MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Scope of work for the supply of cost estimates for thermal envelope options for new housing to inform a review of Building Code Clause H1 Energy Efficiency settings

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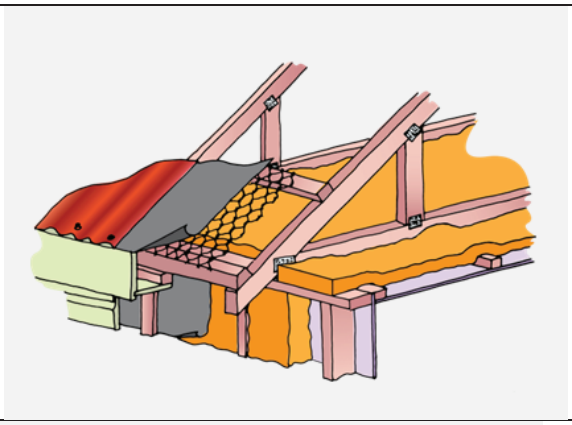
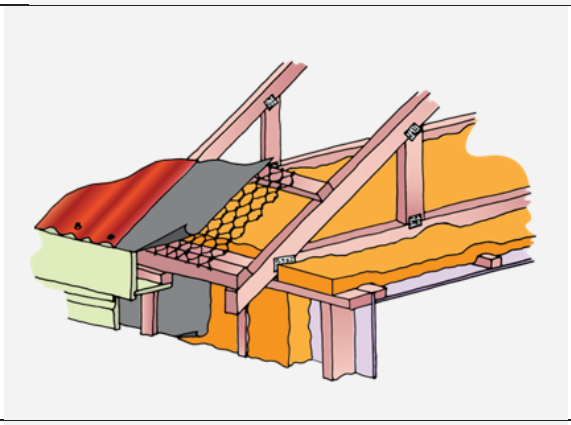
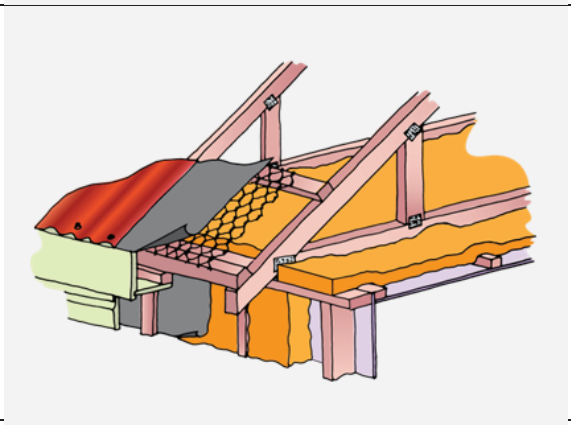
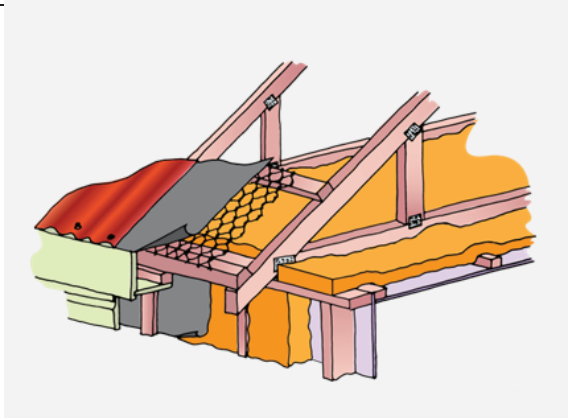
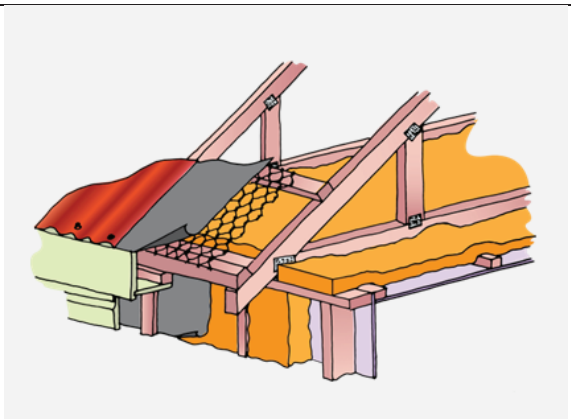
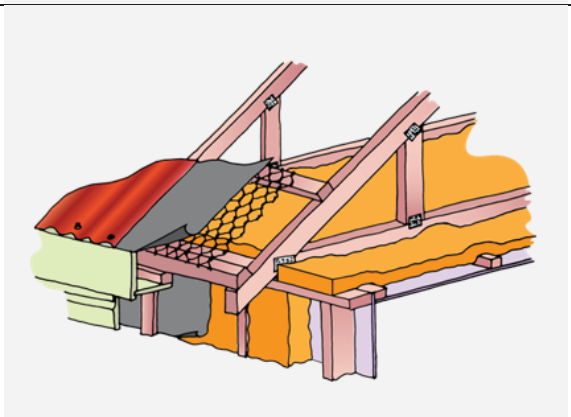
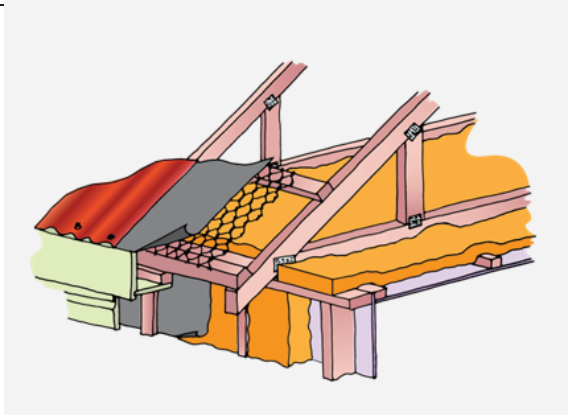
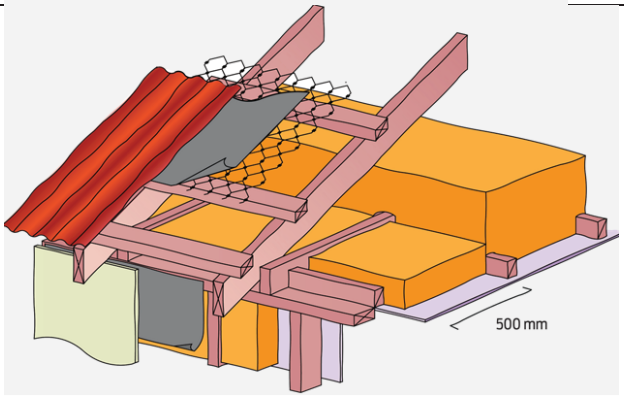
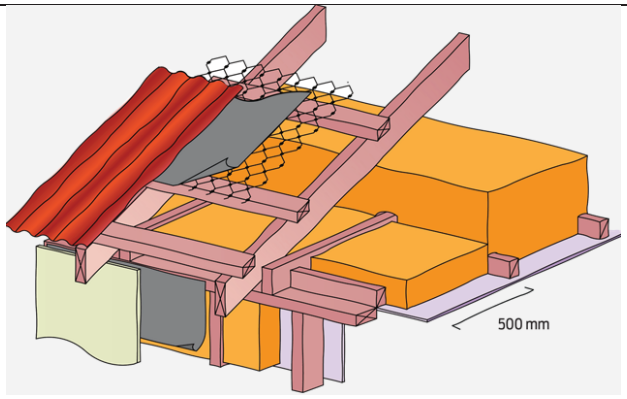
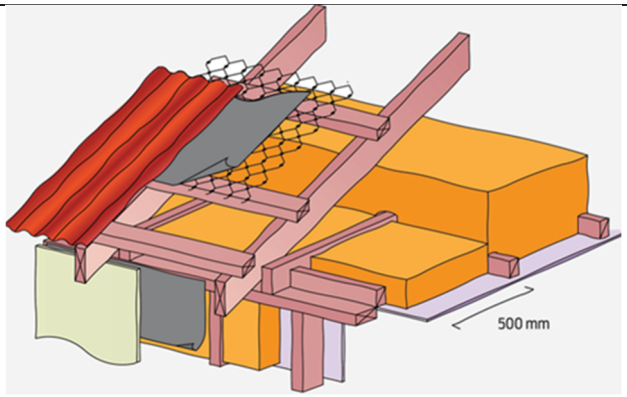
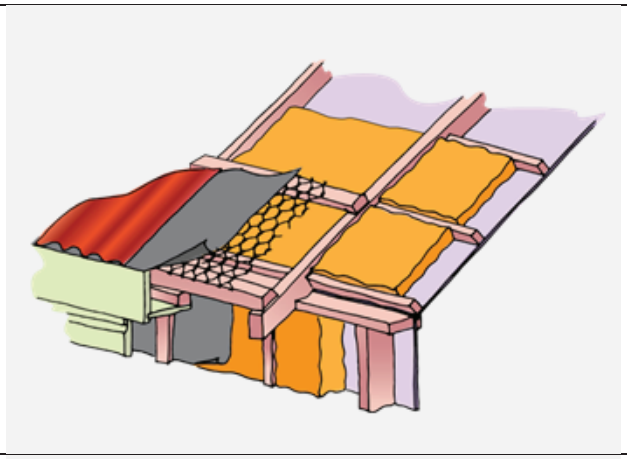
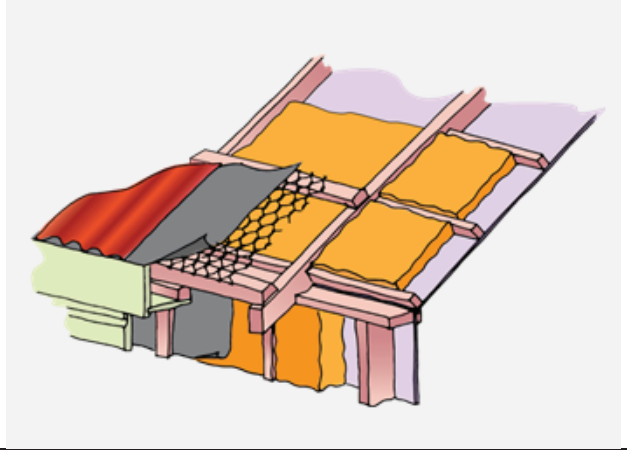
Appendix 1
Trussed roof assemblies

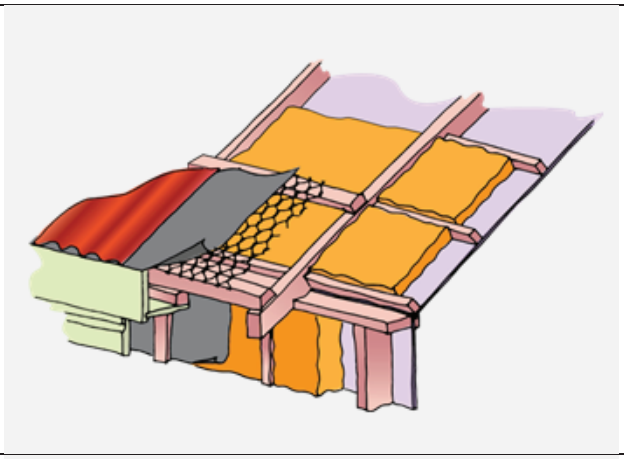
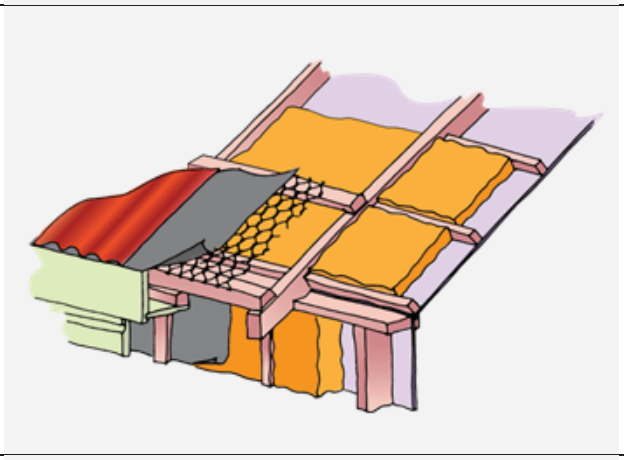
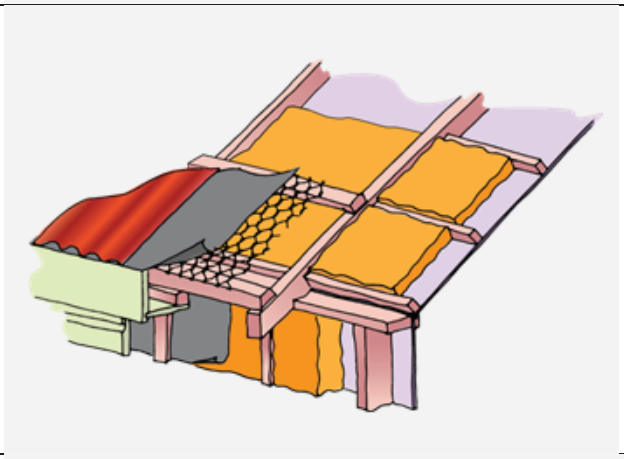
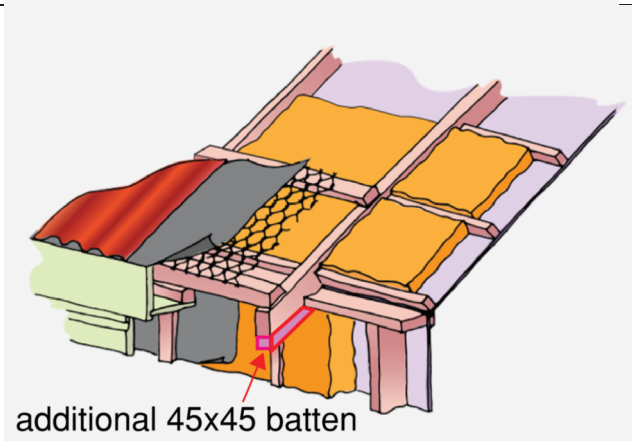
Roof space1		• Corrugated profile 0.55BMT colorsteel metal roof cladding • Thermakraft covertek 403 • Roof safety mesh, hexagonal netting • 70x45 purlins @900crs • Truss 140x45 all members @900crs with a pitch of 22° • **R3.0 single layer insulation** • 45x19 ceiling batten @600cnrs • Plasterboard 13mm ceiling **Construction R2.9**
Roof space 2		• Corrugated profile 0.55BMT colorsteel metal roof cladding • Thermakraft covertek 403 • Roof safety mesh, hexagonal netting • 70x45 purlins @900crs • Truss 140x45 all members @900crs with a pitch of 22° • **R3.3 single layer insulation** • 45x19 ceiling batten @600cnrs • Plasterboard 13mm ceiling **Construction R3.2**
Roof space 3		• Corrugated profile 0.55BMT colorsteel metal roof cladding • Thermakraft covertek 403 • Roof safety mesh, hexagonal netting • 70x45 purlins @900crs • Truss 140x45 all members @900crs with a pitch of 22° • **R3.4 single layer insulation** • 45x19 ceiling batten @600cnrs • Plasterboard 13mm ceiling **Construction R3.3**
Roof space 4		• Corrugated profile 0.55BMT colorsteel metal roof cladding • Thermakraft covertek 403 • Roof safety mesh, hexagonal netting • 70x45 purlins @900crs • Truss 140x45 all members @900crs with a pitch of 22° • **R3.6 single layer insulation** • 45x19 ceiling batten @600cnrs • Plasterboard 13mm ceiling **Construction R3.5**

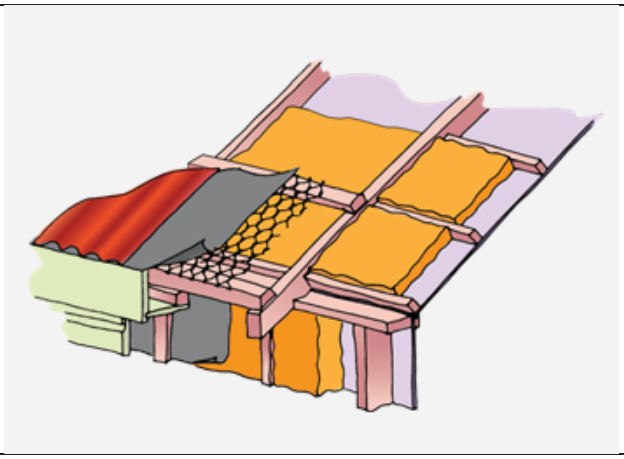
Roof space 5		• Corrugated profile 0.55BMT coloursteel metal roof cladding • Thermakraft covertek 403 • Roof safety mesh, hexagonal netting • 70x45 purlins @900crs • Truss 140x45 all members @900crs with a pitch of 22° • **R4.0 single layer insulation** • 45x19 ceiling batten @600cnrs • Plasterboard 13mm ceiling **Construction R3.8**
Roof space 6		• Corrugated profile 0.55BMT coloursteel metal roof cladding • Thermakraft covertek 403 • Roof safety mesh, hexagonal netting • 70x45 purlins @900crs • Truss 140x45 all members with @900crs a pitch of 22° • **R4.5 single layer insulation** • 45x19 ceiling batten @600cnrs • Plasterboard 13mm ceiling **Construction R4.2**
Roof space 7		• Corrugated profile 0.55BMT coloursteel metal roof cladding • Thermakraft covertek 403 • Roof safety mesh, hexagonal netting • 70x45 purlins @900crs • Truss 140x45 all members @900crs with a pitch of 22° • **R5.0 single layer insulation** • 45x19 ceiling batten @600cnrs • Plasterboard 13mm ceiling **Construction R5.0**
Roof space 8		• Corrugated profile 0.55BMT coloursteel metal roof cladding • Thermakraft covertek 403 • Roof safety mesh, hexagonal netting • 70x45 purlins @900crs • Truss 140x45 all members with @900crs a pitch of 22° • **R6.0 single layer insulation** • 45x19 ceiling batten @600cnrs • Plasterboard 13mm ceiling **Construction R6.0**

Roof space 9		• Corrugated profile 0.55BMT coloursteel metal roof cladding • Thermakraft covertek 403 • Roof safety mesh, hexagonal netting • 70x45 purlins @900crs • Truss 140x45 all members @900crs with a pitch of 22° • **R7.0 single layer insulation** • 45x19 ceiling batten @600cnrs • Plasterboard 13mm ceiling **Construction R6.6**
Roof space 10		• Corrugated profile 0.55BMT coloursteel metal roof cladding • Thermakraft covertek 403 • Roof safety mesh, hexagonal netting • 70x45 purlins @900crs • Truss 140x45 all members @900crs with a pitch of 22° • **R8.0 single layer insulation** • 45x19 ceiling batten @600cnrs • Plasterboard 13mm ceiling **Construction R8.1**

Skillion roof assemblies

Skillion 1		• Corrugated profile 0.55BMT coloursteel metal roof cladding • Thermakraft covertek 403 • Roof safety mesh, hexagonal netting • 70x45 purlins @900crs • Rafters 140x45 @600crs @22° 140mm nogs @600 cnrs • **R3.2 single layer insulation** • Plasterboard 13mm ceiling **Construction R3.0**
Skillion 2		• Corrugated profile 0.55BMT coloursteel metal roof cladding • Thermakraft covertek 403 • Roof safety mesh, hexagonal netting • 70x45 purlins @900crs • Rafters 190x45 @600crs @22° 140mm nogs @600 cnrs • **R3.6 single layer insulation** • Plasterboard 13mm ceiling **Construction R3.5**

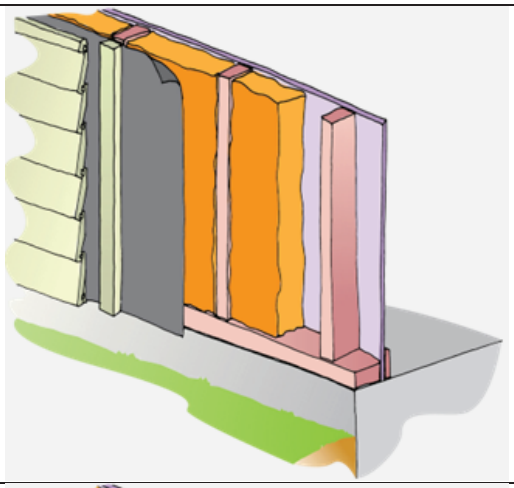
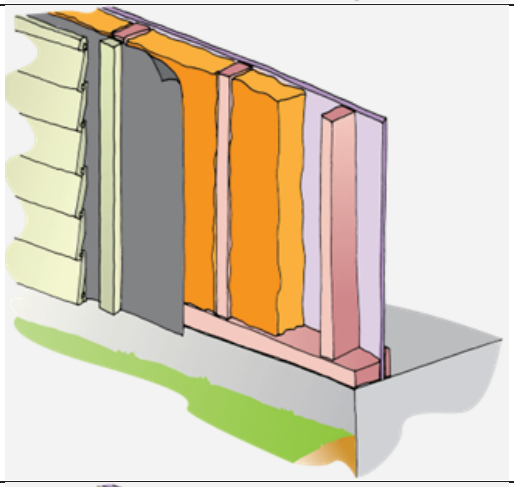
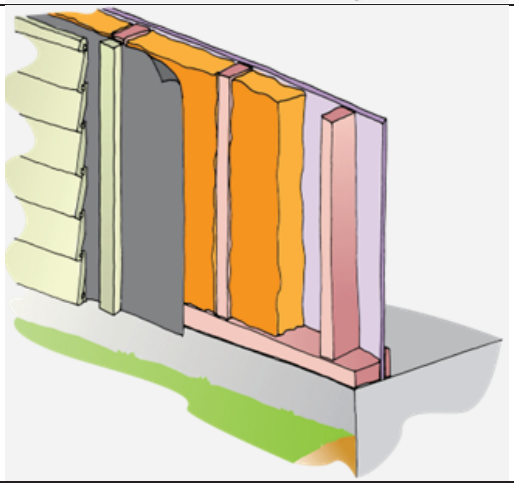
Skillion 3		• Corrugated profile 0.55BMT colourSteel metal roof cladding • Thermakraft covertek 403 • Roof safety mesh, hexagonal netting • 70x45 purlins @900crs • Rafters 190x45 @600crs @22° 140mm nogs @600 cnrs • **R4.5 single layer insulation** • Plasterboard 13mm ceiling **Construction R4.2**
Skillion 4		• Corrugated profile 0.55BMT colourSteel metal roof cladding • Thermakraft covertek 403 • Roof safety mesh, hexagonal netting • 70x45 purlins @900crs • Rafters 190x45 @600crs @22° 140mm nogs @600 cnrs • **R5.0 single layer insulation** • Plasterboard 13mm ceiling **Construction R4.6**
Skillion 5		• Corrugated profile 0.55BMT colourSteel metal roof cladding • Thermakraft covertek 403 • Roof safety mesh, hexagonal netting • 70x45 purlins @900crs • Rafters 240x45 @600crs @22° 140mm nogs @600 cnrs • **R6.0 single layer insulation** • Plasterboard 13mm ceiling **Construction R5.5**
Skillion 6		• Corrugated profile 0.55BMT colourSteel metal roof cladding • Thermakraft covertek 403 • Roof safety mesh, hexagonal netting • 70x45 purlins @900crs • Rafters 240x45 @600crs with 45x45 timber batten to increase depth. @22° 140mm nogs @600 cnrs • **R7.4 single layer insulation** • Plasterboard 13mm ceiling **Construction R6.7**

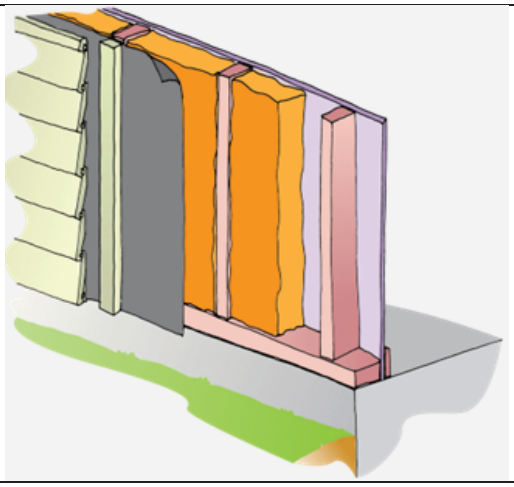
Skillion 7		• Corrugated profile 0.55BMT colour steel metal roof cladding • Thermakraft covertek 403 • Roof safety mesh, hexagonal netting • 70x45 purlins @900crs Rafters 290x45 @600crs @22° 140mm nogs @600 cnrs • **R7.4 single layer insulation** • Plasterboard 13mm ceiling **Construction R6.7**

Appendix 2

Walls

I understand there is very difference in these examples.

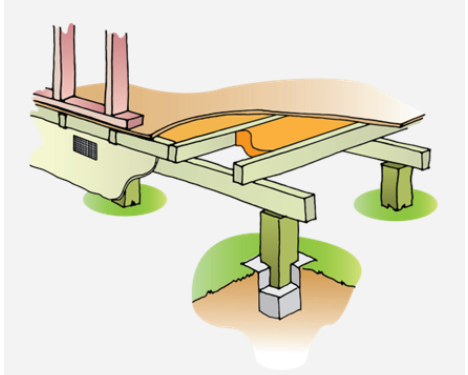
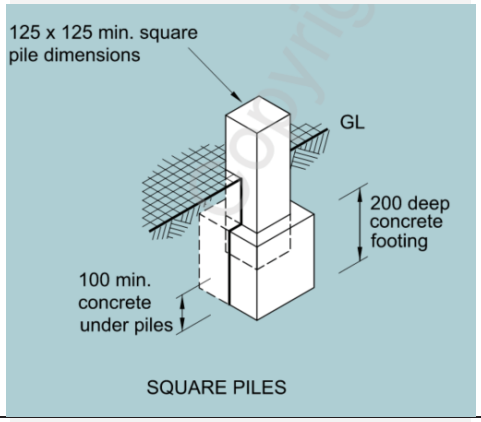
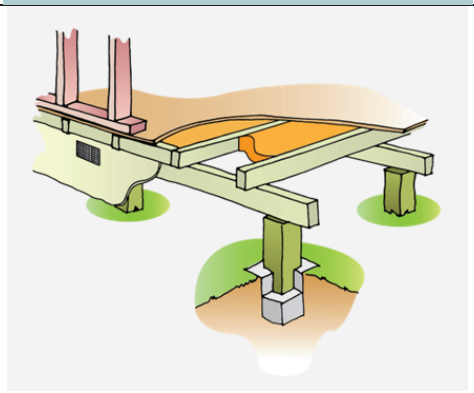
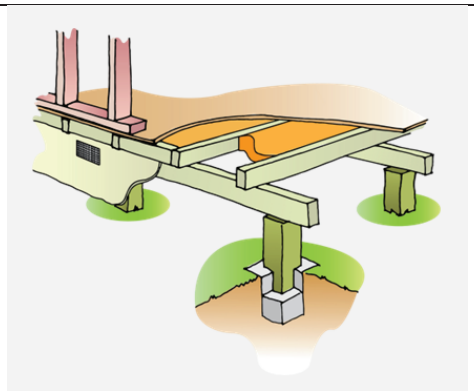
Wall 1		• 140mm Wide, Standard P61 Bevelback Weatherboard • 20x 45 cavity batten @ 600cnrs • Thermakraft covertek 403 • 90x45 timber framing with 24% framing ratio • **R2.5 single layer 90mm insulation** • Plasterboard 13mm **Construction R1.9**
Wall 2		• 140mm Wide, Standard P61 Bevelback Weatherboard • 20x 45 cavity batten @ 600cnrs • Thermakraft covertek 403 • 90x45 timber framing with 24% framing ratio • **R2.8 single layer insulation** • Plasterboard 13mm **Construction R2.0**
Wall 3		• 140mm Wide, Standard P61 Bevelback Weatherboard • 20x 45 cavity batten @ 600cnrs • Thermakraft covertek 403 • 140x45 timber framing with 24% framing ratio • **R4.0 single layer 140mm insulation** • Plasterboard 13mm **Construction R2.8**

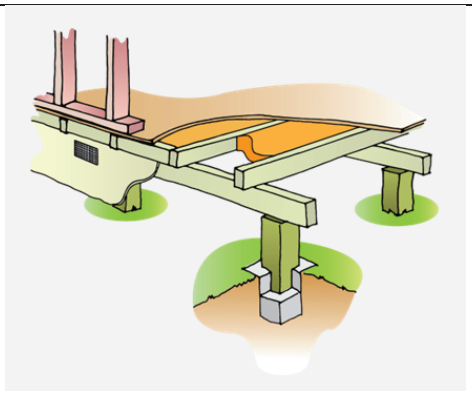
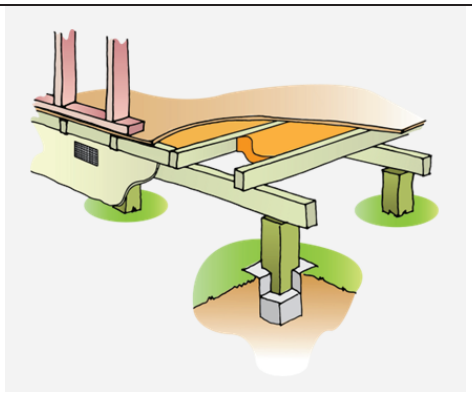
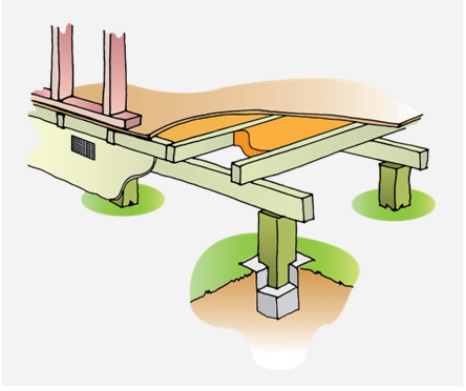
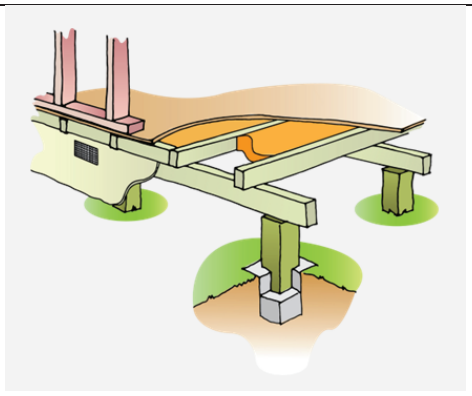
Wall 4		• 140mm Wide, Standard P61 Bevelback Weatherboard • 20x 45 cavity batten @ 600cnrs • Thermakraft covertek 403 • 140x45 timber framing with 24% framing ratio • **R4.4 single layer 140mm insulation** • Plasterboard 13mm **Construction** R2.9

Appendix 3

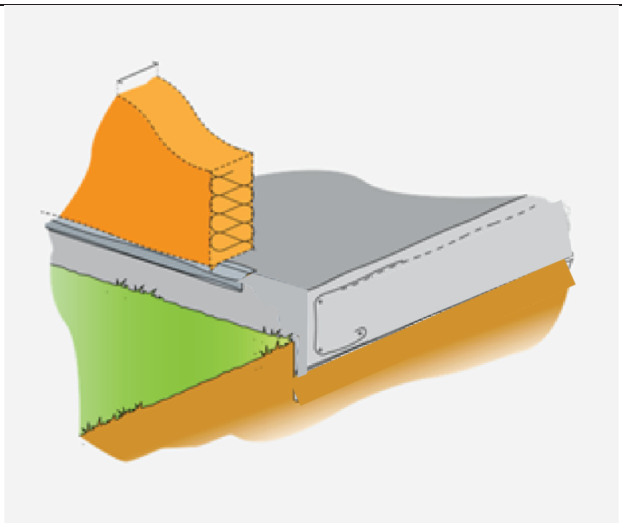
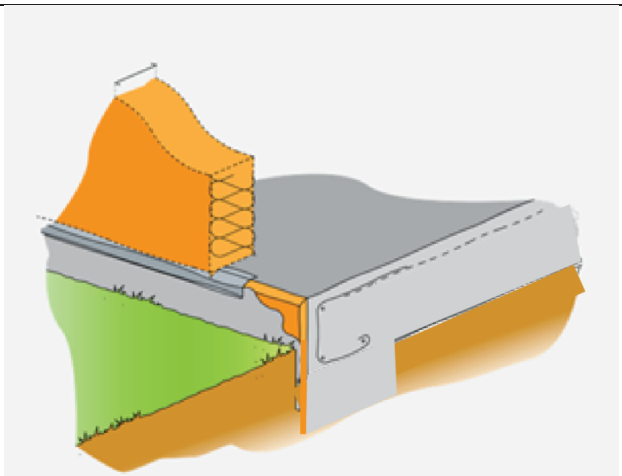
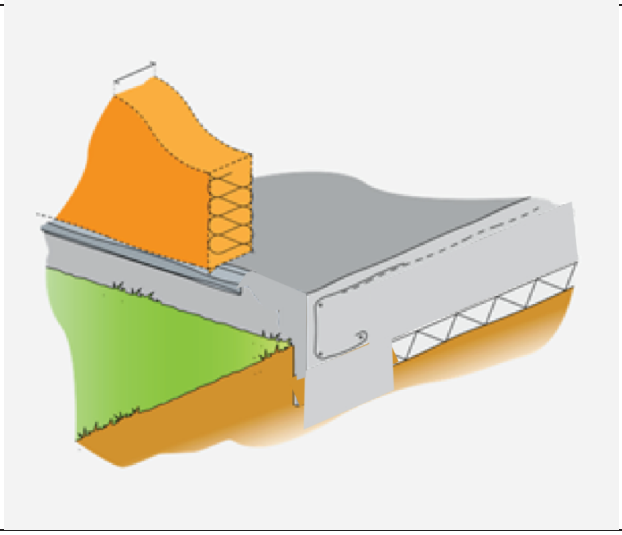
Floors

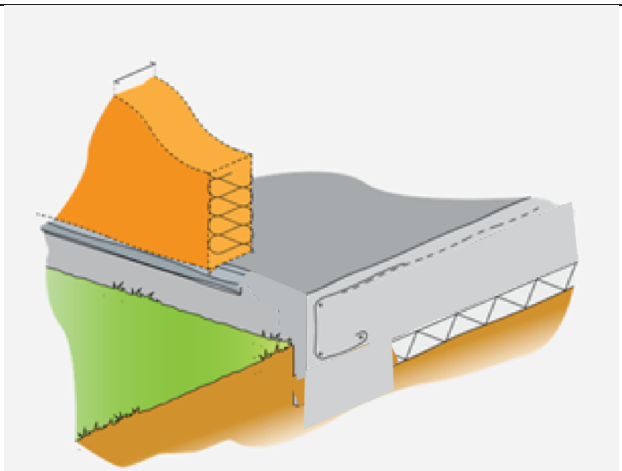
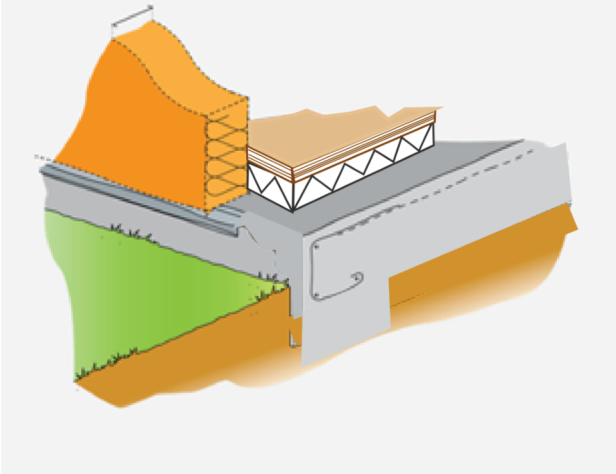
Timber Floors *for single- and double-storey only, do not calculate for townhouse and apartment*

Timber floor 1	 	• 20mm strand board H3.2 T&G floor • 140x45 timber framing @ 400 cnrs with 90x45 blocking @1200 cnrs • **R1.5 single layer 60mm fibre insulation** • 140x70 bearers @ 2000 cnrs • H4 timber ordinary square 125x125 piles @ 1650 cnrs **Construction R1.4**
Timber floor 2	 Pile as above	• 20mm strand board H3.2 T&G floor • 140x45 timber framing @ 400 cnrs with 90x45 blocking @1200 cnrs • **R1.8 single layer 115mm fibre insulation** • 140x70 bearers @ 2000 cnrs • H4 timber ordinary square 125x125 piles @ 1650 cnrs **Construction R1.7**
Timber floor 3	 Pile as above	• 20mm strand board H3.2 T&G floor • 140x45 timber framing @ 400 cnrs with 90x45 blocking @1200 cnrs • **R2.0 single layer 70mm fibre insulation** • 140x70 bearers @ 2000 cnrs • H4 timber ordinary square 125x125 piles @ 1650 cnrs **Construction R1.9**

Timber floor 4	 Pile as above	• 20mm strand board H3.2 T&G floor • 140x45 timber framing @ 400 cnrs with 90x45 blocking @1200 cnrs • **R2.6 single layer 70mm fibre insulation** • 140x70 bearers @ 2000 cnrs • H4 timber ordinary square 125x125 piles @ 1650 cnrs **Construction R2.5**
Timber floor 5	 Pile as above	• 20mm strand board H3.2 T&G floor • 140x45 timber framing @ 400 cnrs with 90x45 blocking @1200 cnrs • **R2.8 single layer 70mm fibre insulation** • 140x70 bearers @ 2000 cnrs • H4 timber ordinary square 125x125 piles @ 1650 cnrs **Construction R2.6**
Timber floor 6	 Pile as above	• 20mm strand board H3.2 T&G floor • 140x45 timber framing @ 400 cnrs with 90x45 blocking @1200 cnrs • **R3.0 single layer 70mm fibre insulation** • 140x70 bearers @ 2000 cnrs • H4 timber ordinary square 125x125 piles @ 1650 cnrs **Construction R2.8**
Timber floor 7	 Pile as above	• 20mm strand board H3.2 T&G floor • 140x45 timber framing @ 400 cnrs with 90x45 blocking @1200 cnrs • **R3.2 single layer 70mm fibre insulation** • 140x70 bearers @ 2000 cnrs • H4 timber ordinary square 125x125 piles @ 1650 cnrs **Construction R3.0**

Slab Floors

Slab Floor 1		• 200mm slab on grade • **No edge insulation** • **No under slab insulation** • Allow 300 x 400 thickening to slab edge
Slab floor 2		• 200mm slab on grade • **30mm thick x400mm deep XPS vertical edge insulation** • Edge protection eg render(over edge insulation) • **No under slab insulation** • Allow 300 x 400 thickening to slab edge
Slab floor 3		• 200mm slab on grade • Allow 300 x 400 thickening to slab edge • **45mm S-grade EPS underslab insulation** (full cover in between footings)

Slab Floor 4		• 200mm slab on grade • Allow 300 x 400 thickening to slab edge • **90mm S-grade EPS underslab insulation** (full cover in between footings)
		• 200mm slab on grade • Allow 300 x 400 thickening to slab edge • No edge insulation • No underslab insulation • **R1.0 topper insulation (40mm EPS laid on top of slab in between external and internal walls)**, • 20mm T&G plywood sheet-floor on top

Appendix 4 Windows and Doors

WinDoor 1	Type of glazing	Double glazing with standard glass and air filling
	Glazing Ug	2.63
	Spacer type	Aluminium
	Frames	Standard aluminium
	Rwindow (as per H1/AS1 Table E.1.1.1)	**R0.26**
WinDoor 2	Type of glazing	Double glazing with Low E and Argon filling
	Glazing Ug	1.1
	Spacer type	Thermally improved
	Frames	Standard aluminium
	Rwindow (as per H1/AS1 Table E.1.1.1)	**R0.37**
WinDoor 3	Type of glazing	Double glazing with Low E and Argon filling
	Glazing Ug	1.3
	Spacer type	Thermally improved
	Frames	Thermally-broken aluminium
	Rwindow (as per H1/AS1 Table E.1.1.1)	**R0.46**
WinDoor 4	Type of glazing	Double glazing with Low E and Argon filling
	Glazing Ug	1.1
	Spacer type	Thermally improved
	Frames	Thermally-broken aluminium
	Rwindow (as per H1/AS1 Table E.1.1.1)	**R0.50**