

Subfloor bracing



TOM EDHOUSE, BRANZ TECHNICAL ADVISOR

IN *BUILD* 131 (PAGES 29–30), WE EXPLAINED THE INFORMATION NEEDED BEFORE STARTING BRACING CALCULATIONS FOR A BUILDING. THIS TIME, WE WORK THROUGH A SUBFLOOR EXAMPLE.





Elevation of example house.

THE HOUSE BEING USED in this example has a second storey on part of the house (see Figures 1–2).

Data for this example

Refer to *Build* 131 for how to establish these values.

- Wind zone: Medium
- Earthquake zone: 2

Floor plan area

This example has a mixture of single and double storeys. Because these have different wind and earthquake demands, two calculations are required – one for the subfloor area of the 2-storey portion and one for the subfloor area of the single-storey (shown in Figure 3). The slab floor in the garage has no subfloor so does not form part of the calculation. Gross floor plan area for:

2-storey = 10.6 × 5 = 53 m²

1-storey = $8.1 \times 9.3 = 75.3 \text{ m}^2$ (for simplicity, the area has not been reduced for the entry porch).

Once the demand is established, the overlap of the 2-storey will be deducted from the 1-storey. Soil type: Rock

Weight of claddings: Light subfloor, lower storey, upper storey and roof

Roof pitch: 30 degrees, so choose 25–45 degrees Building shape: Subfloor has no wings or blocks *Heights for building*

2-storey to apex H = 7.1 m, roof height above eaves h = 1.8 m.

Note: Where heights don't exactly match the table, use the next highest bracing unit (BU). For example, in the subfloor structure (using

Table 5.5), H = 7.1 m, so round up to 8 m, and h = 1.8 (round down to 1 m, this is a higher BU requirement).

Single-storey to apex H = 4.8 m, h = 1.9 m. **Roof type and building dimension**

The 2-storey has a gable roof with 300 mm soffit/verge.

As the roof is over 25°, when considering wind on the 2-storey part of the building, use the overall dimensions of the roof for the width and length.

So, 2-storey section building dimensions are: Length = 10.6 + 0.300 + 0.300 = 11.2 m Width = 5.0 + 0.300 + 0.300 = 5.6 m.

Single-storey dimensions are: Length = 9.3 m (no soffit to lower level) Width = 8.1 m (no soffit to lower level). Transfer these values to the calculation sheets (Figures 4 and 6).

Note that, because this is a hip roof shape, wind demand in both the along and across directions is the same, so choice of length and width is not critical.

Bracing calculation sheets

The above data is then entered into bracing calculation sheets to obtain the bracing demand (see Figures 4 and 6). Sheets can be downloaded from the Toolbox on the BRANZ website www. branz.co.nz.

2-storey section

Using the calculation sheets (see Figure 4), bracing demand for the 2-storey section is:

- 1176 BUs for wind across the ridge
- 627 BUs for wind along the ridge
- 636 BUs for earthquake.

Use 1176 BUs for wind across and 636 for both wind along and earthquake.

Single-storey section

Bracing demand results for the single-storey area (see Figure 6) are:

- 521 BUs for wind across
- 454 BUs for wind along
- 603 BUs for earthquake.

Use 603 BUs for along and across as it is the higher value in both directions.

Choose bracing element

The subfloor is 600 mm or less high. Anchor piles have been chosen as the subfloor bracing element as they are rated as 160 BUs for wind and 120 BUs for earthquake.

Moving to the bracing lines

For this example, the exterior walls will be used as bracing lines in each direction along with the common wall between the garage and the house. These are within the 5 m rule and provide an even distribution of bracing throughout the building.

We now need to calculate the minimum bracing needed in each line and check the bracing distribution complies with the requirements of NZS 3604:2011 clause 5.5:

 maximum spacing of bracing lines in the subfloor = 5 m >









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Figure 4

Calculation sheet for demand – 2-storey section of subfloor.

Figure 5

Calculation sheet for bracing achieved – 2-storey section of subfloor.

- minimum capacity of subfloor bracing lines is the greater of:
 - 100 BUs
 - 15 BU/m of bracing line
 - 50% of the total bracing demand, divided by the number of bracing lines in the direction being considered.

See Table 1 where this has been worked through. Minimum bracing for 2-storey section

Using the calculation sheet (see Figure 5) gives:

- 1280 BUs for wind across
- 960 BUs for earthquake and along.

This meets the minimum demand requirements from the calculation sheet (see Figure 4) and NZS 3604:2011 clause 5.5.2.

Minimum bracing for single-storey section

Using the calculation sheet (see Figure 7) gives:

1080 BUs for earthquake bracing across

 1080 BUs for earthquake bracing along.
This meets the minimum demand requirements from the calculation sheet (see Figure 6) and NZS 3604 clause 5.5.2.

The piles in brace line N are staggered to comply with the requirement that braced or loadbearing walls are within 200 mm of the pile line.

More to check

Buildings where the height exceeds 1.7 times the width must be on a continuous foundation wall (NZS 3604:2011 clause 5.4.3.2). Height is measured from the underside of the bottom plate on the lowest floor to the top of the roof). In this example, width 5 m \times 1.7 = 8.5 m, so this design is OK as the height is 6.5 m from underside of bottom plate to top of roof.

There is also a minimum number of subfloor braces (NZS 3604:2011 clause 5.5.6) – a minimum of four braced or anchor piles placed in each direction symmetrically around the perimeter. Wherever practical, they should be placed near a corner. This design has five piles in the across direction and nine in the along direction so is OK.

Note Having trouble reading Figures 4–7? You can download these with this article from www.branz.co.nz/welcome_to_ build then Design Right.

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Figure 6

Calculation sheet for demand – single-storey section of subfloor.



Calculation sheet for bracing achieved – single-storey section of subfloor.

Table 1

MINIMUM BRACING NEEDED IN EACH LINE

	2-STOREY SECTION	SINGLE-STOREY SECTION
WIND ACROSS RIDGE		
Bracing lines	B, C, D and E = 5 m long	A, B, C, D = 8.1 m long
Bracing demand per line (greatest value)	100 BUs or 75 BUs (5.0 x 15 BUs) or 147 BUs (1176 BUs divided by 2 = 588 divided by 4 lines)	100 BUs or 122 BUs (8.1 x 15) or 76 BUs (603 BUs divided by 2 = 301.5 divided by 4 lines)
Minimum BUs per line	147 BUs	122 BUs
Minimum anchor piles per line	1 anchor pile = 160 BUs (wind)	2 anchor piles = 240 BUs (120 each for earthquake)
WIND ALONG RIDGE		
Bracing lines	M and N = 10.6 m long	M, N, O = 9.3 m long
Bracing demand per line (greater value)	100 BUs or 159 BUs (10.6 x 15) or 159 BUs (636 BUs (for earthquake) divided by 2 = 318 divided by 2 lines)	100 BUs or 140 BUs (9.3 x 15) or 100 BUs (603 BUs divided by 2 = 301.5 divided by 3 lines)
Minimum BUs per line	159 BUs	140 BUs
Minimum piles per line	2 anchor piles = 240 BUs (120 each for earthquake)	2 anchor piles = 240 BUs (120 each for earthquake)

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	Foundation) Single Storey	y or Upper S	itorey L	ower Store	у		
	Use one sneet	t for each store	y & circle the	appropriat	e Location			
Box 2 V Wind Zone (Building Heig Roof Height Stud Height	/ind Bracing Den Table 5.1) ght to Apex (H) above Eave (h)	nand (Table 5.5 L/M/1 m m m	for foundation H / VH / EH ▼· l L · 8	W Ace	r 5.7 for ot ross Applic Applie ng Applic	= 150 es to acro s to acro = 160 es to Alor	s) D RUS /m ss ridge for 1 ss & along CUS / m ng ridge for (gable roof: for Hip roof) Gable roof
NOTE Table In wind zones	s 5.5 , 5.6, 5.7 re other than high , inte factor given o	elate to HIGH multiply the fig	WIND ZONE ure from the ta	ibles Low Med Very	/ lium / High ra High	0.5 x 0.7 1.3 1.6	Value from table across 150 alorg 160	105 acres
by the appropriate	alle factor given	a seame		2.00				
Box 3 E	arthquake Bracing	g demand (Tabl	les 5.8 5.9 5.	10)				
Box 3 E Earthquake Ze Weight of Ro Roof Pitch (Weight of upp Weight of Lov Weight of sub	arthquake Bracing one (Fig 5.4) of cladding Degrees) er (or Single) sto ver storey Cladding floor Cladding	g demand (Tabl I Orey cladding	les 5.8 5.9 5. 1 /2/ 3 / 4 Light / Heavy -25 /26-45 Light/ Mediur Light/ Mediur Light/ Mediur	10) 46-60 n / Heavy n / Heavy n / Heavy	Concrete Part stor Part stor Chimney Wing / E Deck Pro	Slab cy in Roc cy Basen / llocks ojecting r	of space nent nore than 2n	Yes/No Yes/No Yes/No Yes/No Yes/No Yes/No
Box 3 E Earthquake Ze Weight of Ro Roof Pitch (1) Weight of Low Weight of Low Weight of sub	arthquake Bracing one (Fig 5.4) of cladding Degrees) er (or Single) sto ver storey Cladding floor Cladding 5.8, 5.9, 5.10 Rel on factors for oth	g demand (Tabl	les 5.8 5.9 5. 1 /(2)/ 3 / 4 Light / Heavy -25 / 26-45/ Light/ Mediur Light/ Mediur Light/ Mediur pe D/E in Ear e below	10) 46-60 n / Heavy n / Heavy n / Heavy	Concrete Part stor Part stor Chimney Wing / E Deck Pro	Slab cy in Roc cy Basen llocks ojecting r	of space nent nore than 2n	Yes/No Yes/No Yes/No Yes/No Yes/No Yes/No
Box 3 E Earthquake Ze Weight of Ro Roof Pitch (Weight of upp Weight of Low Weight of sub NOTE Tables for Multiplicati Soil Class	arthquake Bracin one (Fig 5.4) of cladding Degrees) er (or Single) sto ver storey Cladding floor Cladding 5.8, 5.9, 5.10 Rel on factors for oth Earthquake Z	g demand (Tabl	les 5.8 5.9 5. 1 /(2)/ 3 / 4 Light / Heavy 0-25 / 26-45 Ught / Medium Light / Medium pe D/E in Ear e below (2)	10) 46-60 n / Heavy n / Heavy n / Heavy thquake zon	Concrete Part stor Part stor Chimney Wing / E Deck Pro	Slab ey in Roc y Basen / locks ojecting r	of space nent nore than 2n n box 3 x multip	Yes /No Yes /No Yes /No Yes /No Yes No
Box 3 E Earthquake Ze Weight of Ro Roof Pitch (1 Weight of upp Weight of Low Weight of sub NOTE Tables for Multiplicati Soil Class A&B Rocl	arthquake Bracin one (Fig 5.4) of cladding Degrees) er (or Single) sto ver storey Claddin floor Cladding 5.8, 5.9, 5.10 Rel on factors for oth Earthquake Z	g demand (Tabl	les 5.8 5.9 5. 1 /2/ 3 / 4 Light / Heavy -25 /26-45/ Light/ Mediur Light/ Mediur pe D/E in Ear e below (0.5) 0.5	10) 46-60 n / Heavy n / Heavy n / Heavy thquake zon 3 0.6	Concrete Part stor Part stor Chimney Wing / E Deck Pro	Value from	nore than 2m nore than 2m n box 3 x multip x 0.5	Yes /No Yes /No Yes /No Yes /No Yes /No htr Yes /No
Box 3 E Earthquake Ze Weight of Ro Roof Pitch (1 Weight of upp Weight of Low Weight of sub NOTE Tables for Multiplicati Soil Class A&B Rocl C Shallow D/E	arthquake Bracing one (Fig 5.4) of cladding Degrees) er (or Single) sto ver storey Cladding floor Cladding 5.8, 5.9, 5.10 Rel on factors for oth Earthquake 2	g demand (Tabl orey cladding ng late to : Soil typer rer soil types see one 1 0.3 0.4 0.5	les 5.8 5.9 5. 1 $/(2)/3 / 4$ Light / Heavy 0.25 (26-45) Light / Mediur Light / Mediur pe D/E in Ear e below (2) (0.5) 0.6 0.8	10) 46-60 n / Heavy n / Heavy thquake zon 3 0.6 0.7 1.0	Concrete Part stor Part stor Chimney Wing / E Deck Pro- e 3 4 0.9 1.1 1.5	Value from	nore than 2m nore than 2m n box 3 x multip x 0-5	Yes/No Yes/No Yes/No Yes/No Yes No Atr Yes No Atr Yes No
Box 3 E Earthquake Za Weight of Ro Roof Pitch (1 Weight of upp Weight of Low Weight of sub NOTE Tables for Multiplicati Soil Class A&B Rocl C Shallow D/E Box 4 Build	arthquake Bracing one (Fig 5.4) of cladding Degrees) er (or Single) sto ver storey Cladding floor Cladding 5.8, 5.9, 5.10 Rel on factors for oth Earthquake Z	g demand (Tabl orey cladding ng late to : Soil typer rer soil types sector one 1 0.3 0.4 0.5 ons (Fig 5.3)	les 5.8 5.9 5. 1 /(2)/ 3 / 4 ight / Heavy 0-25 / 26-45 ight / Mediur ight / Mediur pe D/E in Ear e below (2) (0.5) 0.6 0.8	10) 46-60 n / Heavy n / Heavy thquake zon 3 0.6 0.7 1.0	Concrete Part stor Part stor Chimney Wing / E Deck Pro	Value from	nore than 2m nore than 2m n box 3 x multip x 0-5	Yes/No Yes/No Yes/No Yes/No Yes /No Her =
Box 3 E Earthquake Ze Weight of Ro Roof Pitch (1 Weight of upp Weight of Low Weight of Low Weight of sub NOTE Tables for Multiplicati Soil Class A & B Rock C Shallow D/E Box 4 Build Roof or Build Roof or Build Roof or buildi Gross Floor A	arthquake Bracing one (Fig 5.4) of cladding Degrees) er (or Single) sto ver storey Cladding floor Cladding 5.8, 5.9, 5.10 Rel on factors for oth Earthquake Z	g demand (Tabl orey cladding ng late to : Soil type rer soil types sec one 1 0.3 0.4 0.5 ons (Fig 5.3) ind across ridge d along ridge	les 5.8 5.9 5. 1 /(2)/ 3 / 4 Light / Heavy -25 /(26-45) Light / Mediur Light / Mediur pe D/E in Ear e below (2) (0.5) 0.6 0.8 L Across W Along GFA	10) 46-60 n / Heavy n / Heavy thquake zon 3 0.6 0.7 1.0	Concrete Part stor Part stor Chimney Wing / E Deck Pro- e 3 4 0.9 1.1 1.5 11.2 5.6 53	Slab cy in Roc cy Basen llocks ojecting r 2.4 m m Sq m	nore than 2m nore than 2m n box 3 x multip x 0.5	Yes /No Yes /No Yes /No Yes /No Yes /No Alter =
Box 3 E Earthquake Za Weight of Ro Roof Pitch (1 Weight of upp Weight of Low Weight of sub NOTE Tables for Multiplicati Soil Class A&B Rocl C Shallow D/E Box 4 Build Roof or Build Roof or Build Roof or Build Roof or Build	arthquake Bracing one (Fig 5.4) of cladding Degrees) er (or Single) sto ver storey Cladding floor Cladding 5.8, 5.9, 5.10 Rel on factors for oth Earthquake Z ing plan dimension ing length for wind rea ation of demand	g demand (Tabl orey cladding ng late to : Soil types sector one 1 0.3 0.4 0.5 ons (Fig 5.3) ind across ridge d along ridge	les 5.8 5.9 5. 1 /(2)/ 3 / 4 Light / Heavy 0-25 / 26-45 Light / Medium Light / Medium pe D/E in Ear e below (0.5) 0.6 0.8 L Across W Along GFA er of wind or er	10) 46-60 n / Heavy n / Heavy n / Heavy thquake zon 3 0.6 0.7 1.0 = = =	Concrete Part stor Part stor Chimney Wing / E Deck Pro- e 3 4 0.9 1.1 1.5 11-2 5-6 53	value from Value from Lipcks vjecting r Value from Lip Sq m	nore than 2m nore than 2m n box 3 x multip x 0-5 Box 4 Dimension	Yes/No Yes/No Yes/No Yes/No Yes /No Her = = 12. BU

2-storey section

Sheet B

LOCATION OF STOREY BEING ASSESSED

FOUNDATION SINGLE STOREY or UPPER STOREY LOWER STOREY



Use one sheet for each storey and circle the appropriate location

ACROSS

1	2	3	4	5	Wind	1	8	9	10 Earthquake	1 11
Wall or Bracing Line	Bracing Element Identification	Bracing Type	Length of Element (m)	BU's/m (Wind)	BU's Achieved	Total for Bracing Line	Minimum Bracing Demand	BU's/m (Earthquake)	BU's Achieved	Total for Bracing Line
B	Blue Maganta Overlap	Anchor	2 Piler	160	320	320	147	120	240	240
c	Blue Magenter	Anchor	2. R.U.N	760	320	320	147	120	240	240
D	Blue Majerta	Archer	2 Piles	160	320	320	147	120	240	240
E	Magada	Anchor	2 Piles	160	320	320	147	120	240	240
-				Total Brack	o Achieved	1050	ل_	Total Bracin	o Achieved	910
						1200				100
				Total Brack for Wind A	ng Demand pross	1176		Total Bracin for Earthqua	g Demand ake	636
LON	IG 2	3	4	Total Brack for Wind Ar	ng Demand cross	1176	8	Total Bracin for Earthqua 9	g Demand ake 10	11
ALON 1 Wall or knotig	IG 2 Bracing Element	3 Bracing Type	4 Length of Element (m)	Total Brack for Wind Ar 5 BU's/m (Wind)	6 Wind BU's Achieved	7 Total for Bracing Line	8 Minimum Bracing Demand	9 BU's/m (Earthquake)	g Demand ake 10 Earthquake BU's Achieved	11 Total for Bracing
1 Wall or bracing Line	IG 2 Bracing Element Identification Megebute	3 Bracing Type Anschor	4 Length of Element (m) 4 Pilly	S BU's/m (Wind) 760	6 Wind BU's Achieved	Total for Bracing Une 640	8 Minimum Bracing Demand 159	9 BU's/m (Earthquake) /20	10 Earthquake BU's Achieved	11 Total for Bracing Line 4 80
Mall or kracing Line M	IG Bracing Element Identification Magente	3 Bracing Type Anchor Anchor	4 Length of Element (m) 4 P.(Le	S BLJ's/m (Wind) 760	6 Wind BU's Achieved 640	Total for Bracing Une 640	8 Minimum Bracing Demand 159 159	9 BU's/m (Earthquake) 1/2.0	10 Earthquake BU's Achieved 480	11 Total for Bracing Line 4.80
N N N	IG Bracing Element Identification Maganates	3 Bracing Type Anchor Aachor	4 Length of Element (m) 4 P. (Le	S BU's/m 160 160	6 Wind BU's Achieved	Total for Bracing Line 640	8 Minimum Bracing Demand 159 159	9 BU's/m (Earthquake) /20	10 Earthquake BU's Achieved 4/80	11 Total for Bracing Line 4 SO
N N N N N N N	IG Bracing Element Megehates Megehates	3 Bracing Type Anchese	4 Length of Element (m) 4 P.(Le 4 P.(Le)	S BU's/m (Wind) 160	6 Wind BU's Achieved 640	7 Total for Bracing Line 640	8 Minimum Braching Demand 159 159	9 BU's/m (Earthquake) 120	10 Earthquake BU's Achieved 480	11 Total for Bracing Line 480
Nall or stacting M N N Q	IG Bracing Element Identification Maganates	3 Bracing Type Anchor	4 Length of Element (m) 4 P. (Le	S BL/s/m 8L/s/m (Wind) 760 1	6 Wind BU's Achieved 640	1176 7 Total for Bracing Une 640 640	8 Minimum Bracing Demand 159 159	9 BU's/m (Earthquake) 1/2.0	10 Earthquake BU's Achieved 4280	11 Total for Bracing Line 480
N N Q	IG Bracing Element Magenetes Magenetes	3 Bracing Type Ainchosc	4 Length of Element (m) 4 P. (Le 4 P. (Le	Total Brack for Wind A	g Achieved	1176 7 Total for Bracing Line 640 640	8 Minimum Brachig Demand 159 159	9 BU's/m (Earthquake) 120 1/20	10 Earthquake BU's Achieved 480	636 11 Total for Bracing Line 480 480

ame of applic	ant		Site ad City/to Street OI Lot &	ldress own or dis & No r & DP Nun	trict	ngie	-91(orey e	
Box 1		Location	of Store	y being	Assess	sed			
	Foundation	Single Stor	ey or Up	per Store	y Lo	wer Ste	orey		
5	Use one sheet	for each stor	ey & circl	le the app	oropriate	e Locati	on		
Box 2	Wind Bracing Dem	and (Table 5.	5 for foun	dation an	d 5.6 or	r 5.7 for	other lev	els)	
Wind Zone Building He Roof Heigh	(Table 5.1) right to Apex (H) t above Eave (h)	L (M) m (m	/H/VH/ 4·8 1·9	EH	W Acro	ss App App	= SC lies to ac lies to ac	ross ridge fo ross & alor	BU's / mtr or gable roof: ng for Hip roof)
Stud Heigh	t	m			YY 7000	App	= lies to Al	ong ridge fo	BU's / mtr
In wind zone by the approp	es other than high , r priate factor given o	nultiply the fi pposite	gure from	the tables	Very Extra	High a High	1.3 1.6		Across and Along Required BU's Mi
	CALL CONTRACTOR OF THE OWNER	and the second se							
Box 3	Earthquake Bracing	demand (Tal	bles(5.8) 5.	9, 5.10)	1	Conce	ete Slab		Vec No
Box 3 Earthquake 2 Weight of R Roof Pitch (Weight of up Weight of Lo Weight of su	Earthquake Bracing Zone (Fig 5.4) oof cladding (Degrees) per (or Single) sto wer storey Claddin bfloor Cladding	demand (Tal (rey cladding g	bles 5.8 5. 1 /(2)/ Light / 1 0-25 / 26 Light / M Light / M Light / M	9, 5.10) 3 / 4 Icavy -45) 46- edium / H edium / H	60 Icavy Icavy Icavy	Concr Part st Part st Chimr Wing Deck	ete Slab orey in R orey Base rey / Blocks Projecting	oof space ement ; more than 2	Yes No Yes / No Yes / No Yes / No Yes / No 2mtr Yes / No
Box 3 Earthquake 2 Weight of R Roof Pitch (Weight of up Weight of Lo Weight of su	Earthquake Bracing Zone (Fig 5.4) oof cladding (Degrees) per (or Single) sto wer storey Cladding bfloor Cladding	demand (Tal (rey cladding g the to : Soil t	hles(5.8)5. 1 /(2)/ Light/ 1 0-25/ 26 Light/ M Light/ M Light/ M Ver D/E in	9, 5.10) 3 / 4 Icavy -45) 46- cdium / H edium / H ledium / H	60 Icavy Icavy Icavy Icavy	Concr Part st Part st Chimr Wing Deck I	ete Slab orey in R orey Base iey / Blocks Projecting	oof space ement ; more than 2	Yes No Yes / No Yes / No Yes / No Yes / No 2mtr Yes / No
Box 3 Earthquake 2 Weight of R Roof Pitch (Weight of up Weight of Lo Weight of su NOTE : Table for Multiplica	Earthquake Bracing Zone (Fig 5.4) oof cladding (Degrees) oper (or Single) sto ower storey Claddin bfloor Cladding s 5.8, 5.9, 5.10 Rela tion factors for othe	demand (Tal (rey cladding g the to : Soil ty er soil types s	hes (5.8) 5. 1 /(2) / Light / I 0-25 / 26 Light / M Light / M Light / M Light / M Light / M Light / M	9, 5.10) 3 / 4 Icavy -45) 46- edium / H edium / H ledium / H	60 Icavy Icavy Icavy Icavy	Concr Part st Part st Chimr Wing Deck I	ete Slab orey in R orey Base rey / Blocks Projecting	oof space ement ; more than :	Yes No Yes /No Yes / No Yes / No Yes / No 2mtr Yes / No
Box 3 Earthquake 2 Weight of R Roof Pitch (Weight of up Weight of Lo Weight of su NOTE : Table for Multiplica Soil Class A & B Roo	Earthquake Bracing Zone (Fig 5.4) oof cladding (Degrees) oper (or Single) sto ower storey Cladding bfloor Cladding s 5.8, 5.9, 5.10 Rela- tion factors for othe Earthquake Zo sk)	demand (Tal rey cladding g the to : Soil ty er soil types s one 1 0.3	bles(5.8)5. 1 /(2)/ Light/ 1 0-25 / 26 Light/ M Light / M Light / M vpc D/E in ee below (2) (0.3)	9, 5.10) 3 / 4 Icavy -45) 46- cdium / H edium / H edium / H Earthqu 3 0.6	60 Icavy Icavy Icavy Icavy Icavy	Concr Part st Part st Chimr Wing Deck	ete Slab orey in R orey Base Projecting	multiplier =	Yes No Yes / No Yes / No Yes / No 2mtr Yes / No 2mtr Yes / No
Box 3 Earthquake 2 Weight of R Roof Pitch (Weight of up Weight of Lo Weight of su NOTE : Table for Multiplica Soil Class A & B Roo C Shallow D/E	Earthquake Bracing Zone (Fig 5.4) oof cladding (Degrees) oper (or Single) sto ower storey Cladding bfloor Cladding s 5.8, 5.9, 5.10 Relation factors for othe Earthquake Zock	demand (Tal rey cladding g det to : Soil ty er soil types s one 1 0.3 0.4 0.5	bles (5.8) 5. 1 /(2) / Light / I 0-25 / 26 Light / M Light / M Light / M Light / M Light / M Light / M 0-25 0.6 0.8	9, 5.10) 3 / 4 Icavy -45) 46- edium / H edium / H ledium / H Earthqu 3 0.6 0.7 1.0	60 Icavy Ica	Concr Part st Part st Chimr Wing , Deck I 2000 Value fi 16 2	ete Slab orey in R orey Base rey / Blocks Projecting	oof space ement multiplier = 0.5 = [Yes No Yes / No Yes / No Yes / No 2mtr Yes / No 2mtr Yes / No
Box 3 Earthquake 2 Weight of R Roof Pitch (Weight of up Weight of Lo Weight of su NOTE : Table for Multiplica Soil Class A & B Roo C Shallow D/E	Earthquake Bracing Zone (Fig 5.4) oof cladding (Degrees) oper (or Single) sto ower storey Cladding bfloor Cladding s 5.8, 5.9, 5.10 Rela tion factors for othe Earthquake Zock	demand (Tal rey cladding g the to : Soil ty er soil types sone 1 0.3 0.4 0.5	bles (5.8) 5. 1 /(2) / Light / 1 0-25 / 26 Light / M Light /	9, 5.10) 3 / 4 Icavy -45) 46- cdium / H edium / H ledium / H bedium / H a Earthqu 3 0.6 0.7 1.0	60 Icavy Ica	Concr Part st Part st Chimr Wing , Deck I Deck I	ete Slab orey in R orey Base rey / Blocks Projecting	multiplier = {	Yes No Yes / No Yes / No Yes / No 2mtr Yes / No 8 Buts Sq Mtr
Box 3 Earthquake 2 Weight of R Roof Pitch (Weight of up Weight of Lo Weight of su NOTE : Table for Multiplica Soil Class A & B Roo C Shallow D/E Box 4 Buil Roof or Build Gross Floor A	Earthquake Bracing Zone (Fig 5.4) oof cladding (Degrees) oper (or Single) sto ower storey Cladding bfloor Cladding s 5.8, 5.9, 5.10 Relation factors for othe Earthquake Zock k ding plan dimension lding length for wind Area	demand (Tal rey cladding g the to : Soil ty er soil types sone 1 0.3 0.4 0.5 ns (Fig 5.3) nd across ridg along ridge	bles (5.8) 5. 1 /(2) / Light / I 0-25 / 266 Light / M Light / M Light / M vpc D/E in ce below (2) 0.3 0.6 0.8 c L / W GF/	9, 5.10) 3 / 4 Icavy -45) 46- edium / H edium / H Earthqu 3 0.6 0.7 1.0 Across Along A	60 Icavy Icav Icav Icav Icav Icav Icav Icav Icav	Concr Part st Part st Chimr Wing , Deck I Deck I Value fi IG 2 9.3 \$.1 75.3	ete Slab orey in R orey Base rey / Blocks Projecting com box 3 x 3 // \$ x m m Sq m	oof space ement ; more than multiplier = : 0 · 5 = [Yes No Yes / No Yes / No Yes / No 2mtr Yes / No 8 Bu's Sq Mir
Box 3 Earthquake 2 Weight of R Roof Pitch (Weight of up Weight of Lo Weight of Su NOTE : Table for Multiplica Soil Class A & B Roo C Shallow D/E Box 4 Buil Roof or Build Gross Floor A Box 5 Calca	Earthquake Bracing Zone (Fig 5.4) oof cladding (Degrees) oper (or Single) sto ower storey Cladding bfloor Cladding s 5.8, 5.9, 5.10 Relation factors for othe Earthquake Zock k ding plan dimension lding length for wind Area	demand (Tal rey cladding g the to : Soil ty er soil types s one 1 0.3 0.4 0.5 ans (Fig 5.3) and across ridg along ridge	bles (5.8) 5. 1 /(2) / Light / I 0-25 / 26 Light / M Light / M Light / M ype D/E in ee below (2) 0.3 0.6 0.8 e L / W GF/ GF/ er of wind	9, 5.10) 3 / 4 Icavy -45) 46- cdium / H cdium / H cedium / H Across Along A or carthq	60 Icavy Icav Icav Icav Icav Icav Icav Icav Icav	Concr Part st Part st Chimr Wing , Deck I 20 20 20 20 20 20 20 20 20 20 20 20 20	ete Slab orey in R orey Base rey / Blocks Projecting com box 3 x 3 // \$ x m m Sq m	oof space ement multiplier = : 0 · 5 = [Yes No Yes / No Yes / No Yes / No 2mtr Yes / No 8 Bu's Sq Mir BU'S
Box 3 Earthquake 2 Weight of R Roof Pitch (Weight of up Weight of Lo Weight of su NOTE : Table for Multiplica Soil Class A & B Roo C Shallow D/E Box 4 Buil Roof or Buil Roof or Buil Gross Floor A Box 5 Calcu Wind Load A	Earthquake Bracing Zone (Fig 5.4) oof cladding (Degrees) oper (or Single) sto ower storey Cladding bfloor Cladding s 5.8, 5.9, 5.10 Relation factors for othe Earthquake Zock k ding plan dimension ding length for wind Area ulation of demand (cross = Across val long = Along Value	demand (Tal rey cladding g the to : Soil ty er soil types s one 1 0.3 0.4 0.5 ns (Fig 5.3) nd across ridg along ridge Use the great tue (from tab ue (from Tab	bles (5.8) 5. 1 /(2) / Light / 1 0-25 / 26 Light / M Light / M Light / M Light / M PPE D/E in ce below (2) 0.3 0.6 0.8 c L / W GF/ ce of wind les (5.5) 5.6	9, 5.10) 3 / 4 Icavy -45) 46- cdium / H edium / H edium / H edium / H a Earthqu 3 0.6 0.7 1.0 Across Along A or earthq 5, 5.7 x let 5, 5.7) x w	60 Icavy Icav Icav Icav Icav Icav Icav Icav Icav	Concr Part st Part st Chimr Wing / Deck l 23 Value fi /6 / 75 + 3 F Idg	ete Slab orey in R orey Base Projecting 7 Blocks Projecting 7 M box 3 x 3 U S x m m Sq m Mox 2 Value 5 G 5 G	oof space ement multiplier = 0.5 = [Box 4 Dimension x 9.3 x 3.1	Yes No Yes / No Yes / No Yes / No 2mtr Yes / No 8 Buts Sq Mtr 8 BU'S = 520 · 8 = 453 · 6

Single-storey section

8

8

Sheet B

LOCATION OF STOREY BEING ASSESSED

FOUNDATION SINGLE STOREY or UPPER STOREY LOWER STOREY



Use one sheet for each storey and circle the appropriate location

ACROSS

1	2	3	4
Wall or Bracing Line	Bracing Element Identification	Bracing Type	Length of Element (m)
A	Blue	Aucher	2 files
8	Blue Myenter	Anchor	2 Piles
c	Blue Myonh	Archor	3 Piles
D	Blue Mezentin Overlap	Auchar	2Ples
E			

5	6	7	8
	Wind	+	5
BU's/m (Wind)	BU's Achieved	Total for Bracing Line	Minimum Bracing Demand
160	321)	320	122
160	320	320	nz
160	480	480	122
160	320	320	122
iotal Bracin	ng Achieved	1440	
otal Bracin or Wind Ad	ng Demand cross	520-8	

9	10	11
	Earthquake	P
8U's/m (Earthquake)	BU's Achieved	Total for Bracing Line
120	240	240
126	240	240
120	360	360
120	240	240
Total Bracin	g Achieved	1080
Total Bracin	g Demand	602.4

ALONG

1	2	3	4
Wall or Bracing Line	Bracing Element Identification	Bracing Type	Length of Element (m)
м	Blue Magenter	Anchose	41.65.
N	Blue Naventra Over las	Autrac	3 194.
0	il ve.	Anhar	206
P.			
Q			

5	6	7	8
BU's/m (Wind)	BU's Achieved	Total for Bracing Line	Minimum Bracing Demand
160	640	640	140
160	480	480	140
160	320	320	140
		11.1.0	
Total Bracin for Wind Al	ng Achieved ng Demand ong	453.6	

9	10	11
	Earthquake	N
8U's/m (Earthquaixe)	BU's Achieved	Total for Bracing Line
120	480	100
120	360	480
		360
120_	240	240
		10
Total Bracin	g Achieved	10 80
Total Bracin for Earthqui	g Demand	602.4