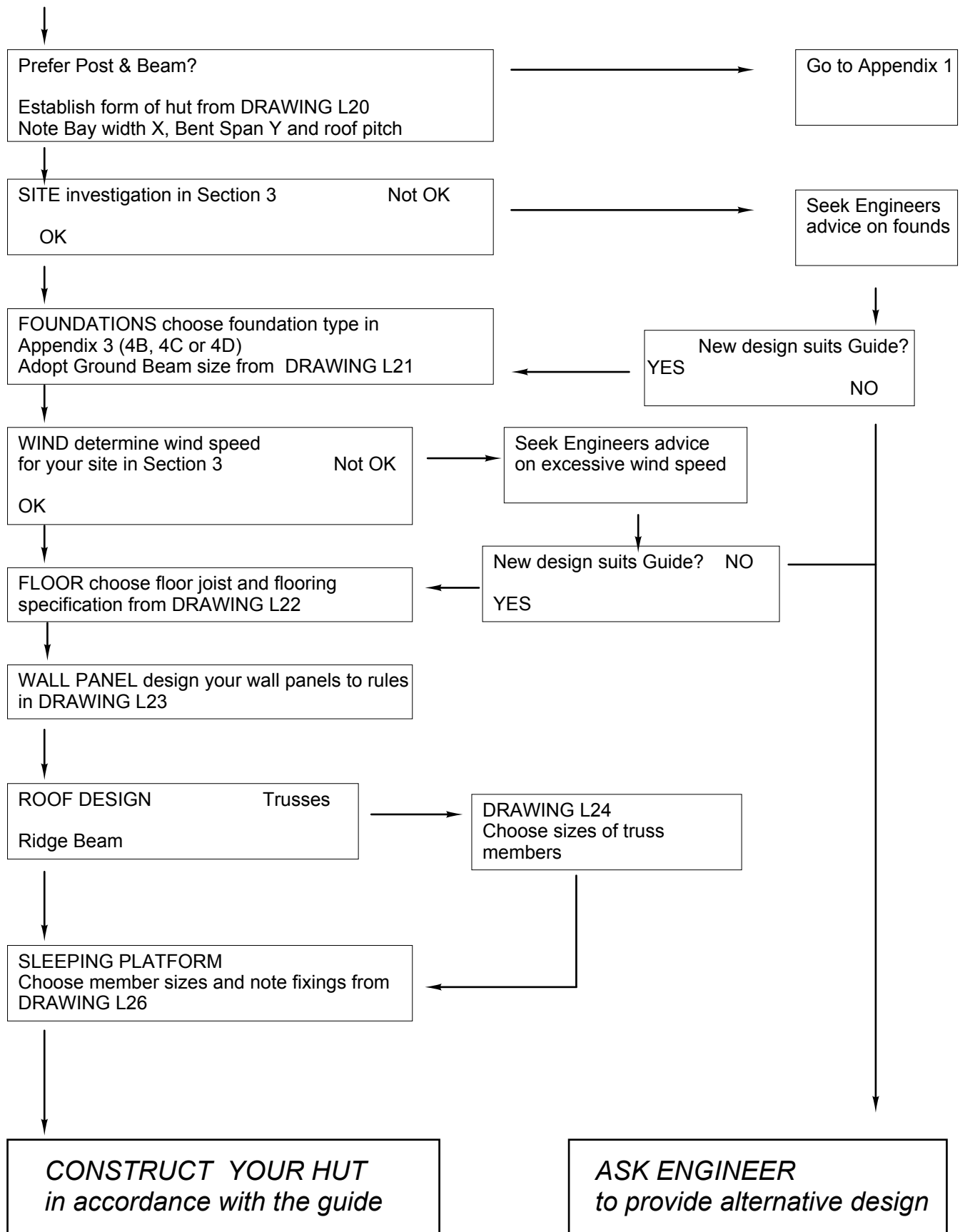
## APPENDIX 2 : Stud Frame Model

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# How to navigate Stud Frame Appendix 2

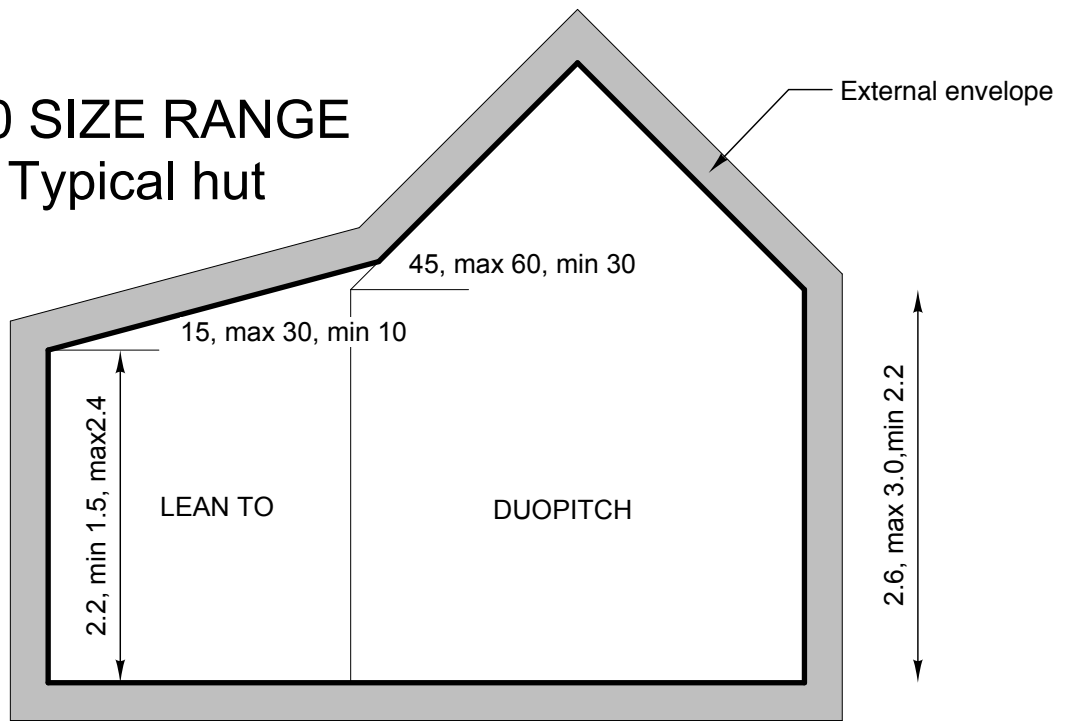
## YOUR HUT



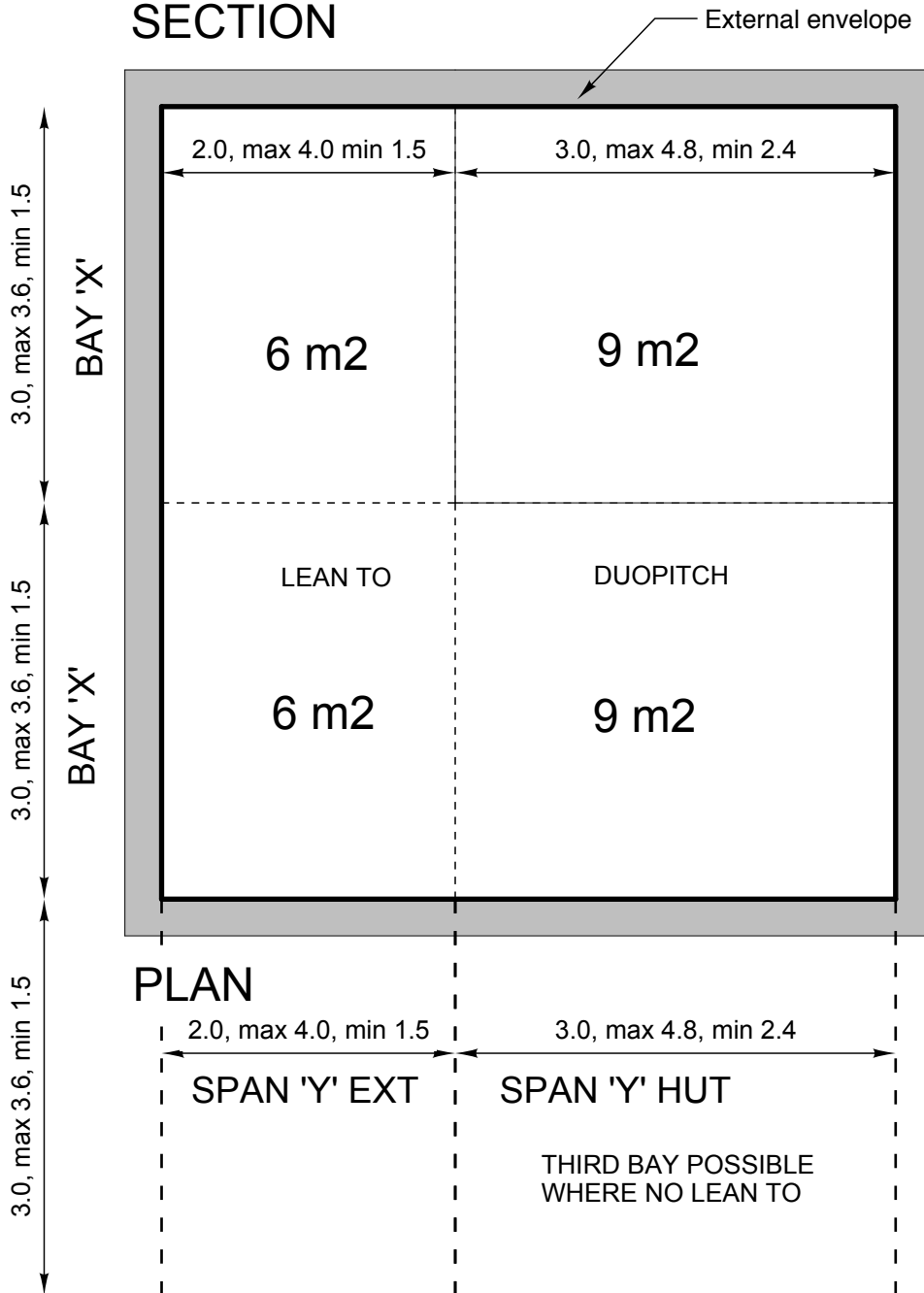
# Appendix 2

## Drawing L20 SIZE RANGE

### Stud Frame Typical hut



### SECTION



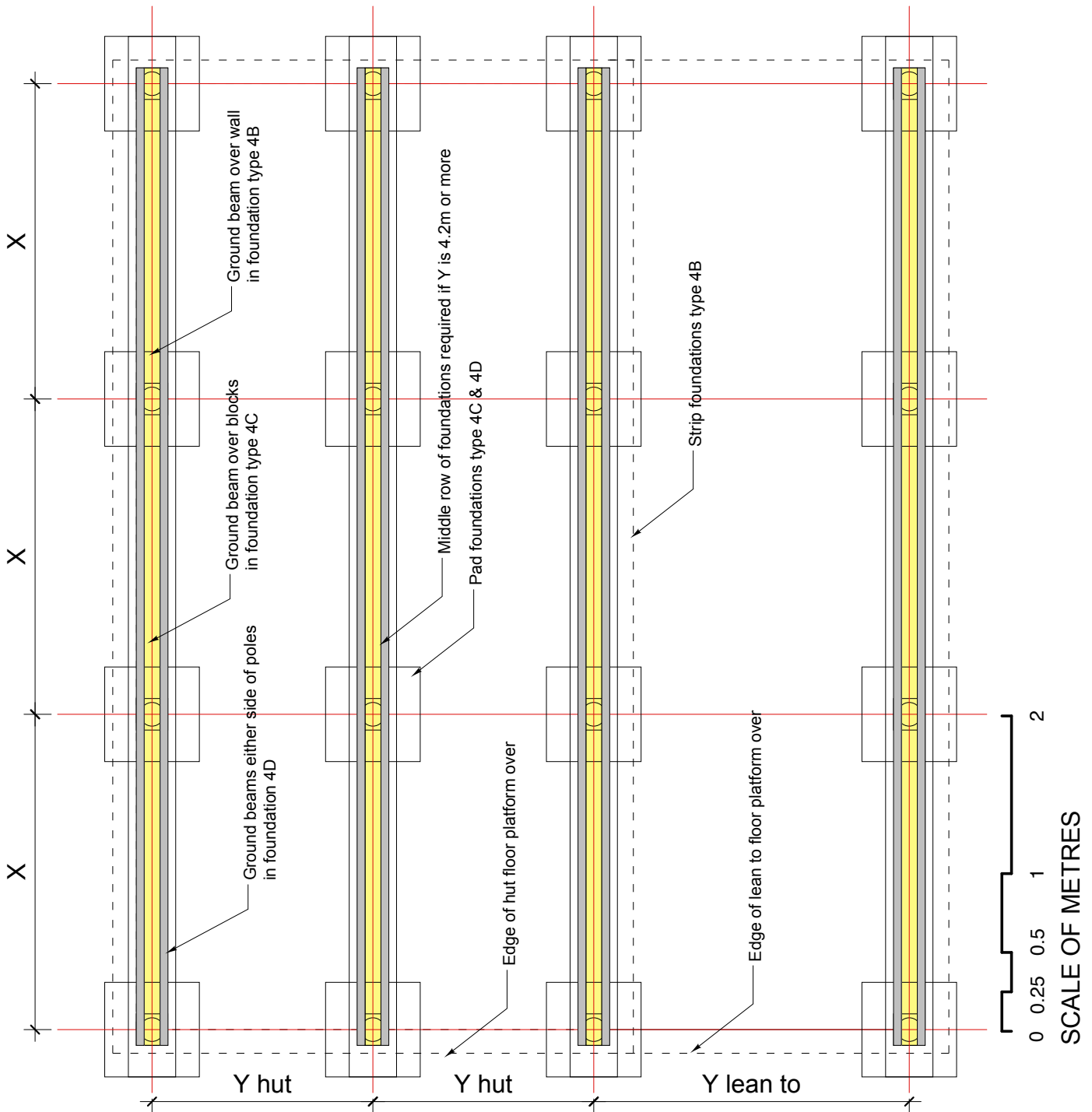
### PLAN

*Dimensions are in metres, angles in degrees  
areas in metres squared. Maximum area 30m<sup>2</sup>*

# Drawing L21 FOUNDATIONS - Appendix 2

STUD FRAME HUT		TABLE 21
<b>GROUND BEAM SIZING</b>		
Height (mm)	width (mm)	Max foundation centre 'X' (m)
Foundation type 4B - strip wall		continuous
50	100	
Foundation type 4C - precast slab		
150	50	1.5
200	75	2.4
200	100	3.6
Foundation type - 4D pole		
100	50	1.5
150	50	2.4
200	70	3.6

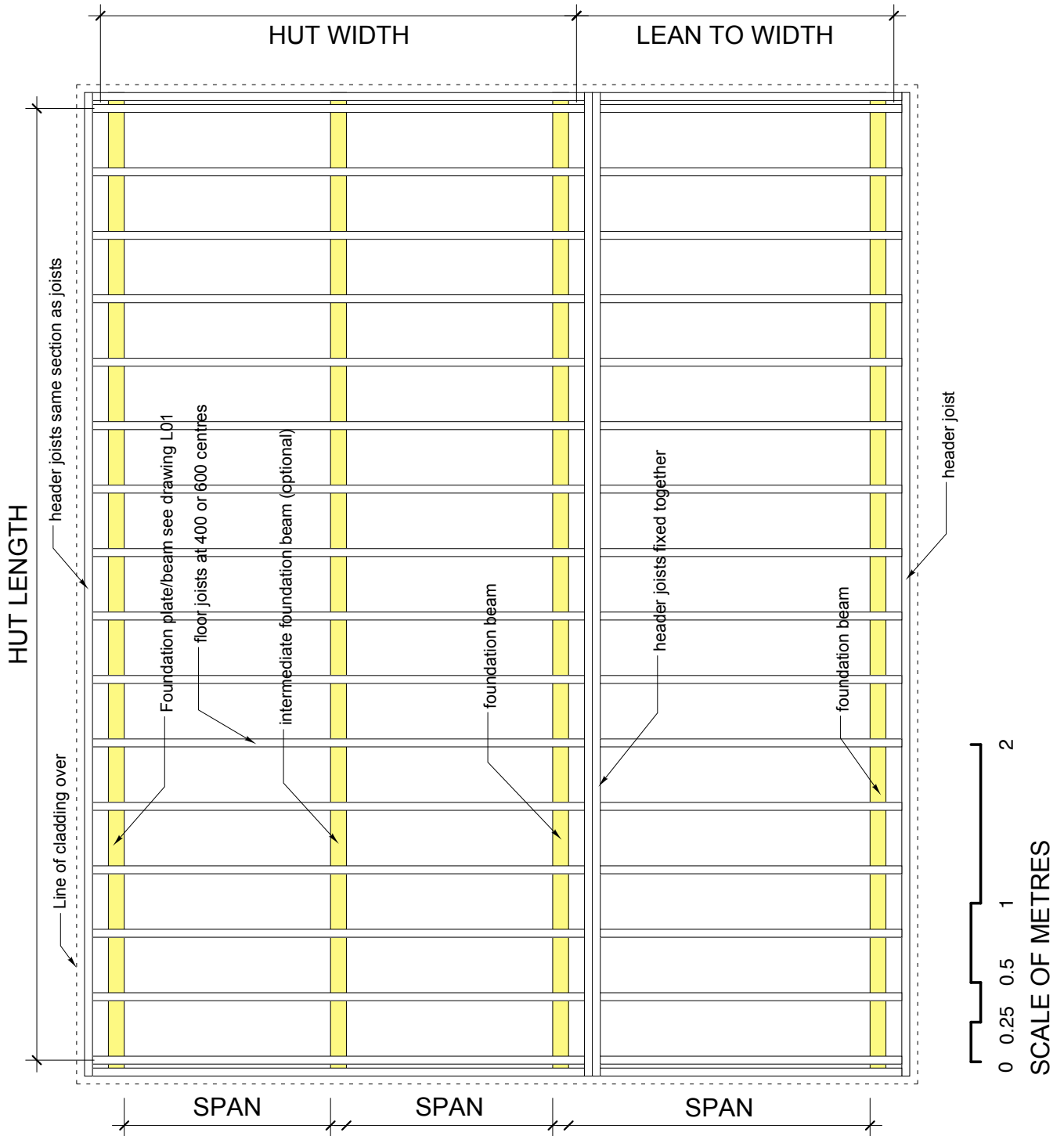
Note: Foundation type 4D has twin beams of this size



# Drawing L22 FLOOR PLATFORM Appendix 2

STUD FRAME HUT		TABLE 22A	
FLOOR PLATFORM JOIST SPAN TABLE			
Width of Joist	Height of Joist	Span in metres	
		Joist centres(mm)	
38	97	400	600
38	122	1.8	1.3
38	147	2.4	1.9
38	170	2.9	2.5
38	195	3.4	2.8
38	195	3.9	3.2
38	220	4.4	3.6
47	97	2	1.5
47	122	2.6	2.3
47	147	3.2	2.7
47	170	3.6	3.1
47	195	4.2	3.6
47	220	4.7	4
63	97	2.3	1.9
63	122	2.9	2.5
63	147	3.5	3
63	170	4	3.5
63	195	4.6	4
63	220	5	4.5
75	122	3.1	2.7
75	147	3.7	3.2
75	170	4.2	3.7
75	195	4.8	4.3
75	220	5.2	4.7
NOTES			
1. Joists to be timber strength class C16 or better			
2. Roughsawn timber from a sawmill can be used next size up e.g. 47 x 97 becomes 50 x 100			
3. Dead load not more than 0.25kN/m <sup>2</sup>			

STUD FRAME HUT		TABLE 22B	
FLOORING TO GROUND FLOOR			
Type of flooring	min. thickness (mm) for joist ccs of (mm)		
	400	600	
Softwood tongued and grooved	16	19	
Hardwood tongued and grooved	16	19	
Chipboard tongued and grooved	18	22	
NOTES			
1. Softwood flooring can be secret nailed or fixed with two bright zinc lost head nails min 50mm every joist			
2. Hardwood floors should be secret nailed with a proprietary nail in a flooring nailer at max 400 centres			
3. Chipboard should be fixed with 65 annular ring shank nails at max 300 centres. Joist should be glued with expanding PVA adhesive.			
4. Flooring can be laid to the full extend of the floor platform or be laid later inside external walls			

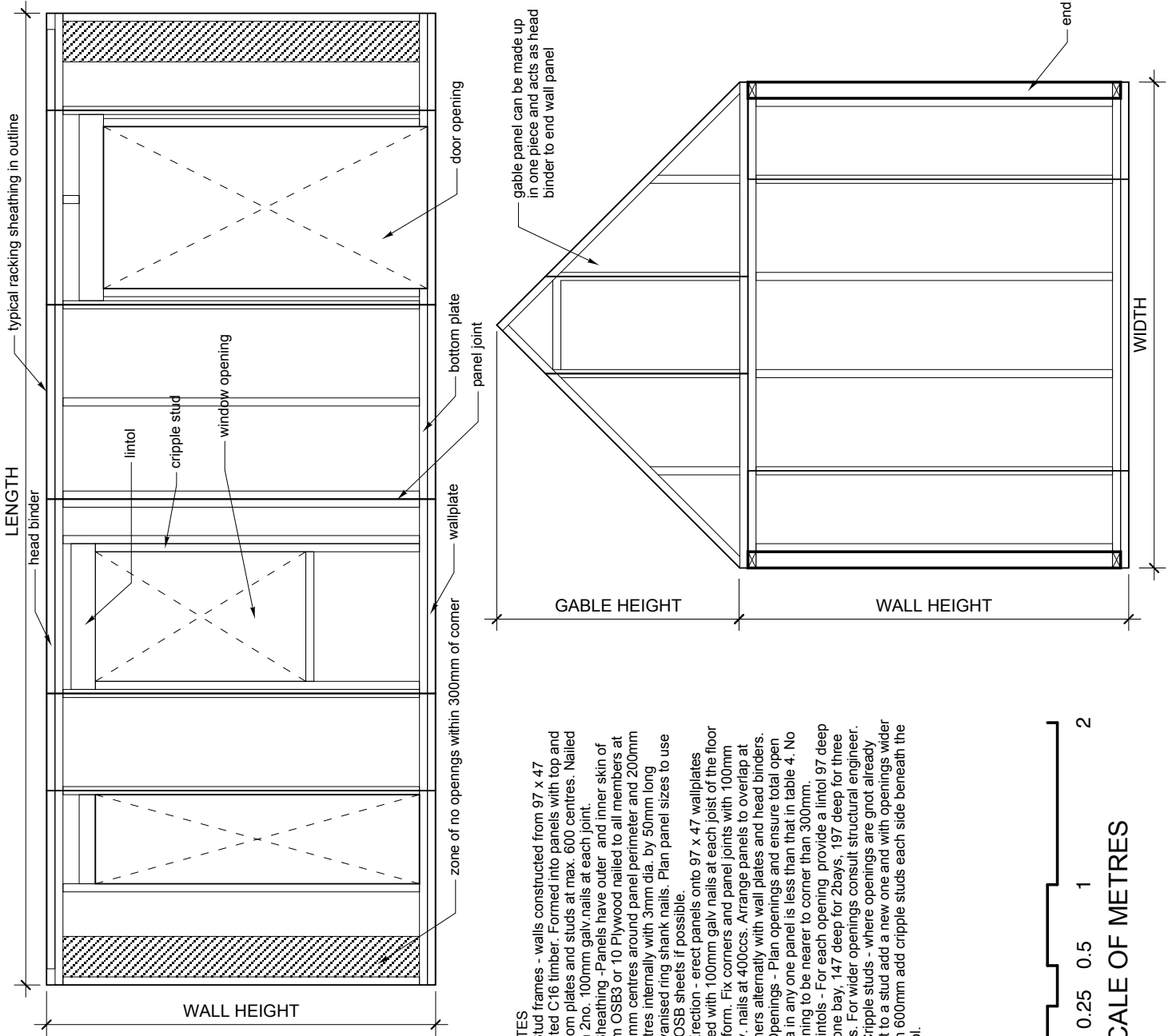


# Drawing L23 WALL PANELS Stud Frame - Appendix 2

STUD FRAME HUT		TABLE 23
<b>WALL RACKING</b>		
Altitude (m) (up to)		Max. percentage of opening area side walls
Wind speeds from map in section 3		
Wind speed up to 25m/s		
100		25
200		25
300		20
400		10
Wind speed up to 27m/s		
100		25
200		10
300		10
400		10
Wind speed up to 29m/s		
100		20
200		10
300		10
400		0

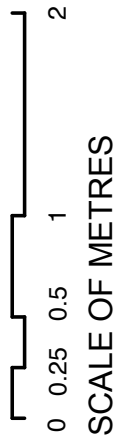
NOTES : Consult an engineer if:

1. Your design requires openings in a gable wall
2. Your openings area exceeds this percentage
3. Your altitude exceeds 400 metres
4. Your wind speed exceeds 29 metres/sec
5. You site is within 1 kilometre of the west coast



**NOTES**

1. Stud frames - walls constructed from 97 x 47 treated C16 timber. Formed into panels with top and bottom plates and studs at max. 600 centres. Nailed with 2no. 100mm galv nails at each joint.
2. Sheathing - Panels have outer and inner skin of 9mm OSB3 or 10 Plywood nailed to all members at 100mm centres around panel perimeter and 200mm centres internally with 3mm dia. by 50mm long galvanised ring shank nails. Plan panel sizes to use full OSB sheets if possible.
3. Erection - erect panels onto 97 x 47 wallplates nailed with 100mm galv nails at each joist of the floor platform. Fix corners and panel joints with 100mm galv. nails at 400ccs. Arrange panels to overlap at corners alternately with wall plates and head binders.
3. Openings - Plan openings and ensure total open area in any one panel is less than that in table 4. No opening to be nearer to corner than 300mm.
4. Lintols - For each opening provide a lintol 97 deep for one bay, 147 deep for 2bays, 197 deep for three bays. For wider openings consult structural engineer.
5. Cripple studs - where openings are not already next to a stud add a new one and with openings wider than 600mm add cripple studs each side beneath the lintol.

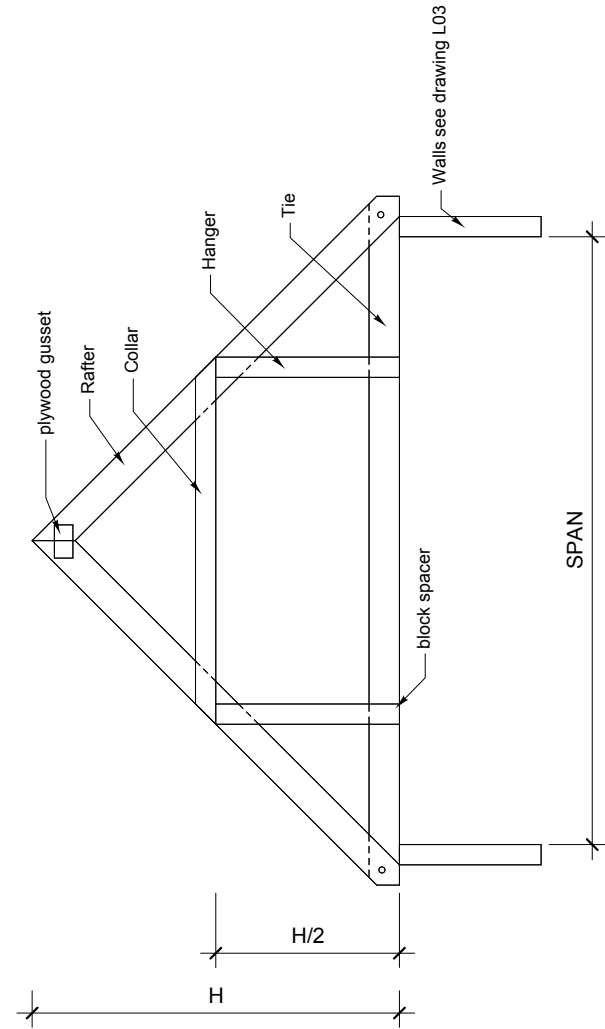


# Drawing L24 ROOF TRUSSES Stud Frame - Appendix 2

STUD FRAME HUT		TABLE 24			
ROOF MEMBERS					
All sizes in millimetres except span					
Centres	Span (m)	Rafter	Ceiling Tie	Collar	Hanger
Timber strength class C16					
400	less than 3.0	38 x 122	38 x 122	38 x 72	38 x 72
600	less than 2.7	38 x 147	38 x 147	38 x 97	38 x 97
400	less than 4.8	47 x 195	47 x 195	47 x 97	47 x 97
600	less than 4.8	47 x 220	47 x 220	47 x 147	47 x 147
Timber strength class C24					
400	less than 2.7	38 x 122	38 x 122	38 x 72	38 x 72
600	less than 2.7	38 x 122	387 x 122	38 x 97	38 x 97
400	less than 4.8	47 x 147	47 x 147	47 x 97	47 x 97
600	less than 4.8	47 x 195	47 x 195	47 x 147	47 x 147

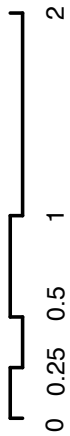
NOTES Consult an engineer if:

- Span is greater than 4.8 metres
- Roof pitch is less than 30 degrees or more than 55



## NOTES

- Rafters fixed with plywood gusset 200 x 100 and nailed at 40 ccs  
Then lapped with tie and bolted together with M12 bolts tooth plate connectors and plate washers
- Collars and hangers laid on and fixed with 4 nails at each end to complete truss
- Trusses laid on top of wall head binder at chosen centres and fixed down with truss plate connectors
- Either 9 OSB or 10 Plywood sarking laid over trusses and fixed at 150 centres with 50 ring shank nails



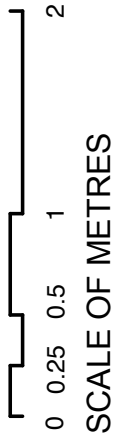
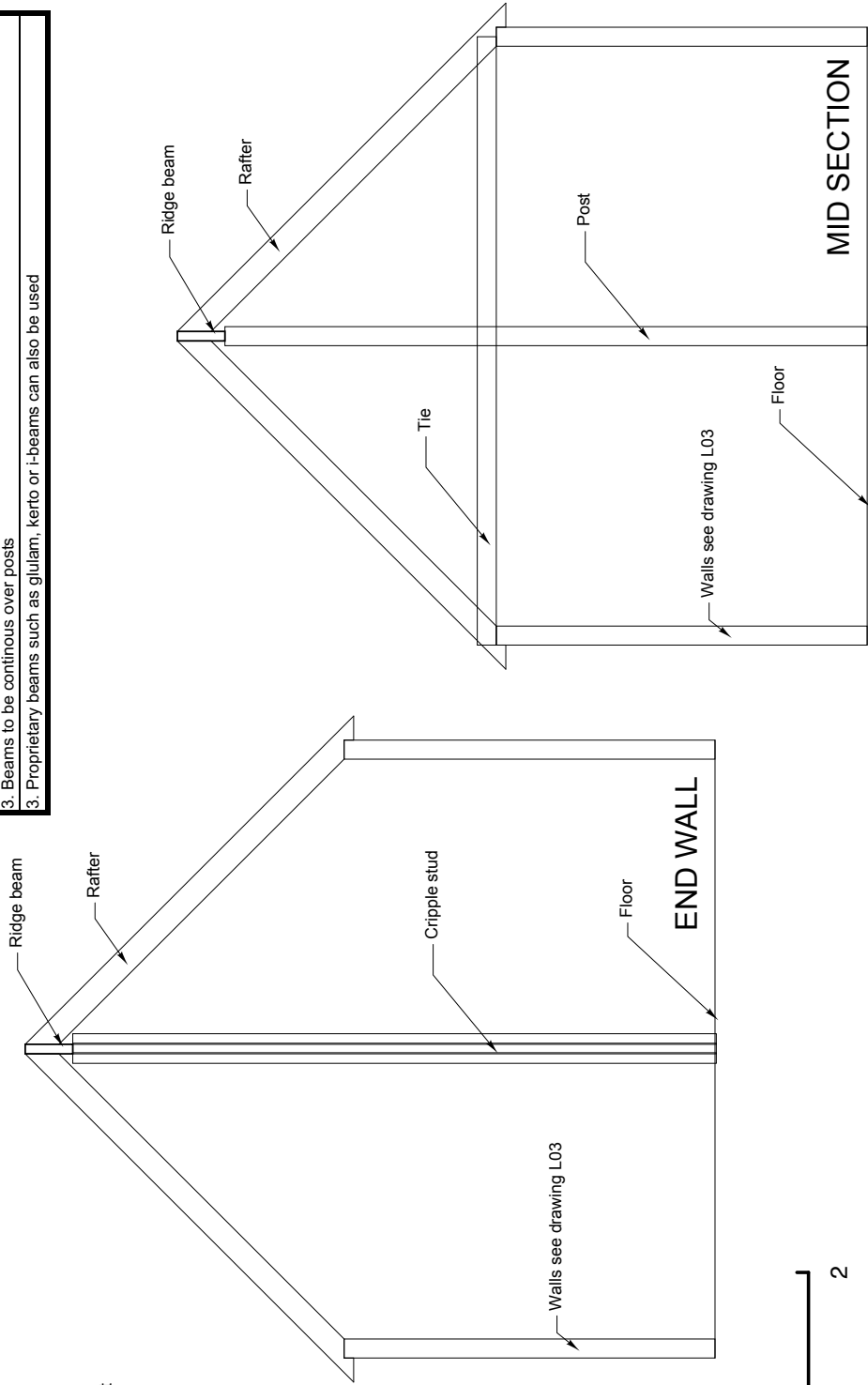
SCALE OF METRES

# Drawing L25 RIDGE BEAM ROOF Stud Frame -Appendix 2

STUD FRAME HUT		TABLE 25	
RIDGE BEAM SIZING		Rafters sized as table 24	
All sizes in millimetres except span which is in metres			
		Ridge beam span	
Bay (X)	2.4	3	3.6
less than 2.4	47x145	47x100	47x220
less than 4.0	47x145	47x195	47x220
less than 4.8	47x170	47x220	63x245
			2ho. 47x245
<b>NOTES Consult an engineer if:</b>			
1. Span is greater than 4.0 metres			
2. Roof pitch is less than 30 degrees or more than 55			
3. Beams to be continuous over posts			
3. Proprietary beams such as glulam, kerfo or i-beams can also be used			

**NOTES**

- Ridge beam fixed to cripple studs built into gable walls
- Ridge beam spans can be reduced by intermediate posts min. 95 x 95 with tied to wallhead. Tie 95 x 45 or 2ho. 95 x 38 fixed with bolts to rafter in line of tie.
- As a minimum, a post must be provided for each bay in the X direction (giving a maximum ridge span of 3.6m) For X = 2.0m, the ridge beam can span over 2no. bays (giving a max. span of 4.0m)
- Rafters fixed to ridge beam and checked over top of wall head binder at chosen centres and fixed down with truss plate connectors.
- Either 9 OSB or 9 Plywood sarking laid over rafters and fixed at 150 centres with 50 ring shank nails





# Drawing L26 SLEEPING PLATFORM Stud Frame - Appendix 2

STUD FRAME HUT		TABLE 26	
SLEEPING PLATFORM			
JOISTS	Width of	Height of	Span at
	Joist	400 ccs	
	38	70	1.5
	38	97	2.1
	38	122	2.7
	38	147	3.3
	47	70	1.8
	47	97	2.4
	47	122	3
	47	147	3.6
BEAMS			
	47	122	2.4
	47	147	2.7
	47	170	3
	47	195	3.3
	47	220	3.6
	63	122	2.7
	63	147	3
	63	170	3.3
	63	195	3.6
	63	220	3.9
NOTES			

- NOTES
- Joists to be timber strength class C16 or better.
  - Roughsawn timber from a sawmill can be used next size up e.g. 47 x 97 becomes 50 x 100
  - Dead load not more than 0.25kN/m<sup>2</sup>
  - Live load not more than 1.5kN/m<sup>2</sup>
1. Platforms can be either single span joists or joists fixed to beams which are then fixed to the walls.
2. Platforms can be across the wallhead or lower down the walls to get the optimum height above and below the platform.
3. Flooring should be as ground floor (see dwg L02)

