



**DESIGN DATA FOR
LIGHT TIMBER FRAMED CONSTRUCTION**

Public Works Department Suva Fiji

DESMOND COLLIER.

**PWD GUIDELINES TO
LIGHT TIMBER FRAMED CONSTRUCTION**

The object of this section of standard details is to illustrate and evaluate simple details. Design values and charts are given to allow the rapid production of drawings. The information given can only cover a sample range of structures and all drawings should be checked to ensure that the scope of the data is not exceeded. Checking should be carried out by a structural engineer and hopefully the use of the information given will mean that only minor improvements if any will be necessary.

SCOPE

The scope chosen was the design of standard single storey timber buildings or 2 storey buildings with the upper floor in timber, up to 7 metres high, capable of resisting hurricane force winds up to 66m/sec (237 kph or 147 mph) basic wind speed. It is assumed that such buildings would be on flat exposed sites such as coral islands. Openings are assumed to be uniformly distributed. Large openings such as wide windows which may cause up to 40% increase in loadings if damaged have not been allowed for.

Consideration has been given to reduced wind speeds of 55m/sec on city sites which may be relatively sheltered. This is given separately. As fixings are usually the weakest link, it is recommended that fixings be detailed for the higher wind speed but that items such as studs and rafters may be made slightly smaller (see separate tables).

No attempt has been made to design for impact of debris during hurricane conditions. It is considered uneconomic to increase cladding sizes sufficiently. Damage from debris would generally not lead to structural collapse and would be repairable.

Deflections under extreme wind loads have not been considered as their occurrence is rare, so some superficial damage due to deflection must be expected.

REFERENCES

The recommendations are based on:

- NZS. 4203 1976 - Code of practice for general structural design loadings for buildings. (Basic Wind speed 66m/sec Ground roughness 1 Earthquake Zone B for Non Public Buildings).
- NZS 3604. 1978 - Code of practice for Light Timber Frame Buildings not requiring specific design. (in general this code has been considered as a minimum. Details and member sizes have been upgraded to cope with higher wind loads. The range of details has been reduced and they have been adapted to comply with common Fiji practices for single storey construction only.)

Note The maximum wind speed is equivalent to that recommended for cyclone areas of Queensland and Northern Territory in S.A.A. Loading Code (AS 1170 Part 2 1973) ie basic wind speed of 63 m/sec with terrain category 2. The reduced wind speed for cities is equivalent to the same basic wind speed with terrain category 3.

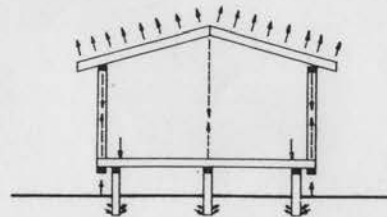
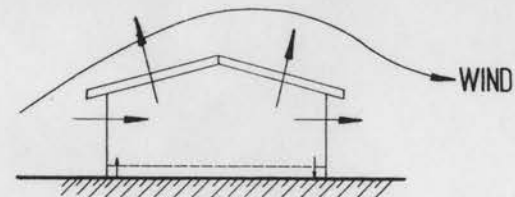
The timber design is based on Fiji light density woods e.g. Fiji pine (500 kg/m³ air dry) and Kauri (480 kg/m³ air dry).

Basic working extreme fibre stress in bending of No.1 framing - Fiji pine at 16% m.c. - 8.13 Mpa. (7.84 x 1.5 (wind factor) Mpa used in calculations.)

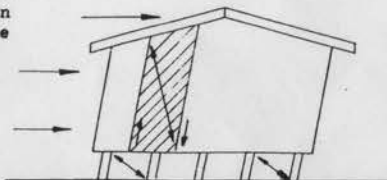
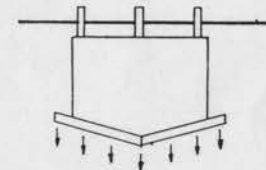
Fixings - J5 stresses refer NZS 3603

CONTINUITY OF FORCES

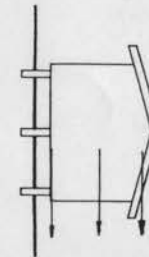
It cannot be emphasised strongly enough that details themselves cannot be relied upon to give a sound structure if there is a lack of continuity for forces that satisfy the basic laws of statics.



UPLIFT FORCES
ANALOGOUS TO



RACKING FORCES
ANALOGOUS TO



Notes

Amendments		
no.	details	date

drawn bp/mh	date MAY '80
scale	
approval <i>DR Collins</i>	approval <i>Carson</i>
P.W.D. FIJI	

DESIGN DATA
LIGHT TIMBER FRAMED CONSTRUCTION
GUIDELINES.
Wind Speed 66m/sec.

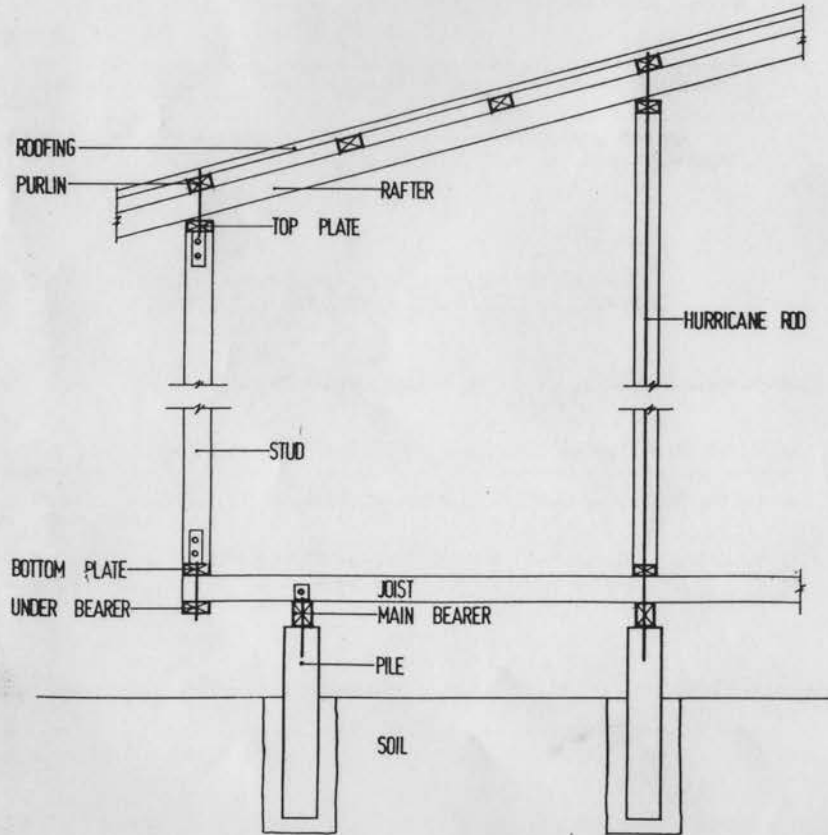
sheet no.
SD (05) 1
amend

CONTINUITY OF FORCES RESISTING UPLIFT

Roofing to Purlin
 Purlin to Rafter or Truss
 Rafter or Truss to Top Plate
 Top Plate to Stud
 Stud to under Bearer.
 Underbearer to Joists
 Joists to Main Bearer
 Main Bearer to Pile
 Pile to Soil

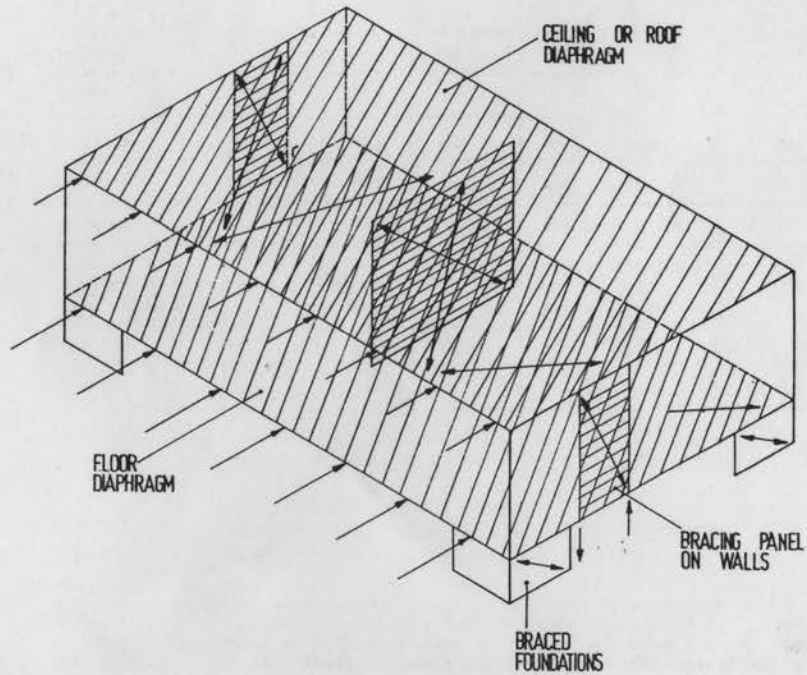
Alternative

Rafter or Truss Direct to Underbearer
 By Hurricane Rod.



CONTINUITY OF FORCES RESISTING RACKING

Lateral Load from walls to roof framing (and to floor diaphragm)
 Through Roof ceiling Diaphragm to bracing walls panels
 Through Bracing Panels to Floor Level. (Uplift to Anchor Piles).
 Through Floor Diaphragm to Braced Foundation Panels.



Notes

Amendments

no.	details	date

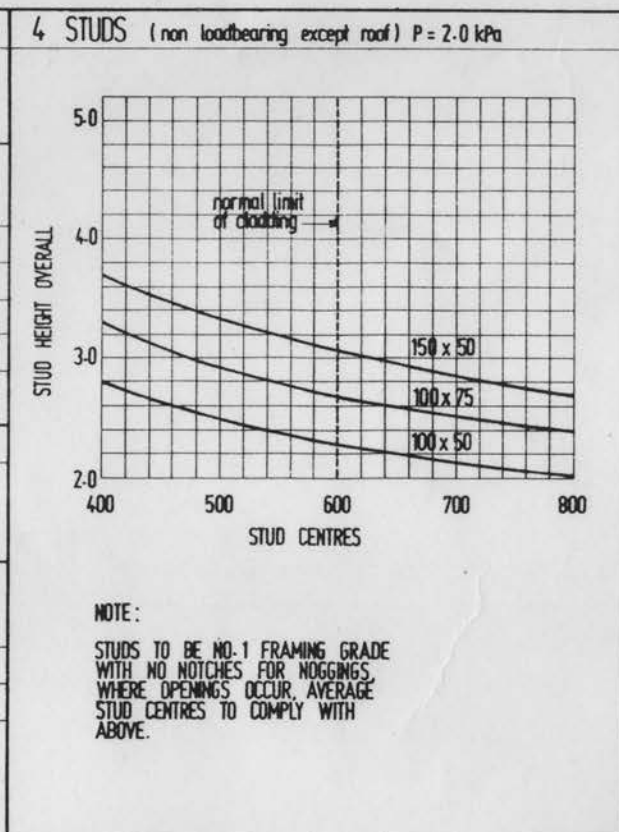
drawn bp/mh date MAY '90
 scale
 approval P.W.D. FIJI

DESIGN DATA
 LIGHT TIMBER FRAMED CONSTRUCTION
 GUIDELINES.
 Wind Speed 66m/sec.

1 BEARERS				
BEARER CENTRES	1 800	2 000	2 700	3 000
BEARER SIZE ON EDGE	BEARER SPAN - (SINGLE SPAN ONLY FOR DOUBLE SPAN ADD 10%)			
100 x 75	1 430	1 270	-	-
100 x 100	1 590	1 480	1 270	-
150 x 75	1 960	1 860	1 680	1 580
150 x 100	-	2 090	1 910	1 730

2 FLOOR JOISTS		
JOIST CENTRES	450	1 600
JOIST SIZE	JOIST SPAN - (SINGLE SPAN ONLY FOR DOUBLE SPAN ADD 10%)	
100 x 50	1 750	1 600
150 x 50	2 700	2 400

3 FLOORING (19mm t & g FLOOR LINING)	
SPECIES	SPAN
LIGHT / MEDIUM DENSITY - Damanu Yaka Kaudamu Kauvula	450
HIGH DENSITY - Yasiyasi Socau Rosarosa Vesi	600



5 RAFTERS P = 2.0 kPa (net)		
RAFTER CENTRES	900	1 200
RAFTER SIZE	RAFTER SPAN	
100 x 50	1 770	1 530
150 x 50	2 780	2 450
200 x 50	2 860	2 620

6 OVERHANGS - (NO BIRDSMOUTH IN RAFTER) P = 3.4 kPa		
RAFTER CENTRES	900	1 200
RAFTER SIZE	MAXIMUM OVERHANG (INCLUDING GUTTER)	
100 x 50	680	590
150 x 50	1 025	905

7 OVERHANGS (20mm BIRDSMOUTH IN RAFTER) P = 3.4 kPa		
RAFTER CENTRES	900	1 200
RAFTER SIZE	MAXIMUM OVERHANG (INCLUDING GUTTER)	
100 x 50	410	355
150 x 50	775	670

8 PURLINS (900 CENTRES MAXIMUM)		
PURLIN SIZE	SPAN (max)	OVERHANG (max)
75 x 50 (on flat)	900	400
100 x 50 (on edge)	1 400	600
150 x 50 (on edge)	2 100	1 000

Notes
 BASED ON FIJI PINE (no.1 framing grade)
 FLOOR LOADING 1.5 kPa
 ALL DIMENSIONS ARE IN MILLIMETRES

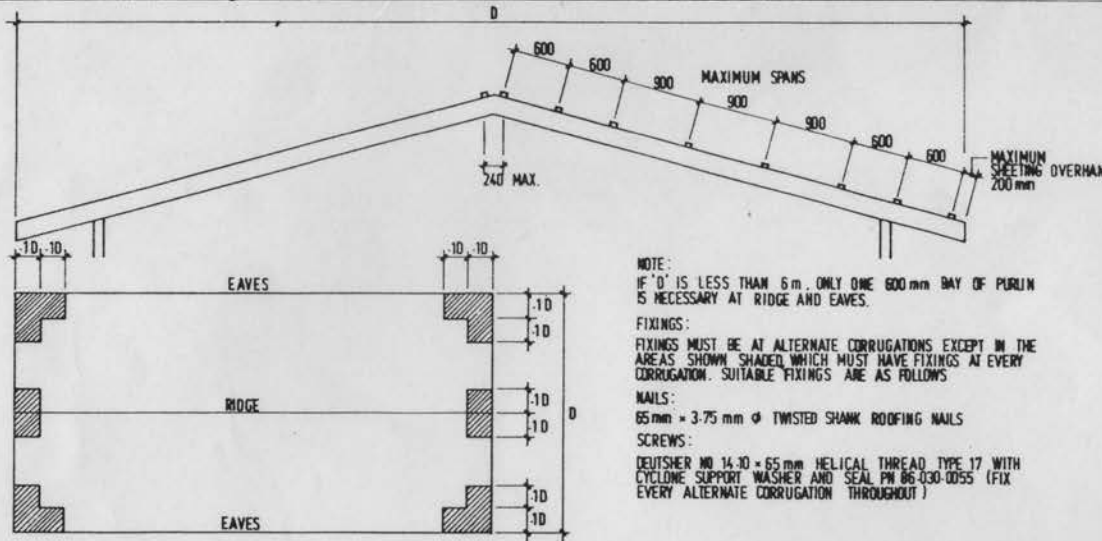
Amendments		
no.	details	date

Drawn bp/sk date AUG '90
 Scale 1:50
 Approved by [Signature]
 P.W.D. FIJI

DESIGN DATA FOR STRUCTURAL
 TIMBER
 (Basic Wind Speed 66m/sec)

sheet no. SD (05) 4 | amend

CORRUGATED IRON (0.48mm, [26g] GALVANISED STEEL) MINIMUM PITCH 15°



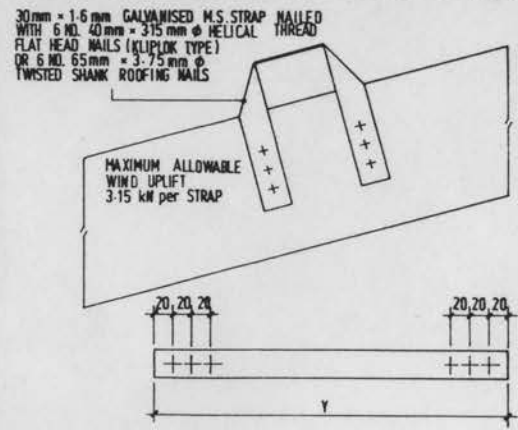
NOTE:
IF 'D' IS LESS THAN 6m, ONLY ONE 600mm BAY OF PURLIN IS NECESSARY AT RIDGE AND EAVES.

FIXINGS:
FIXINGS MUST BE AT ALTERNATE CORRUGATIONS EXCEPT IN THE AREAS SHOWN SHADED WHICH MUST HAVE FIXINGS AT EVERY CORRUGATION. SUITABLE FIXINGS ARE AS FOLLOWS

NAILS:
65mm x 3.75mm ϕ TWISTED SHANK ROOFING NAILS

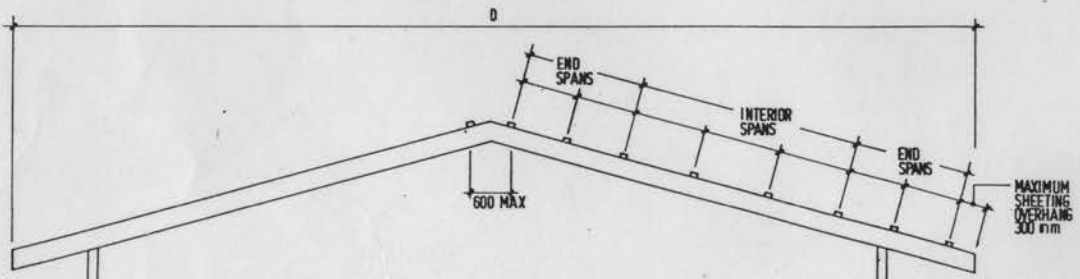
SCREWS:
DEUTSHER NO 14-10 x 65mm HELICAL THREAD TYPE 17 WITH CYCLONE SUPPORT WASHER AND SEAL PN 06-030-0055 (FIX EVERY ALTERNATE CORRUGATION THROUGHOUT)

PURLIN TO RAFTER FIXING, ALTERNATIVE 1, P = 2.76 kPa



FOR 75mm x 50mm PURLIN ON FLAT . Y = 370 mm
FOR 100mm x 50mm PURLIN ON EDGE . Y = 440 mm

PAN IRON (KLIPLOK etc.) MINIMUM PITCH 3°

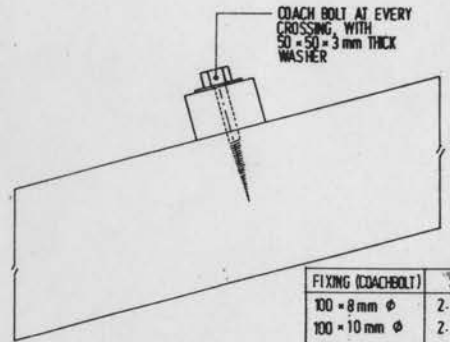


NOTE:
IF D IS LESS THAN 6m ONLY ONE REDUCED END SPAN OF PURLINS IS NECESSARY AT RIDGE AND EAVES.

FIXING SCREWS:
DEUTSHER NO 14-10 x 90mm HELICAL THREAD TYPE WITH KLIPLOK SUPPORT WASHER AND SEAL PN 16-030-0059

THICKNESS (GAUGE)	INTERIOR SPAN (mm)		END SPAN (mm)	
	.66 (24g)	.76 (22g)	.66 (24g)	.76 (22g)
WITHOUT CYCLONE WASHER	820	970	520	640
WITH CYCLONE WASHER	1190	1370	860	900

PURLIN TO RAFTER FIXING, ALTERNATIVE 2 P = 2.76 kPa



FIXING (COACHBOLT)	STRENGTH
100 x 8mm ϕ	2.489 kN
100 x 10mm ϕ	2.784 kN
125 x 10mm ϕ	4.176 kN

Based on J4 fixing strength

PURLIN FIXING LOAD (assuming 900mm c/c for purlins)

PURLIN SPAN (mm)	900	1200	1800	2000
LOAD (kN)	2.48	3.31	4.41	5.52

Notes
TEST RESULTS HAVE NOT YET BEEN RECEIVED FOR NAILING RECOMMENDATIONS 11/6/80

Amendments

no.	details	date

drawn bp date JUN '80
scale 1:50, 1:5
approval *[Signature]*
P.W.D. FIJI

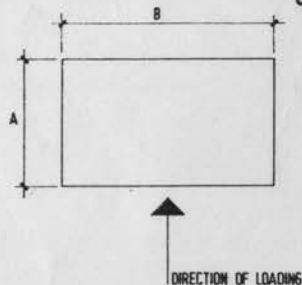
DESIGN DATA
ROOFING SPANS, and TIMBER PURLIN FIXINGS
WIND SPEED 66 m/sec

sheet no. **SD(05) 5** | amend

CEILING PLAN DIAPHRAGM (ALTERNATIVE 4)

DIAPHRAGM MAY CONSIST OF EITHER (a) 6mm PLYWOOD, LINING TO CEILING TO CEILING

OR (b) 9mm GIBRALTER BOARD LINING TO CEILING

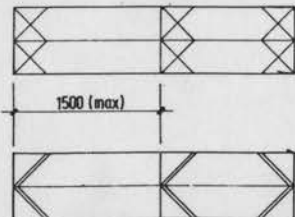


$B \nlessgtr 1.15A$ FOR GIBRALTER BOARD CEILING LINING
 $B \nlessgtr 1.72A$ FOR PLYWOOD CEILING LINING.

DIAPHRAGMS EXCEEDING THESE RATIOS REQUIRE SPECIFIC STRUCTURAL DESIGN.

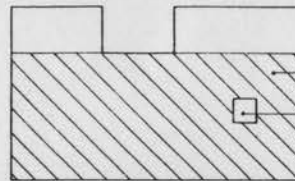
NOTE:

PARTIAL ROOF PLANE BRACING MAY ALSO BE REQUIRED AT EACH END OF ROOFS AND AT NOT MORE THAN 15 METRES e/e TO STABILISE TRUSSES OR CABLES



NOTE:

DIAPHRAGM MUST BE CONTINUOUS, WITH NO HOLES GREATER THAN 1 METRE IN EITHER DIRECTION, AND NO 'SET BACKS' INCLUDED IN THE DIAPHRAGM AREA.



EXTENT OF DIAPHRAGM SHOWN SHADED.

HOLE NOT EXCEEDING 1 METRE IN EITHER DIRECTION

DIAPHRAGM MUST BE ATTACHED TO MEMBERS THAT CAN TAKE THE CHORD FORCES ALONG THEIR EDGES. e.g.

DOUBLE CEILING BATTENS WITH STAGGERED JOINTS
 TRUSS CHORDS

CONTINUOUS TOP PLATES

NAILING:

40 x 2.5mm ϕ CLOUTS AT 150mm e/e FOR SHEET EDGES.

40 x 2.5mm ϕ CLOUTS AT 300mm e/e FOR INTERMEDIATE FRAMING.

Notes
 1 THE SYMBOL \nlessgtr MEANS "NOT GREATER THAN"

Amendments		date
no.	details	

drawn	bp	date	AUG '80
scale			
approved	<i>[Signature]</i>		
P.W.D. FIJI			

DESIGN DATA
 ROOF BRACING (refer also drwg no. SD(05)6)

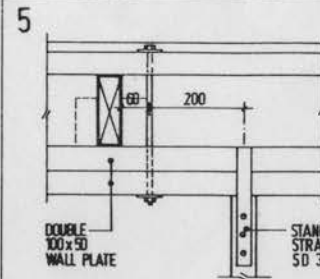
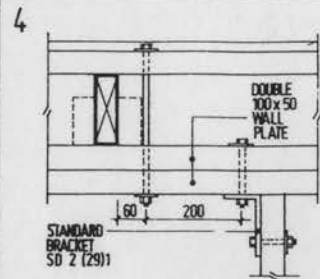
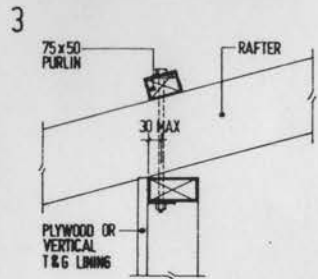
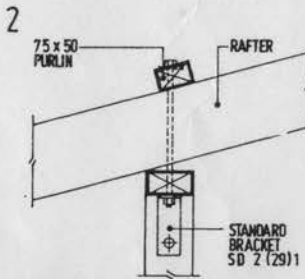
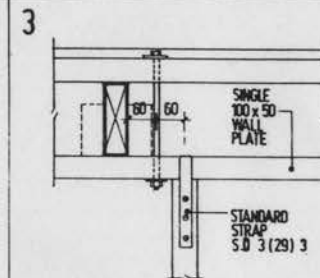
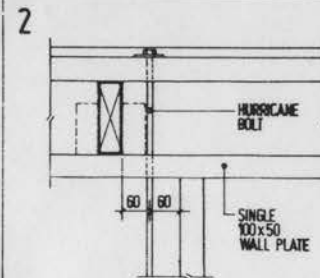
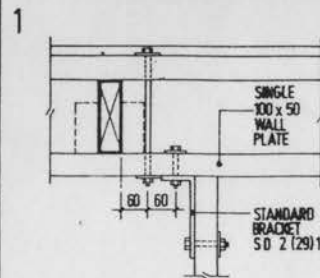
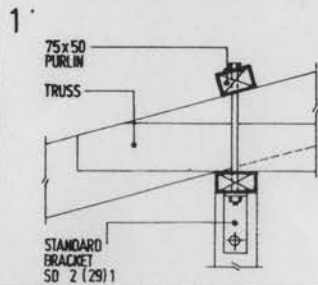
Wind Speed 66m/sec.

sheet no. **SD(05)7** | 7 | amend

EAVES FIXING P = 2.0 kPa net

TOP PLATE LOADING LIMITATIONS

RAFTER OR TRUSS CENTRES FOR SINGLE 12mm Ø M.S. BOLTS	MAXIMUM PERMISSIBLE SPAN (s)
900 c/c	13 140
1200 c/c	9 180
2000 c/c	4 430



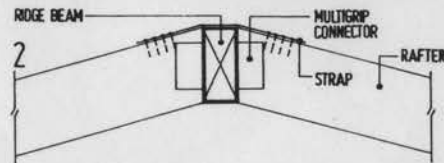
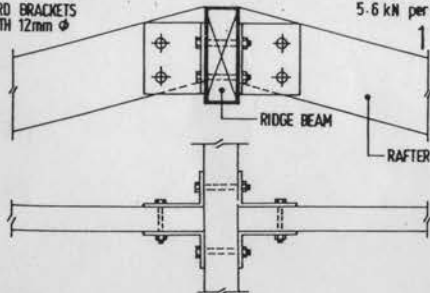
APEX FIXING P = 2.76 kPa

NOTE: ALL DETAILS SHOWN ASSUME A RIDGE BEAM OF ADEQUATE SIZE FOR ITS SPAN AND LOADING, PROPERLY FIXED DOWN 800mm MAX. OVERHANG ASSUMED.

RAFTER SPAN	1000	2000	3000	4000
RAFTER CENTRES				
900	0.9	1.8	2.7	3.6
1200	1.2	2.4	3.6	4.8
1500	1.5	3.0	4.5	

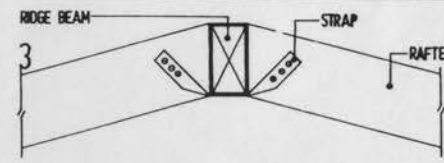
FIXINGS
4 - STANDARD BRACKETS
5 (29)1 WITH 12mm Ø M.S. BOLTS

FIXING STRENGTH
5.6 kN per RAFTER



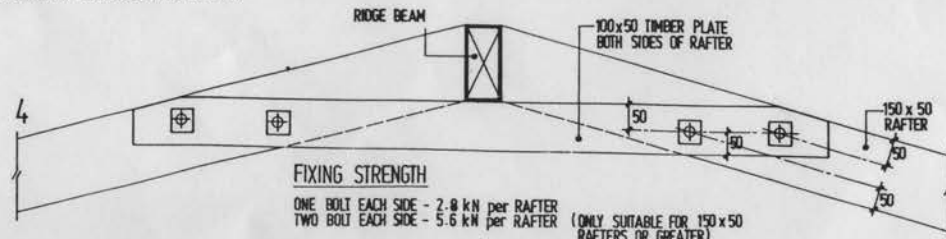
FIXINGS
1. 30 x 1.6mm Thick GALVANISED M.S. STRAP OVER TOP OF RAFTERS NAILED EACH SIDE WITH 4 - 40mm x 3.15mm Ø GALV. HELICAL THREAD FLAT HEAD NAILS.
2. TWO MULTIGRIP CONNECTORS PER RAFTER

FIXING STRENGTH
6 kN per RAFTER



FIXINGS
30 x 1.6mm Thick GALV. M.S. STRAP BOTH SIDES AND NAILED WITH 40mm x 3.15mm Ø GALV. HELICAL THREAD FLAT HEAD NAILS.

FIXING STRENGTH
2 - STRAPS, 6 NAILS EACH SIDE - 3.15 kN per RAFTER
2 - STRAPS, 6 NAILS EACH SIDE - 4.20 kN per RAFTER



FIXING STRENGTH
ONE BOLT EACH SIDE - 2.8 kN per RAFTER
TWO BOLT EACH SIDE - 5.6 kN per RAFTER (ONLY SUITABLE FOR 150x50 RAFTERS OR GREATER)

Notes

ALL BOLTS SHOWN ARE 12mm Ø M.S. WITH 50mm SQUARE WASHERS, 3mm THICK, TO BEAR AGAINST TIMBER SURFACES.

Amendments

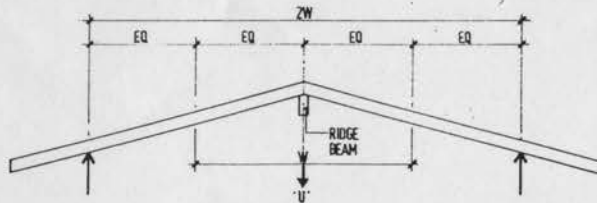
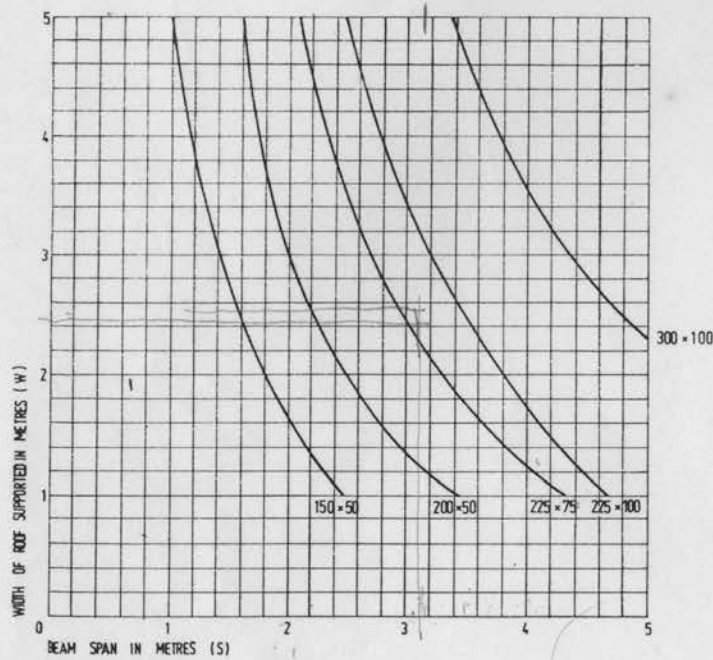
no.	details	date

drawn bp/sk date SEP '80
scale 1:10
approval [signature]
P.W.D. FIJI

DESIGN DATA (TIMBER)
FIXINGS TO RESIST UPLIFT (WIND) ON TRUSSES / RAFTERS
Wind Speed 66m/sec

sheet no. SD (05) 8

RIDGE BEAM SIZES and SPANS

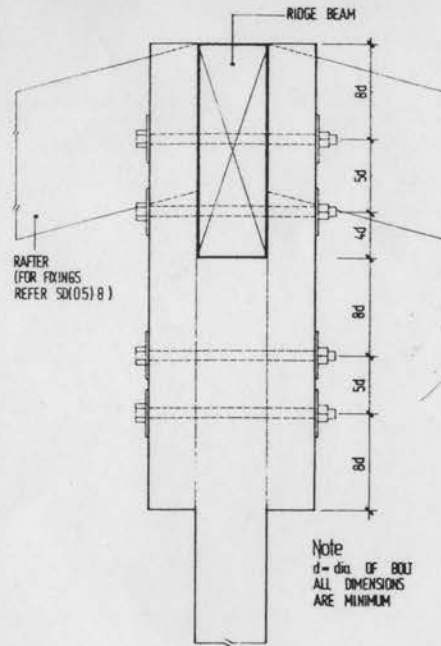


UPLIFT ON FIXINGS AT EACH END OF RIDGE BEAM "U" = $W \times S$ (W & S expressed in metres)

$3.154 \times 2.49 = 7.85 \text{ kN}$
requires no 12mm ϕ bolts.

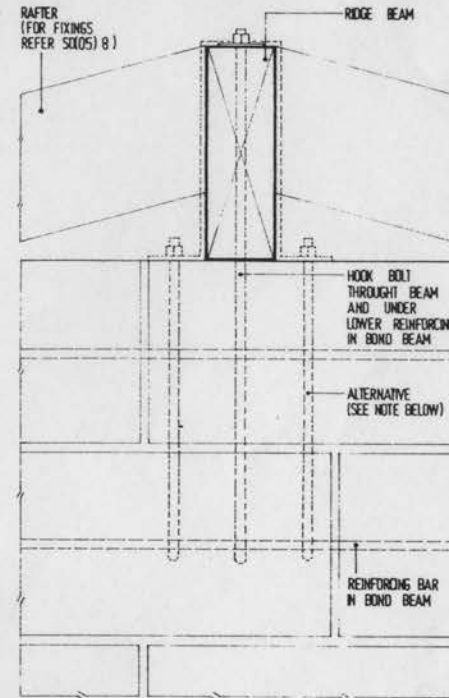
MAXIMUM PERMISSIBLE WIND UPLIFT ON FIXINGS

Bolts In Double Shear With Loads At Right Angles To Grain.



FIXINGS REQUIRED TO RESIST UPLIFT LOADS ON TIMBER POSTS

Bolts In Tension



FIXINGS	FIXING STRENGTH IN (kN)			FIXINGS	STRENGTH
	BEAM THICKNESS IN (mm)				
	50	75	100		
12mm ϕ BOLT WITH 50 x 50 x 3mm Thick WASHER	2.79	4.03	5.58	12mm ϕ BOLT WITH 50 x 50 x 3mm Thick WASHER	13.40 kN each
16mm ϕ BOLT WITH 65 x 65 x 5mm Thick WASHER	3.72	5.37	7.45	16mm ϕ BOLT WITH 65 x 65 x 5mm Thick WASHER	25.40 kN each

Note THROUGH BOLTS SHOULD NOT BE USED FOR BEAMS LESS THAN 75mm WIDE FOR BEAMS 50mm WIDE A 50mm WIDE M.S. PLATE, 6mm THICK SHOULD BE USED, BENT OVER THE BEAM AND BOLTED TO BLOCKWORK AS SHOWN DOTTED ABOVE.

Notes

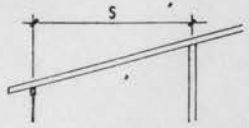
Amendments

no.	details	date

Drawn bp date JUN '80
 scale 1:5
 approval [Signature]
 P.W.D. FIJI

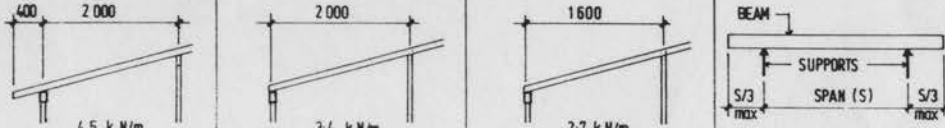
DESIGN DATA
 RIDGE BEAM SIZES, SPANS and FIXINGS
 WIND SPEED 66 m/sec

VERANDAH RAFTER SPANS (P=3-4 kPa)

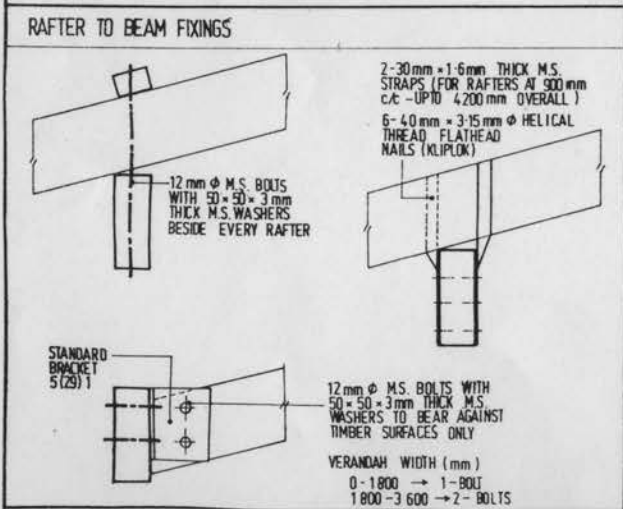
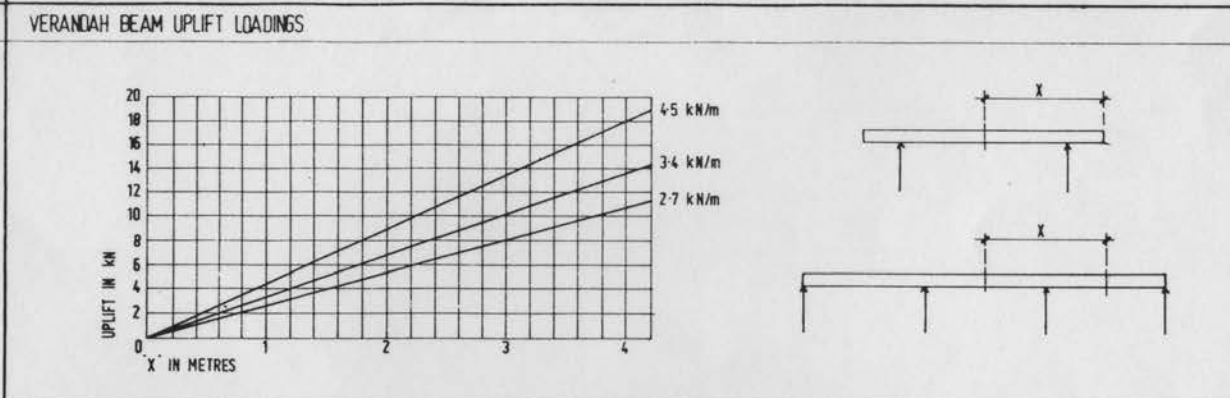
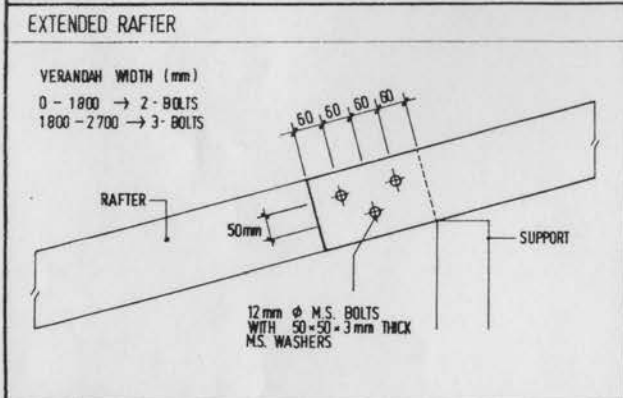


RAFTER SIZE (mm)	RAFTER SPACING (mm)		
	900	1 200	200
100 x 50	1 360	1 180	—
150 x 50	2 125	1 840	1 425

VERANDAH BEAM SPANS (P=3-4 kPa)

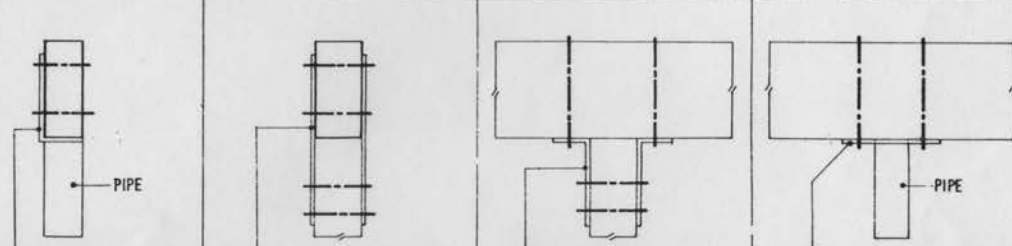


BEAM SIZE (mm)	400	2 000	2 000	1 600	—
150 x 75	1 900	—	—	—	—
150 x 100	2 460	—	—	—	—
200 x 50	2 110	2 730	—	3 050	—
200 x 75	2 850	3 290	—	3 680	—
200 x 100	3 350	3 870	—	4 320	—



VERANDAH BEAM TO POST FIXING STRENGTH

Note: ALL POSTS MUST BE ANCHORED TO THE GROUND WITH SUITABLE QUANTITY OF CONCRETE TO RESIST UPLIFT (CONCRETE WEIGHS 24.5 kN/m³)



BEAM WIDTH (mm)	50	75	100	—	—
50	2.79 kN	5.58 kN (STEEL POST ONLY)	—	—	—
75	4.03 kN	8.06 kN (" " ")	16.78 kN	—	32.1 kN
100	5.58 kN	11.16 kN	16.78 kN	32.1 kN	32.1 kN

WELDED BRACKET TO M.S. POST AND 2-12 mm ϕ M.S. BOLTS WITH 50 x 50 x 3 mm THICK M.S. WASHERS TO BEAR AGAINST TIMBER SURFACES ONLY

50 mm x 6 mm THICK M.S. PLATE AND 4-12 mm ϕ M.S. BOLTS.

2-STANDARD BRACKET 4(29)1 AND 4-12 mm ϕ M.S. BOLTS WITH 50 x 50 x 3 mm THICK WASHERS TO BEAR AGAINST TIMBER SURFACES ONLY.

50 mm x 6 mm THICK M.S. PLATE WELDED TO POST AND 2-12 mm ϕ M.S. BOLTS WITH 50 x 50 x 3 mm THICK M.S. WASHERS TO BEAR AGAINST TIMBER SURFACES ONLY.

Notes
 1. PURLIN SPACING SHOULD NOT EXCEED 600 mm OVER WIDTH OF VERANDAH.

Amendments

no.	details	date

drawn bp date JUN 00
 scale 1:10
 approval P.W.D. FIJI
DESIGN DATA (TIMBER)
 VERANDAH RAFTER, BEAM AND POST DETAILS
 (Wind Speed 66 m/sec.)

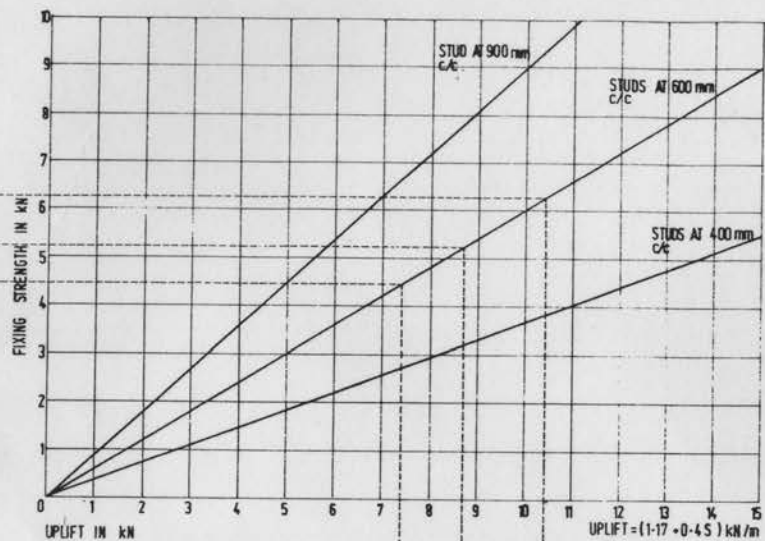
11/007 no. SD(05)10 amend

ALTERNATIVES 1,2 and 3(a),(b) and (c) (NAILED CLADDING, M.S. STRAPS and NAILS, M.S. BRACKETS and BOLTS)

ALTERNATIVE 4 (HURRICANE BOLTS)

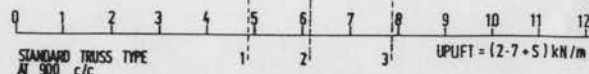
ALTERNATIVE 3	ALTERNATIVE 2
MILD STEEL ANGLE BRACKETS AND BOLTS	MILD STEEL STRAPPING AND NAILS
3(a) & (b)	16 NAILS
	12 NAILS
3(c)	8 NAILS
	6 NAILS

NOTE:
WHERE STUD SPACING EXCEEDS 900 mm (eg. AT OPENINGS),
HURRICANE BOLTS (ALTERNATIVE 4) WILL BE REQUIRED.

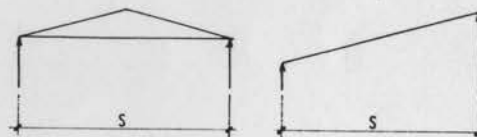
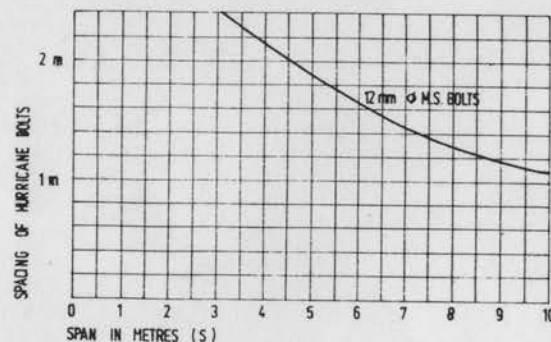


ALTERNATIVE 1	75 x 3.75 mm ϕ NAILS	AT	60 mm c/c	40 mm c/c
Nails to vertical t & g boarding or plywood cladding	65 x 3.15 mm ϕ NAILS or 40 x 3.15 mm ϕ CLOUTS	AT	60 mm c/c	40 mm c/c
	40 x 2.5 mm ϕ CLOUTS	AT	60 mm c/c	40 mm c/c

UPLIFT (kN/m) FOR 66 m/sec WIND ON ROOF OF 15°-30° PITCH WITH OVERHANG OF 900 mm MAX.



MAXIMUM DISTANCE BETWEEN HURRICANE BOLTS IN LOAD BEARING WALLS MUST NOT EXCEED 2.4 m.



NOTE:

- UNLESS HURRICANE BOLTS ARE IMMEDIATELY ADJACENT TO EACH AND EVERY RAFTER OR TRUSS (i.e. WITHIN 60 mm) FIXING FROM RAFTER OR TRUSS TO WALL PLATE, OR FROM WALL PLATE TO STUD IS STILL REQUIRED.
- HURRICANE BOLTS MUST BE POSITIONED AT ALL EXTERNAL CORNERS.
- AT END WALLS, HURRICANE BOLTS SHOULD BE POSITIONED AT EACH BEARER INSTEAD OF SPACING SHOWN ABOVE. EACH BOLT TO EXTEND FROM TOP PLATE IF FRAMED END WALL, OR FROM PACKER ON BOTTOM CHORDS OF TRUSS, IF TRUSS COINCIDES WITH END WALL, AND TO PASS THROUGH BEARER.
- THE ABOVE SPACING ASSUMES A WIND SPEED OF 66 m/sec AND A ROOF OF 15°-30° PITCH WITH OVERHANGS OF 900 mm MAXIMUM.

FOR FURTHER DETAILS SEE DRAWING NO. SD(05)14

Notes

NAIL AND BOLT HOLDING STRENGTHS ARE BASED ON USE OF J 5 TIMBER (FIJI PINE ETC.). TEST RESULT HAVE NOT YET BEEN RECEIVED FOR NAILING RECOMMENDATIONS 11/6/80.

Amendments

no.	details	date

drawn	bp	date	JUL '80
scale			
approval			
	P.W.D. FIJI		

DESIGN DATA (TIMBER)
CHOICE OF FIXING OF TOP and BOTTOM PLATES TO STUDS

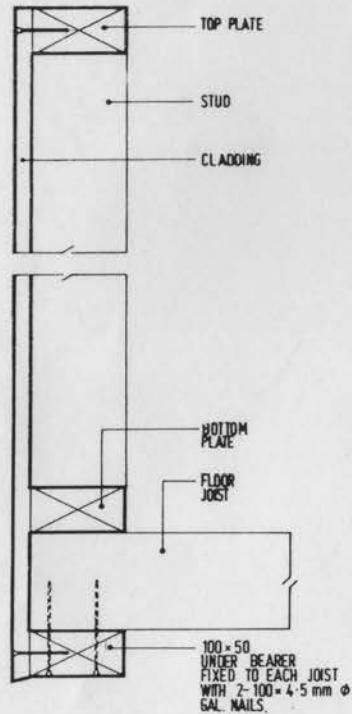
WIND SPEED 66 m/sec

Sheet no.

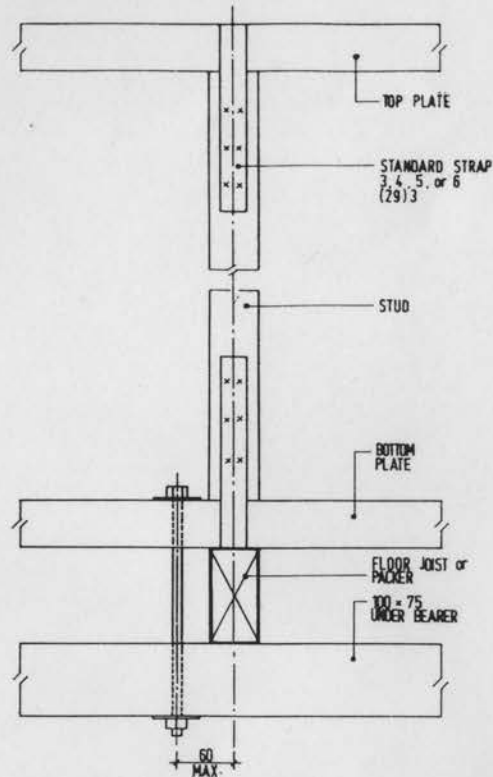
SD(05) 11

amend

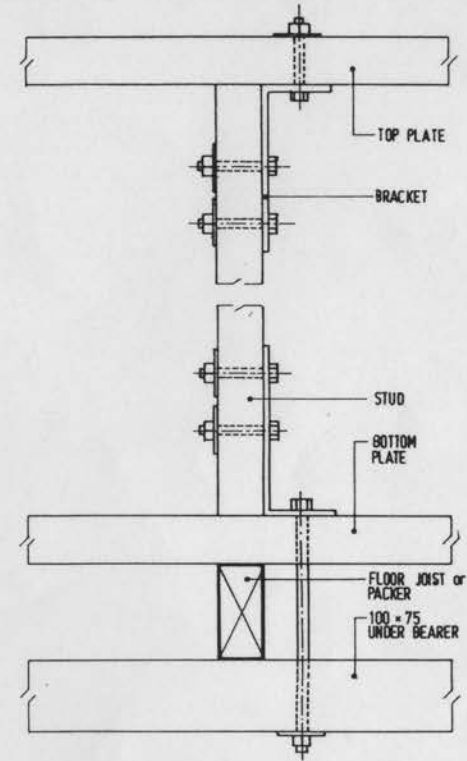
ALTERNATIVE 1 (CLADDING)



ALTERNATIVE 2 (STRAPS)



ALTERNATIVE 3(a) (ANGLE BRACKET)



TYPES OF CLADDING	NAIL SIZES and SPACING	RESISTANCE TO UPLIFT (kN)	TYPE OF STRAP and NAIL.	NUMBER OF NAILS	RESISTANCE TO UPLIFT (kN)	FIXINGS	RESISTANCE TO UPLIFT (kN)
140 x 20 T & G (Vertical)	75 mm x 3.75 mm ϕ at 40 mm c/c	10.46	30 mm x 1.6 mm thick galvanised steel strap over top of top plate and under bottom of bottom plate nailed to two faces of stud with 40 mm x 3.15 mm ϕ helical thread flat head galvanised nails.	6	2.25	STANDARD BRACKET 4(29)1 3-12 mm ϕ M.S. bolts with 50x50x3 mm thick M.S. washers to bear against timber surfaces	7.82
90 x 20 T & G (Vertical)	65 mm x 3.15 mm ϕ at 40 mm c/c	7.50		8	3.00		
6 mm Exterior plywood	65 mm x 2.50 mm ϕ at 40 mm c/c	4.84		12	4.50		
				16	6.00		

NOTE: Nail spacings given are for horizontal fixing.
For vertical fixing of plywood 150 mm c/c (average) on every stud.

Notes
NAIL AND BOLT HOLDING STRENGTHS ARE BASED ON THE USE OF J5 TIMBER (FIJI PINE ETC.). TEST RESULTS FOR NAILS NOT YET RECEIVED 11/6/80. NAIL LENGTHS MAY BE REDUCED TO CLADDING THICKNESS + 3, BUT DIAMETER MUST NOT BE REDUCED.

Amendments

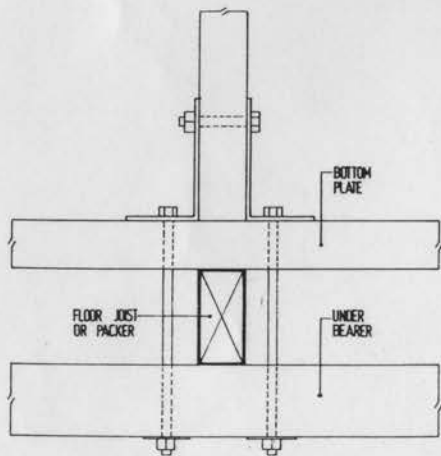
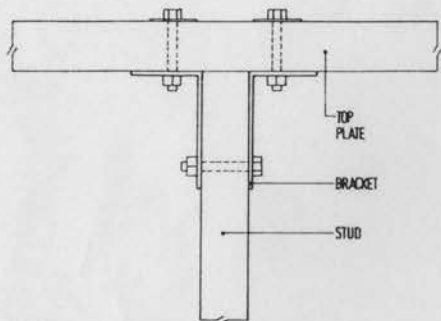
no.	details	date

drawn bp date JUN 80
scale 1:5
approval P.W.D. FIJI

DESIGN DATA (TIMBER)
FIXING OF STUDS TO TOP and BOTTOM PLATE
WIND SPEED 66 m/sec

sheet no. SD(05)12

ALTERNATIVE 3(b) (ANGLE BRACKET)



FIXINGS

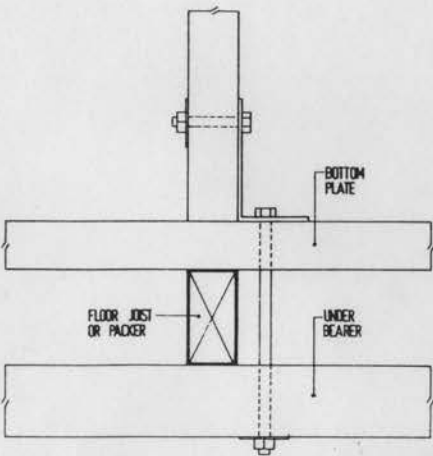
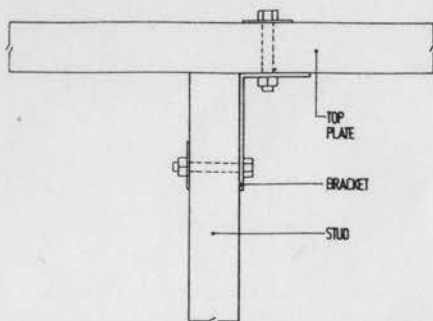
RESISTANCE TO UPLIFT (kN)

STANDARD BRACKET 2(29)

3-12mm ϕ MS BOLT WITH 50 x 50 x 3mm THICK MS WASHERS TO BEAR AGAINST TIMBER SURFACES

7.82

ALTERNATIVE 3(c) (ANGLE BRACKET)



FIXINGS

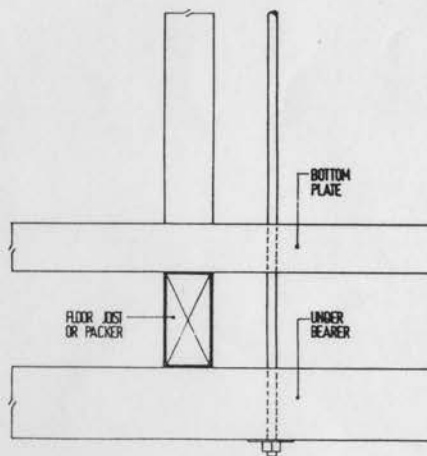
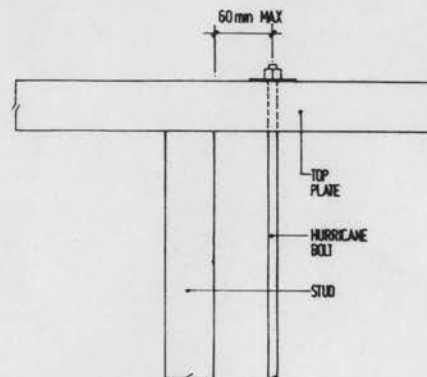
RESISTANCE TO UPLIFT (kN)

STANDARD BRACKET 2(29)

2-12mm ϕ MS BOLTS WITH 50 x 50 x 3mm THICK MS WASHERS TO BEAR AGAINST TIMBER SURFACES

3.91

ALTERNATIVE 4 (HURRICANE BOLTS)



FIXINGS

RESISTANCE TO UPLIFT (kN)

12mm ϕ MS HURRICANE BOLTS WITH 50 x 50 x 3mm THICK MS WASHERS TO BEAR AGAINST TIMBER SURFACES OF TOP PLATE AND UNDERBEARER

14.26

Note:
HURRICANE BOLTS MAY BE EXTENDED UPWARDS TO TIE DOWN TRUSSES OR RAFTER AS SHOWN ON SD (05) 14

Notes

NAIL AND BOLT HOLDING STRENGTHS ARE BASED ON THE USE OF J 5 TIMBER (FUJI PINE ETC.). TEST RESULTS FOR NAILING RECOMMENDATIONS HAVE NOT YET BEEN RECEIVED. 11/6/80.

Amendments

no.	details	date

drawn	bp/mh	date	June '80
scale	1:10	BY	
approval			
P.W.D. FIJI			

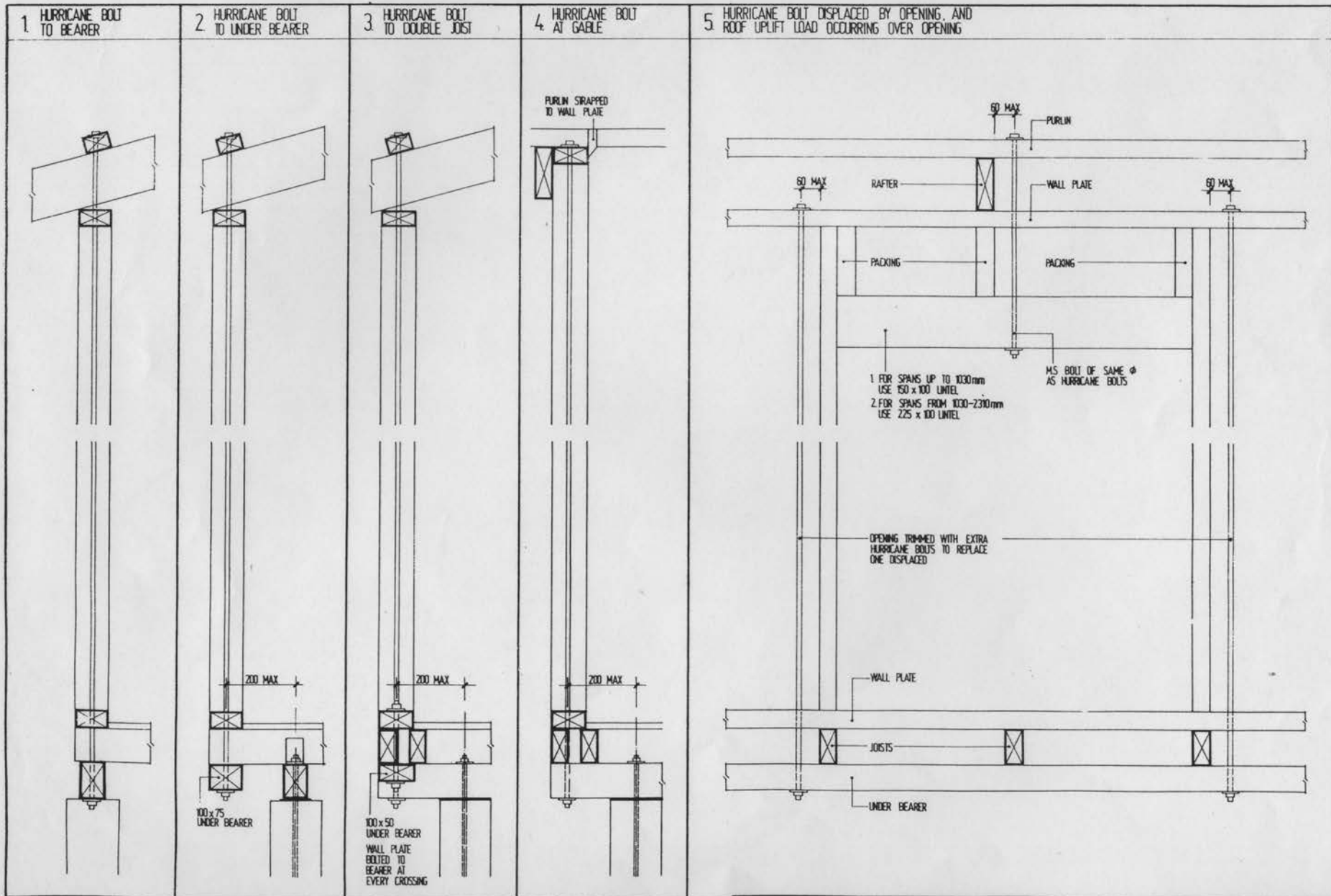
DESIGN DATA (TIMBER)
FIXING OF TOP and BOTTOM PLATE TO STUDS

WIND SPEED 66 m/sec

sheet no.

SD(05) 13

amend



Notes

- 1 FOR 12mm ϕ BOLTS USE 50x50x3mm Thick WASHERS TO BEAR AGAINST TIMBER SURFACES
- 2 FOR 16mm ϕ BOLTS USE 65x65x5mm Thick WASHERS TO BEAR AGAINST TIMBER SURFACES

Amendments

no.	details	date

drawn mh/bp date JUNE '80
 scale 1:20
 approved [Signature] P.W.D. FIJI

DESIGN DATA (TIMBER)
 HURRICANE BOLT DETAILS

WIND SPEED 66 m/sec

sheet no. SD(05)14

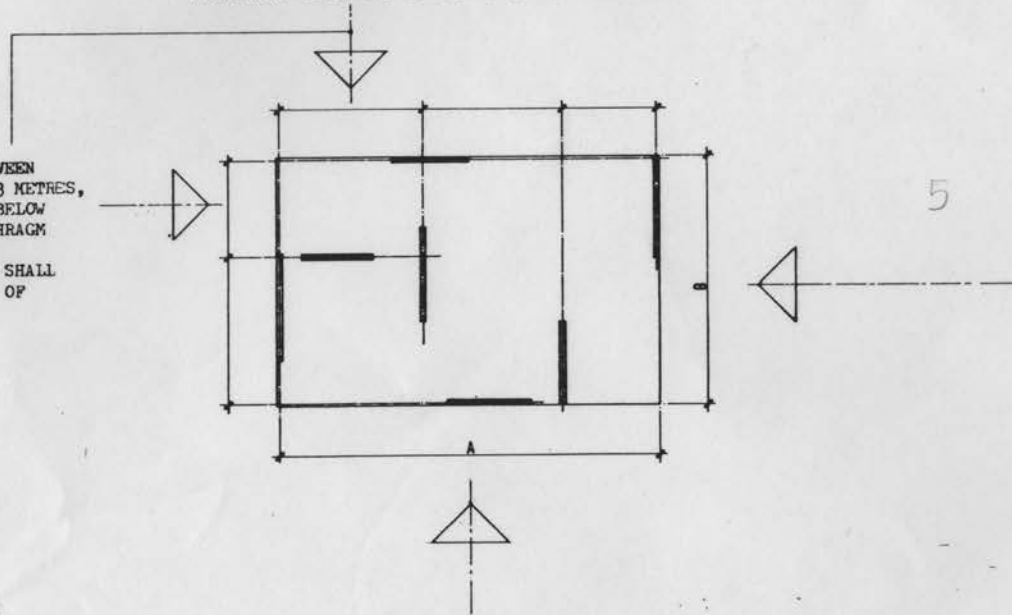
WALL BRACING - SINGLE STOREY OR TOP STOREY OF DOUBLE STOREY, WITH LIGHT ROOF OF PITCH UP TO 25°

BASIC WIND SPEED 66 METRES/SEC - BRACING UNITS REQUIRED PER METRE WIDTH EXPOSED TO THE WIND, 73 UNITS
(FOR UNIT RATINGS OF VARIOUS WALL CONSTRUCTIONS, SEE DRAWING NO. SD(05)16)

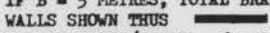
Note: AT HIGH WIND SPEEDS, WIND LOADINGS WILL BE MORE CRITICAL IN TIMBER BUILDINGS THAN EARTHQUAKE LOADINGS, UNLESS THE BUILDING IS VERY LONG, OR HAS A VERY LARGE PLAN AREA

EXAMPLE SHOWING BRACING UNITS REQUIRED


MAXIMUM WIDTH BETWEEN BRACING LINES IS 3 METRES, OR 7.5 METRES IF BELOW A RECOGNISED DIAPHRAGM (NZS 3604, 1978) EACH BRACING LINE SHALL CONTAIN A MINIMUM OF 70 UNITS



'B' IS WIDTH OF BUILDING FOR CALCULATING TOTAL BRACING REQUIRED IN ←→ DIRECTION

IF B = 5 METRES, TOTAL BRACING REQUIRED IN WALLS SHOWN THUS  IS
 $B \times 73 \text{ UNITS/METRE} = 5 \times 73 = 365 \text{ UNITS}$

'A' IS WIDTH OF BUILDING FOR CALCULATING TOTAL BRACING REQUIRED IN ↑↓ DIRECTION

IF A = 8 METRES, TOTAL BRACING REQUIRED IN WALLS SHOWN THUS  IS
 $A \times 73 \text{ UNITS/METRE} = 8 \times 73 = 584 \text{ UNITS}$

Notes

Amendments

no.	details	date

Drawn bp
scale 1:10
approved *[Signature]*
P.W.D. FIJI

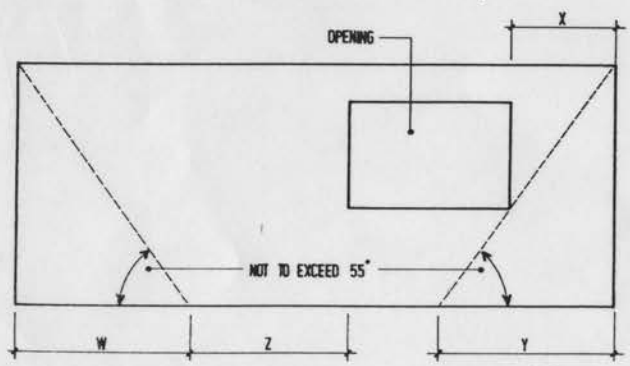
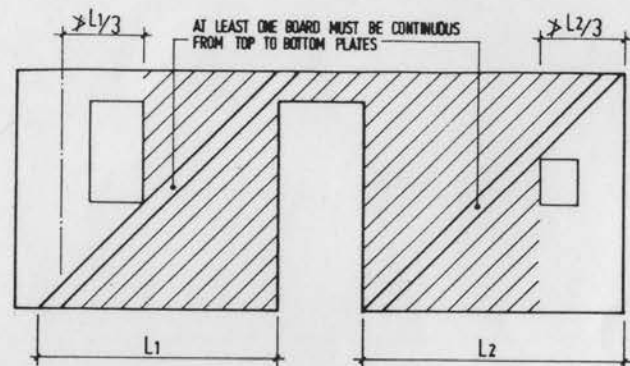
date JUNE '80

DESIGN DATA (TIMBER)
WALL BRACING

WIND SPEED 66m/sec

15

sheet no. SD(05)15

1 WALL BRACING WITH SHEET LINING	RATING	2 DIAGONAL WEATHERBOARDING	RATING
<p>(a) LET IN 100 x 25 CONTINUOUS TIMBER DIAGONAL BRACE, OR 22 x 22 x 1.2mm THICK GALVANISED M.S. ANGLE, PLUS SHEET LINING ON ONE SIDE OF STUDS. eg. 4mm THICK PLYWOOD, or 9 - 12mm THICK GIBRALTER BOARD or 6 - 7.5mm THICK HARDIFLEX</p> <p>(b) AS ABOVE WITH SHEET LINING ON 2 SIDES</p> <p>(c) IN THE EXAMPLE BELOW, SOME ADDITIONAL BRACING (NOT MORE THAN 50% IN ANY ONE BRACING LINE) CAN BE ACHIEVED FROM SECTION 'Z' PROVIDED IT IS LINED ON BOTH SIDES. OPENINGS AND ANY LENGTHS LESS THAN 1200mm MUST NOT BE USED. RATING QUOTED IS THE MAXIMUM TOTAL FOR THIS SECTION.</p>  <p>W = LENGTH OF BRACING ELEMENT TO (a) or (b) LENGTH OF BRACING ELEMENT TO (a) or (b) IS LESSER OF 'Y' OR (1.5 x 'X')</p> <p>FIXINGS: FIXING OF LINING SHALL BE A MINIMUM OF 40 x 2.5mm ϕ GALVANISED CLOUT NAILS AT 150mm c/c ON ALL SHEET EDGES (NOT CLOSER THAN 10mm TO EDGE) AND 300mm c/c AT INTERMEDIATE FRAMING.</p> <p>FIXING OF DIAGONAL BRACING SHALL BE A MINIMUM OF 3 - 75 x 3.15mm ϕ GALVANISED FLAT HEAD NAILS TO TOP AND BOTTOM PLATES AND 2 - 75 x 3.15mm ϕ AT EVERY STUD CROSSING.</p>	<p>42 UNITS PER METRE</p> <p>62 UNITS PER METRE</p> <p>TOTAL 42 UNITS ONLY</p>	<p>BOARDING: 140 x 20 WEATHERBOARDS (SLOPE 25° - 55°) END JOINTS STAGGERED</p> <p>FIXINGS: 2 - 6.5 x 2.0mm ϕ GALV. NAILS PER BOARD, TO EACH STUD AND PLATE.</p> 	<p>83 UNITS PER METRE</p>
		3 SHEET BRACING	
<p>Notes</p> <p>1) TEST RESULTS FOR NAILING RECOMMENDATIONS NOT YET RECEIVED 11 / 6 / 80</p> <p>2) THE SYMBOL \neq MEANS NOT GREATER THAN.</p>		<p>6mm THICK PLYWOOD OR 7.5mm THICK HARDIFLEX.</p> <p>(a) SHEET BRACING ONE SIDE ONLY (BRACING ELEMENT 900mm - 1800mm)</p> <p>(b) SHEET BRACING ONE SIDE ONLY (BRACING ELEMENT 900mm - 1800mm) AND LINING ON OTHER SIDE</p> <p>(c) SHEET BRACING ONE SIDE ONLY (BRACING ELEMENT EXCEEDING 1800mm)</p> <p>LET-IN DIAGONAL BRACE IS NOT REQUIRED WITH ANY OF ALTERNATIVES (a), (b) AND (c) ABOVE FOR DETAILS OF SHEET BRACING, REFER SD (05) 17.</p>	<p>63 UNITS PER METRE</p> <p>83 UNITS PER METRE</p> <p>83 UNITS PER METRE</p>

Notes

1) TEST RESULTS FOR NAILING RECOMMENDATIONS NOT YET RECEIVED 11 / 6 / 80

2) THE SYMBOL \neq MEANS NOT GREATER THAN.

Amendments		no.	details	date

drawn bp/sk date OCT '80
scale
Caron
approval
P.W.D. FIJI

DESIGN DATA TIMBER
BRACING UNIT RATING FOR VARIOUS WALL
CONSTRUCTIONS
Wind Speed 66m/sec

16 SD (05) 16 amend

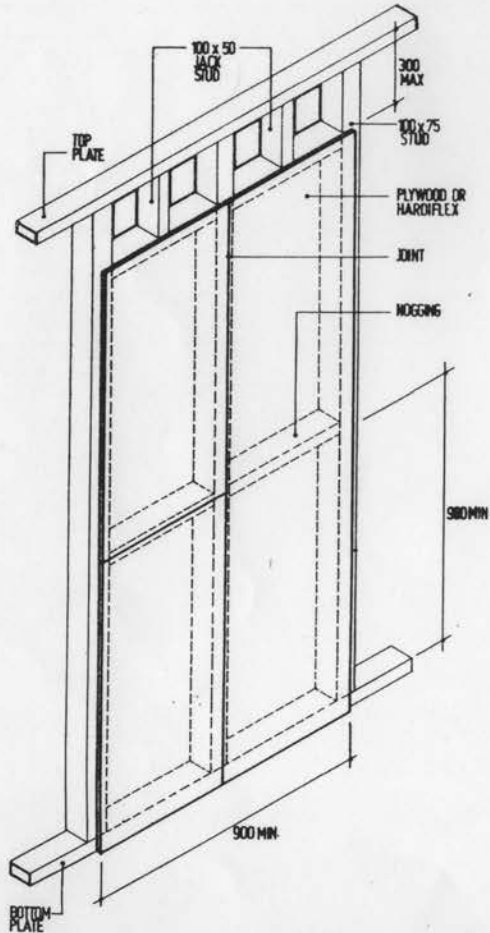
SHEET BRACING SPECIFICATION AND FIXING

SHEET BRACING MUST CONSIST OF EITHER 6mm PLYWOOD OR 7.5mm HARDFLEX
FIXING MUST BE A MINIMUM OF 40x2.5mm ϕ GALVANISED CLOUT NAILS AT 150mm C/C ON ALL SHEET EDGES (NOT CLOSER THAN 10mm TO EDGE) AND 300mm C/C AT INTERMEDIATE FRAMING.

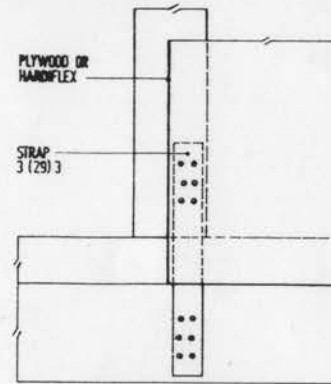
NOTE IF SHEET BRACING IS ALSO TO RESIST UPLIFT, EXTRA FRINGS WILL BE REQUIRED AT TOP AND BOTTOM OF PANEL. SEE DRAWINGS No. SD (05) 11-14

FIX TO TOP PLATE OR NOGGING (minimum 50x40) WITHIN 300mm OF TOP PLATE

1. NO OPENINGS GREATER THAN 150mm ϕ PERMITTED.
2. MAXIMUM OF ONE JOINT PERMITTED VERTICALLY OR HORIZONTALLY PER BRACING PANEL.
3. AT LEAST ONE LINE OF NOGGINGS REQUIRED.
4. AT END OF EACH BRACING PANEL, FIX WITH STRAPS TO FLOOR JOISTS (DETAIL A) OR BOLT TO CONCRETE SLAB (DETAIL B) OR OVERLAP SHEETING AND NAIL TO BEARER OR UNDER BEARER (DETAIL C) OR HURRICANE BOLT TO BEARER, UNDER BEARER, OR FOUNDATIONS (DETAIL D)

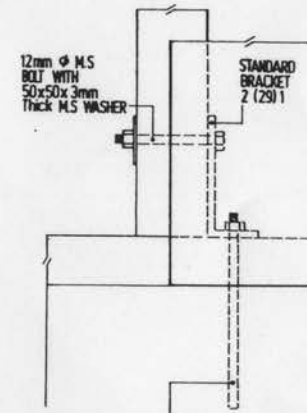


DETAIL A



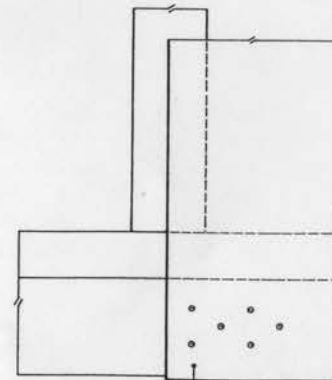
30x1.6mm GALVANISED M.S. STRAPS NAILED TO PANEL, AND TO JOIST OR BEARER, (TWISTED IF NECESSARY) WITH 12-40x3.15mm ϕ HELICAL THREAD FLAT HEAD NAILS (RUIPOK TYPE)

DETAIL B



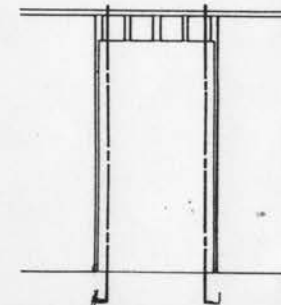
12mm ϕ M.S. BOLT SET INTO CONCRETE FLOOR OR TAKEN THROUGH TIMBER BEARER OR UNDER BEARER WITH 50x50x3mm THICK M.S. WASHERS TO BEAR AGAINST TIMBER SURFACES ONLY

DETAIL C



BRACING PANEL EXTENDED DOWNWARDS AND FIXED TO JOIST OR BEARER WITH 6-40x2.5mm ϕ GALVANISED CLOUT NAILS

DETAIL D



12mm ϕ M.S. HURRICANE BOLTS 100mm MAXIMUM DISTANCE FROM BRACING PANEL EDGES, EXTENDING FROM TOP PLATE, TO CONCRETE FLOOR OR THROUGH BEARERS OR UNDER BEARERS WITH 50x50x3mm THICK M.S. WASHERS TO BEAR AGAINST TIMBER SURFACES

Notes

TEST RESULTS FOR NAILING RECOMMENDATIONS NOT YET RECEIVED 11/6/80.

Amendments

no.	details	date

drawn bp/sk date AUG '80
 scale 1:20
 approved [Signature] P.W.D. FIJI

DESIGN DATA (TIMBER)
 SHEET BRACING DETAILS

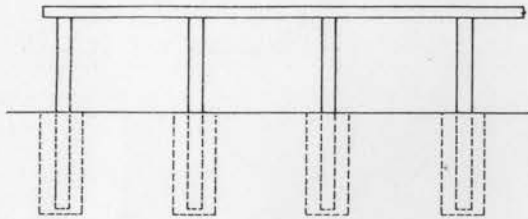
WIND SPEED 66m/sec

17

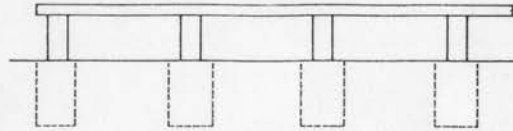
sheet no. SD (05) 17

amend

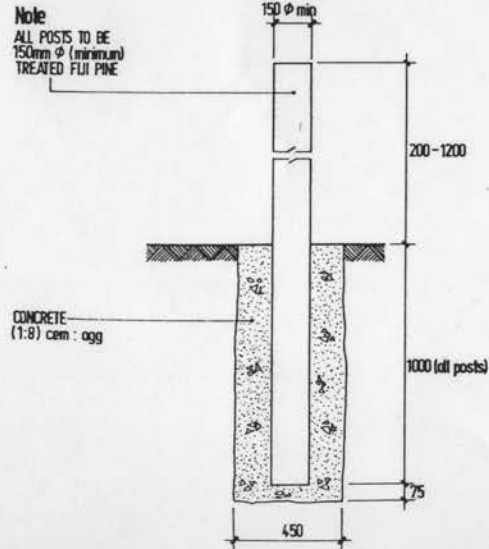
1 CANTILEVER POST FOUNDATION (TIMBER)



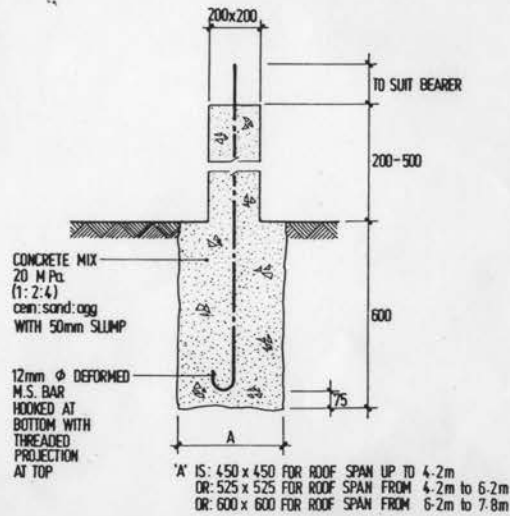
2 CANTILEVER POST FOUNDATION (CONCRETE)



DETAIL 1



DETAIL 2



Notes

1. CONCRETE BACKFILLING AROUND POST IS BASED ON RESISTING 60% GROSS UPLIFT ONLY
2. ASSUMED SAFE SOIL PRESSURE 100 K Pa
3. MAXIMUM HEIGHT BASED ON MINIMUM OF 18 POSTS, AT LEAST 3 IN A ROW FOR EVERY 10m LENGTH OF BUILDING

Amendments

no.	details	date

drawn bp/sk
scale 1:50, 1:20
approval
P.W.D. FIJI

date AUG '80

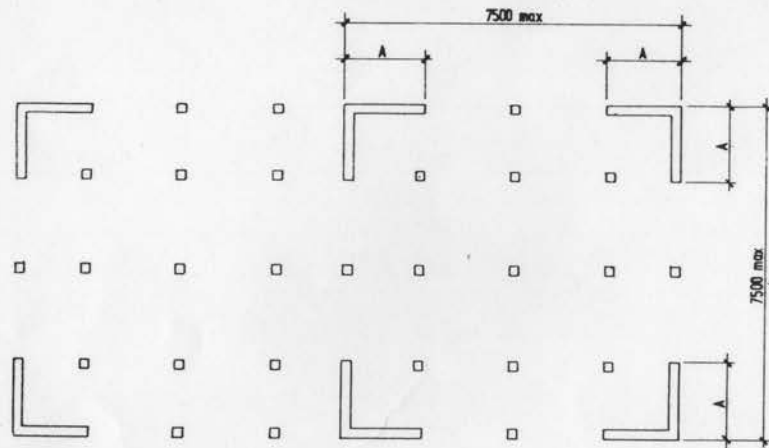
approval
P.W.D. FIJI

FOUNDATION TYPES FOR TIMBER
BUILDINGS WITH HUNG FLOORS
CANTILEVER POST DETAILS
(Wind Speed 66m/sec)

18

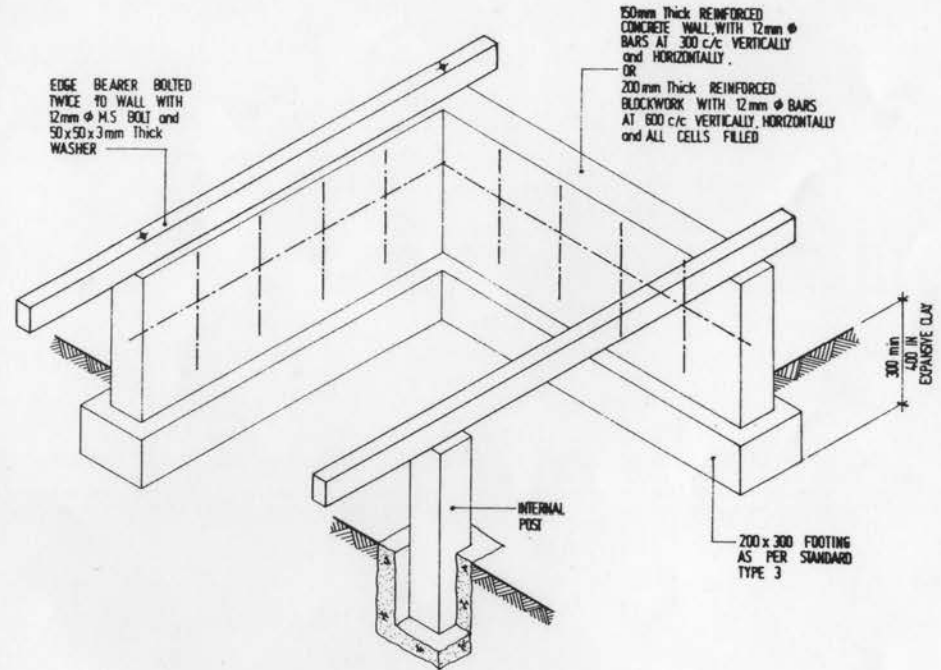
SD (04) 1

LOCATION & SIZE

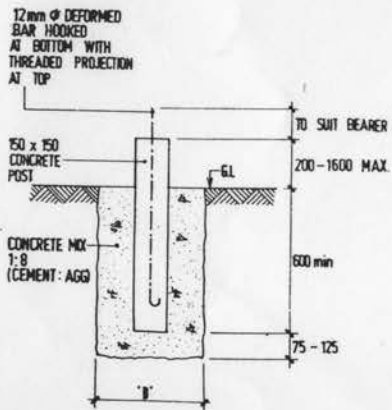


Note:
DIMENSION 'A' SHOULD BE NOT LESS THAN 1.6m OR HEIGHT OF WALL, WHICHEVER IS GREATER.

PANEL DETAIL

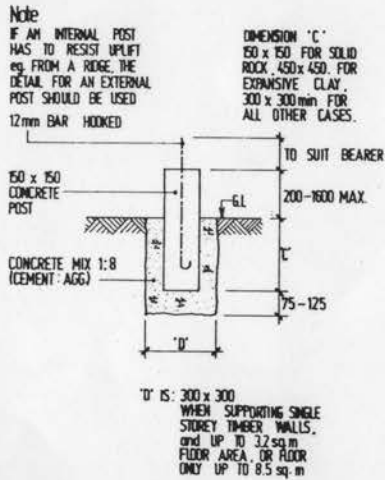


EXTERNAL POST



'D' IS: 450 x 450 FOR ROOF SPAN UP TO 4.2m
OR: 525 x 525 FOR ROOF SPAN UP TO 4.2m to 6.2m
OR: 600 x 600 FOR ROOF SPAN UP TO 6.2m to 7.8m

INTERNAL POST

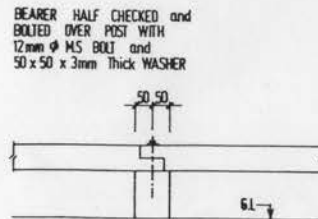


Note:
IF AN INTERNAL POST HAS TO RESIST UPLIFT eg. FROM A RIDGE, THE DETAIL FOR AN EXTERNAL POST SHOULD BE USED

DIMENSION 'C'
150 x 150 FOR SOLID ROCK, 450 x 450 FOR EXPANSIVE CLAY, 300 x 300 MIN FOR ALL OTHER CASES.

'D' IS: 300 x 300 WHEN SUPPORTING SINGLE STOREY TIMBER WALLS, and UP TO 3.2sqm FLOOR AREA, OR FLOOR ONLY UP TO 8.5 sq m

BEARER JOINT



BEARER HALF CHECKED and BOLTED OVER POST WITH 12mm ϕ M.S. BOLT and 50 x 50 x 3mm THICK WASHER

Notes

CONCRETE POST TO BE CONSTRUCTED OF WELL COMPACTED 20 Mpa MIX (1:2:4, CEMENT, SAND, AGGREGATE), 50mm SLUMP REQUIRED, ASSUMED SAFE BEARING PRESSURE 100 kPa.

Amendments

no.	details	date

drawn bp/mh date JUN 80
scale 1:20
approved P.W.D. FIJI

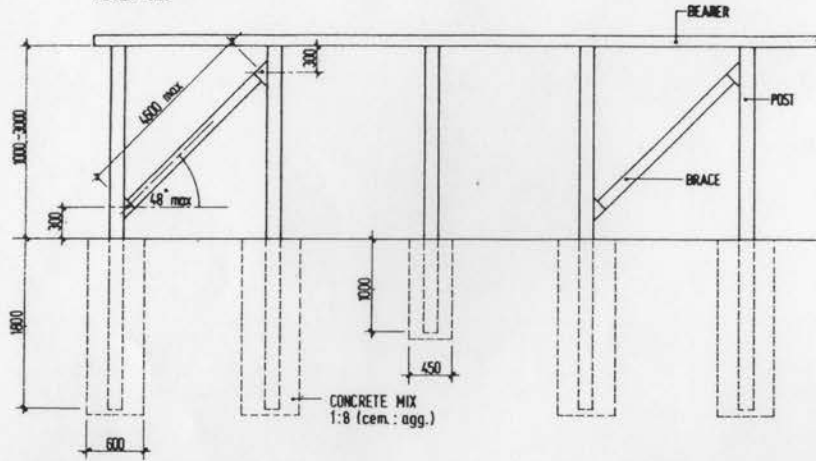
BRACED POST FOUNDATIONS (CONCRETE)

WIND SPEED 66 m/sec

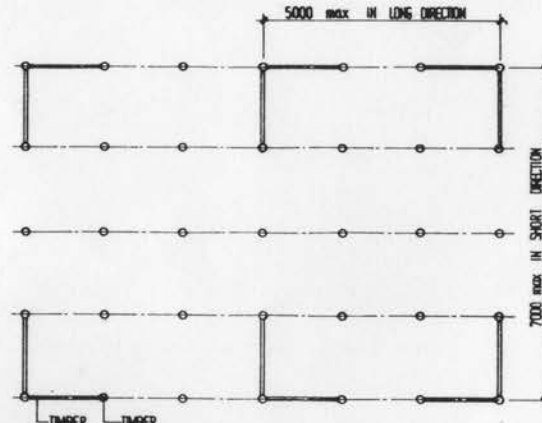
sheet no. SD (04) 2

ELEVATION SHOWING BRACE

Note
 MAXIMUM ANGLE 48°
 IF ANGLE EXCEEDS 48° RESPACE
 POST TO COMPLY and INCREASE
 BEARER SIZE

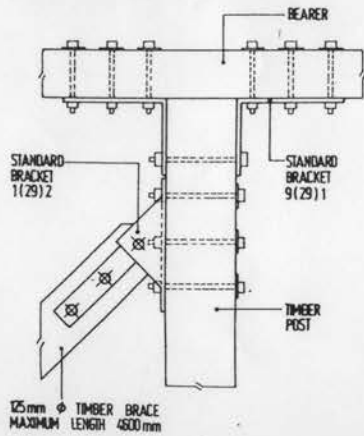


LOCATION OF BRACES



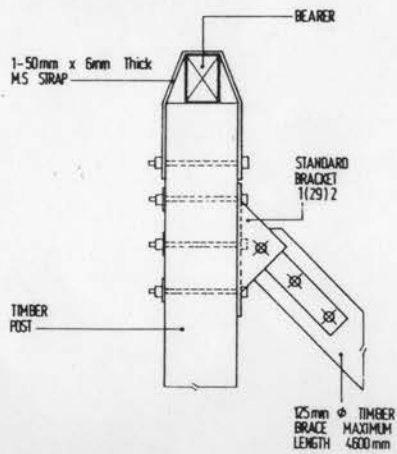
PARALLEL TO BRACING LINE

ALL BOLTS TO BE 16mm ϕ
 MS, WITH 65 x 65 x 5mm
 Thick MS WASHER TO BEAR
 AGAINST TIMBER SURFACE

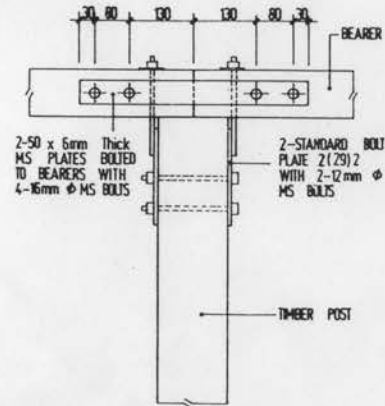


RIGHT ANGLES TO BRACING LINE

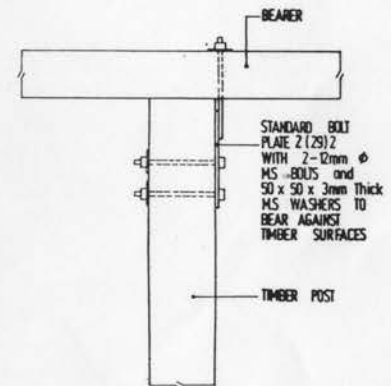
ALL BOLTS TO BE 16mm ϕ
 MS, WITH 65 x 65 x 5mm
 Thick MS WASHER TO BEAR
 AGAINST TIMBER SURFACE



BEARER JOINT ON BRACING LINE



UNBRACED INTERIOR POST



Notes

Amendments

no.	details	date

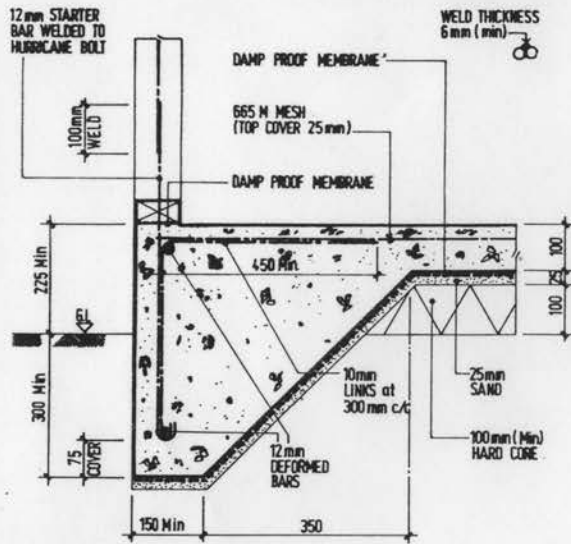
Drawn bp date JUN '80
 Scale 1:50 1:10
 P.W.D. FIJI

BRACED POST FOUNDATION
 (TIMBER)

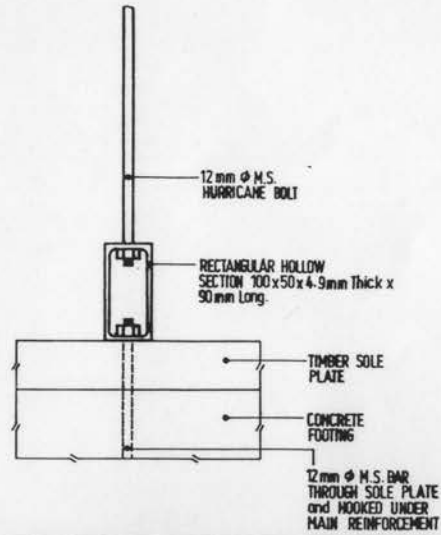
WIND SPEED 66 m/sec

sheet no.
 SD(04)3

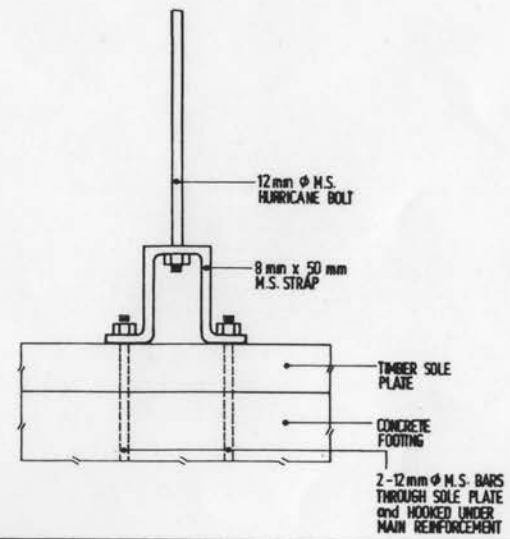
SOLID FOOTING WITH HURRICANE BOLT WELDED TO STARTER BARS



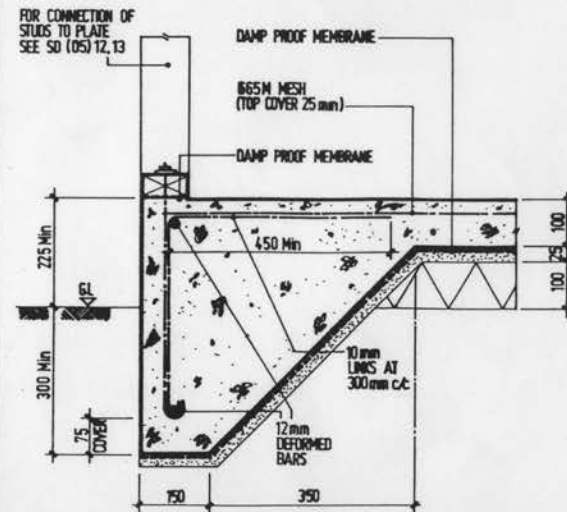
HURRICANE BOLT COUPLER (ALTERNATIVE 1)



HURRICANE BOLT COUPLER (ALTERNATIVE 2)



SOLID FOOTING WITH STARTER BARS BOLTED TO PLATE



Notes

Amendments

no.	details	date

drawn bp/sk date SEP '80
 scale 1:10
 approval *[Signature]* approval *[Signature]*
 P.W.D. FIJI

FOUNDATION DETAILS FOR TIMBER BUILDING WITH SOLID FLOORS

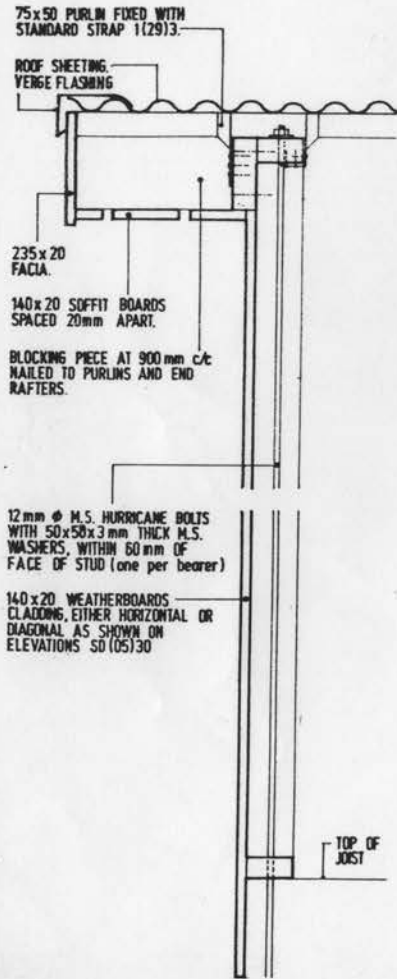
WIND SPEED 66m/sec.

21

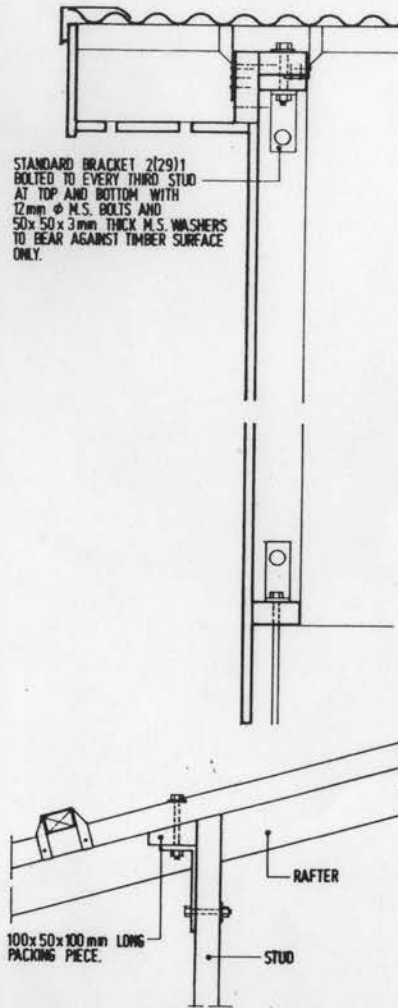
SD (04) 4

amend

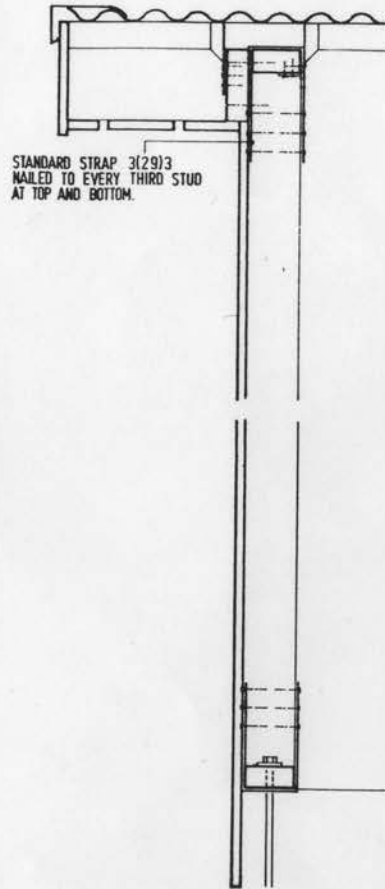
DETAIL 1



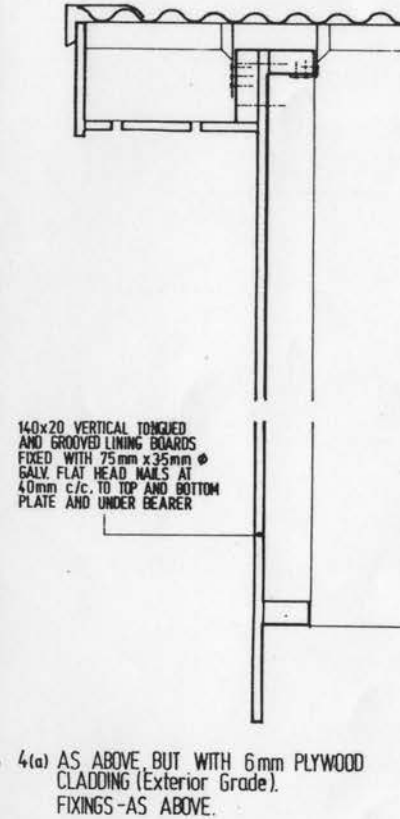
DETAIL 2



DETAIL 3



DETAIL 4



Note: FIXING CHOICE BASED ON CURRENT AVAILABILITY OF NAILS. NAIL LENGTHS MAY BE REDUCED TO 3x CLADDING THICKNESS IF SUITABLE NAILS ARE AVAILABLE, DIAMETER MUST NOT BE REDUCED.

Notes

1. TEST RESULT FOR NAILING RECOMMENDATIONS NOT YET RECEIVED 11/6/80
2. FOR FIXINGS TO FLOOR STRUCTURE, REFER TO SD(23)12

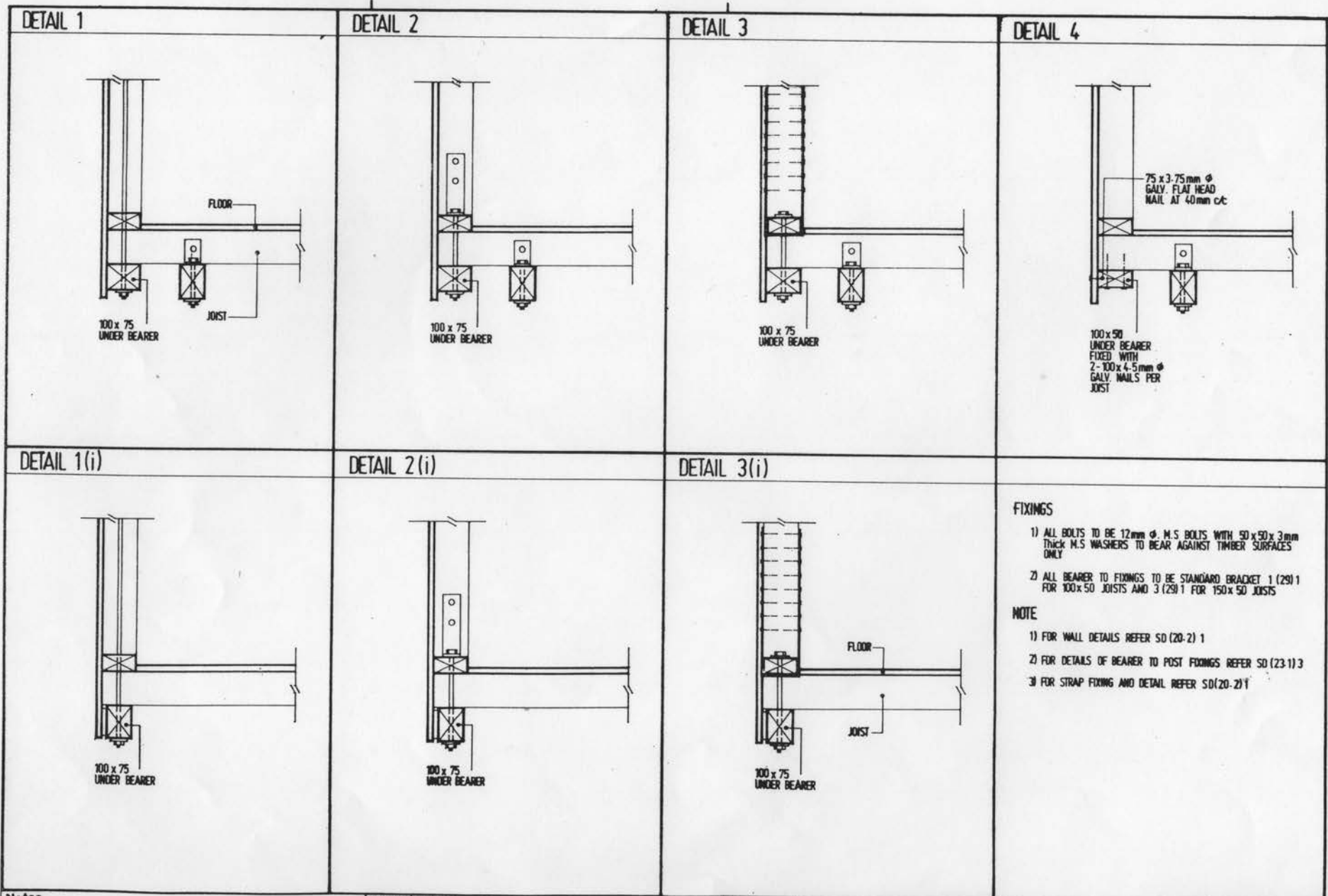
Amendments

no.	details	date

drawn	bp	date	OCT'80
scale	1:10		
approval	<i>O. Cannon</i>	approval	
P.W.D. FIJI			

TIMBER: external gable walls to resist uplift from roof, assuming standard truss at 900 c/c SPAN 4800-7800, STUDS 600mm c/c MAX. WIND SPEED 66m/sec.

SD(04)6



FIXINGS

- 1) ALL BOLTS TO BE 12mm Ø. M.S BOLTS WITH 50x50x3mm THICK M.S WASHERS TO BEAR AGAINST TIMBER SURFACES ONLY.
- 2) ALL BEARER TO FIXINGS TO BE STANDARD BRACKET 1 (29) 1 FOR 100x50 JOISTS AND 3 (29) 1 FOR 150x50 JOISTS

NOTE

- 1) FOR WALL DETAILS REFER SD (20-2) 1
- 2) FOR DETAILS OF BEARER TO POST FIXINGS REFER SD (23-1) 3
- 3) FOR STRAP FIXING AND DETAIL REFER SD (20-2) 1

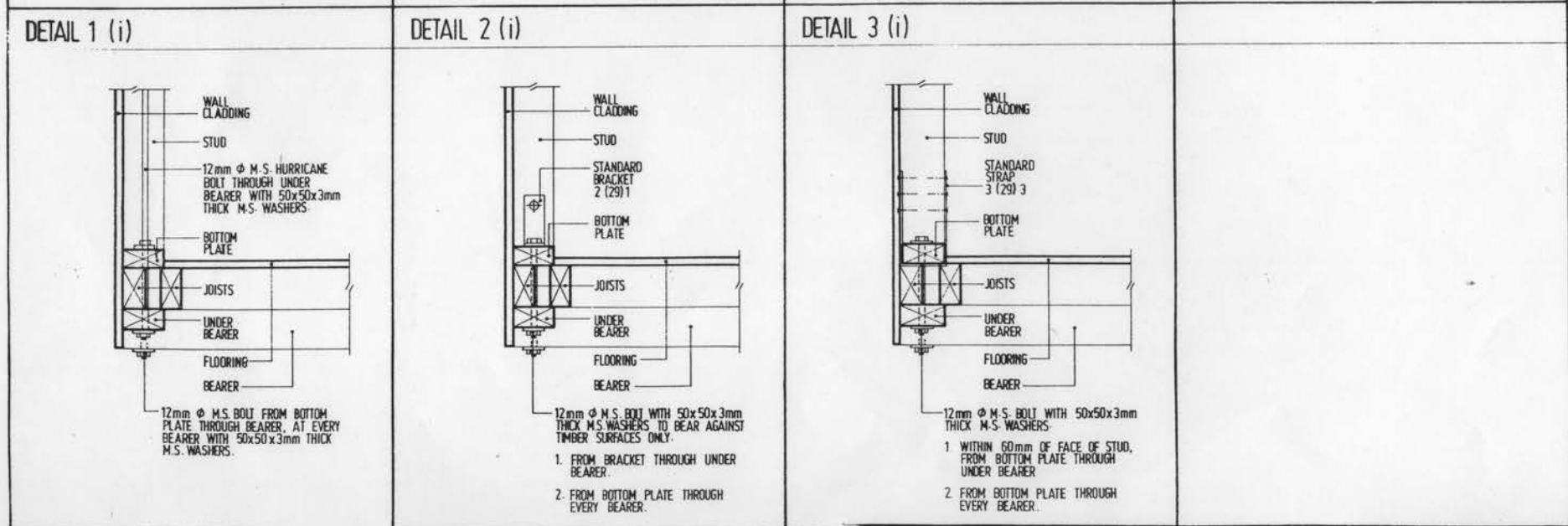
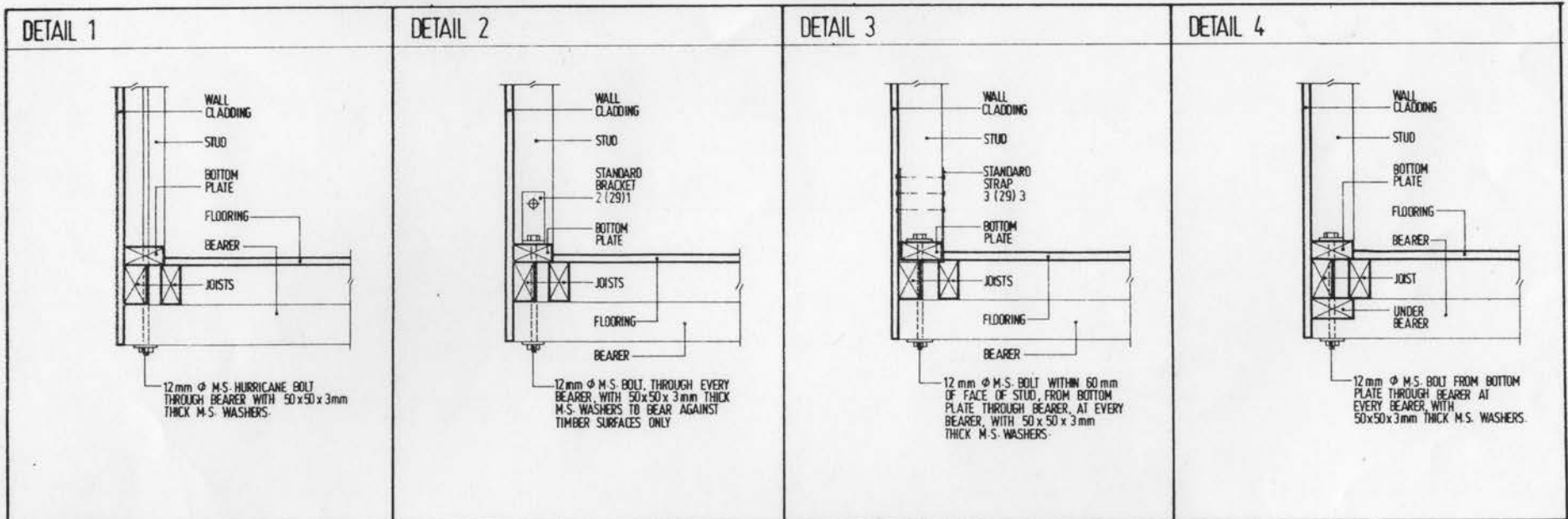
Notes

Amendments		
no.	details	date

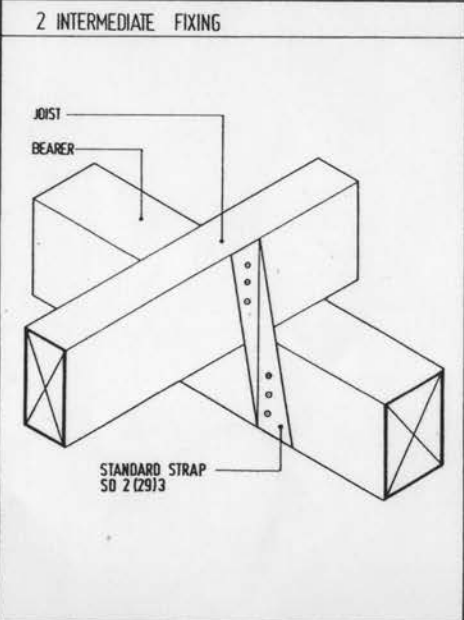
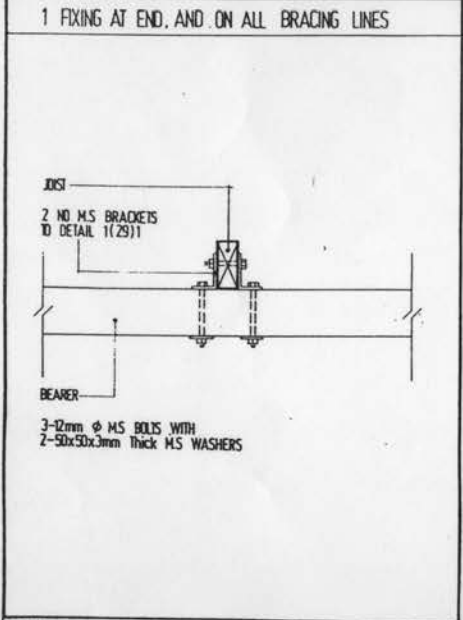
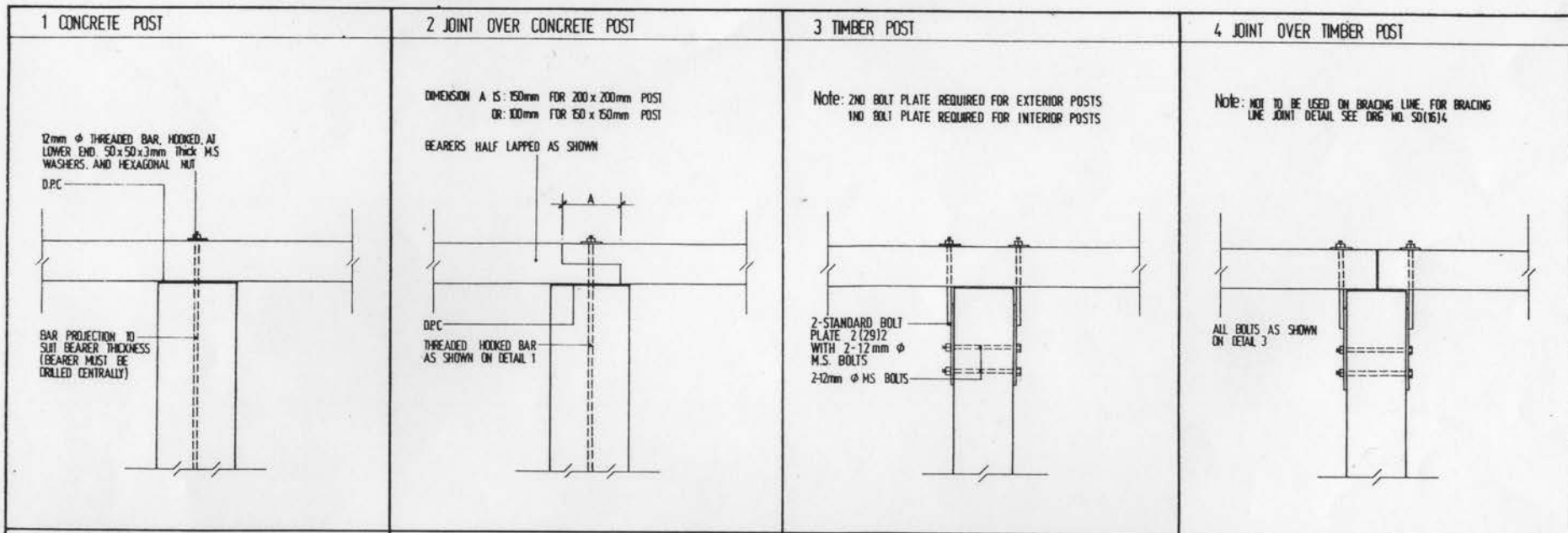
drawn bp/sk date SEP '80
 scale 1:10
 approval *[Signature]*
 P.W.D. FIJI

TIMBER SUSPENDED FLOORS
 TO RESIST ROOF UPLIFT FROM STANDARD TRUSS
 SPAN 4800 - 7800
 Wind Speed 66 m/sec

24 SD(04)7



<p>Notes</p>	<p>Amendments</p> <table border="1"> <thead> <tr> <th>no.</th> <th>details</th> <th>date</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	no.	details	date										<p>Drawn bp/sk date SEP '90 scale 1:10 approval <i>[Signature]</i> approval <i>[Signature]</i> P.W.D. FIJI</p> <p>TIMBER SUSPENDED FLOORS TO RESIST UPLIFT FROM STANDARD TRUSSES SPAN 4800 - 7800 Wind Speed 66m/sec.</p>	<p>Sheet no. SD(04)8 25</p>
no.	details	date													



Notes

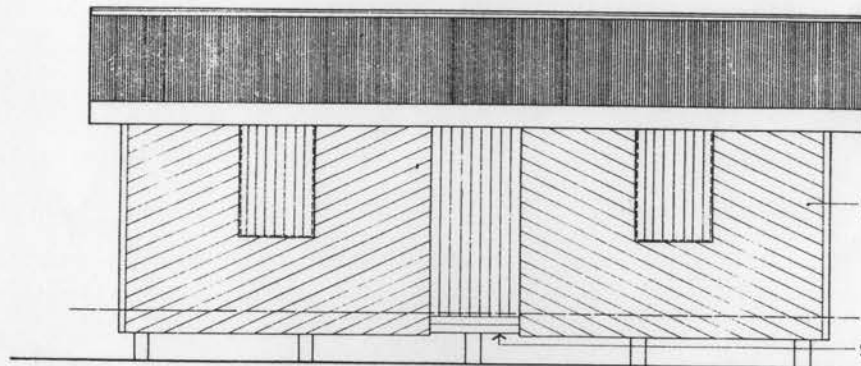
Amendments		date
no.	details	date

drawn bp/mh	date JUNE '80	FIXINGS OF BEARERS AND JOISTS
scale 1:10	approval	
approval	approval	WIND SPEED 66m/sec

P.W.D. FIJI

sheet no. SD(04)9

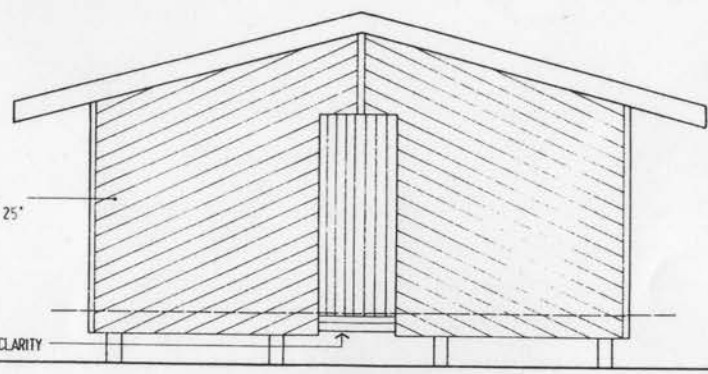
26



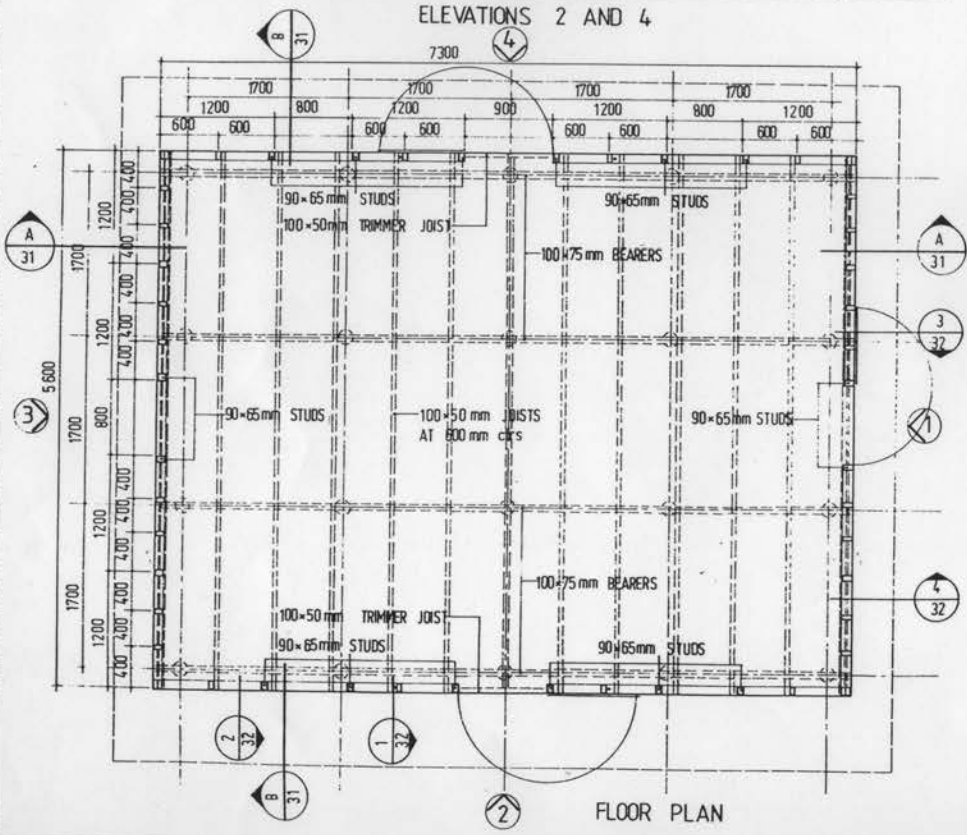
140x20 mm DIAGONAL WEATHERBOARDING AT 25°

STEPS OMITTED FOR CLARITY

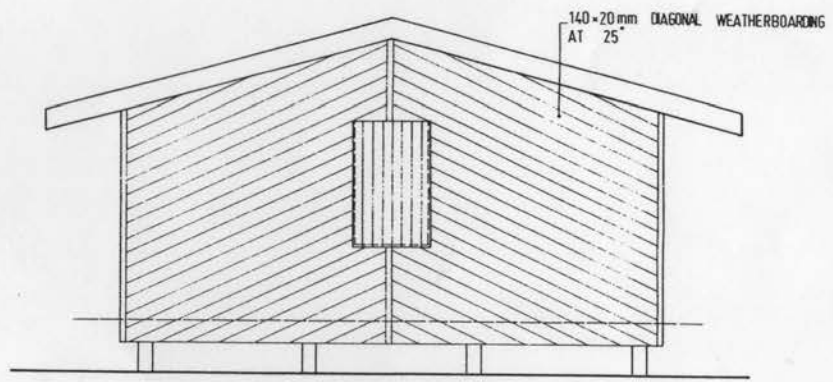
ELEVATIONS 2 AND 4



ELEVATION 1



FLOOR PLAN



ELEVATION 3

140x20 mm DIAGONAL WEATHERBOARDING AT 25°

- ALL DOOR OPENINGS TO HAVE 65x20mm STOPPERS.
- WEATHERBOARDING JUNCTIONS TO HAVE 65x20mm COVER STRIPS
- ALL STUDS TO BE 90x45mm EXCEPT WHERE OTHERWISE SPECIFIED
- ROOF FINISH
0.48 mm CORRUGATED IRON (26 g)

Notes

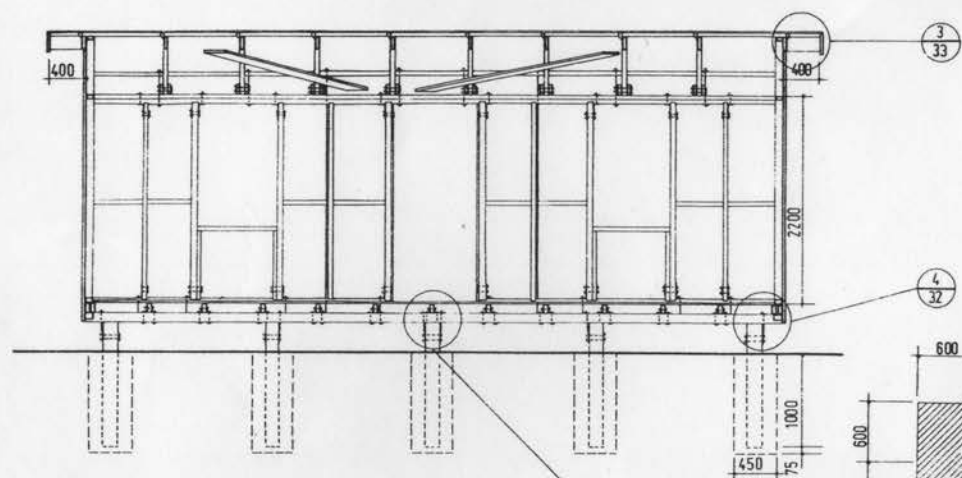
A	SECTION LETTER
31	SHEET NUMBER
1	DETAIL NUMBER
32	SHEET NUMBER

Amendments

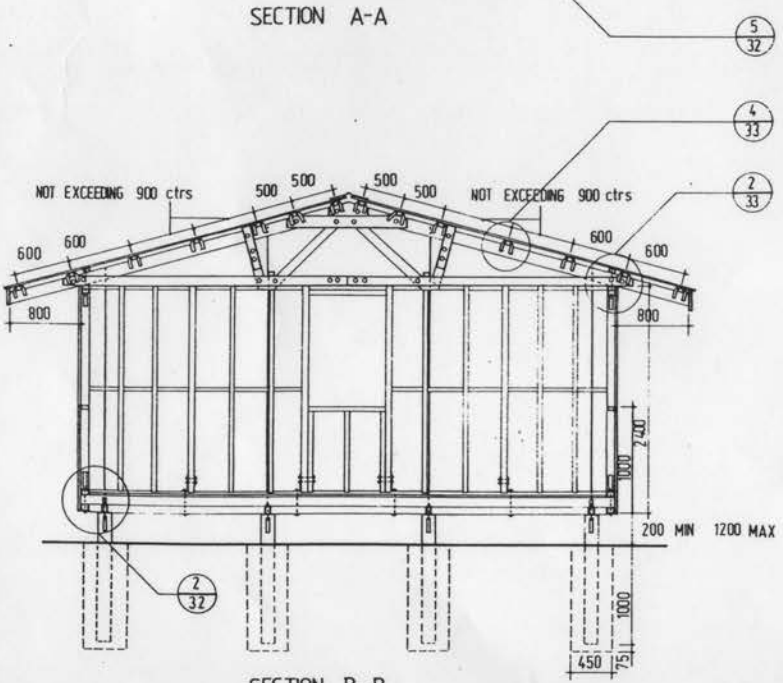
No.	Date	Description

R.W.	6.5.80	DESIGN DATA TIMBER
1:50		TYPICAL LIGHT FRAMED TIMBER
		BUILDING
		BASIC WIND SPEED: 66 m/s

SD(04)10

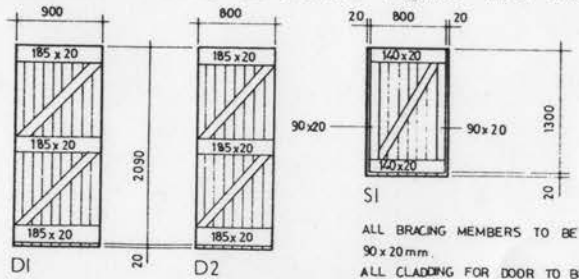


SECTION A-A

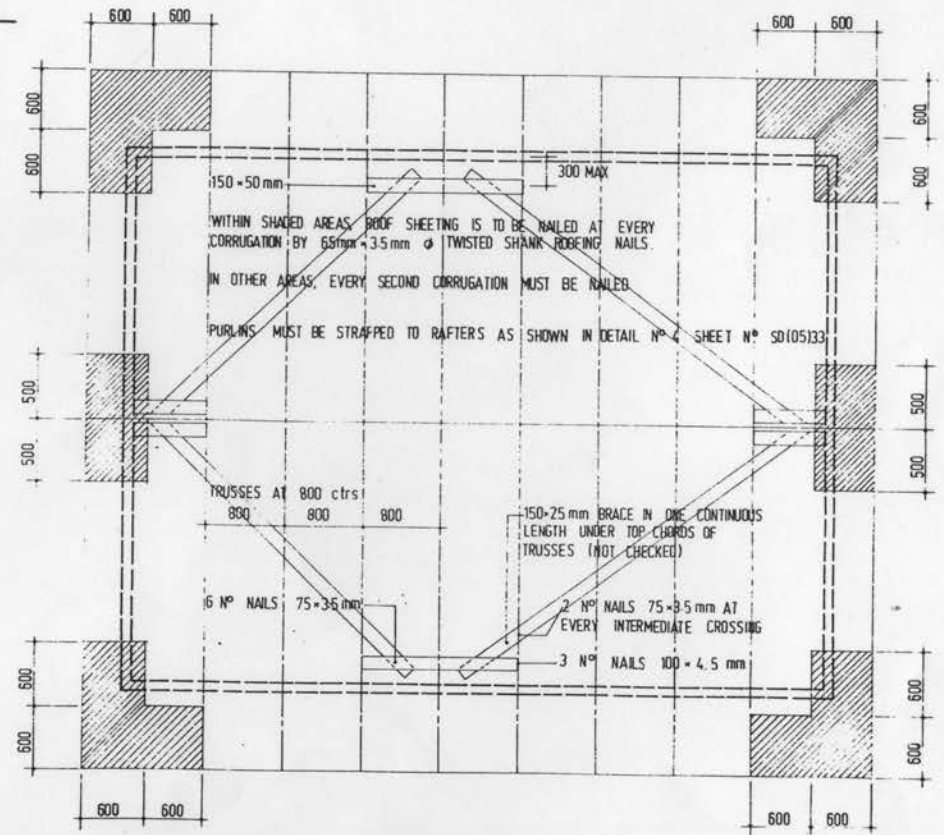


SECTION B-B

ELEVATIONS OF DOORS AND SHUTTER (VIEWED FROM INSIDE)



S1
ALL BRACING MEMBERS TO BE 90x20 mm.
ALL CLADDING FOR DOOR TO BE 90x20 mm t & g BOARDS.



ROOF PLAN

Notes

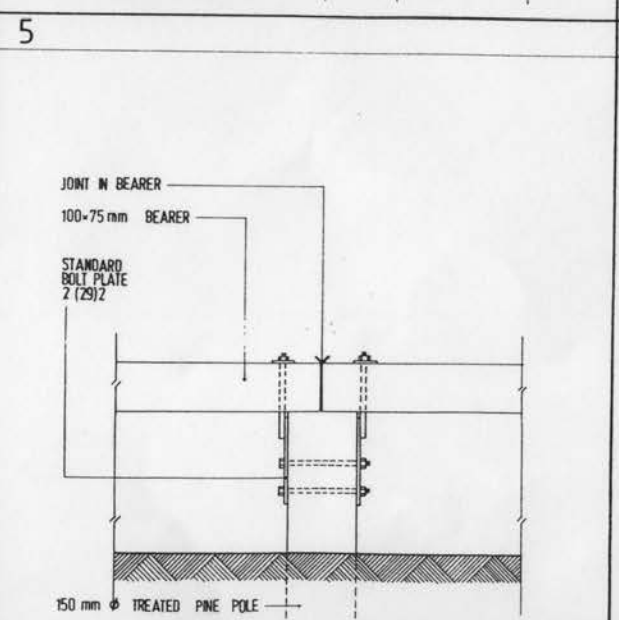
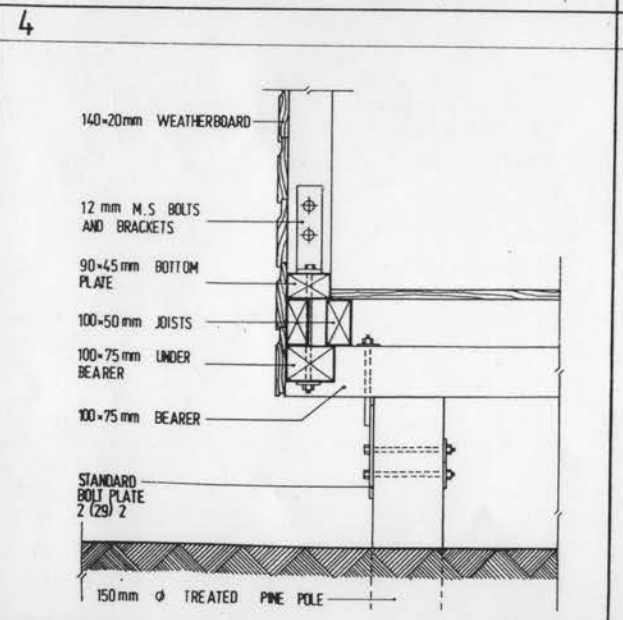
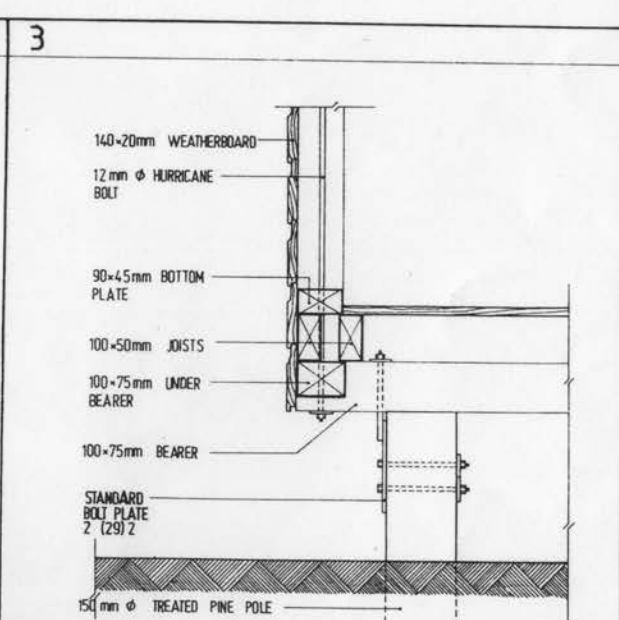
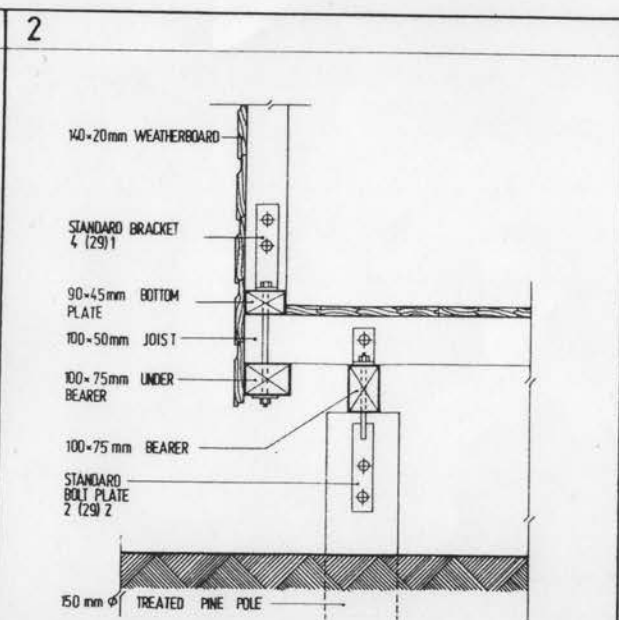
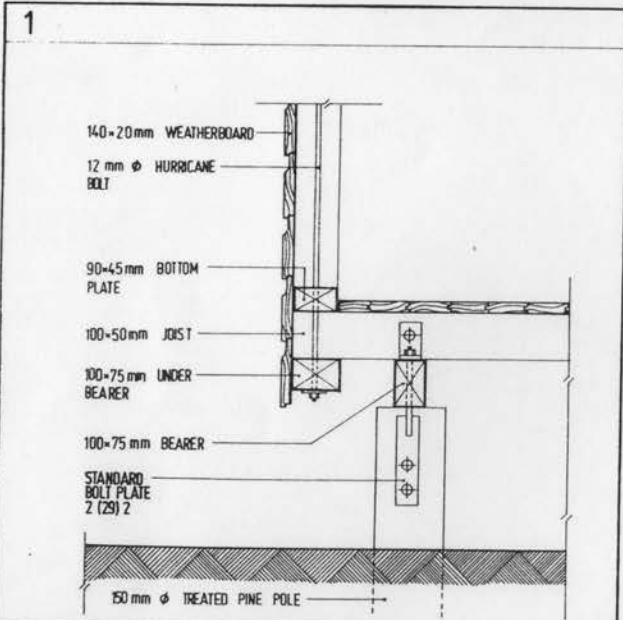
1	DETAIL NUMBER
2	SHEET NUMBER

BASIC WIND SPEED 66 m/s
ALL STRUCTURAL TIMBER TO BE FRAMING GRADE 1

Amendments

no.	date	description	date

drawn R.W	date 8.5.80	DESIGN DATA TIMBER TYPICAL LIGHT FRAMED TIMBER BUILDING BASIC WIND SPEED 66m/s
scale 1:50		
approval <i>DR Collins</i>	approval <i>[Signature]</i>	SD(04)11
P.W.D. FIJI		



Notes

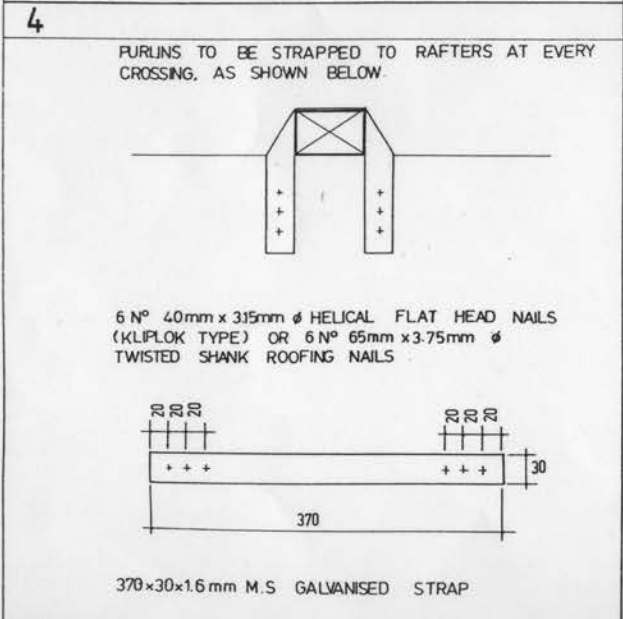
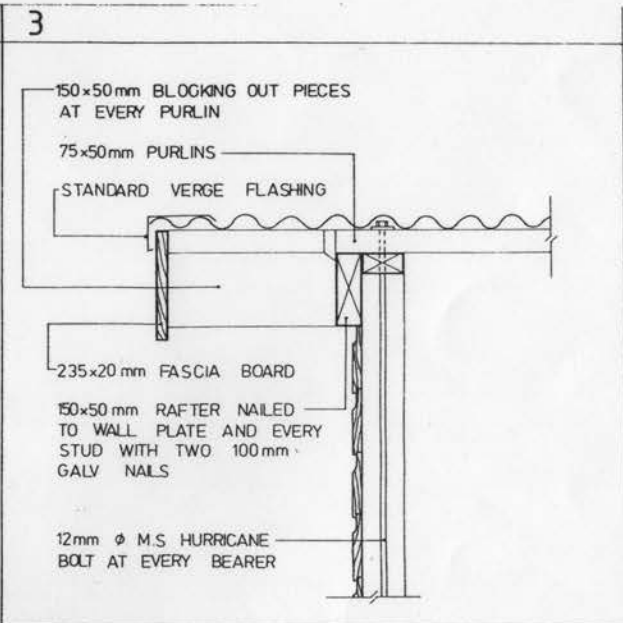
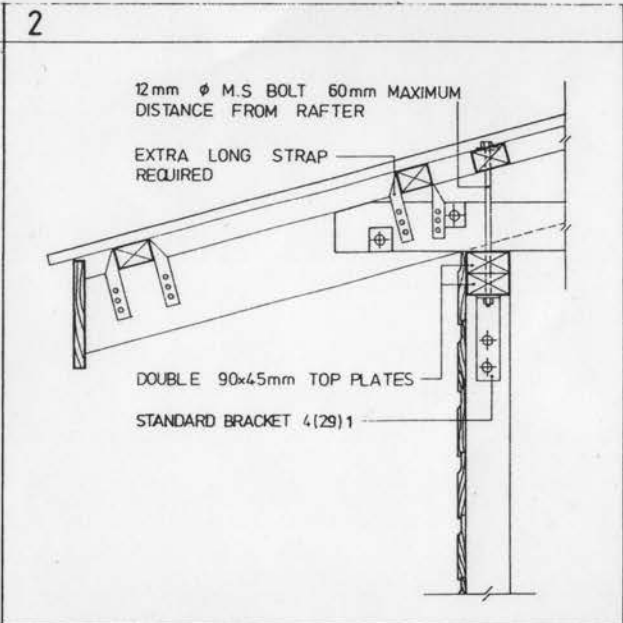
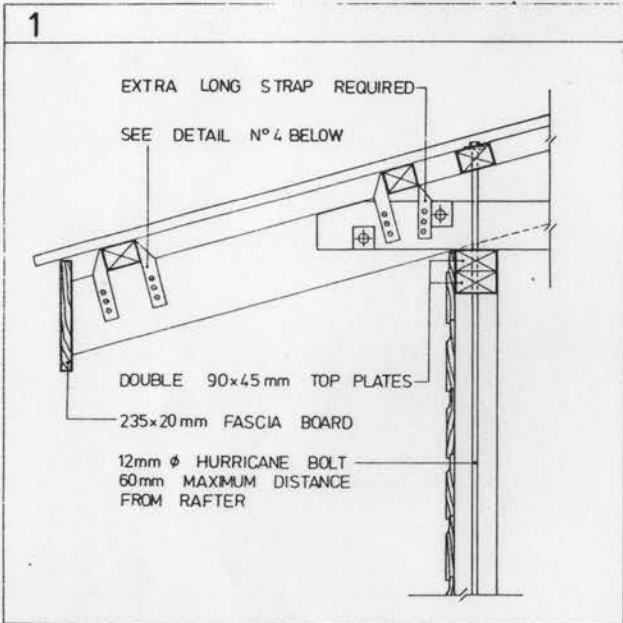
Amendments

no.	details	date

Drawn R.W
Scale 1:10
date 12.5.80
approval P.W.D. FIJI

DESIGN DATA TIMBER
TYPICAL LIGHT FRAMED TIMBER
BUILDING
BASIC WIND SPEED: 66 m/s

Sheet no. SD(04)12
29



Notes

Amendments

no.	details	date

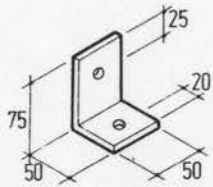
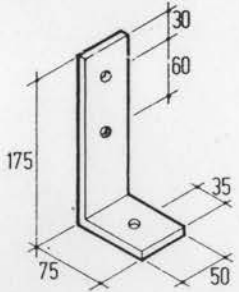
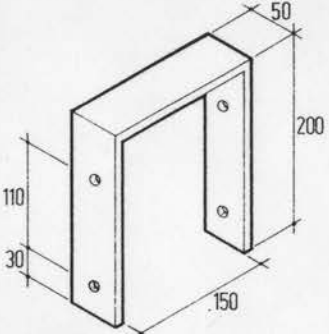
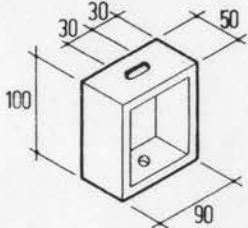
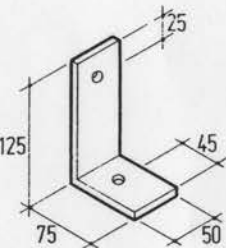
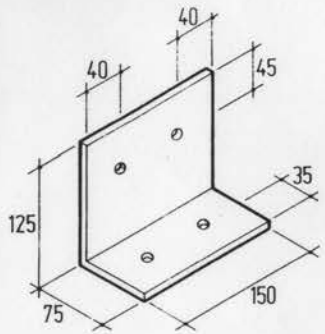
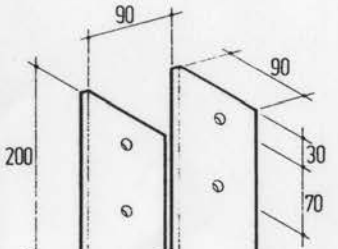
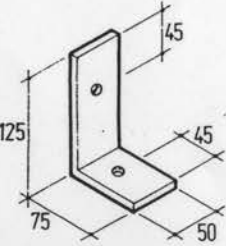
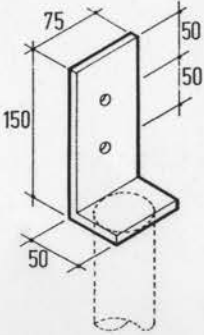
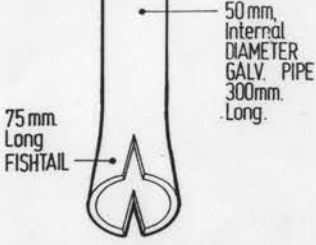
drawn	R.W	date	9.5.80
scale	1:10	approval	<i>P.W.D. FIJI</i>
approval	<i>P.W.D. FIJI</i>	approval	<i>...</i>

DESIGN DATA TIMBER
TYPICAL LIGHT FRAMED TIMBER
BUILDING
BASIC WIND SPEED : 66 m/s

SD(04)13

30

amend

<p>1 (29)1</p> 	<p>4 (29)1</p> 	<p>7 (29)1</p> 	<p>9 (29)1</p> 	
<p>2 (29)1</p> 	<p>5 (29)1</p> 	<p>8 (29)1</p> 		
<p>3 (29)1</p> 	<p>6 (29)1</p> 	<p>75 mm Long FISHTAIL</p> <p>50 mm, Internal DIAMETER GALV. PIPE 300mm. Long.</p>  <p>PIPE TO BE EMBEDDED 200mm. (min) in Conc.</p>		

Notes

- ALL ACCESSORIES TO BE MADE FROM 6mm. Thick M.S. PLATE, EITHER CUT and WELDED, OR FOLDED, OR SAWN FROM STANDARD M.S. ANGLES.
- ALL HOLES TO SUIT 12mm. ϕ BOLTS. CARE MUST BE TAKEN TO MAKE EXTRA ALLOWANCE IF GALVANISING IS SPECIFIED.

Amendments		no.	date
A	9 (29)1	ADDED	OCT. '80

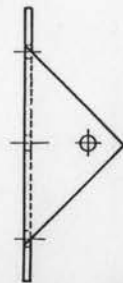
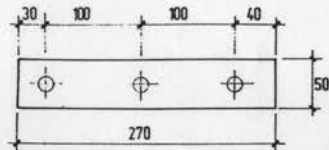
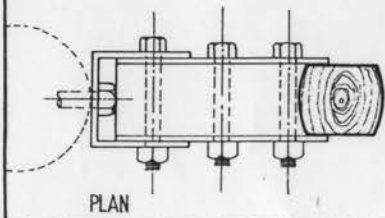
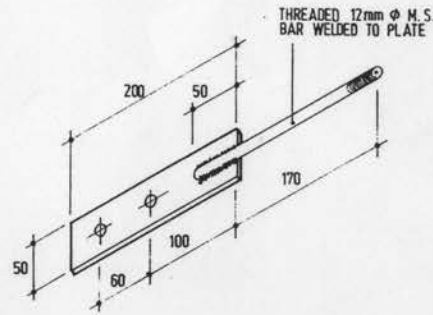
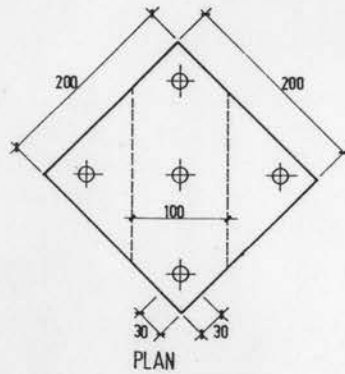
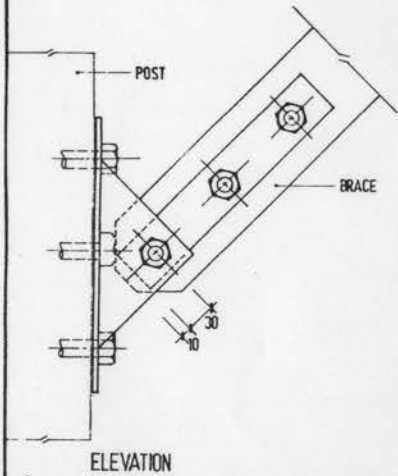
Drawn bp/an
 scale 1:5
 date aug. '79
 approval P.R. Collins
 P.W.D. FIJI

STRUCTURAL ACCESSORIES
 MILD STEEL

STANDARD DETAILS
 Sheet no. SD(29) 1 | A
 amend

1 - ALL HOLES TO SUIT 16mm ϕ BOLTS

2 - ALL HOLES TO SUIT 12mm ϕ BOLTS



SIDE ELEVATION

Notes

1 ALL ACCESSORIES TO BE MADE FROM 6mm Thick M.S. PLATE.

Amendments

no.	details	date

drawn	bp	date	JULY '80
scale	1:5	approval	<i>[Signature]</i>
approval	<i>[Signature]</i>	approval	<i>[Signature]</i>
P.W.D. FIJI			

STRUCTURAL ACCESSORIES
MILD STEEL

STANDARD DETAILS

Sheet no.
SD(29)2 | amend

1 FLOORS		LENGTH (mm) x DIAMETER (mm) and TYPE	NUMBER and LOCATION	2 WALLS		LENGTH (mm) x DIAMETER (mm) and TYPE	NUMBER and LOCATION
FLOOR FRAME JOINTS (SUBFLOOR FRAMING - SEE RELEVANT STANDARD DETAILS)				WALL FRAME JOINTS			
JOIST TO PLATE OR BEARER LAPPED JOINT IN JOIST FITCHED JOINT IN JOIST SOLID BLOCKING (strutting) TO JOIST (required at mid span of all 200mm x 50mm joists or greater spanning 2.5m or more, solid blocking between all joists also required on all foundation bracing lines).		100x4.0 100x4.0 100x4.0 100x4.0 OR 75x3.15	2No. SKEWED 2No. EACH SIDE 2No. EACH SIDE 2No. END NAILED 4No. SKEWED	STUD TO PLATE DOUBLE STUDS AT OPENINGS, BLOCKING AND STUDS AT WALL INTERSECTIONS BOTTOM PLATE TO FLOOR FRAMING HALF JOINT IN TOP PLATE (non bracing wall only) CILL OR HEADER TRIMMER TO TRIMMING STUD FOR: a) TRIMMER NOT EXCEEDING 2.4m LONG b) TRIMMER NOT EXCEEDING 3.6m LONG TOP PLATE 100mm x 50mm DWANG TO STUD		100x4.0 100x4.0 100x4.0 75 x 3.15 100x3.75 100x3.75 75x3.15 OR 100x4.0	2No. END NAILED 600mm e/c 1No. AT EVERY JOINT 3No. 2No. END NAILED 3No. END NAILED 2No. AT 500mm o/c 2No. SKEWED 2No. END NAILED
BOUNDARY JOIST TO PLATE		100x4.0	12No. SKEWED PER 1.5m LENGTH 4No. SKEWED	WALL BRACING JOINTS (ADDITIONAL FIXINGS REQUIRED - SEE RELEVANT STANDARD DETAILS)			
SOLID BLOCKING BETWEEN JOISTS TO PLATE OR BEARER BOUNDARY JOIST TO END OF EACH JOIST CURTAILED JOIST NOT EXCEEDING 3m LONG TO TRIMMER CURTAILED JOIST TO TRIMMER WHEN HALF HOUSED		100x4.0 100x4.0 100x4.0 100x4.0	2No. END NAILED 3No. END NAILED 2No. END NAILED	DIAGONAL BRACING: 100mm x 25mm BRACE TO: a) PLATES b) STUDS STEEL ANGLE BRACE TO: a) PLATES b) STUDS SHEET MATERIAL USED WITH DIAGONAL BRACING TO: a) STUDS AND PLATES AT SHEET EDGES b) INTERMEDIATE STUDS		75x3.15 65x3.15 40x2.5 FH	3 No. 2 No. 3 No. 2 No. 150mm o/c 300mm o/c
FLOOR DECK JOINTS				3 ROOFS			
STRIP FLOOR MAXIMUM 140mm x 20mm THICK TO FLOOR JOIST PLYWOOD DECKING (not exceeding 21mm thick) TO: a) SUPPORTS AT SHEET EDGES b) INTERMEDIATE SUPPORTS		50x2.8 50x2.8 50x2.8	2 No. 150mm c/c 300mm c/c	ROOF SARKING JOINTS			
SHEET MATERIAL FOR SHEET SARKING TO: a) RAFTERS OR TOP CHORDS AT SHEET EDGES b) INTERMEDIATE SUPPORTS		40x2.5 FH	150mm c/c 300mm c/c	CEILING LING JOINTS			
SHEET MATERIAL FOR CEILING DIAPHRAGM TO: a) FRAMING MEMBER AT SHEET EDGES b) INTERMEDIATE SUPPORTS		40x2.5 FH	150mm c/c 300mm c/c	ROOF FRAME JOINTS (ADDITIONAL FIXINGS REQUIRED - SEE RELEVANT STANDARD DETAILS)			
TRUSS TO TOP PLATE OF INTERNAL WALL CEILING BATTEN TO PARALLEL TOP PLATE OF INTERNAL WALL BRACING ELEMENT ROOF BRACES, AT EACH CONNECTION TO A FRAMING MEMBER: a) 100mm x 25mm BRACE b) 75mm x 50mm BRACE c) 100mm x 50mm BRACE 100mm x 50mm BLOCKING BETWEEN RAFTERS, JOISTS OR TRUSS CHORDS OUTRIGGER RAFTER TO RAFTER		100x4.0 75x3.15 100x4.0 OR 75x3.75 100x3.75 100x4.0 100x4.0 100x4.0	2 No. 2 No. AT 400mm o/c 2 No. 3 No. 2 No. 3 No. 2 No. END NAILED	CEILING FRAME JOINTS			
MULTIGRIP OR BETTER				CEILING BATTEN TO JOIST, RAFTER OR TRUSS 50mm x 50mm		100x4.0	1 No.
Notes		Amendments		RECOMMENDED FASTENINGS AND CONNECTIONS FOR USE IN STRUCTURAL JOINTS WHICH ARE NOT SPECIFIED IN THE P.W.D. GUIDELINES FOR LIGHT TIMBER FRAME CONSTRUCTION a) ALL NAILS SHALL BE GALVANISED UNLESS OTHERWISE STATED. b) 'FH' INDICATES THAT FLAT HEAD NAILS SHALL BE USED. c) ANY NAIL SPECIFIED IN THE ABOVE SCHEDULE MAY BE REPLACED BY ANY OTHER NAIL OF THE SAME TYPE PROVIDED THAT NEITHER THE LENGTH NOR THE DIAMETER SHALL BE LESS THAN THAT SPECIFIED.			
				drawn bp date NOV '80 scale approval P.W.D. FIJI		STANDARD DETAILS sheet no. SD (29) 5 amend	

NAILING SCHEDULE
FOR STRUCTURAL JOINTS IN TIMBER

