

=====

BraceS

=====

version 2.10

A computer program to calculate bracing requirements
and provide bracing schedules to NZS 3604:1990

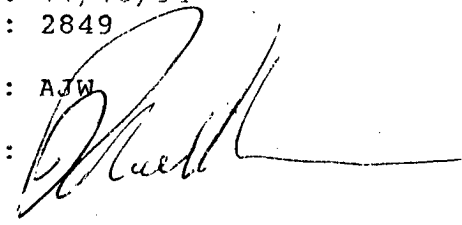
Project Information

Client : R. COLEY
Address: HOLDSWORTH DR
 : WANGANUI

Date : 11/10/94
Job no : 2849

Designer : AJW

Lot no : 79
DP no :

Signature: 

Don Thomson owns this program (BraceS) and has sold a licence to
A.J. Williamson Premier Design & Masterton
who has contracted to use (and is responsible for other people to
use) this copy of BraceS one on computer at any one time
registration no: 2015

Don Thomson assumes no responsibility for the accuracy, validity
or applicability of the results of BraceS.

ZONE INFORMATION

Building is in Earthquake Zone:
(refer figure 2.2)

zone A

WIND ZONE DETERMINATION

House is in flat area - Contour information not required

House is not in Lee Zone

House is not in valley with accelerated wind flows

Type of formation is [from table 2.5]:

T1

Wind region is:

R1

Ground roughness is:

urban

Exposure is:

exposed

Building wind zone is:

L

LAYOUT OF HOUSE

HOLDSWORTH DR

Axis or direction nominated as ALONG the building is: east-west
(for reference only).

A ridge runs across the building.

A ridge runs along the building.

House is single storey.

Foundation is slab to Appendix E or specific designed.

There is no room in the roof space.

Floor supports a normal live load.

The house does not contain a small chimney to NZBC B1/AS3.

DIMENSIONS

Average roof slope (degrees) 25 deg

Roof cladding type is: heavy

Wall cladding type is: heavy

Length overall of BUILDING in Along direction is: 25.6 m

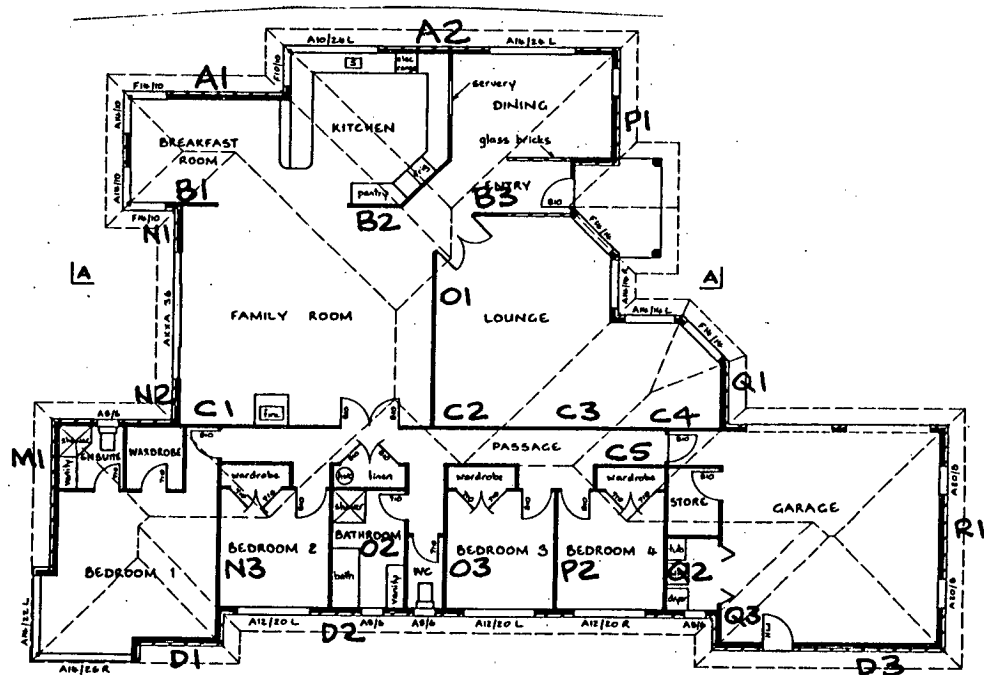
Length overall of BUILDING in Across direction is: 17.7 m

Area of roof is: 335 sq m

Height of building from ground to ridge (building height): 4.8 m

Height of roof from eaves to top of ridge (roof height): 2.4 m

Height top or single storey floor to ceiling (stud height): 2.4 m



EARTHQUAKE BRACING REQUIREMENTS
[from table 4.7A and 6.1]

HOLDSWORTH DR

level	direction	area sq m	bracing per sq m	plus chimney	required bracing
top or single	along and across	335	4.9	0	1642
				0	0
foundation (min 280 BU) (cl 4.6.7.2)	along and across	335	12.5	0	4188

WIND BRACING REQUIREMENTS
[from table 4.7B and 6.2]

level	direction	perpendicular length m	bracing per metre	plus chimney	required bracing
top or single	along	17.7	36	-	635
	across	25.6	36	-	919
				-	
				-	
foundation (min 640 BU) (cl 4.6.7.2)	along	17.7	47	-	823
	across	25.6	47	-	1190

This program licensed for the sole use of:
A.J. Williamson
Premier Design &

BRACING LINES Top or Single Storey

HOLDSWORTH DR

Lines A-E are for ALONG direction. Lines M-R are for ACROSS direction.

Line Name	Length of Line as external wall (m)	Length of Line as internal bracing line	Total width of diaphragms attached (m)	Number of Dragon Ties attached	Min BUS
A	13.9 m	0.0 m	0.0 m	0	139
B	0.0 m	13.9 m	0.0 m	0	70
C	9.6 m	15.6 m	0.0 m	0	166
D	25.6 m	0.0 m	0.0 m	0	256
E	0.0 m	0.0 m	0.0 m	0	0
M	6.9 m	0.0 m	0.0 m	0	69
N	6.2 m	9.6 m	0.0 m	0	132
O	0.0 m	16.3 m	0.0 m	0	70
P	7.7 m	8.6 m	0.0 m	0	147
Q	2.7 m	5.5 m	0.0 m	0	97
R	6.4 m	0.0 m	0.0 m	0	64

Bracing Schedule - Top or Single Storey - ALONG

Bracing required for EQ 1642 units: HOLDSWORTH DR
 Bracing provided for EQ 1766 units:
 Bracing required for WL 635 units: Bracing minimum for each
 Bracing provided for WL 2246 units: line is achieved

BRACING ELEMENT				BRACING UNITS					LINE
name	angle	height	length	type	EQ rate	EQ prov	WL rate	WL prov	min
	deg	m	m		BU/m	BU	BU/m	BU	BU
A1	0	2.4	2.4	GIB1	50	120	75	180	A
A2	0	2.4	2.4	GIB1	50	120	75	180	
A3	0	2.4	0.0		0	0	0	0	
A4	0	2.4	0.0		0	0	0	0	
A5	0	2.4	0.0		0	0	0	0	
A6	0	2.4	0.0		0	0	0	0	
					240		360		139
B1	0	2.4	1.2	BR6	110	132	150	180	B
B2	0	2.4	1.2	BR6	110	132	150	180	
B3	0	2.4	0.9	BR4	85	77	100	90	
B4	0	2.4	0.0		0	0	0	0	
B5	0	2.4	0.0		0	0	0	0	
B6	0	2.4	0.0		0	0	0	0	
					341		450		70
C1	0	2.4	2.4	GIB2	70	168	80	192	C
C2	0	2.4	2.4	GIB2	70	168	80	192	
C3	0	2.4	2.4	GIB2	70	168	80	192	
C4	0	2.4	2.4	GIB2	70	168	80	192	
C5	0	2.4	2.4	GIB2	70	168	80	192	
					840		960		166
D1	0	2.4	2.4	GIB1	50	120	75	180	D
D2	0	2.4	2.1	GIB1	50	105	55	116	
D3	0	2.4	2.4	GIB1	50	120	75	180	
D4	0	2.4	0.0		0	0	0	0	
D5	0	2.4	0.0		0	0	0	0	
D6	0	2.4	0.0		0	0	0	0	
					345		476		256
E1	0	2.4	0.0		0	0	0	0	E
E2	0	2.4	0.0		0	0	0	0	
E3	0	2.4	0.0		0	0	0	0	
E4	0	2.4	0.0		0	0	0	0	
E5	0	2.4	0.0		0	0	0	0	
E6	0	2.4	0.0		0	0	0	0	
This program licensed for									0
the sole use of					0		0		
A.J. Williamson					EQ		WL		
Premier Design &					total		total		

Bracing Schedule - Top or Single Storey - ACROSS

Bracing required for EQ 1642 units: HOLDSWORTH DR
 Bracing provided for EQ 1747 units:
 Bracing required for WL 919 units: Bracing minimum for each
 Bracing provided for WL 2167 units: line is achieved

BRACING ELEMENT				BRACING UNITS					LINE
name	angle deg	height m	length m	type	EQ rate BU/m	EQ prov BU	WL rate BU/m	WL prov BU	min BU
M1	0	2.4	2.4	GIB1	50	120	75	180	M
M2	0	2.4	0.0		0	0	0	0	
M3	0	2.4	0.0		0	0	0	0	
M4	0	2.4	0.0		0	0	0	0	
M5	0	2.4	0.0		0	0	0	0	
						120		180	69
N1	0	2.4	1.2	BR5	85	102	115	138	N
N2	0	2.4	1.2	BR5	85	102	115	138	
N3	0	2.4	2.4	GIB2	70	168	80	192	
N4	0	2.4	0.0		0	0	0	0	
						372		468	132
O1	0	2.4	2.4	GIB2	70	168	80	192	O
O2	0	2.4	2.4	GIB2	70	168	80	192	
O3	0	2.4	2.4	GIB2	70	168	80	192	
O4	0	2.4	0.0		0	0	0	0	
						504		576	70
P1	0	2.4	2.4	GIB1	50	120	75	180	P
P2	0	2.4	2.4	GIB2	70	168	80	192	
P3	0	2.4	0.0		0	0	0	0	
P4	0	2.4	0.0		0	0	0	0	
						288		372	147
Q1	0	2.4	1.8	GIB1	50	90	55	99	Q
Q2	0	2.4	2.4	GIB2	70	168	80	192	
Q3	0	2.4	1.0	BR4	85	85	100	100	
Q4	0	2.4	0.0		0	0	0	0	
						343		391	97
R1	0	2.4	2.4	GIB1	50	120	75	180	R
R2	0	2.4	0.0		0	0	0	0	
R3	0	2.4	0.0		0	0	0	0	
R4	0	2.4	0.0		0	0	0	0	
R5	0	2.4	0.0		0	0	0	0	
This program licensed for the sole use of A.J. Williamson Premier Design &						120		180	64
				EQ	====		WL	====	
				total		1747	total	2167	

SPECIAL WALL BRACING TYPES

<u>TYPE</u>	<u>PRINCIPAL ELEMENT</u>	<u>SECONDARY ELEMENT</u>
WINSTONES BRACELINE		
BR1	Braceline one face.	Metal or timber diagonal brace
BR2	Braceline one face fixed vertically.	None.
BR3	Braceline one face fixed horizontally.	None.
BR4	Braceline on one face.	Outer edges of frame anchored with 6 kN capacity fixing.
BR5	Braceline one face.	Outer edges of frame anchored with 6 kN capacity fixing.
BR6	Braceline one face, 9.5mm Gib Board on other.	Outer edges of frame anchored with 12 kN capacity fixing.
BR7	Braceline one face, 7.5mm plywood on other.	Outer edges of frame anchored with 6 kN capacity fixing.
BR8	Braceline one face, 4.75mm Hardboard on other.	Outer edges of frame anchored with 6 kN capacity fixing.
BR9	Braceline one face.	Outer edges of frame anchored with 6 kN capacity fixing.
WINSTONES GIBRALTAR BOARD		
GIB1	9.5mm Gib Board one face.	Metal or timber diagonal brace
GIB2	9.5mm Gib Board two faces.	Metal or timber diagonal brace
GIB3	9.5mm Gib Board two faces.	None.

**SPECIFICATION
OF
MATERIALS TO BE SUPPLIED
AND
WORK TO BE EXECUTED
IN THE
ERECTION OF
A RESIDENCE
FOR
MR R COLEY
HOLDSWORTH DRIVE
WANGANUI**

CONTENTS

The following are included in these documents:

VARIATION SCHEDULE

BRACING SCHEDULE

STANDARD SHEETS

- A PRELIMINARY AND GENERAL**
- B EXCAVATION AND WATERPROOFING**
- C CONCRETE**
- D CARPENTER**
- E JOINER**
- F PLASTERER**
- G FIREPLACE**
- H BRICKLAYER**
- J CONCRETE BLOCK MASON**
- L ROOFER**
- M PLUMBER**
- P DRAINLAYER**
- Q ELECTRICIAN**
- S PAINTER**

DRAWINGS - Plan No. 2849 Sheets 1 - 3

VARIATION SCHEDULE

(This schedule sets out the specific materials to be used and must be read in conjunction with the standard sheets.)

FOUNDATIONS:

Construct foundations as noted on the drawings.

FLOOR:

100 mm concrete slab with 668 mesh.

Garage floor slab to be 100mm lower than main floor level.

At Garage, cast concrete nib under wall framing, to main floor level.

Recess slab at doors to provide weathering.

Surface finish to be U2.

EXTERIOR SHEATHING:

Monier 70mm brick veneer.

Sills to be formed with sill slabs.

CABLE SHEATHING:

Hardies Hardilattice over Harditex.

POSTS:

Posts at Entry to be 200mm diameter pvc, concrete filled.

ROOF FRAMING:

Pryda or Gangnail nail plate trusses.

Truss Manufacturer to provide Builder with a complete roof layout plan.

ROOFING:

Monier concrete tiles on battens.

WINDOWS & GLAZING:

Aluminium awning, Powder coated, as shown on the drawings.

Reveals to be H3 treated timber, grooved to take linings.

PC GlassBlock units laid with Kwik'N Ez kit, to Entry.

DOORS - Exterior:

Aluminium Powder coat ranchslider as shown on the drawings.

Aluminium Powder coat hinged door as shown on the drawings.

Reveals to be H3 treated timber, grooved to take linings.

Timber panelled with glazed sidelight, to Entry. P.C. Sum \$600

Timber door to be in aluminium frame.

2400mm wide, 2100mm high, Colorsteel sectional overdoors to Garage.

DOORS - Interior:

Paint grade hollow core flush.

Bi-folding flush doors to Laundry.

Doors to be hung in Customwood Slimline jambs.

CEILINGS:

9.5mm Gib-Board, glued and screwed.

Finish to be Level 5 in accordance with Gib Board brochure, ready for painting.

INTERIOR LININGS:

9.5mm Gib Board.

9.5mm Gib Water Resistant Board to Laundry, Bathroom, En Suite, W.C.

Finish to be Level 5 in accordance with Gib Board brochure, ready for painting.

INTERIOR FINISHES:

Cornice - 50 mm Gib-Cove

Skirting - Customwood Moulding No. 3

Skirting - Planted PVC moulding to take coved vinyl, to Bathroom, En Suite, W.C.

WARDROBES:

Method B (see Standard Sheets).

KITCHEN DETAILS:

Allow the P.C. Sum of \$6500 for supply of Kitchen joinery.

HARDWARE:

Allow the P.C. Sum of \$450 for supply of door furniture (handles).

Allow the P.C. Sum of \$150 for supply of the following:

2 Toilet roll holders

5 Towel rails

INSULATION:

Insulation shall be as follows:

R2.4 NZFG fibreglass batts to ceiling spaces.

R1.8 NZFG fibreglass batts to exterior walls.

FIREPLACE:

Stack Vista free standing, fitted with flue shield.

Heater to be fitted with wetback connected to hot water cylinder.

Heater to be fixed to tiled hearth.

SHOWER:

Clearlite Aspen fibreglass shower enclosure with folding door and return panels, to En Suite.

Clearlite Athens 2A fibreglass shower enclosure, with folding door and return panel, to Bathroom.

VANITY:

Allow the P.C. Sum of \$900 each for the supply.

TOILET:

Fowler Cheval white pedestal pan.

Dux Twinline, dual flush cistern with seat.

BATH:

Clearlite Pacific 1655 acrylic.

BATH SURROUND:

Tiles to 300mm above bath.

Build in bath, line with Water Resistant Gib-Board and tiles.

TUB:

Mercer Autodrain 600 pressed stainless steel on standard cupboard.

TAPS:

Install three exterior hose taps.

Install the following taps:

Methven Clementine.

WATER PIPING:

All piping to be carried out in approved copper.

HOT WATER CYLINDER:

180 litre electric, and connected to wetback.

Fit Repco RMC Tempering Valve.

Hot water supply to be via a supply tank.

SPOUTING & GUTTERS:

Marley Classic, uPVC.

DOWNPIPES:

Marley Classic, uPVC.

STORMWATER:

Carried to existing stormwater connection.

WATER SUPPLY:

From new connection.

SEWER:

Carried to existing Council sewer drain.

ELECTRICAL:

Install underground cable.

Install MCB switchboard.

Install McKay meter board.

Install the following electrical items:

- 30 incandescent light fittings
- 2 exterior lights and fittings
- 2 exterior lights wired to PIR sensors
- 5 recessed downlights
- 2 two way switch circuits
- 3 dimmers
- 26 double switched socket outlets
- 3 single switched socket outlets
- 2 television aerial outlets
- Hot water cylinder element and thermostat.
- 3 telephone points

Switched socket outlets in Laundry, Bathroom, En Suite to be wired to HPM Electrasafe H3ELM safety switches.

Electrical fittings to be PDL 500 series.

APPLIANCES:

Supply and install the following:

Electric range. PC Sum of \$1300.

Heated Towel rails (two). PC Sum of \$180.

Range hood vented through roof. PC Sum of \$650.

F & P Dishwasher. PC Sum of \$1300

All fittings to be wired to outlets additional to those scheduled.

PAINTING & DECORATING:

In accordance with standard sheets.

Paint all Gib Board walls.

Refer to issue 2

=====

BraceS

=====

version 2.10

A computer program to calculate bracing requirements
and provide bracing schedules to NZS 3604:1990

Project Information

Client : R. COLEY	Date : 11/10/94
Address: HOLDSWORTH DR	Job no : 2849
: WANGANUI	
:	Designer : AJW
Lot no : 79	Signature:
DP no :	

Don Thomson owns this program (BraceS) and has sold a licence to
A.J. Williamson Premier Design & Masterton
who has contracted to use (and is responsible for other people to
use) this copy of BraceS one on computer at any one time
registration no: 2015

Don Thomson assumes no responsibility for the accuracy, validity
or applicability of the results of BraceS.

ZONE INFORMATION

Building is in Earthquake Zone:
(refer figure 2.2)

zone A

WIND ZONE DETERMINATION

House is in flat area - Contour information not required

House is not in Lee Zone

House is not in valley with accelerated wind flows

Type of formation is [from table 2.5]:

T1

Wind region is:

R1

Ground roughness is:

urban

Exposure is:

exposed

Building wind zone is:

L

LAYOUT OF HOUSE

HOLDSWORTH DR

Axis or direction nominated as ALONG the building is: east-west
(for reference only).

A ridge runs across the building.
A ridge runs along the building.

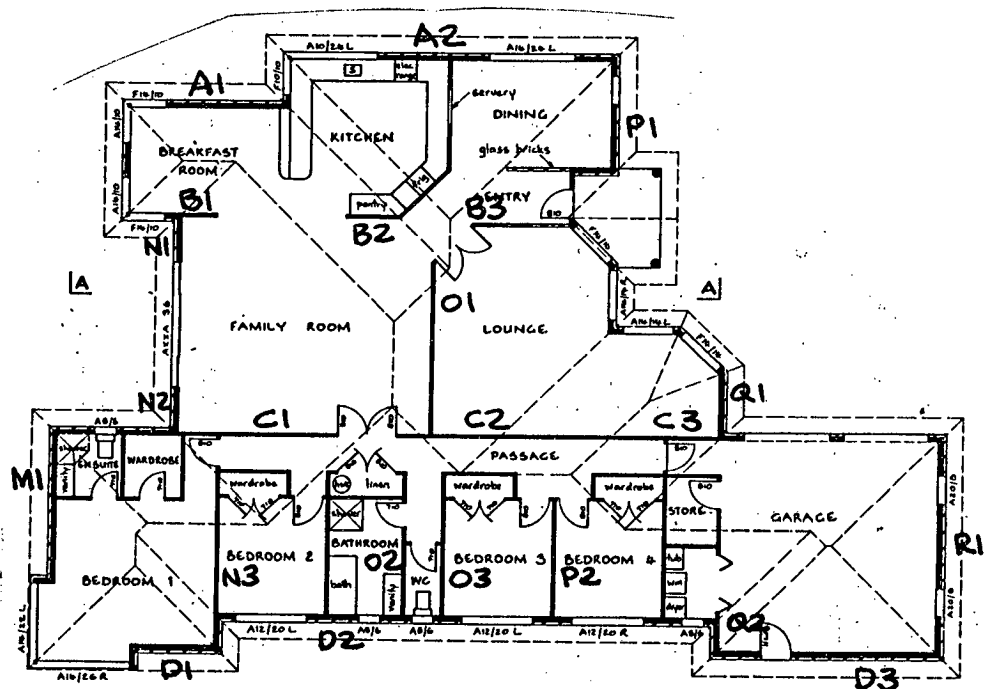
House is single storey.
Foundation is slab to Appendix E or specific designed.

There is no room in the roof space.
Floor supports a normal live load.

The house does not contain a small chimney to NZBC B1/AS3.

DIMENSIONS

Average roof slope (degrees)	25 deg
Roof cladding type is:	heavy
Wall cladding type is:	heavy
Length overall of BUILDING in Along direction is:	25.6 m
Length overall of BUILDING in Across direction is:	17.7 m
Area of roof is:	290 sq m
Height of building from ground to ridge (building height):	4.8 m
Height of roof from eaves to top of ridge (roof height):	2.4 m
Height top or single storey floor to ceiling (stud height):	2.4 m



EARTHQUAKE BRACING REQUIREMENTS
[from table 4.7A and 6.1]

HOLDSWORTH DR

level	direction	area sq m	bracing per sq m	plus chimney	required bracing
top or single	along and across	290	4.9	0	1421
				0	0
foundation (min 280 BU) (cl 4.6.7.2)	along and across	290	12.5	0	3625

WIND BRACING REQUIREMENTS
[from table 4.7B and 6.2]

level	direction	perpendicular length m	bracing per metre	plus chimney	required bracing
top or single	along	17.7	36	-	635
	across	25.6	36	-	919
				-	
				-	
foundation (min 640 BU) (cl 4.6.7.2)	along	17.7	47	-	823
	across	25.6	47	-	1190

This program licensed for the sole use of:
A.J. Williamson
Premier Design &

BRACING LINES Top or Single Storey

HOLDSWORTH DR

Lines A-E are for ALONG direction. Lines M-R are for ACROSS direction.

Line Name	Length of Line as external wall (m)	Length of Line as internal bracing line	Total width of diaphragms attached (m)	Number of Dragon Ties attached	Min BUS
A	13.9 m	0.0 m	0.0 m	0	139
B	0.0 m	13.9 m	0.0 m	0	70
C	9.6 m	15.6 m	0.0 m	0	166
D	25.6 m	0.0 m	0.0 m	0	256
E	0.0 m	0.0 m	0.0 m	0	0
M	6.9 m	0.0 m	0.0 m	0	69
N	6.2 m	9.6 m	0.0 m	0	132
O	0.0 m	16.3 m	0.0 m	0	70
P	7.7 m	8.6 m	0.0 m	0	147
Q	2.7 m	5.5 m	0.0 m	0	97
R	6.4 m	0.0 m	0.0 m	0	64

Bracing Schedule - Top or Single Storey - ALONG

Bracing required for EQ 1421 units: HOLDSWORTH DR
 Bracing provided for EQ 1430 units:
 Bracing required for WL 635 units: Bracing minimum for each
 Bracing provided for WL 1862 units: line is achieved

BRACING ELEMENT				BRACING UNITS					LINE
name	angle	height	length	type	EQ rate	EQ prov	WL rate	WL prov	min
	deg	m	m		BU/m	BU	BU/m	BU	BU
A1	0	2.4	2.4	GIB1	50	120	75	180	A
A2	0	2.4	2.4	GIB1	50	120	75	180	
A3	0	2.4	0.0		0	0	0	0	
A4	0	2.4	0.0		0	0	0	0	
A5	0	2.4	0.0		0	0	0	0	
A6	0	2.4	0.0		0	0	0	0	
						240		360	139
B1	0	2.4	1.2	BR6	110	132	150	180	B
B2	0	2.4	1.2	BR6	110	132	150	180	
B3	0	2.4	0.9	BR4	85	77	100	90	
B4	0	2.4	0.0		0	0	0	0	
B5	0	2.4	0.0		0	0	0	0	
B6	0	2.4	0.0		0	0	0	0	
						341		450	70
C1	0	2.4	2.4	GIB2	70	168	80	192	C
C2	0	2.4	2.4	GIB2	70	168	80	192	
C3	0	2.4	2.4	GIB2	70	168	80	192	
C4	0	2.4	0.0		0	0	0	0	
C5	0	2.4	0.0		0	0	0	0	
						504		576	166
D1	0	2.4	2.4	GIB1	50	120	75	180	D
D2	0	2.4	2.1	GIB1	50	105	55	116	
D3	0	2.4	2.4	GIB1	50	120	75	180	
D4	0	2.4	0.0		0	0	0	0	
D5	0	2.4	0.0		0	0	0	0	
D6	0	2.4	0.0		0	0	0	0	
						345		476	256
E1	0	2.4	0.0		0	0	0	0	E
E2	0	2.4	0.0		0	0	0	0	
E3	0	2.4	0.0		0	0	0	0	
E4	0	2.4	0.0		0	0	0	0	
E5	0	2.4	0.0		0	0	0	0	
E6	0	2.4	0.0		0	0	0	0	
This program licensed for									0
the sole use of									
A.J. Williamson				EQ	====	WL	====		
Premier Design &				total	1430	total	1862		

Bracing Schedule - Top or Single Storey - ACROSS

Bracing required for EQ 1421 units: HOLDSWORTH DR
 Bracing provided for EQ 1579 units:
 Bracing required for WL 919 units: Bracing minimum for each
 Bracing provided for WL 1975 units: line is achieved

BRACING ELEMENT				BRACING UNITS					LINE
name	angle deg	height m	length m	type	EQ rate BU/m	EQ prov BU	WL rate BU/m	WL prov BU	min BU
M1	0	2.4	2.4	GIB1	50	120	75	180	M
M2	0	2.4	0.0		0	0	0	0	
M3	0	2.4	0.0		0	0	0	0	
M4	0	2.4	0.0		0	0	0	0	
M5	0	2.4	0.0		0	0	0	0	
						120		180	69
N1	0	2.4	1.2	BR5	85	102	115	138	N
N2	0	2.4	1.2	BR5	85	102	115	138	
N3	0	2.4	2.4	GIB2	70	168	80	192	
N4	0	2.4	0.0		0	0	0	0	
						372		468	132
O1	0	2.4	2.4	GIB2	70	168	80	192	O
O2	0	2.4	2.4	GIB2	70	168	80	192	
O3	0	2.4	2.4	GIB2	70	168	80	192	
O4	0	2.4	0.0		0	0	0	0	
						504		576	70
P1	0	2.4	2.4	GIB1	50	120	75	180	P
P2	0	2.4	2.4	GIB2	70	168	80	192	
P3	0	2.4	0.0		0	0	0	0	
P4	0	2.4	0.0		0	0	0	0	
						288		372	147
Q1	0	2.4	1.8	GIB1	50	90	55	99	Q
Q2	0	2.4	1.0	BR4	85	85	100	100	
Q3	0	2.4	0.0		0	0	0	0	
Q4	0	2.4	0.0		0	0	0	0	
						175		199	97
R1	0	2.4	2.4	GIB1	50	120	75	180	R
R2	0	2.4	0.0		0	0	0	0	
R3	0	2.4	0.0		0	0	0	0	
R4	0	2.4	0.0		0	0	0	0	
R5	0	2.4	0.0		0	0	0	0	
This program licensed for						120		180	64
the sole use of						====		====	
A.J. Williamson				EQ			WL		
Premier Design &				total		1579	total	1975	

SPECIAL WALL BRACING TYPES

<u>TYPE</u>	<u>PRINCIPAL ELEMENT</u>	<u>SECONDARY ELEMENT</u>
WINSTONES BRACELINE		
BR1	Braceline one face.	Metal or timber diagonal brace
BR2	Braceline one face fixed vertically.	None.
BR3	Braceline one face fixed horizontally.	None.
BR4	Braceline on one face.	Outer edges of frame anchored with 6 kN capacity fixing.
BR5	Braceline one face.	Outer edges of frame anchored with 6 kN capacity fixing.
BR6	Braceline one face, 9.5mm Gib Board on other.	Outer edges of frame anchored with 12 kN capacity fixing.
BR7	Braceline one face, 7.5mm plywood on other.	Outer edges of frame anchored with 6 kN capacity fixing.
BR8	Braceline one face, 4.75mm Hardboard on other.	Outer edges of frame anchored with 6 kN capacity fixing.
BR9	Braceline one face.	Outer edges of frame anchored with 6 kN capacity fixing.
WINSTONES GIBRALTAR BOARD		
GIB1	9.5mm Gib Board one face.	Metal or timber diagonal brace
GIB2	9.5mm Gib Board two faces.	Metal or timber diagonal brace
GIB3	9.5mm Gib Board two faces.	None.

PRELIMINARY AND GENERAL

A.1 CONDITIONS OF CONTRACT

The general conditions of contract shall be:

NZS 3901 - Agreement for Small Building Contracts or the appropriate NZ Master Builders Federation Contract Agreement.

A.2 BUILDING CODE

Unless specifically noted in the contract documents, all work shall conform to the NZ Building Code Handbook and approved documents.

Where reference is made to Acceptable Solutions, these shall be determined in accordance with the Building Act 1991.

The Contractor and all Sub-Contractors shall observe and adhere to all requirements as set out in the NZ Building Code and in the Building Act 1991.

A.3 WORKMANSHIP

Where no specific reference to workmanship is made in this specification in respect of any particular labour required, it shall be understood that the standard of workmanship required is not lower than the best recognised general trade practice for that type of work.

A.4 INTENT

Any labour or materials not covered in this specification or on the drawings, but which are necessary for the proper and effectual completion of the work, shall be taken as being part of the drawings and specification, and shall be carried out in accordance with the best trade practice.

A.5 DISCREPANCIES

Where any variation occurs between the specification and drawings, or on the drawings, the Contractor shall notify the Designer for clarification before proceeding with the section of work affected.

A.6 SUBSTITUTIONS

No materials specified shall be substituted without the prior consent of the Designer or Territorial Authority.

A.7 DIMENSIONS

The Contractor shall check all dimensions on the drawings and should any discrepancies arise, he shall notify the Designer. No allowance will be made for failure to check dimensions.

A.8 ACCIDENT INSURANCE

The Contractor shall take out a Public Liability insurance policy for the amount of \$500,000 (five hundred thousand dollars).

A.9 FIRE INSURANCE

The work including all unfixed materials shall be insured against loss or damage by fire or earthquake. The policy shall be in the joint names of the Owner and Contractor, and shall be sufficient to cover the work and materials at all times.

The insurance policy shall be taken out by the Contractor unless otherwise indicated in the Variation Schedule.

Preliminary and General

A.10 SUB-CONTRACTORS

This specification is subdivided into trade sections for the convenience of reference only and it shall not be construed that each section is an entire and separate sub-contract.

All trades shall collaborate, wait on, assist and render all necessary assistance to other trades.

Carpenters shall provide all dwangs, etc. for other trades.

A.11 BUILDING CONSENT

Before any work commences, the contractor shall ensure that a Building Consent has been obtained from the Territorial Authority.

The Building Consent shall be obtained and paid for by the Owner.

A.12 HEALTH & SAFETY

The attention of the Contractor and all sub-contractors is drawn to the Health & Safety In Employment Act.

A.13 SITE AND SETTING OUT

Approximate ground lines are shown on the drawings but the Contractor is advised to visit the site to ascertain any variations regarding levels for foundations, boundaries, etc.

The Contractor shall perform all setting out of work and shall be responsible for the accuracy thereof.

A.14 CLEANING UP

The Contractor shall maintain the whole of the work site in a clean and tidy state and shall clean the whole of the site of the work at the completion of the contract. The whole of the work, including windows shall be cleaned ready for immediate occupation.

A.15 MAINTENANCE

The Contractor shall maintain the work and make good all defects which may occur within 90 days after the completion of the contract, due to faults which may occur in the materials or labour supplied.

A.16 CONNECTIONS

The Owner shall be responsible for the payment for all connections to public utilities such as water, sewer, telephone, stormwater (not within own property), electricity.

A.17 CONTRACTS

This specification has been drawn up for complete contracts and is only applicable for that type of contract. Where the work is carried out under "Labour Only" or other types of contracts, the Owner becomes the Contractor and is responsible to ensure that the limits of the work to be carried out are clearly defined.

It is also the Owner's responsibility to obtain and pay for all insurance policies.

A.18 COMPLIANCE CERTIFICATES

Upon completion of the work, the Contractor shall be responsible for notifying the Territorial Authority and obtaining a Code Compliance Certificate on behalf of the Owner.

EXCAVATION & WATERPROOFING

B.1 EXCAVATION

Excavate for all foundations to the sizes and depths shown on the drawings or specified herein. Excavation shall be carried to solid bearing. If foundation material is not satisfactory, excavate to solid bearing and backfill with compacted hardfill or 10 MPa concrete.

Remove topsoil and excavate to a minimum of 200mm below underside of floor slab. Shape ground to fall from centre of building.

B.2 BACKFILLING

Backfill against foundations, under floor slab with compacted hardfill.

Backfill under floor slab with compacted, hard drainage metal, graded 40mm to 12mm. This layer may be topped with clean sand or crusher dust.

Backfill against all other foundations with sound excavated material (not topsoil) and compact.

Backfill against retaining walls and basement walls with permeable drainage metal.

B.3 HARDFILL

Where hardfill is required, this shall be graded river run metal or graded crushed metal.

B.4 WATERPROOF MEMBRANE

Lay waterproof membrane as noted on the drawings or in this specification. All joints to be lapped 100mm and sealed with 50mm wide tape. At perimeter of slab, seal the membrane into the joint between foundation wall and slab.

Where pipes, etc. penetrate the membrane, adequate protection against seepage shall be made by sealing the membrane to the penetration, with tape.

Care shall be taken at all times to ensure that the membrane forms a complete waterproof barrier and that it is not punctured during casting of the floor slab.

B.5 WATERPROOFING

Waterproofing shall be carried out to areas as noted on the drawings or in this specification using "Mulseal" or equivalent.

Coating shall be carried out strictly in accordance with the manufacturer's recommendations, especially the cleaning of the surfaces and priming.

In addition to the areas noted in the Variation Schedule or on the drawings, the following areas shall be coated:

- (1) Concrete floors - Top of foundation wall where wall slab will rest and where a veneer will rest.
- (2) Basement walls - All surfaces in contact with the ground.

B.6 DRAINAGE

Where a concrete floor slab is used, the area around the building shall be graded so that surface water drains clear of the building site.

At retaining walls, lay a "Novaflo" or similar drain at the base of the wall, falling to a suitable outlet.

CONCRETE

C.1 MATERIALS

Concrete materials shall be from approved sources and conform to the following:

NZS 3121 - Specification for Water and Aggregate for Concrete.

NZS 3122 - Specification for Portland Cement.

C.2 CONCRETE

Concrete shall conform to one of the following:

NZS 3104 - Specification for Concrete Production: High Grade & Special Grade.

NZS 3108 - Specification for Concrete Production: Ordinary Grade.

Unless specifically noted otherwise, concrete strength shall be 17.5 MPa.

C.3 REINFORCING

Reinforcing shall conform to the following:

NZS 3402 - Steel Bars for the Reinforcement of Concrete.

NZS 3422 - Specification for Welded Fabric of Drawn Steel Wire for Concrete Reinforcement.

Reinforcing rods shall be deformed mild steel, clean and free from loose rust and scale. Laps where required shall be 40 rod diameters.

C.4 CONSTRUCTION

Concrete construction shall conform to NZS 3124 - Specification for Concrete Construction for Minor Works.

C.5 FORMWORK

All concrete shall be placed in properly constructed formwork which is securely braced and held in position.

All formwork shall be carefully removed from concrete.

C.6 FLOOR SLAB

Floor slabs including verandas, porches, carports, garages shall be 100mm thick, and reinforced with 668 welded mesh.

Slabs shall be cast in one layer and shall be finished by power floating unless otherwise indicated.

Floor slabs shall be cured by keeping damp for at least 14 days after placing by covering with hessian and hosing regularly or covering with polythene. A sprayed curing membrane may be used provided it does not inhibit the subsequent bonding of floor coverings.

C.7 SUNDRIES

Concrete steps shall be constructed where shown.

Steps to be reinforced with 668 welded mesh and one D10 at each nosing.

Install 300mm x 150mm crimped wire vents at 1.8m centres in foundation walls to timber floors.

C.8 BUILDING IN

Check with all trades that all bolts, pipes, flashings, etc. have been allowed for before casting any concrete.

CARPENTER

D.1 GENERAL

All work shall be carried out strictly in accordance with the N Z Building Code Handbook and the relevant approved documents, including NZS 3604 - Code of Practice for Light Timber Frame Buildings not Requiring Specific Design.

D.2 TIMBER

Timber grading shall conform to NZS 3631 - New Zealand National Timber Grading Rules.

Timber shall conform to NZS 3602 - Code of Practice for Specifying Timber and Wood-Based Products For Use in Building.

In general this shall be as follows:

Wall Framing	- Radiata Pine, No.1 Framing, H1 treated.
Exposed Framing	- Radiata Pine, No.1 Framing, H3 treated.
Exterior Finish	- Radiata Pine, Clears or finger jointed, H3 treated.
Interior Finish	- Radiata Pine, Clears or Finger jointed, H1 treated, or Customwood or similar mouldings.

All timber shall be protected from sun and water, and finishing timbers shall be protected from damage, as soon as they are delivered on site.

D.3 WORKMANSHIP

All timber shall be nailed or suitably fixed in accordance with the best trade practice and in accordance with the N Z Building Code Handbook and any Standards or as detailed on the drawings.

All work shall be accurately set out and neatly executed.

D.4 FRAMING

Construct framing in accordance with NZS 3604, or as required to support the sheathings and linings. The sheathing or lining manufacturer's recommendations for frame member spacings shall be strictly adhered to.

All timber fixings shall be in accordance with NZS 3604 unless otherwise indicated.

Plumb and straighten all walls.

Lay floor and ceiling framing to true line and level.

Provide all dwangs and noggings for the fixing of cupboards, benches, fittings, switches, etc.

Fix all bracing as detailed in the Bracing Schedule and as required to maintain the structure in a stable condition.

D.5 PRE-NAILED FRAMES

Where pre-nailed frames are used, these shall be supplied complete with all dwangs and bracing (except sheet braces).

D.6 ROOF TRUSSES

Roof trusses shall be from an approved manufacturer and shall be designed for their particular application.

The truss manufacturer shall supply a truss layout plan to the Contractor.

Carpenter

D.7 FLOORING

Flooring shall be 20mm high density particle board or other approved flooring material, fixed in accordance with the manufacturer's recommendations and as required by NZS 3604, to provide a diaphragm. Punch all nails below the surface.

Strip flooring shall be tightly cramped and nailed.

On completion of the building, machine sand all flooring.

D.8 EXTERIOR SHEATHING

All weatherboards shall conform to NZS 3617 - Specification for Profiles of Weatherboards, Fascia Boards and Flooring.

Fix sheathings as indicated on the drawings and in the Variation Schedule. Sheathings shall be fixed strictly in accordance with the manufacturer's recommendations.

Under all sheathings, lay Flamestop building paper unless otherwise indicated.

Timber weatherboards, vertical boarding

Securely fix to framing with galvanized nails and punch nails.

Mitre all joints and carefully scribe to finishes.

Special weatherboards

Fix according to the manufacturer's recommendations, using the proprietary jointing methods. Where possible, use concealed jointers.

Flat sheets

Fix with small head galvanized clouts. Vertical joints shall be made using UPVC jointers and horizontal joints shall be made using galvanized steel Z flashing.

D.9 EXTERIOR FINISHING

Fix all fascias, barges and other finishes as necessary.

Finishes shall conform to NZS 3617 - Specification for Profiles of Weatherboards, Fascia Boards, and Flooring.

Install all necessary flashings, beads, etc, and use sealants only as absolutely required.

All joints shall be made so as to render the work watertight.

All timber shall be primed before fixing.

D.10 DOORS AND WINDOWS

Install doors and windows as shown or noted and as specified under Joiner.

Aluminium doors and windows shall be fixed in accordance with the manufacturer's instructions.

Frames shall be installed plumb and level and shall be securely fixed in place.

Supply and install all necessary flashings and scribes.

D.11 SOFFIT

Soffits are to be lined as noted, with joints made with UPVC jointers.

Timber fascia as shown shall be grooved to take soffit lining.

Unless otherwise noted, soffit linings shall include verandas, porches, carports, ceilings to terraces.

Carpenter

D.12 INTERIOR LININGS

Framing and battens shall have a moisture content below 24% before linings are fixed.

Fix all interior linings as noted on the drawings and in the Variation Schedule, in accordance with the manufacturer's instructions and/or recommendations. Where no instructions exist for any linings, they shall be securely fixed so as to prevent any movement and in accordance with the best trade practices.

The following is a summary of fixings for linings:

Hardboard

Fix with 25mm plated panel pins spaced 100mm apart around perimeter, 12mm minimum from edge, and 200mm apart elsewhere.

Alternatively, fix with Wallboard Adhesive on a continuous bead.

All joints unless otherwise indicated shall be finished with uPVC mouldings.

Woodfibre Insulating Board

Fix with 40mm galvanised panel pins driven at an angle, or 30mm small flathead galvanised wallboard nails. Nails to be punched.

Alternatively, fix with 19mm staples or suitable adhesives.

Fixings to be spaced 100mm apart around perimeter and 150mm to 200mm elsewhere.

Carefully set out sheets to suit each room.

Finish joints between sheets with flush timber beads or as noted in the Variation Schedule.

Panels and Tiles

Set battens at 300mm or 400mm centres to suit panels/tiles.

Fix with staples.

Gib Board

Sheets are to be fixed horizontally on walls in as long lengths as possible.

Fix with adhesive and Gib Clouts.

Where Gib Board is used on ceilings, fixing shall be with adhesive and screws.

Particle Board

Fix with nails, staples or screws, spaced 150mm apart around perimeter and 250mm apart elsewhere.

Alternatively, fix with Wallboard Adhesive on a continuous bead.

Prefinished Wallboards

Sheets to be fixed in accordance with the manufacturer's recommendations using adhesives.

Finish joints with matching uPVC mouldings.

Timber Boarding

These shall be fixed by approved methods of secret or semi-secret nailing.

D.13 INTERIOR FINISHINGS

Architraves

Fix architraves as noted in the Variation Schedule, to all window and door frames. Mitre all corners, neatly fit and securely fix.

Skirtings

Fix skirtings as noted in the Variation Schedule, around base of walls. Mitre external corners, scribe internal corners and securely fix to wall. Where floor is to remain exposed, the skirtings shall be scribed to floor as necessary.

Cornice

Fix cornice as noted in the Variation Schedule.

Carpenter

Special Finishings

As noted under the Interior Linings, or as recommended by the manufacturer.

Pelmets

Construct using 100mm x 25mm top and 125mm wide facing as noted in the Variation Schedule.

Built-in pelmets

Construct 100mm out from wall and extending from ceiling to 20mm below window head. Unless otherwise noted, pelmets shall be faced with the same material as the wall lining.

D.14 INTERIOR DOORS AND FRAMES

Install doors and frames as noted in the Variation Schedule and as specified under Joiner.

Jambs shall be set plumb, and securely wedged and held in place.

D.15 CUPBOARDS

Construct cupboards as indicated on the drawings or in the Variation Schedule. Cupboards shall generally be fitted with five shelves.

D.16 WARDROBES

Wardrobes shall be constructed as follows:

Method A

Construct wardrobe with 1800mm high doors and separate over cupboard with same width doors. Fix full width shelf using 20mm high density particle board between wardrobe and over cupboard.

Method B

Construct wardrobe with standard height doors.

Install 300mm wide particle board shelf, 1700mm above the floor.

Method C

Construct wardrobe with full height sliding doors. Fix full width shelf using 20mm high density particle board, 1700mm above the floor.

All shelves to be adequately supported and to have Pryda Closet Bar fitted under.

Where shown on the drawings, install four side shelves.

D.14 HARDWARE

Supply and fix all necessary hardware to complete the works and as noted in the Variation Schedule. Confer with the owner before purchasing any exposed hardware such as door furniture, rails, etc. Neatly and accurately fit all hardware and on completion of work, adjust all fittings and leave the whole in proper working order.

D.15 DOOR STOPS

Provide and fix door stops to all doors, with screw fixings.

D.16 KITCHEN JOINERY

Install Kitchen joinery as supplied. Neatly scribe units to walls and floor and neatly fit benches to walls to avoid the use of cover moulds. Seal benches to walls.

Carpenter

D.17 STAIRS

Install stairs supplied under Joinery.

D.18 TRAPDOORS

Install 450mm x 450mm trapdoor in ceiling.

For timber floors, install 600mm wide trapdoor and frame through foundation wall.

D.19 INSULATION

Install insulation as noted in the Variation Schedule, in accordance with the manufacturer's recommendations.

JOINER

E.1 ALUMINIUM DOORS AND WINDOWS

Aluminium doors and windows shall be from an approved manufacturer.

Doors and windows shall conform to NZS 3504 - Specification for Aluminium Windows.

Doors and windows are to be fitted with timber reveals.

Where indicated in the Variation Schedule, reveals are to have backs grooved to take linings.

E.2 TIMBER DOORS AND WINDOWS

Doors, windows, and their associated frames shall be constructed in accordance with the N.Z. Joinery Manufacturer's Federation standards or other approved systems.

E.3 INTERIOR DOORS AND FRAMES

Doors shall be as noted in the Variation Schedule, hung on three 90mm, loose pin, butt hinges.

Frames shall be ex 40mm thick timber, rebated, finishing flush with linings, or equivalent Customwood.

Where indicated in the Variation Schedule, frames shall have backs ploughed to take linings.

E.4 GLAZING

Glaze all windows and glaze all doors where required.

Glass and glazing shall be carried out in accordance with the N Z Building Code Handbook and NZS 4223 - Code of Practice for Glazing in Buildings.

All bottom panels of glazed doors and sidelights shall be glazed with safety glass.

All windows less than 400mm above the floor shall be glazed with safety glass.

E.5 KITCHEN JOINERY

Construct Kitchen joinery as indicated on the drawings or in the Variation Schedule.

Where a P C Sum is allowed for the joinery, liaise with the Owner to design the Kitchen.

E.6 STAIRS

Construct stairs where required with the going and rise as noted.

Stringers to be ex 50mm, risers and treads to be ex 25mm.

Where open rise stairs are noted, treads are to be ex 50mm.

Provide handrails and safety rails in accordance with the Variation Schedule and the N Z Building Code Handbook.

PLASTERER

F.1 MATERIALS

Materials shall conform to the following:

NZS 3103 - Specification for Sands for Mortars and Internal and External Renderings.

NZS 3122 - Specification for Portland Cement.

NZS 4221 - Specification for Fibrous Plaster Sheets.

F.2 WORKMANSHIP

Plastering shall be carried out by qualified and experienced tradesmen.

Solid plaster and stucco shall conform to NZS 4251 - Code of Practice for Solid Plastering.

Fibrous plaster shall be carried out in accordance with the code of practice as laid down by the NZ Fibrous Plaster Manufacturer's Association.

F.3 CEMENT PLASTER

Cement plaster shall be mixed in the following proportions:

Bond Coat

Clean Sand - 1.5 parts by volume

Portland Cement - 1 part by volume

Bonding Agent - according to the manufacturer's instructions

Flanking and Finish Coats

Clean Sand - 6 parts by volume

Portland Cement - 1 part by volume

Plasticiser - according to the manufacturer's instructions

F.4 SOLID PLASTER

Solid plaster shall be applied to all concrete and masonry surfaces as shown on the drawings or noted in the Variation Schedule.

Plastering shall consist of a bond coat, a flanking coat, a finish coat. A texture coat shall be used where noted.

Care shall be taken to ensure a good bond to the base.

Where necessary, the surface shall be acid etched to provide a key.

Where a smooth finish is noted, vertical surfaces shall be finished with a steel float and horizontal surfaces shall be finished with a wood float.

F.5 STUCCO

Stucco shall be on a solid backing over timber framing.

Backing shall be fixed in accordance with the manufacturer's recommendations. Over backing, fix waterproof building paper.

Reinforcing shall be 25mm mesh, 1.2mm galvanized wire netting or other approved reinforcing material, secured in an approved manner, 6mm clear of backing.

Plastering shall consist of one or two flanking coats and the finish coat, followed by the texture coat as noted in the Variation Schedule.

Plaster shall finish with an average thickness of 25mm.

Plasterer

F.6 FIBROUS PLASTER

Unless indicated otherwise, fibrous plaster shall be 9mm Plasterglass sheets.

Where possible, all sheets shall be fixed to ceilings with adhesive and/or wadding. Where this is not possible, sheets shall be fixed using adhesive and screws.

Joints, screws, angles shall be stopped using the recommended stopping and finishing compound plasters.

Where plaster cornices are specified, these shall be fixed using the appropriate adhesives. All joints shall be neatly made, ensuring that all patterns match and stopped using the recommended stopping compounds.

F.7 STOPPING

Gib Board

Stopping shall be carried out in accordance with the wallboard manufacturer's recommendations.

All walls and ceilings shall be stopped using Gib Bedding Compound, with joints taped.

Where surfaces are to be painted, these shall be finished with Gib Finishing Compound to Level 5 as detailed by Gib Board.

CHIMNEY & FIREPLACE

G.1 CHIMNEYS

This clause applies to chimneys for fireplaces, constructed from concrete, brick, precast pumice concrete.

Chimneys shall be constructed as detailed in the N Z Building Code Handbook B1/AS3.

Foundations for chimneys shall be constructed as detailed, with reinforcing starter rods for the chimney.

Chimneys shall be tied to the timber framing as detailed, at the upper floor level and the roof level.

G.2 FIREPLACE

Construct back, cheeks, etc, of fireplace using firebricks set in a suitable fire cement. Fireplace shall be to an approved shape and shall be constructed as large as possible.

Backfill behind firebricks with clean sand and top off with plaster.

Install standard cast iron fire grate.

G.3 FIRE SURROUND

Install fire surround as noted in the Variation Schedule.

The fire surround shall be securely fixed to the wall and shall be sealed to the chimney.

G.4 HEARTH

Fireplaces

Hearth shall be constructed the same width as the fire surround and shall extend 300mm forward of the fire surround.

Hearth shall be finished as noted in the Variation Schedule.

Heaters

Hearth shall be constructed to the dimensions as required by the heater manufacturer and shall be installed with the required air spaces.

Hearth shall be finished as noted in the Variation Schedule.

G.5 SOLID FUEL BURNING HEATERS

Heaters shall conform to NZS 7401 - Specification for Solid Fuel Burning Domestic Appliances.

Heaters shall be installed in accordance with NZS 7421 - Specification for Installation of Solid Fuel Burning Domestic Appliances. In addition, heaters shall be installed strictly in accordance with the manufacturer's installation instructions and recommendations.

Install heat shield or flue shield as required by the manufacturer.

BRICKLAYER

H.1 MATERIALS

All bricks shall be from an approved manufacturer and shall conform to one of the following:

NZS 366 - Clay Building Bricks.

NZS 3102 - Concrete Masonry Units.

Materials for mortar shall conform to the following:

NZS 3103 - Specification for Sands for Mortars and Internal and External Renderings.

NZS 3122 - Specification for Portland Cement.

NZS 3117 - Specification for Pigments for Portland Cement and Portland Cement Products.

Natural stone shall be approved for use as noted in NZS 4210.

H.2 WORKMANSHIP

All brickwork shall be carried out by qualified and experienced tradesmen.

Work shall conform to the following:

NZS 3604 - Code of Practice for Light Timber Frame Buildings not Requiring Specific Design.

NZS 4210 - Code of Practice for Masonry Construction: Materials and Workmanship.

Masonry manufacturer's codes of practice.

H.3 DAMP COURSE

Set damp course layer at foundation with a slope outwards to deflect any moisture to the weep holes in the veneer.

H.4 MORTAR

Mortar shall be mixed in the following proportions:

Clean Sand - 5 parts by volume

Portland Cement - 1 part by volume

Plasticiser - according to the manufacturer's instructions.

Mineral Oxide Pigment shall not exceed 3% by weight of cement.

Materials shall be mixed in a batch mixer for not less than 5 minutes. Mortar shall be used within 90 minutes of mixing.

Compressive strength shall be not less than 12.5 MPa at 28 days.

H.5 LAYING

Lay bricks in stretcher bond, true to line, level and plumb, and in accordance with good trade practice. Bricks shall be laid 40mm clear of the timber frame. No corner shall be raised by more than one metre above the wall line. Corners shall be racked back. Lay bricks on an even bed of mortar, with ends buttered. Joints shall not exceed 10mm in thickness.

Care shall be taken to keep the cavity between the veneer and the frame free from mortar droppings.

Leave weep holes at every third joint at the base of the veneer and leave a ventilation gap at the top.

Lay Bricklok or similar bonding mesh in horizontal joints at 900mm maximum centres.

On completion, all work shall be thoroughly cleaned down.

H.6 TIES

Brickwork shall be tied to the timber frame with heavy duty wall ties, face fixed to framing. Spacing shall not exceed 600mm horizontally and 400mm vertically.

H.7 POINTING

Unless indicated otherwise in the Variation Schedule, all joints shall be tooled to a hard concave finish.

H.8 LINTELS

Where bricks are laid above openings, they shall be supported on galvanized steel angles as noted in NZS 3604, Cl F6.1.

CONCRETE BLOCK MASON

J.1 MATERIALS

Materials shall be from an approved source and conform to the following:

NZS 3102 - Concrete Masonry Units

NZS 3103 - Specification for Sands for Mortars and Internal and External Renderings

NZS 3122 - Specification for Portland Cement

J.2 WORKMANSHIP

Concrete block construction shall be carried out by experienced tradesmen and shall conform to the following:

NZS 4210 - Code of Practice for Masonry Construction: Materials and Workmanship

NZS 4229 - Code of Practice for Concrete Masonry Buildings not Requiring Specific Design

J.3 REINFORCING

Reinforcing rods shall be deformed steel conforming to NZS 3402 - Steel Bars for the Reinforcement of Concrete, clean and free from loose rust and scale. Laps where required shall be 40 rod diameters.

Reinforcing shall be held securely in place and shall be a minimum of 12mm clear of blocks.

Reinforcement shall be tied together in accordance with NZS 4210.

J.4 MORTAR

Mortar shall be mixed in the following proportions:

Clean Sand - 5 parts by volume

Portland Cement - 1 part by volume

Plasticiser - according to the manufacturer's instructions.

Materials shall be mixed in a batch mixer for not less than 5 minutes. Mortar shall be used within 90 minutes of mixing.

Compressive strength shall be not less than 12.5 MPa at 28 days.

J.5 LAYING

Concrete blocks shall be laid dry, on a full bed of mortar (including cross-webs), to a true line and to the tolerances specified in NZS 4210.

Joints shall be neatly rubbed down with a round rod pointing tool unless otherwise indicated.

J.6 GROUTING

All voids containing reinforcing shall be filled with coarse grout which conforms to NZS 4210.

Unless approved by the Designer, vertical voids shall be filled for each height between bond beams before filling bond beam.

Only voids containing reinforcing shall be grout filled unless otherwise instructed or noted.

J.7 CONTROL JOINTS

Vertical shrinkage control joints shall be made where shown on the drawings or at 6m maximum centres. Joints shall be made as detailed in NZS 4210.

ROOFER

L.1 MATERIALS

All materials shall be from a recognised manufacturer and shall conform to their respective NZ Standards. All materials used shall be compatible one with the other.

L.2 WORKMANSHIP

All roofing work shall be carried out by accredited fixing agents or if the manufacturer does not require this, by qualified roofing tradesmen. The work shall be carried out strictly in accordance with the manufacturer's recommendations.

On completion, the roof shall be left free from defects and watertight.

L.3 ROOFING UNDERLAY

Under all roofing, lay roof underlay as required by the roofing manufacturer. Where roof underlay is required to be supported, fix 50mm mesh, 1.0mm thick galvanised wire netting as the support.

L.4 CORRUGATED GALVANIZED STEEL

Fix in accordance with the manufacturer's recommendations, using galvanised springhead or lead headed nails.

Finish at ridges and hips with lead edged, 0.55mm galvanised steel ridging or purpose made flashings.

Finish at barges and verges with 0.55mm galvanised steel barge flashing, and into walls with 0.55mm galvanised steel apron flashing.

L.5 STRIP METAL ROOFING

Fix roofing with approved clips at every purlin in accordance with the manufacturer's recommendations.

Finish at ridges, hips, barges, verges, etc. with the manufacturer's purpose made flashings.

L.6 OTHER LONGRUN ROOFING

Fix roofing with approved clips, screws, nails in accordance with the manufacturer's recommendations.

Finish at ridges, hips, barges, verges, etc. with the manufacturer's purpose made flashings.

L.7 PREFINISHED ROOFING

In addition to the above requirements, prefinished roofing shall be handled to avoid marking. All marks shall be made good and if required by the manufacturer, shall be replaced.

All exposed fittings, flashings and finishings shall be prefinished to match the roofing.

L.8 COATED METAL TILES

Fix battens and tiles in accordance with the manufacturer's instructions.

Finish at ridges, hips, barges, verges, etc. with the manufacturer's purpose made flashings.

Roofer

L.9 CONCRETE TILES

Tiles shall be Monier brand or similar.

Fix battens and tiles in accordance with the manufacturer's instructions.

Finish at ridges, hips, barges with capping moulds.

L.10 FLASHINGS

Fix 0.6mm galvanised steel valleys and associated flashings.

Fix flashings to all roof penetrations, etc.

L.11 SPOUTING & DOWNPIPES

Fix spouting and downpipes as noted in the Variation Schedule.

Spouting shall be installed in accordance with the manufacturer's recommendations, with falls to downpipes.

Install sufficient downpipes to ensure the efficient removal of water from the spouting.

L.12 GUARANTEE

Provide the owner with a ten year minimum written guarantee or as determined by the manufacturer, in respect of materials and workmanship.

PLUMBER

M.1 MATERIALS

All materials shall be the best of their kinds and shall conform to their respective N Z Standards. Only materials permitted under the N Z Building Code or other Approved Solution shall be used.

M.2 WORKMANSHIP

All work shall be carried out under the supervision of a qualified and experienced tradesman and shall be executed in accordance with the best trade practices.

All work shall conform to the N Z Building Code Handbook.

M.3 INSTALLATIONS

All installations shall be carried out strictly in accordance with the manufacturer's recommendations and with the N Z Building Code Handbook G12/AS1 or other Approved Solution.

M.4 WATER SUPPLY

Run 20mm pipe, or as noted in Variation Schedule from connection to building.

M.5 WATER PIPING

All piping shall be 1.0mm thick copper joined by an approved brazing or welding system, or an approved polybutylene system.

Run 12mm branches to all fittings as required. Where a hot water storage cylinder is installed, this shall be fed by a 20mm branch.

M.6 HOT WATER SUPPLY

Supply and install hot water cylinder as noted in the Variation Schedule, complete with element and thermostat, and complete with isolating stop cock.

The temperature of the water in the cylinder shall not be less than 60 degrees C.

Where necessary, install a tempering valve so that the temperature at the taps is no greater than 55 degrees C.

Where the hot water cylinder is a low pressure storage cylinder, install 100 litre copper or polythene header tank complete with overflow and tray, or alternatively, a Jomac Reservoir or similar.

Support and restrain cylinder and supply tank as detailed in the N Z Building Code Handbook G12/AS1.

M.7 WASTE PIPING

All waste pipes to be 1.5mm thick copper, or approved polypropylene.

Run waste pipes from all fittings to gully traps in accordance with the N Z Building Code Handbook G13/AS1.

Install back vents or other approved anti-siphonage device, to fittings as required.

M.8 SOIL PIPES

Run soil pipe from toilet pans and connect to sewer drain.

Run soil pipes from fittings as noted in the Variation Schedule or noted on the drawings and connect to sewer drain.

M.9 FITTINGS

Supply and install all fittings as shown on the drawings or noted in the Variation Schedule, complete with all taps, traps, etc.

M.10 TAPS

Install matching taps of the type noted in the Variation Schedule.

Install outlets and taps for an automatic washing machine.

DRAINLAYER

P.1 MATERIALS

All materials shall be the best of their respective kinds and shall conform to their respective N Z Standards.

Only materials permitted by the NZ Building Code shall be used.

P.2 WORKMANSHIP

All work shall be carried out under the supervision of a qualified and experienced tradesman and shall be executed in accordance with the best trade practices.

P.3 INSTALLATIONS

All installations shall be carried out strictly in accordance with the manufacturer's recommendations and in accordance with the NZ Building Code Handbook G13/AS2 or other Acceptable Solution.

P.4 EXCAVATIONS

Excavate for all drains to required depths and gradients.

On completion of laying of drains, carefully backfill around pipes and fill and compact excavations in accordance with the NZ Building Code Handbook G13/AS2.

P.5 SANITARY SEWER

Lay 100mm diameter drain from building to disposal as noted in the Variation Schedule.

Pipes shall be approved UPVC.

Install all necessary cleaning eyes, inspection pipes, etc, in accordance with the NZ Building Code Handbook G13/AS2.

P.6 FITTINGS

Supply and connect all necessary gully traps, terminal vents, etc, and complete in accordance with the NZ Building Code Handbook G13/AS2, or other Acceptable Solution.

P.7 SEPTIC TANK

Supply and install as noted in the Variation Schedule.

Septic tank shall conform to NZS 4610.

Run overflow from tank as shown on the drawings or as noted in the Variation Schedule.

Where the overflow is distributed to more than one field, install distribution box as noted.

P.8 STORMWATER

Run 100mm diameter pipes to disposal as noted in the Variation Schedule.

Install soakpits where required for disposal.

ELECTRICIAN

Q.1 GENERAL

All electrical work shall be carried out strictly in accordance with the Handbook to the N Z Electrical Wiring Regulations and the N Z Electrical Codes of Practice.

Where the work to be carried out is on alterations or additions, the electrical supply to the premises shall be maintained at all times except for short breaks when necessary.

The scope of the work shall include the connection to all items indicated in the documents, requiring electrical power.

Provide all information to and apply for all necessary permits from the Supply Authority.

Q.2 MATERIALS

All materials shall conform to their relevant N Z Standards.

All materials shall be the best of their respective kinds where not specifically noted.

Q.3 WORKMANSHIP

The installation shall be carried out by registered tradesmen and shall be left in full and safe working condition.

Q.4 MAINS

Determine the size of the main and allow for a loading 25% above the requirements noted.

Where the work is for alterations or additions to an existing building, allow to replace the mains if the new load is greater than 90% of the main capacity.

Install an underground cable from the connection to the point of entry.

Q.5 SWITCH BOARD & METER BOARD

Install an internal MCB switch board.

Install an external meter board conforming to NZS 6206.

Q.6 WIRING

All wiring shall be concealed in wall, floor or roof spaces. Where this is not possible, the wiring shall be positioned to be inconspicuous. Surface mounted wiring shall be protected.

Q.7 FITTINGS

Install all fittings as noted, complete with all switches.

Install switched socket outlets on sufficient circuits to avoid reasonable overloading.

Connect hot water cylinder supplied under Plumber.

Q.8 EARTHING & BONDING

Install main earth to the installation and bond all exposed and accessible metal to the earth continuity conductor.

Q.9 COMPLIANCE CERTIFICATE

Upon completion of the work, the electrician shall supply the owner with a Compliance Certificate in accordance with the Building Act.

PAINTER

S.1 MATERIALS

All materials shall be from an approved manufacturer.

Colours noted in the Variation Schedule are British Standard colours and where these are not obtainable in a particular brand, approval shall be obtained before using an alternative colour.

S.2 WORKMANSHIP

Work shall only be carried out by competent tradesmen.

Check all surfaces before commencing work to ensure that they are ready to receive paint or paper.

Paint shall be evenly spread and thoroughly brushed or rolled out.

Between coats, surfaces shall be sanded to remove all grit and irregularities and cleaned down.

Where possible, all hardware shall be removed before painting and replaced when completed.

S.3 PREPARATION

New or Unpainted Smooth Finishes

Sand to a smooth surface and clean down.

New or Unpainted Masonry, Plaster, Cement Sheet, Etc

Remove all nibs, dirt, etc, and make good any surface defects.

Previously Painted Surfaces

Remove all paint that is soft, powdered, blistered, loose or flaking, by scraping, wire brushing, sanding or water blasting.

Mould Infected Surfaces

Surfaces shall be washed down with household bleach to destroy mould and then washed down. Alternatively use "Mould Killer". After washing down, the surface shall be treated with an "Anti-mould" preparation, compatible with the paint system being used.

S.4 PRIMING

New or Unpainted Timber (Exterior)

Apply one coat of General Purpose Primer to all timber, except that to be stained, before erection. Patch prime as required after erection.

New or Unpainted Timber (Interior)

Apply one coat of General Purpose Primer/Undercoat.

New or Unpainted Masonry, Plaster, Cement Sheet, Etc

Apply one coat of thinned acrylic paint or special purpose primer in accordance with the product manufacturer's and paint manufacturer's recommendations.

Previously Painted Timber

Apply General Purpose Primer to all bare areas.

New or Unpainted Wallboards

Apply one coat of approved sealer as recommended by wallboard manufacturer.

Galvanised Steel

Apply one coat of Galvanised Steel Etch Primer.

S.5 STOPPING

All exterior timber work shall be stopped, after priming, with linseed-oil putty and patch primed.

All interior timber work shall be stopped with suitable stopping compound, compatible with the paint system being used.

Painter

S.6 EXTERIOR PAINTING

New or Previously Painted Timber

Apply one coat of exterior undercoat tinted to the approximate colour of the finish coat. Apply two coats of exterior high gloss paint.

Apply two coats acrylic gloss. (Not for doors, windows and frames)

New or Previously Painted Masonry, Plaster, Cement Sheet, Etc

Apply two coats acrylic paint.

Timber Stain

Apply strictly in accordance with the manufacturer's instructions and/or recommendations.

Galvanised Steel

Apply two coats Galvanised Steel Roof Paint.

S.7 INTERIOR PAINTING

New or Previously Painted Timber

Apply one coat of All Purpose Undercoat, tinted to the approximate colour of the finish coat. Apply two coats of High Gloss or Semigloss Enamel.

New or Previously Painted Wallboards (Wet Areas)

Apply one coat of All Purpose Undercoat, tinted to the approximate colour of the finish coat. Apply two coats of High Gloss or Semigloss Enamel.

New or Previously Painted Wallboards

Apply two coats of acrylic paint.

New or Previously Varnished Timber

Apply two coats of Polyurethane gloss or satin to doors and timber trim.

Apply two coats of timber stain to exposed beams.

S.8 PAPERHANGING

Check wall surfaces for irregularities before commencing.

Seal the wallboard with a sealer and lightly sand when dry.

Apply size over sealer to all walls before hanging paper. The paper manufacturer's recommendations shall be followed for pasting.

Paper shall be hung plumb in full lengths, with joints accurately butted and neatly trimmed into all finishings.

S.9 CLEANING

On completion of work, clean down all areas including floor and windows where paint has been splashed or spilled.

Clean off all paste marks from paintwork.