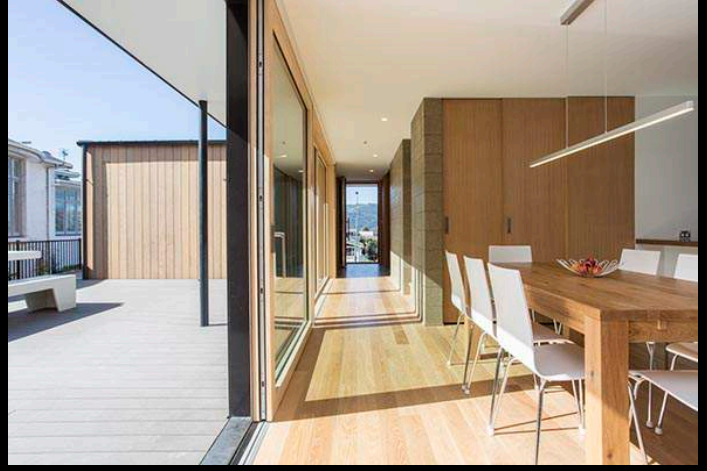
Timber Framed Passive House Multi-Unit Homes

Acoustic, Fire and Structural Design Considerations

Tim Ross - Architype



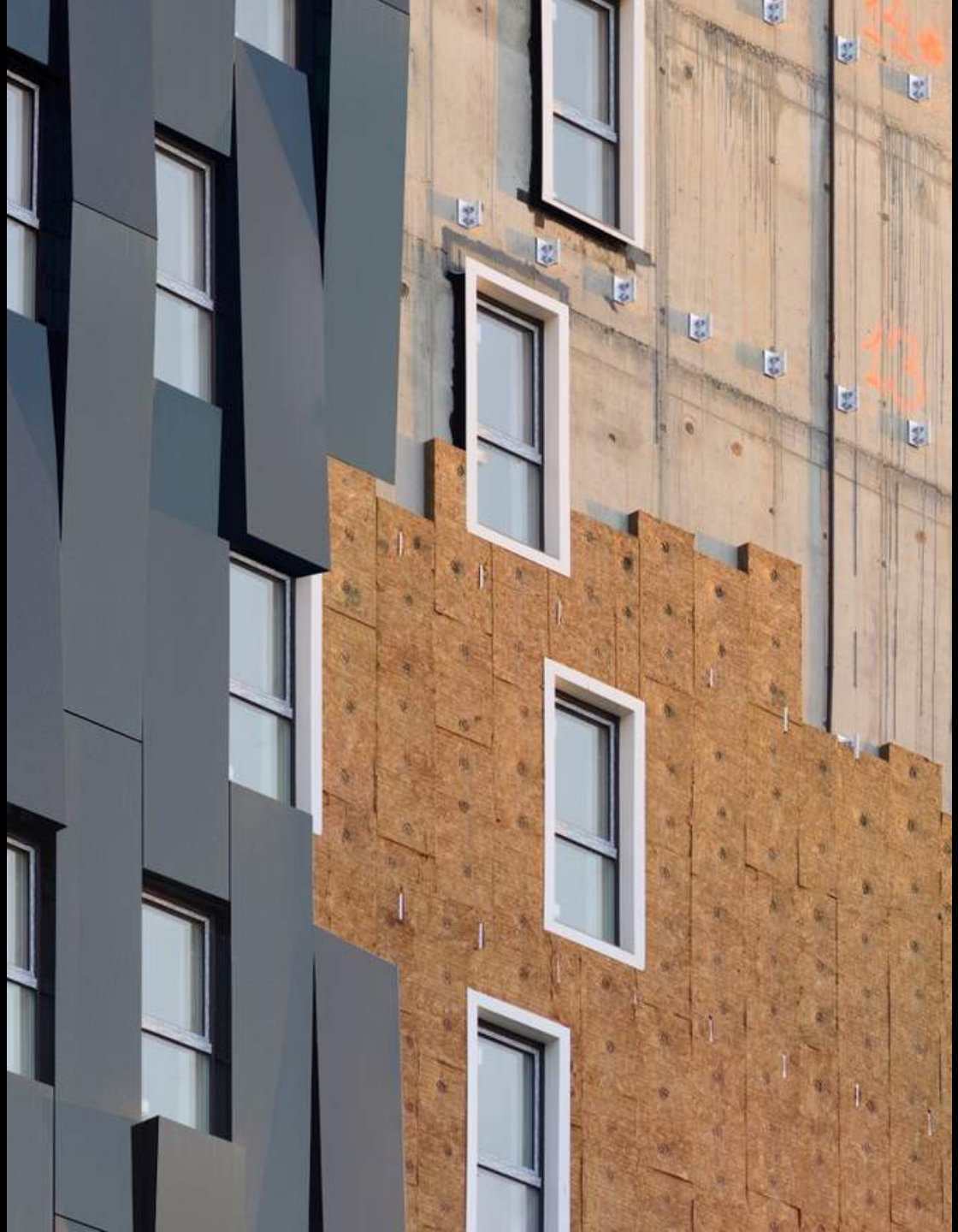
architype

architects+designers

Timber framed Passive House Multi-Unit Homes

Acoustic, Fire and Structural Design Considerations

Tim Ross - Architype




What's Going On Here?
EMERGENCY PHONE NUMBERS


IRVINE & STEVENSON. CASH GROCERS. IRVINE & STEVENSON.
WHOLESALE & RETAIL
Frost


NAPIER EARTHQUAKE. 3.2.31. EMERSON ST. PROTECTED. F.W. 8.


TOURIST
Baird's
DRAPERS


SPIDA
3
SpiroSaw 500


PALFINGER
PK 16002
· Timber
· Hardware
· Plywood
· Fencing
· Fibre Cement
wiritimber
www.wiritimber.co.nz
#151
· Decking
· Concrete
· Steel
· Frames
· Trusses
FTMA
GYM390
FUSO
KEITH ANDREWS
FUSO
KEITH ANDREWS


Layher
Layher
Layher

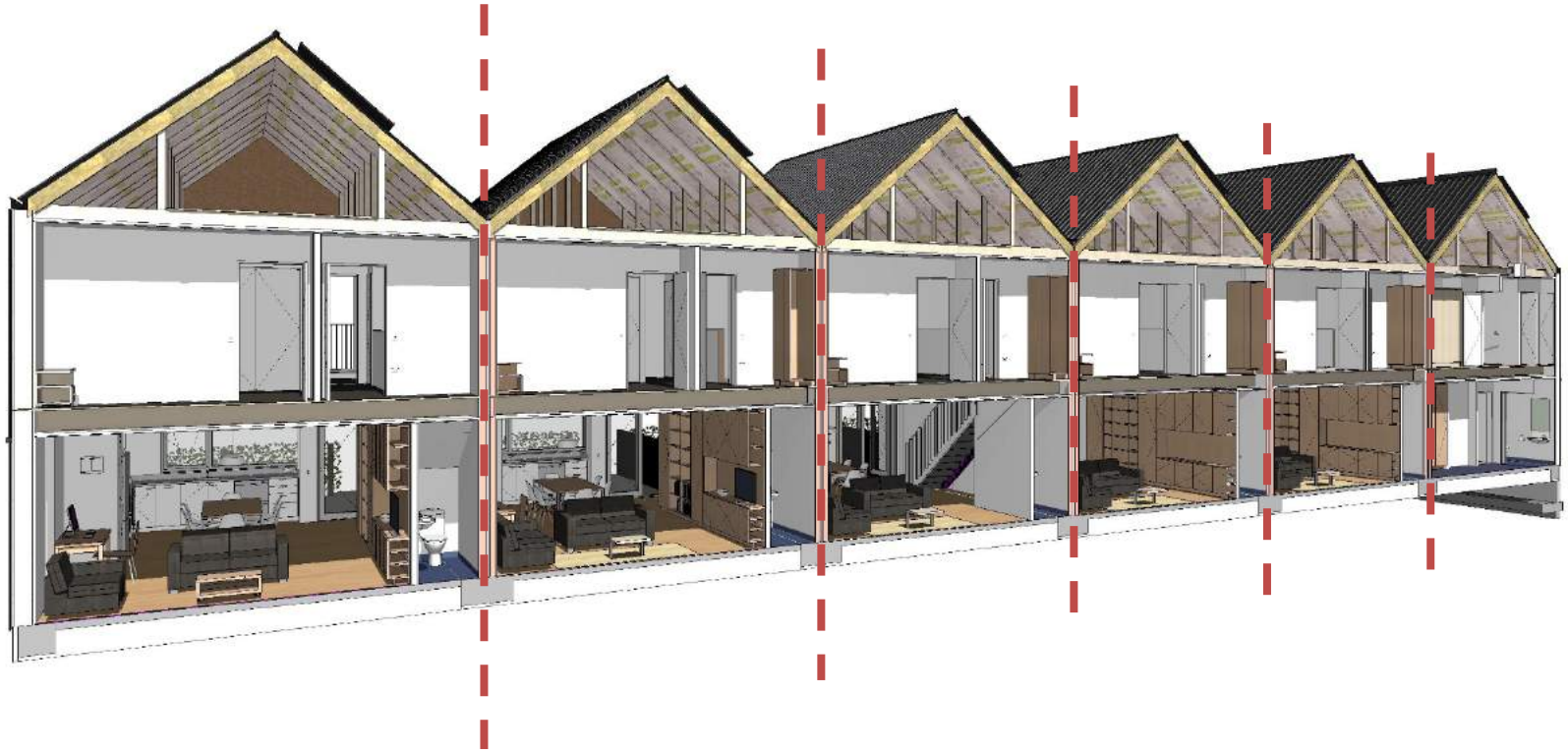
Using more wood in construction would help reduce pollution and slow global warming

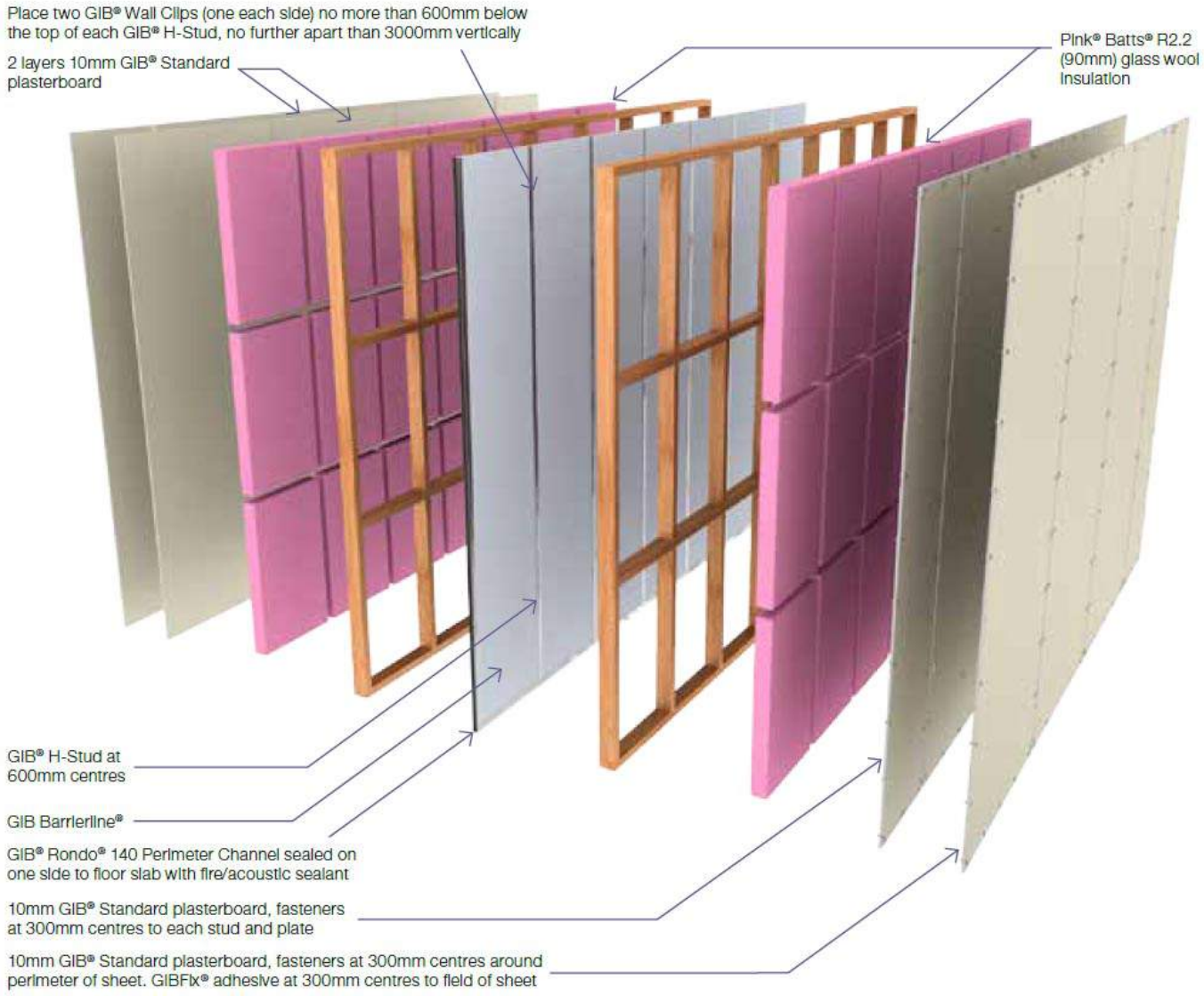
Why more buildings should be made of wood

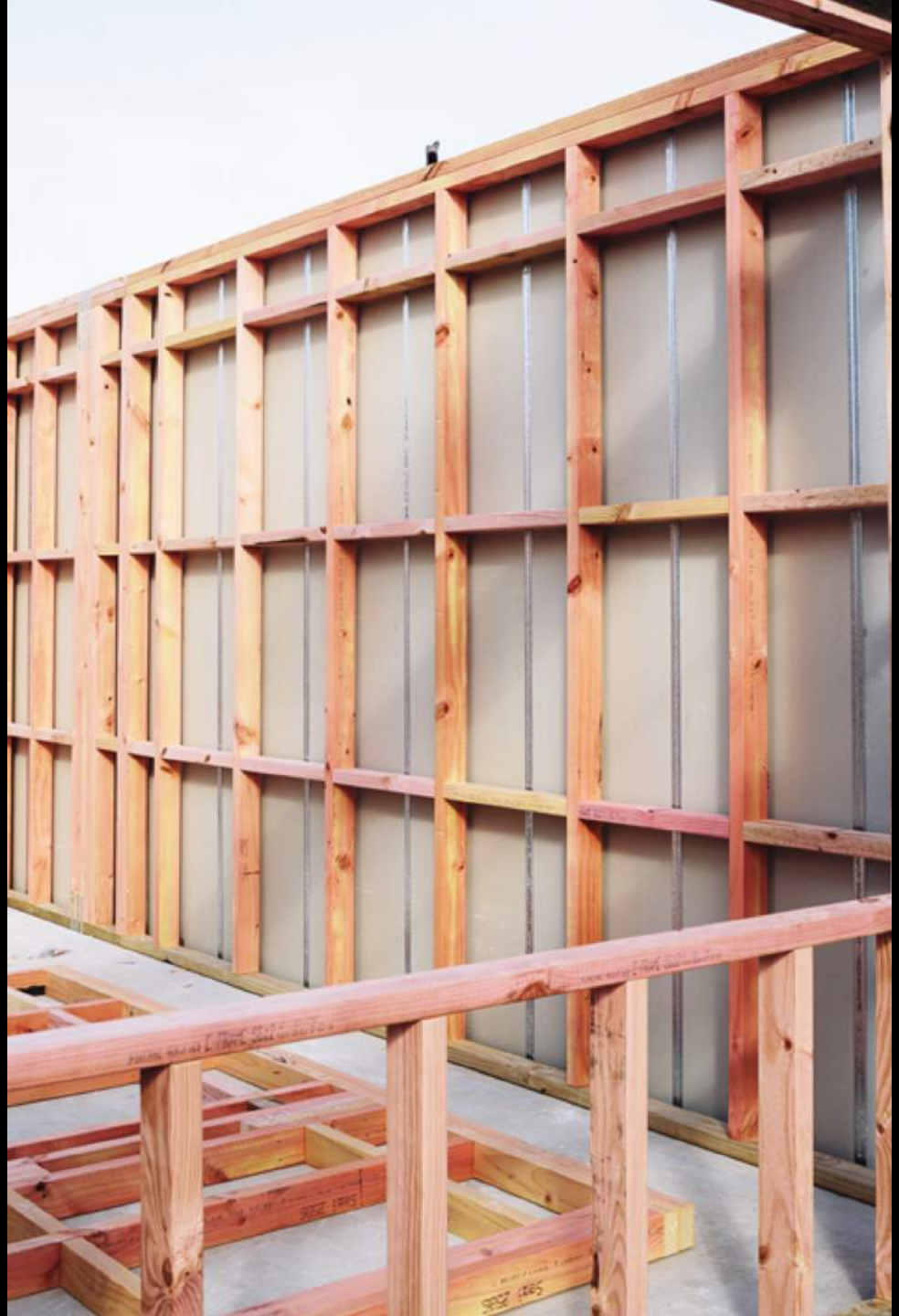
The Economist

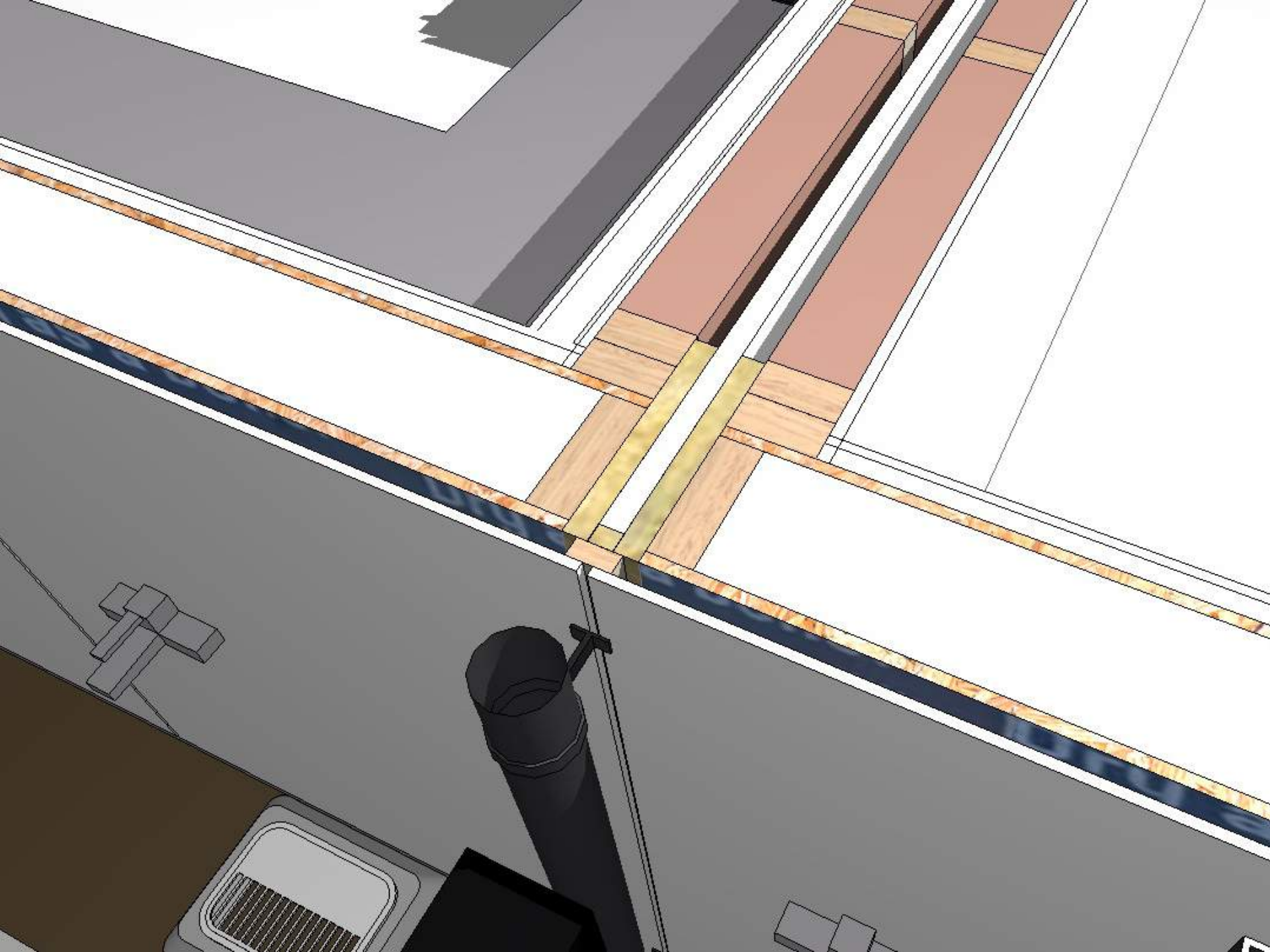

MILES
HAZARD AREA

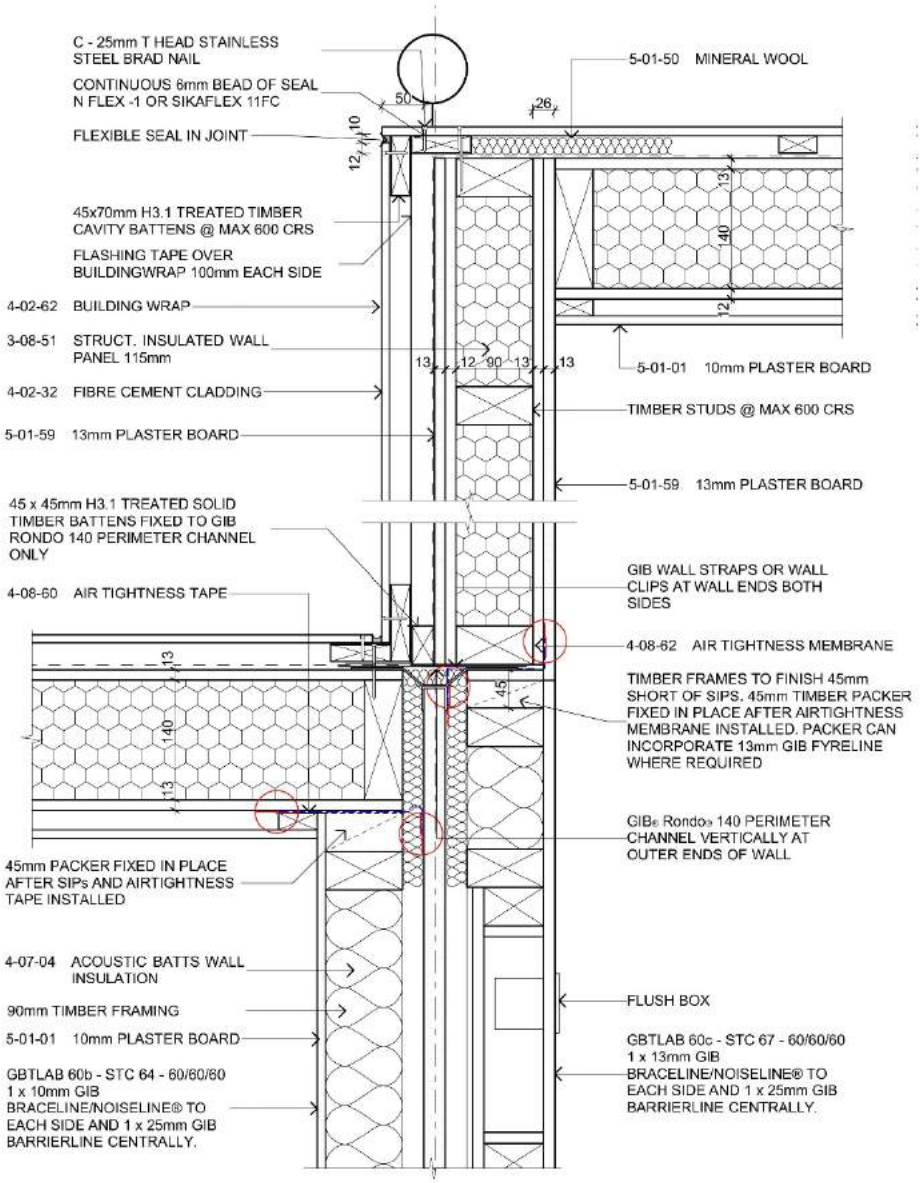

New Zealand's No.1 Home Builder
Diego
0800 42 45 46
(03) 455 5510
www.gjgardner.co.nz
equiptec
03 477 1199




Place two GIB® Wall Clips (one each side) no more than 600mm below the top of each GIB® H-Stud, no further apart than 3000mm vertically
2 layers 10mm GIB® Standard plasterboard
Pink® Batts® R2.2 (90mm) glass wool insulation
GIB® H-Stud at 600mm centres
GIB Barrierline®
GIB® Rondo® 140 Perimeter Channel sealed on one side to floor slab with fire/acoustic sealant
10mm GIB® Standard plasterboard, fasteners at 300mm centres to each stud and plate
10mm GIB® Standard plasterboard, fasteners at 300mm centres around perimeter of sheet. GIBFix® adhesive at 300mm centres to field of sheet

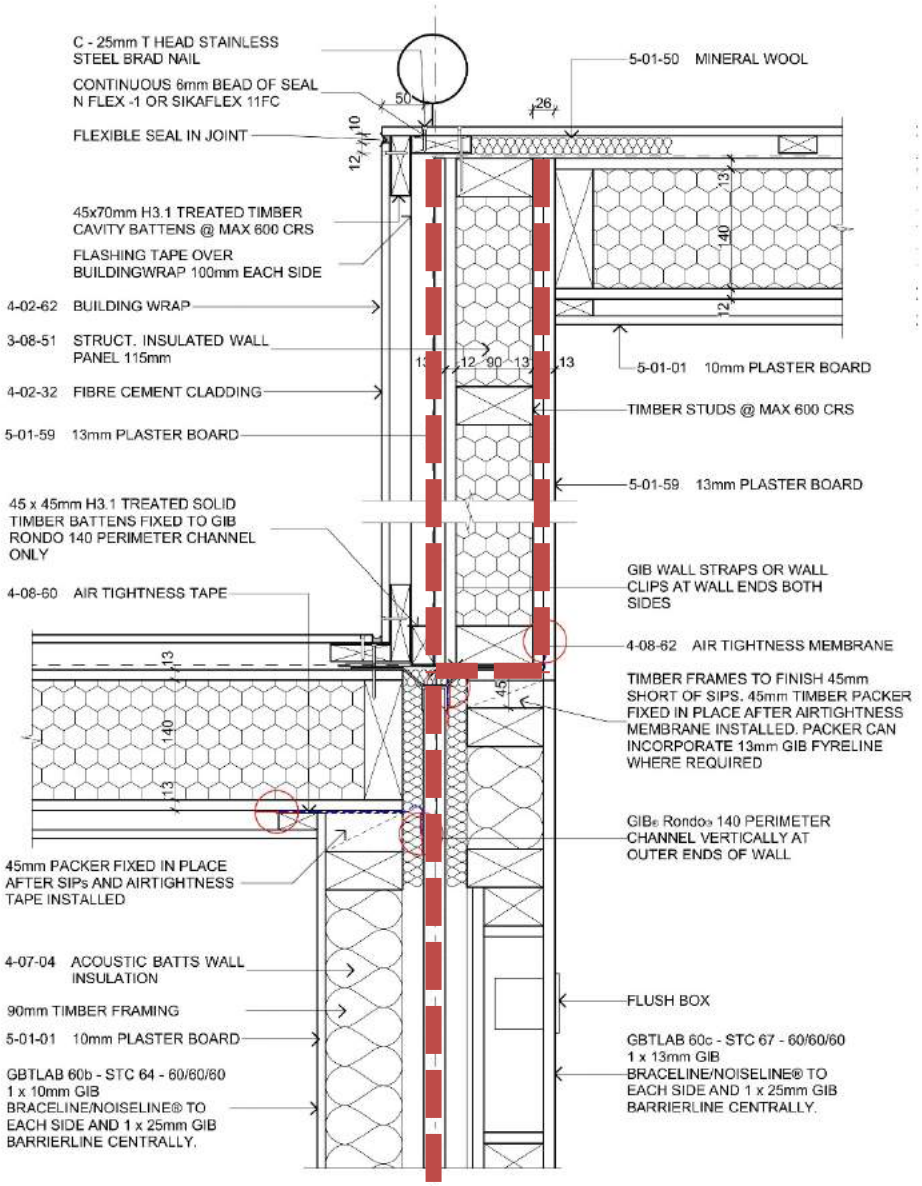






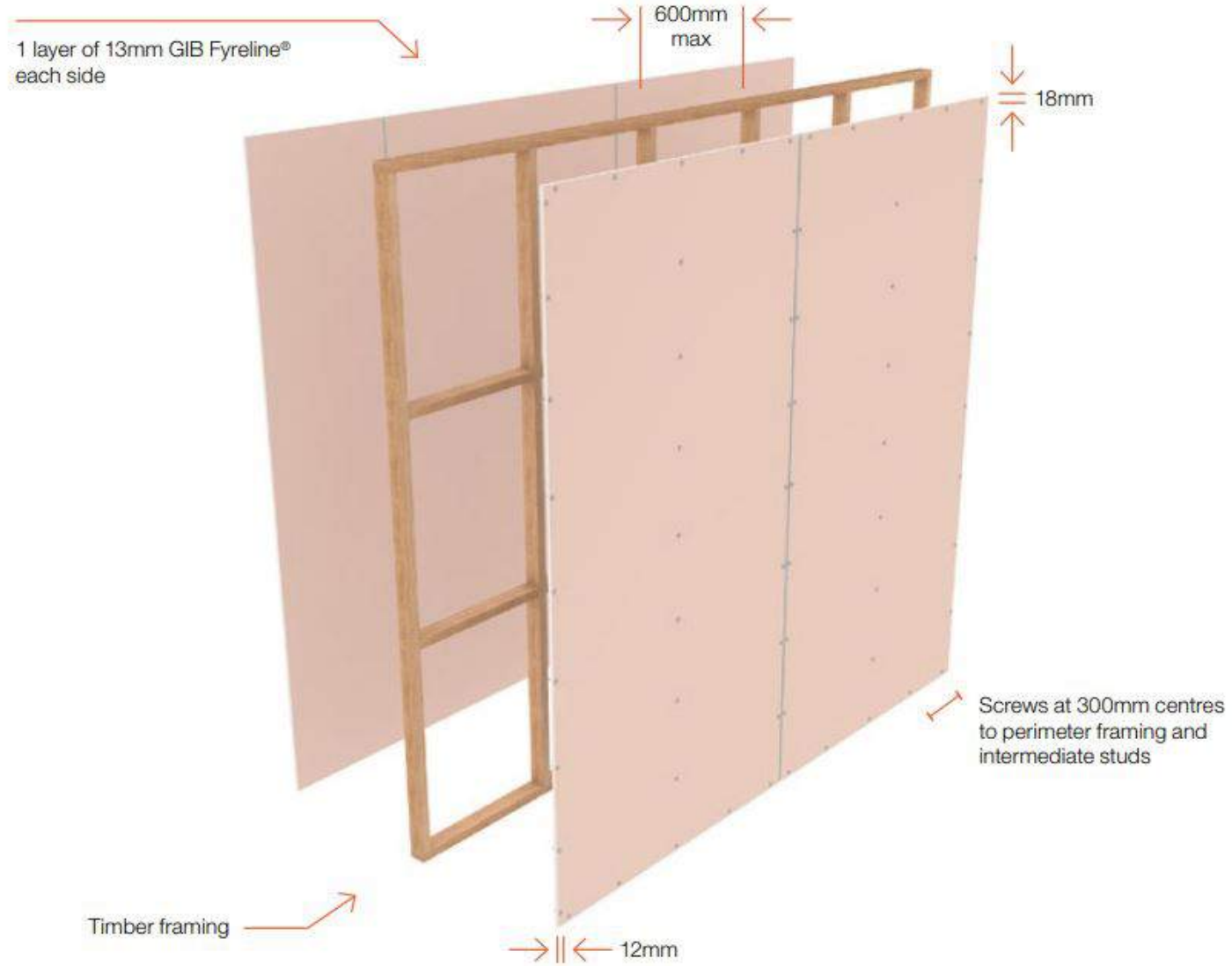
3 / A1-03 **Party Wall Exterior Step Detail**

1:5 @ A1



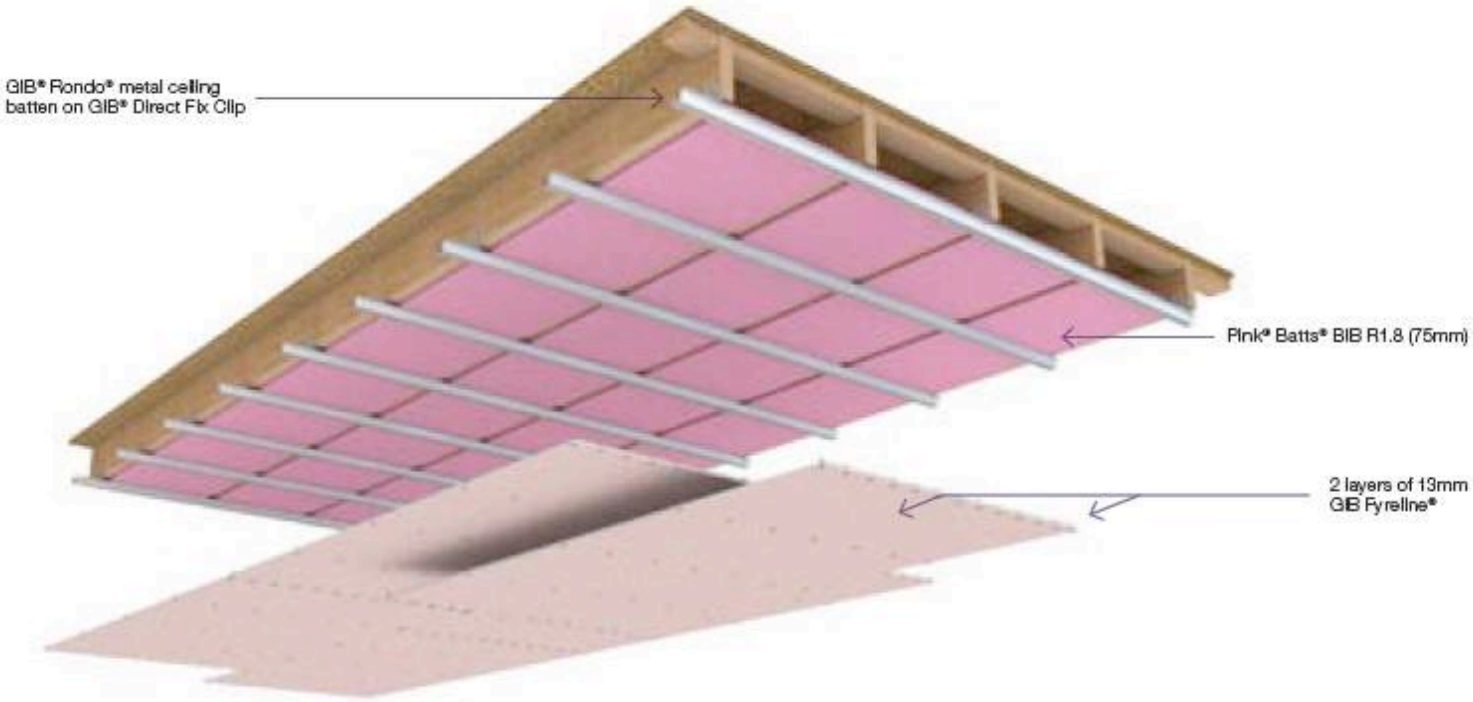
3 / A1-03 **Party Wall Exterior Step Detail**

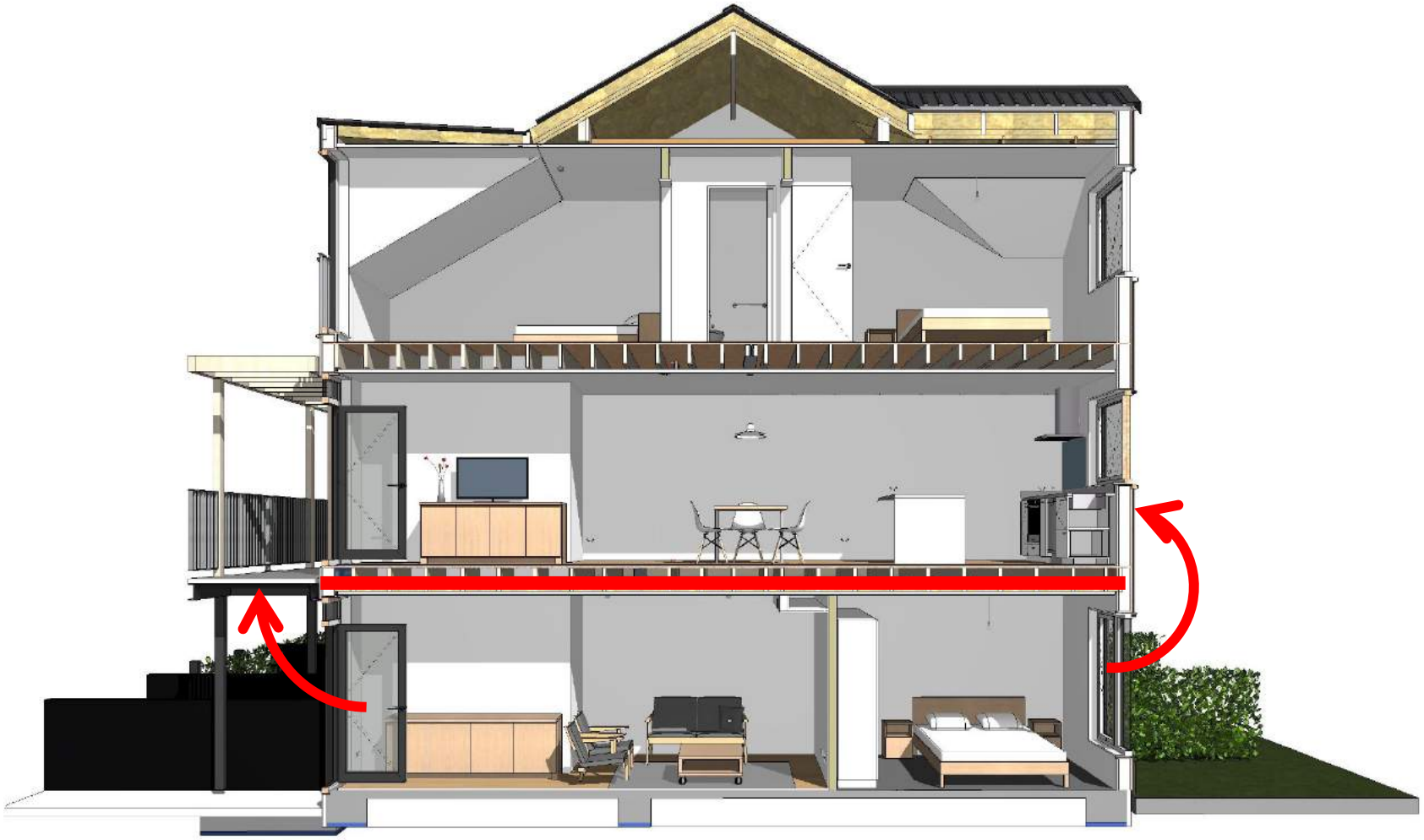
1:5 @ A1

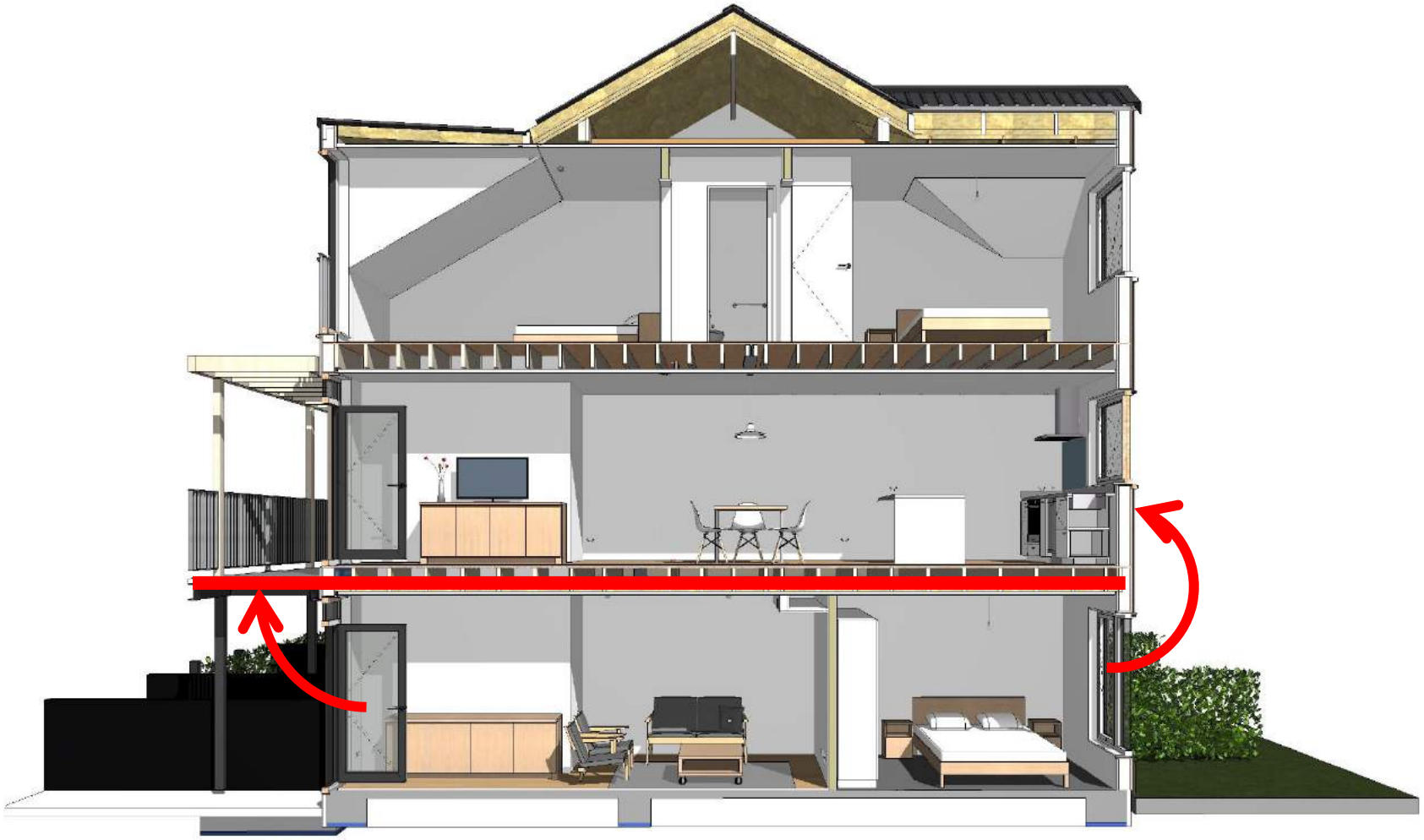

1 layer of 13mm GIB Fyreline®
each side
600mm
max
18mm
Screws at 300mm centres
to perimeter framing and
intermediate studs
Timber framing
12mm

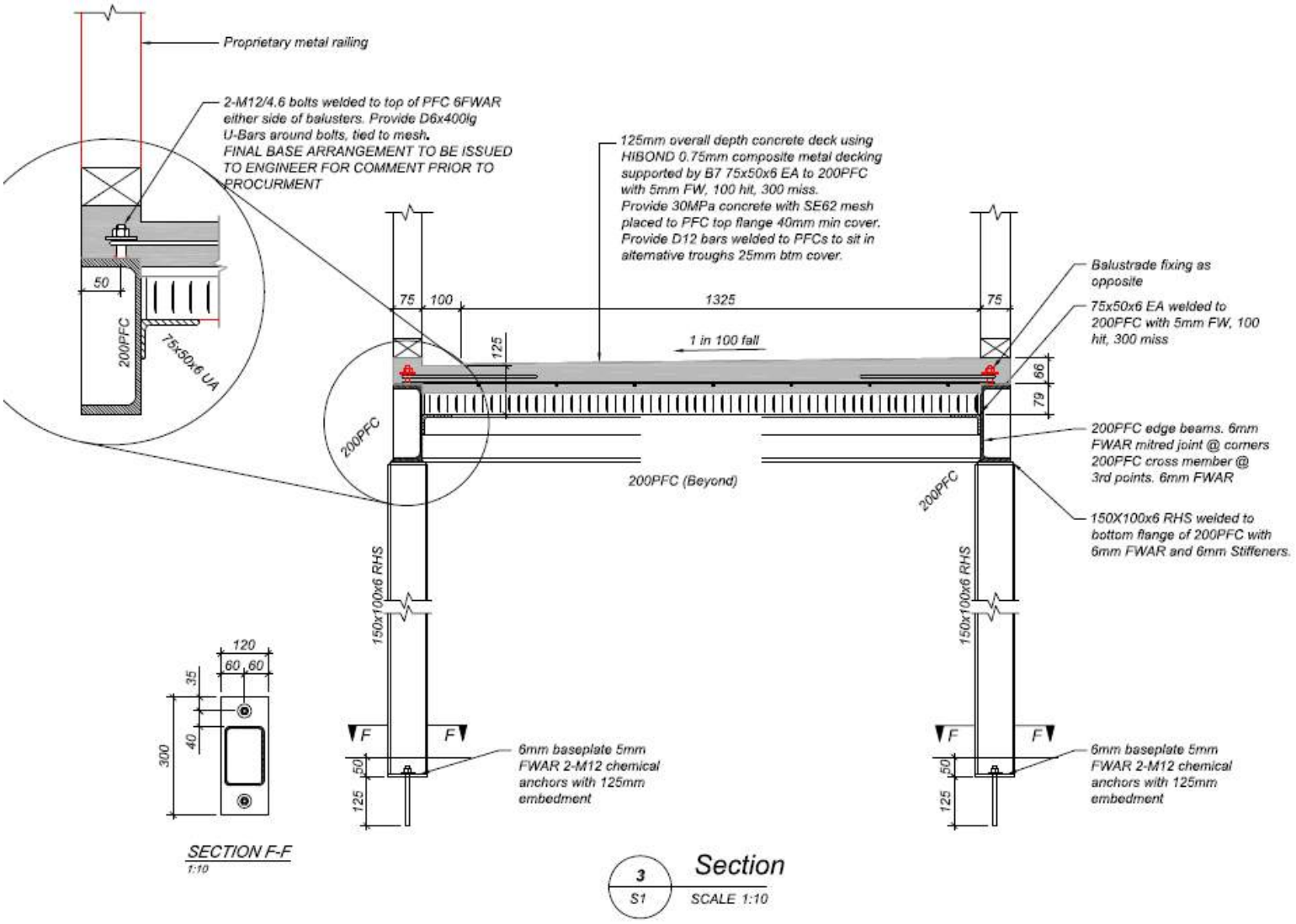
Floor/ceiling — timber joists

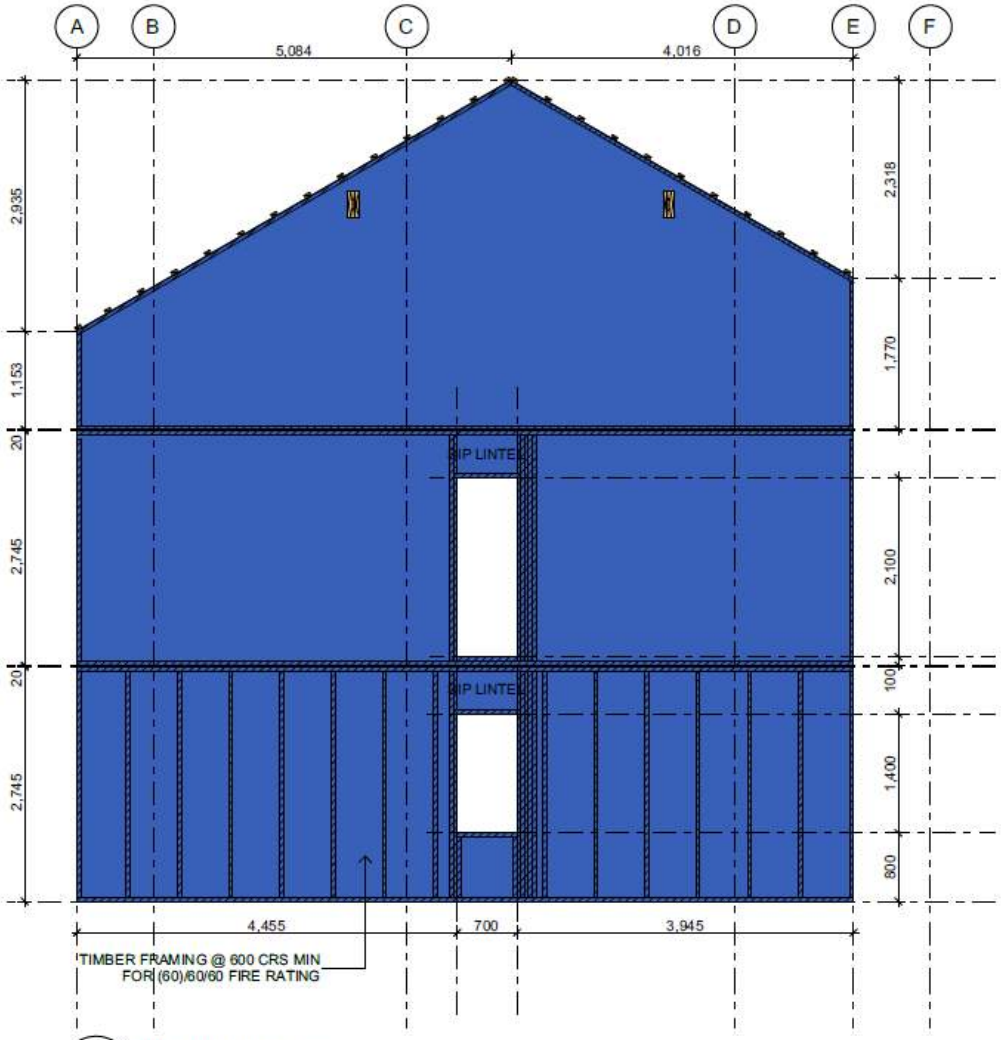
Specification number	Performance		Specifications	
GBDFA 60b	**STC**	57	**Lining**	2 x 13mm GIB Fyreline®
	Rw	56	**LB/NLB**	Load bearing
	FRR	60/60/60	**IIC***	47–69







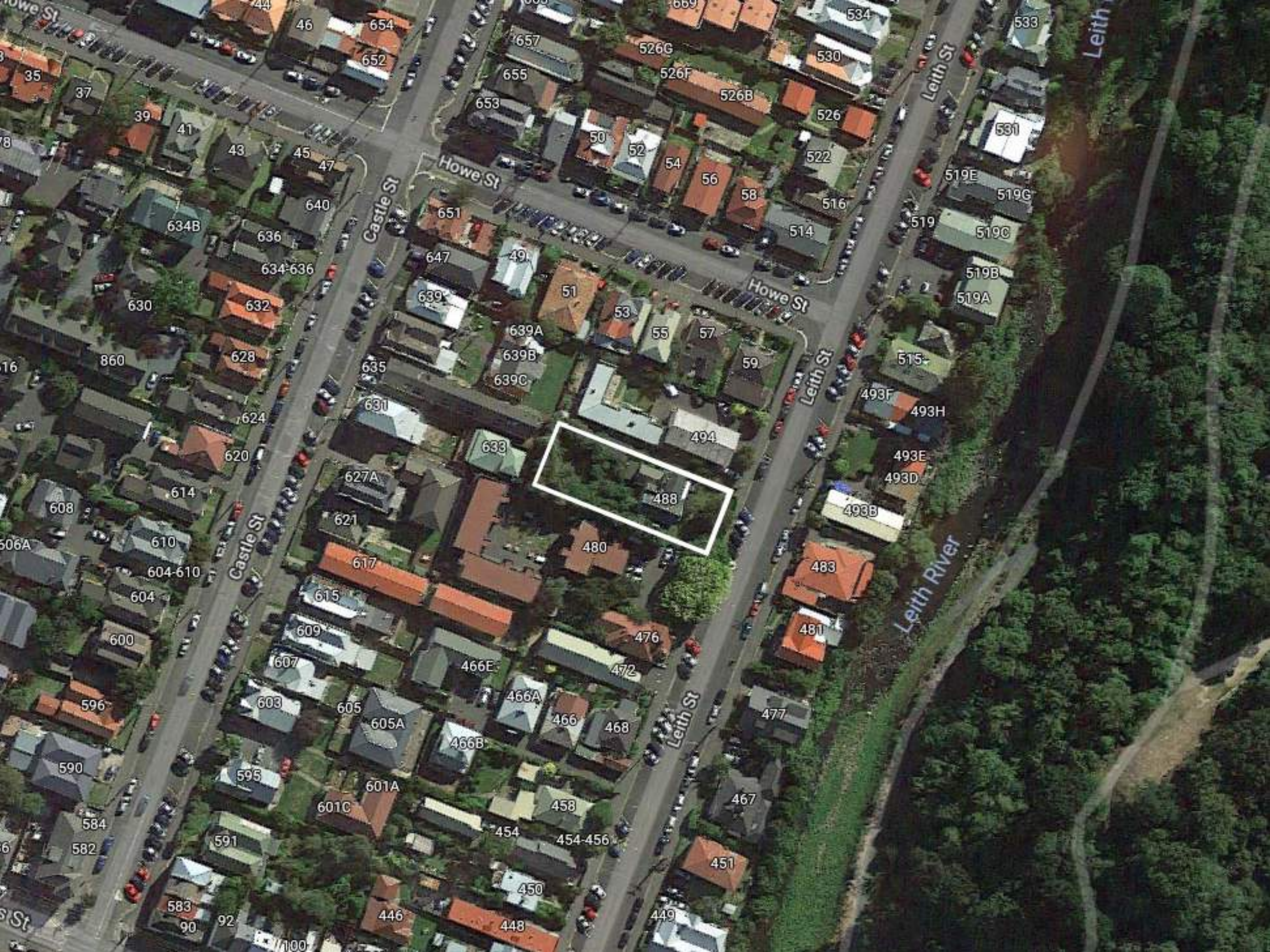

Proprietary metal railing
2-M12/4.6 bolts welded to top of PFC 6FWAR either side of balusters. Provide D6x400lg U-Bars around bolts, tied to mesh.
FINAL BASE ARRANGEMENT TO BE ISSUED TO ENGINEER FOR COMMENT PRIOR TO PROCURMENT
125mm overall depth concrete deck using HiBOND 0.75mm composite metal decking supported by B7 75x50x6 EA to 200PFC with 5mm FW, 100 hit, 300 miss.
Provide 30MPa concrete with SE62 mesh placed to PFC top flange 40mm min cover.
Provide D12 bars welded to PFCs to sit in alternative troughs 25mm btm cover.
Balustrade fixing as opposite
75x50x6 EA welded to 200PFC with 5mm FW, 100 hit, 300 miss
200PFC edge beams. 6mm FWAR mitred joint @ corners
200PFC cross member @ 3rd points. 6mm FWAR
150X100x6 RHS welded to bottom flange of 200PFC with 6mm FWAR and 6mm Stiffeners.
6mm baseplate 5mm FWAR 2-M12 chemical anchors with 125mm embedment
6mm baseplate 5mm FWAR 2-M12 chemical anchors with 125mm embedment
1 in 100 fall
200PFC (Beyond)
200PFC
200PFC
150x100x6 RHS
150x100x6 RHS
75
100
1325
75
125
66
79
50
200PFC
75x50x6 UA
F
F
F
F
50
125
50
125
120
60
60
35
40
300
SECTION F-F
1:10
3
S1
Section
SCALE 1:10

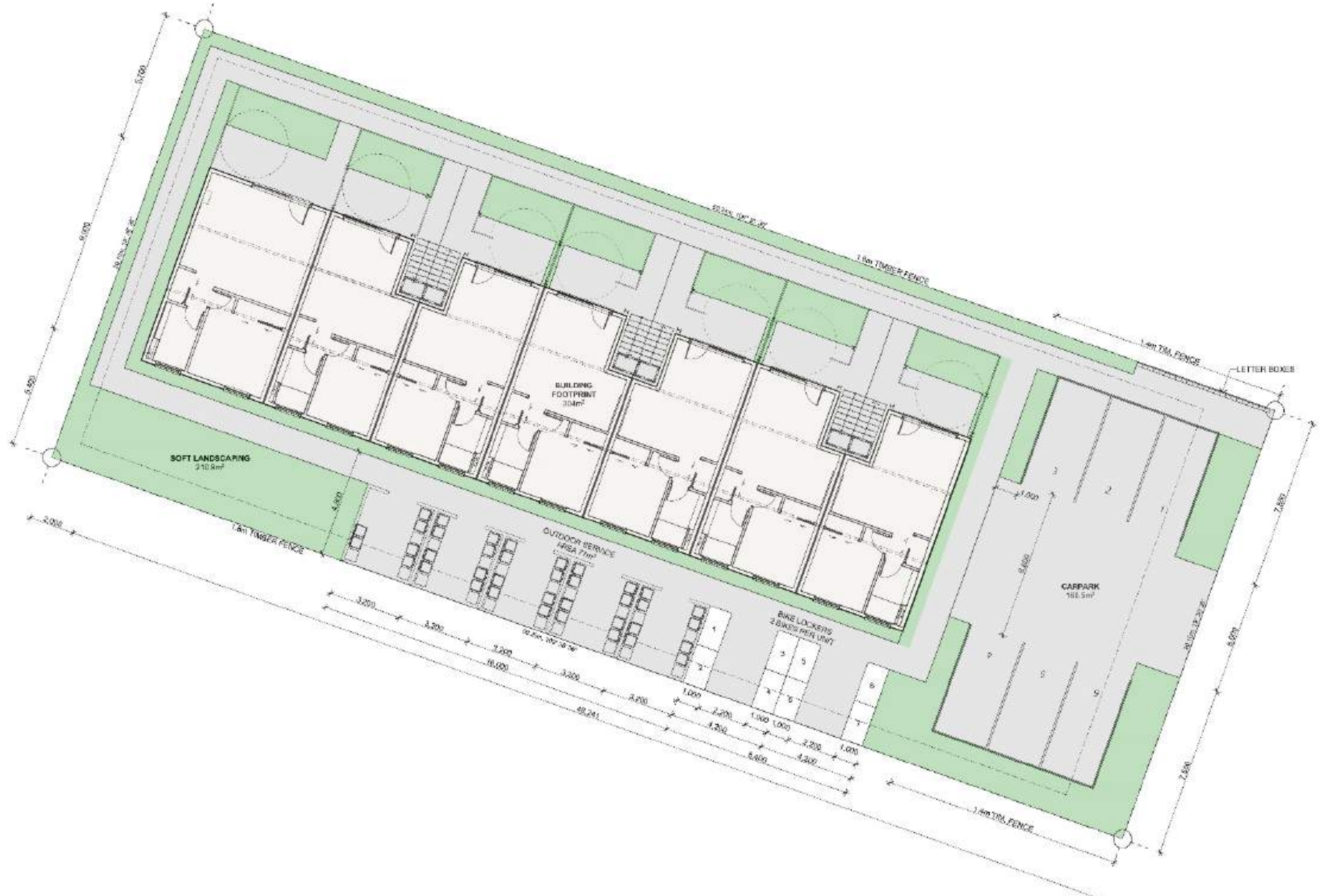


2
A2-06

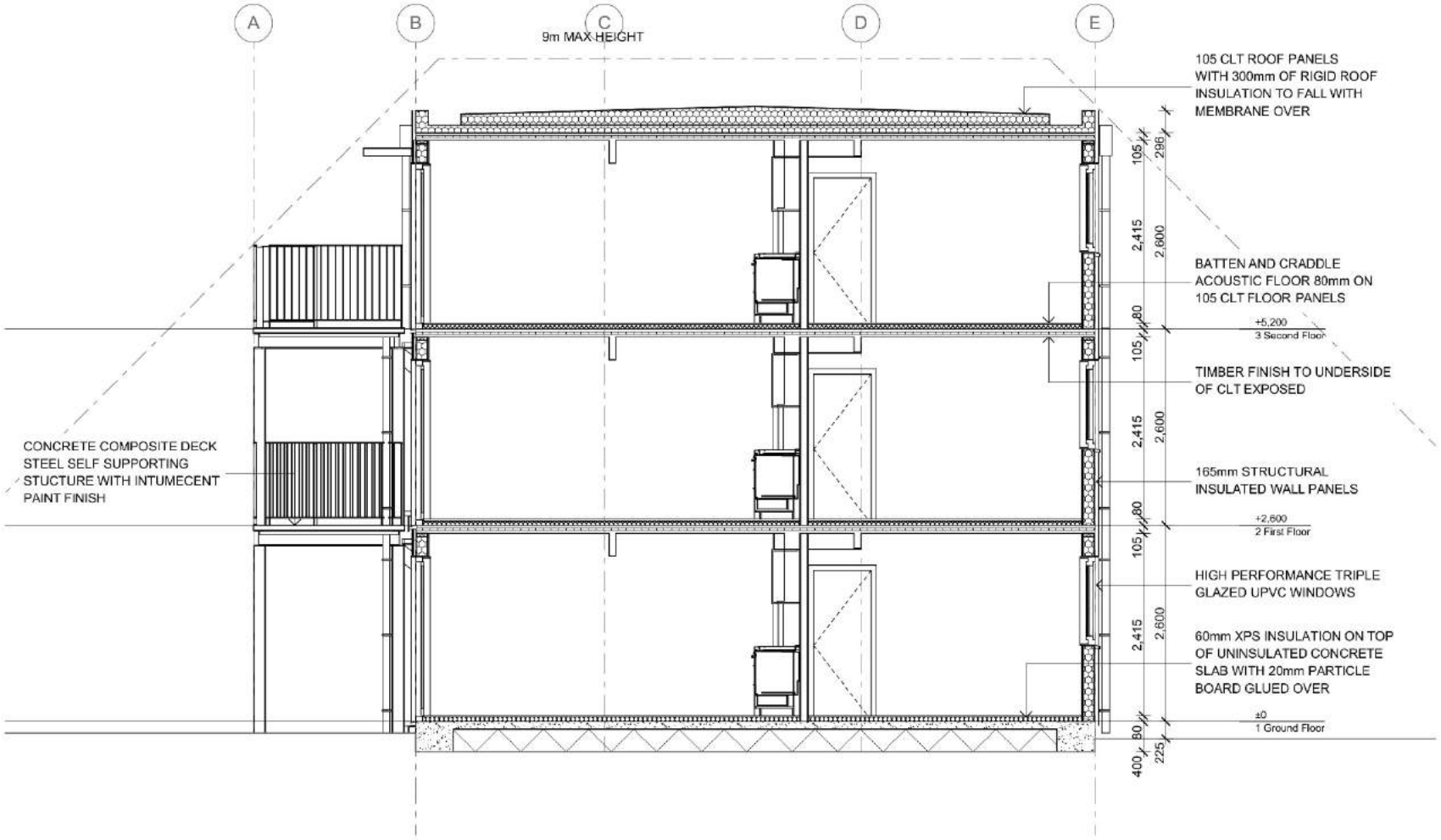
West SIP Elevation

1:50 @ A1


Howe St
Castle St
Leith St
Leith River
488
494
480
633
631
627A
621
617
615
609
607
603
605
605A
466E
466A
466
466B
468
472
476
483
481
477
467
458
454
454-456
451
450
449
448
446
493B
493D
493E
493F
493H
515
519A
519B
519C
519
519E
519G
514
516
522
526
526B
526F
526G
530
531
533
534
59
57
55
53
51
49
647
651
639
639A
639B
639C
635
50
52
54
56
58
653
655
657
654
652
46
35
37
39
41
43
45
47
640
636
634B
634-636
632
630
628
624
620
614
608
610
604-610
604
600
596
590
595
601A
601C
591
584
582
583
90
92
860



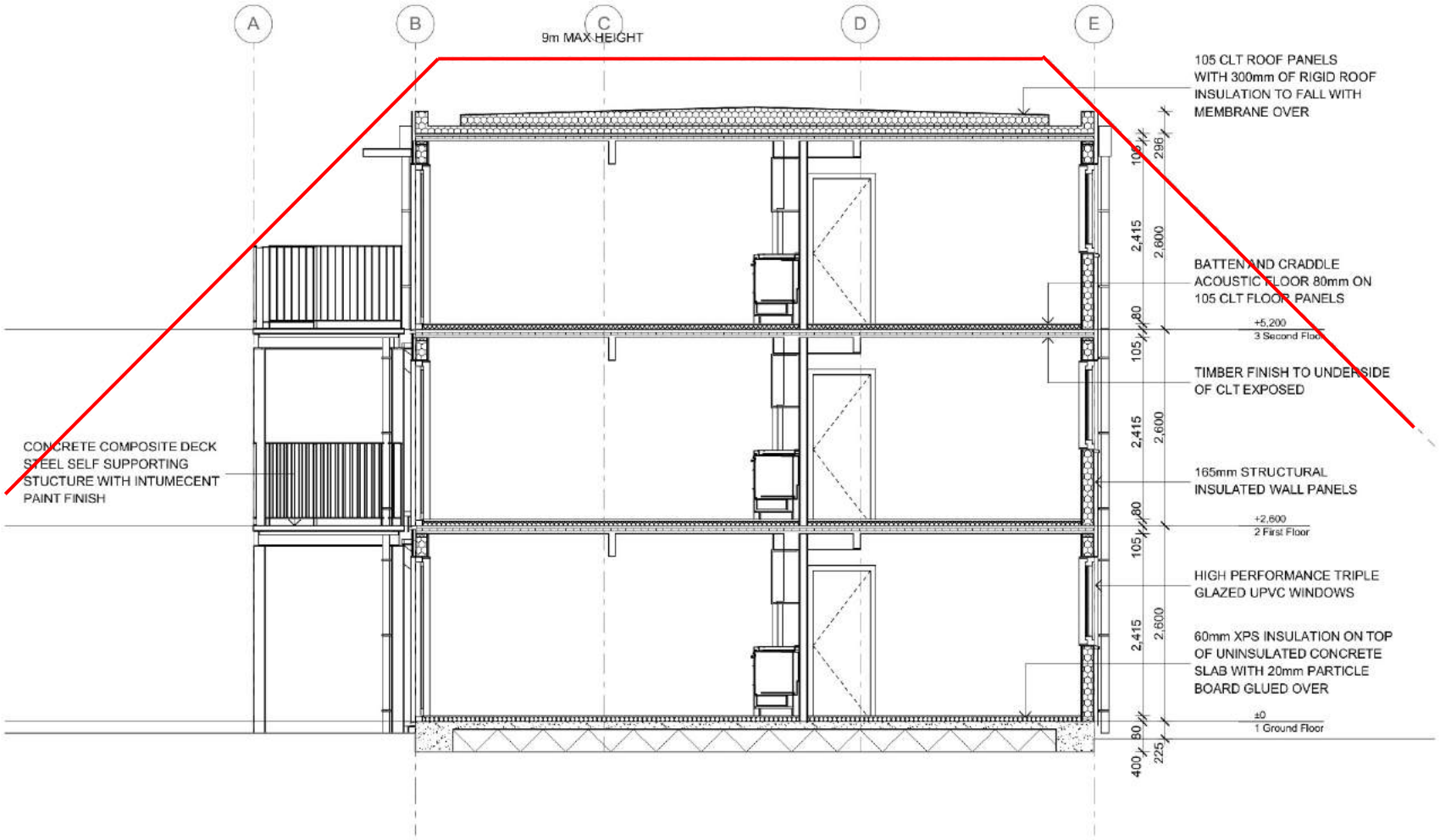
SOFT LANDSCAPING
210.9m²
BUILDING
FOOTPRINT
304m²
OUTDOOR SERVICE
AREA 77m²
BIKE LOCKERS
2 BIKES PER UNIT
CARPARK
168.5m²
LETTER BOXES
1.8m TIMBER FENCE
1.4m TIM. FENCE



1
-

Section AA

1:50 @ A1



1
-

Section AA

1:50 @ A1

Floor/ceiling — timber joists

Specification number	Performance		Specifications	
GBDFA 60d	**STC**	67	**Lining**	2 x 13mm GIB Fyreline®
	Rw	65	**LB/NLB**	Load bearing
	FRR	60/60/60	**IIC***	57–76

JOINTING

All fastener heads stopped and all sheet joints tape reinforced and stopped in accordance with the publication entitled GIB® Site Guide.

SUPPLEMENTARY MATERIAL

For additional information covering general and wet area installations of James Hardie Secura Interior Flooring, refer to the James Hardie Secura Interior Flooring Installation Manual.

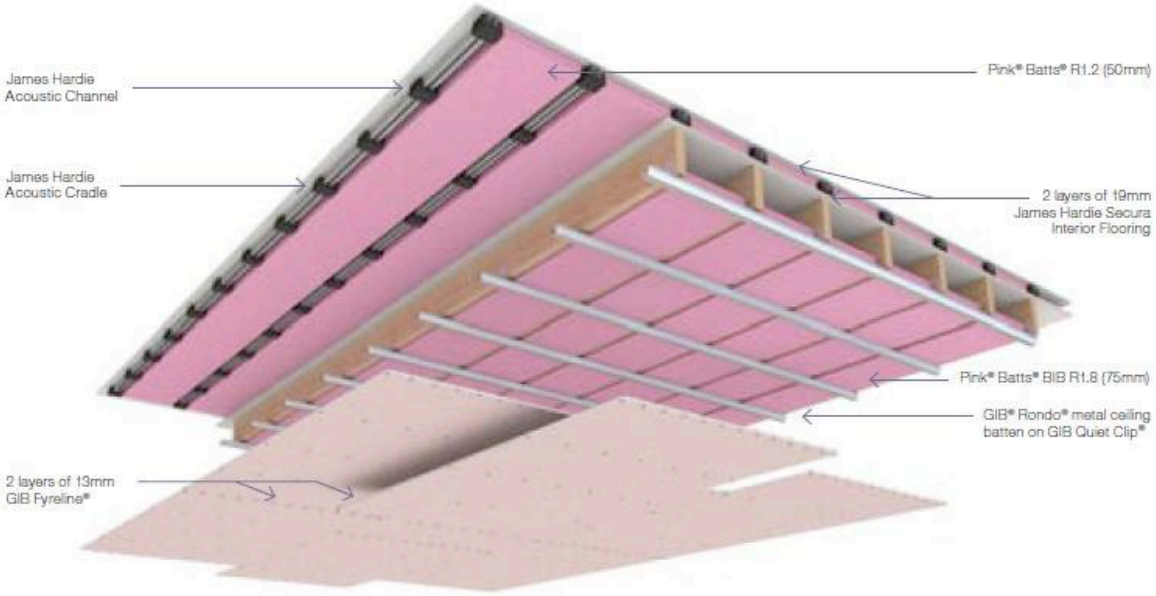
*Impact Insulation Class (IIC)

A performance of IIC 57 is achieved with a bare floor.

A performance of IIC 57 is achieved with a floor covering of 4mm cushion-backed vinyl.

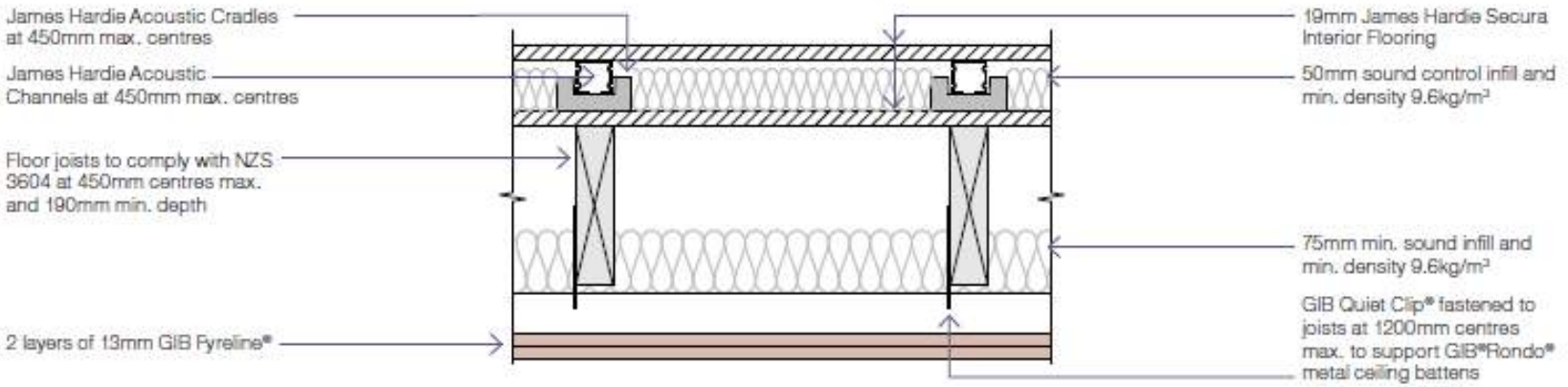
A performance of IIC 76 is achieved with a floor covering of 40oz cut pile carpet loose laid on 8mm foam underlay.

Note: See page 90 for perimeter details.



400 - 500mm buildup

CONSTRUCTION DETAIL



GNS020

File Home Insert Page Layout Formulas Data Review View Help PDFsam Enhanced 4 Creator Tell me what you want to do

F15 | 12mm Fibre Cement Sheet (min. 18.0kg/m2)

XLam CLT Acoustic Predictor — Floor - Channel Ceiling

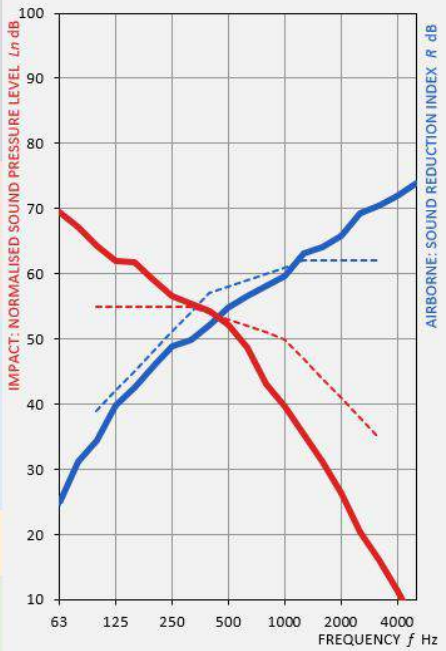
IMPACT	RATING
$L_{n,w}$	53
C_i	1
IIC	56

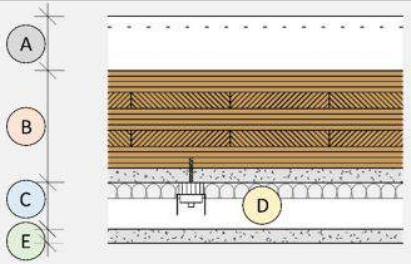
AIRBORNE	RATING
R_w	58
C_{tr}	-7
$R_w + C_{tr}$	51
STC	58

v1.0 2017-06

PKA ACOUSTIC CONSULTING

		Thickness (mm)	Mass (kg/m2)	Density (kg/m3)	
A	Floor Surface	10			7mm Laminated Timber on 3mm Foam Underlay
	Floor Topping	28	26.0		2x9mm Fibre Cement on 10mm Acoustic Rubber Underlay
	Total	38	26.0		
B	Panel	105	48.0	465	105mm XLam CLT Panel (min. 48kg/m2)
	Lining (Direct Fix)	12	18.0	1500	12mm Fibre Cement Sheet (min. 18.0kg/m2)
	Total	117	66.0		
C	Connection				Resilient Mounts (cc 1200mm x 600mm)
	Ceiling Type				Furring Channel Ceiling
	Cavity	55			
	Total	55			
D	Insulation (Cavity)	50		14	50mm Glasswool Batts (min. 14kg/m3)
E	Lining 1	10	9.0	900	10mm GIB Noiseline Plasterboard (9.0kg/m2)
	Lining 2	10	9.0	900	10mm GIB Noiseline Plasterboard (9.0kg/m2)
	Total	20	18.0		
System	Total	230	110.0		





The XLam Acoustic Predictor was developed by PKA Acoustic Consulting following an extensive CLT acoustic research program [Ref: PKA-A172] conducted in New Zealand's Auckland University Acoustic Laboratory.

Wall_Channelx1 | Wall_Channelx2 | Wall_ChannelSeparateStud | Wall_CLTx2 | Floor_SuspendedCeiling | Floor_ChannelCeiling | Floor_NoCeiling

Takeaways

- Timber PH townhouses – Straight forward
- Timber PH stacked apartments – Challenging
- More massive floors make SIPs difficult
- Timber framed acoustic floors – Allow 400-500mm
- CLT midfloors possible but expensive and really difficult to leave exposed

Happy PH detailing