

Figure S1:Mass-timber wall variants

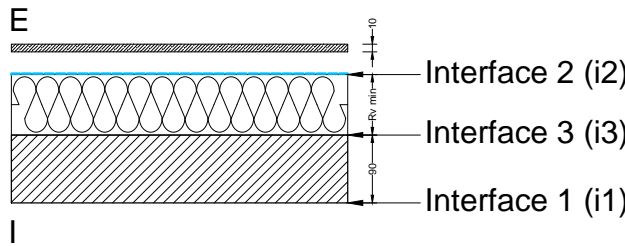
MASS-TIMBER WALL

Climate zones 2-5-6-7

Reference  
Scenario

STEP 0

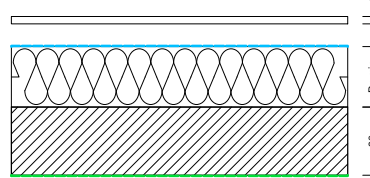
- i2 - weather barrier,  $\mu=200$  (vapour permeable)
- R-value (NCC compliant)



Variant 1  
Moisture control  
layers

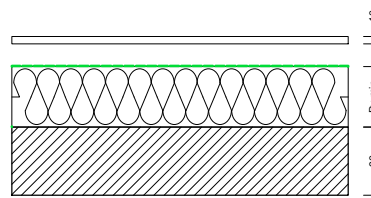
STEP 1.0

- i2 - weather barrier,  $\mu=200$  (as in STEP 0)
- i3 - none
- i1 - vapour barrier,  $\mu=1.5M$



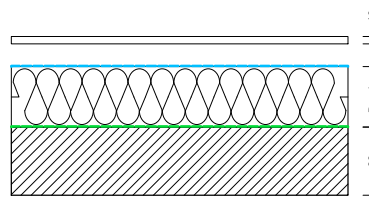
STEP 1.1

- i2 - weather barrier,  $\mu=1.5M$  (acting as vapour barrier)
- i3, i1 - none



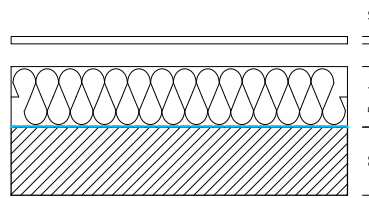
STEP 1.2

- i2 - weather barrier,  $\mu=200$  (as in STEP 0)
- i3 - vapour barrier,  $\mu=1.5M$
- i1 - none



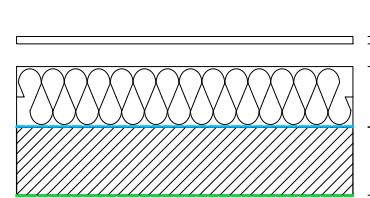
STEP 1.3

- i2, i1 - none
- i3 - weather barrier,  $\mu=200$  (as in STEP 0)



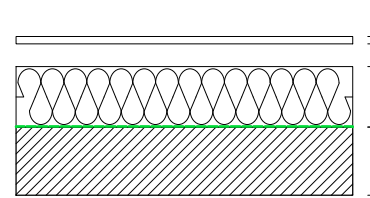
STEP 1.4

- i2 - none
- i3 - weather barrier,  $\mu=200$  (as in STEP 0)
- i1 - vapour barrier,  $\mu=1.5M$



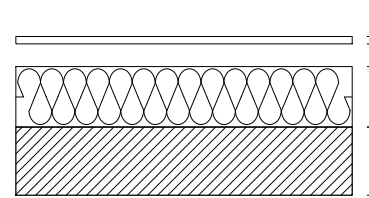
STEP 1.5

- i2, i1 - none
- i3 - weather barrier,  $\mu=1.5M$  (acting as vapour barrier)



STEP 1.6

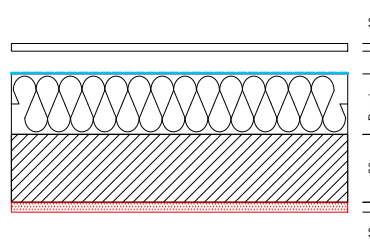
- no barriers



Variant 2  
Fire barriers

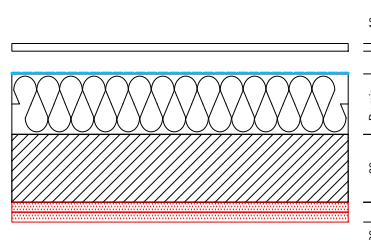
STEP 2.0

- i2, i3 - none
- i1 - fire barrier, 1-layer



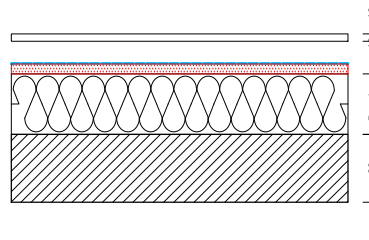
STEP 2.1

- i2, i3 - none
- i1 - fire barrier, 2-layer



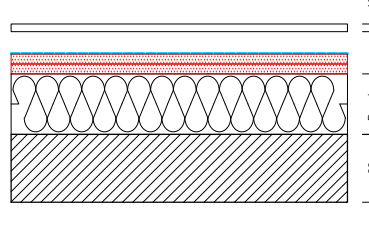
STEP 2.2

- i2 - fire barrier, 1-layer
- i3, i1 - none



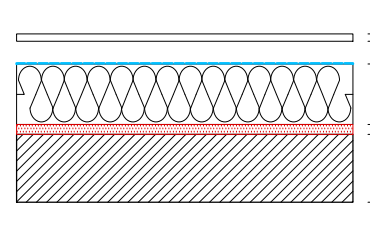
STEP 2.3

- i2 - fire barrier, 2-layer
- i3, i1 - none



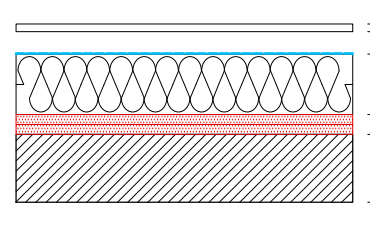
STEP 2.4

- i2, i1 - none
- i3 - fire barrier, 1-layer



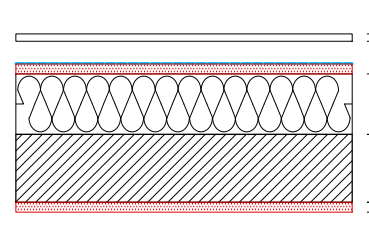
STEP 2.5

- i2, i1 - none
- i3 - fire barrier, 2-layer



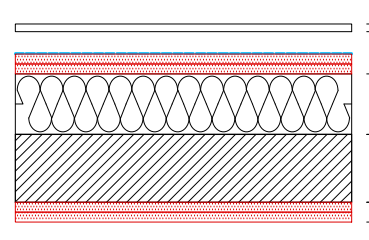
STEP 2.6

- i2 - fire barrier, 1-layer
- i3 - none
- i1 - fire barrier, 1-layer



STEP 2.7

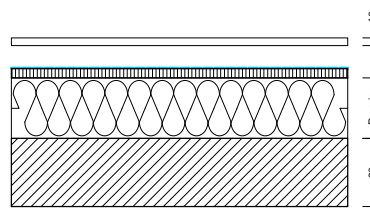
- i2 - fire barrier, 2-layer
- i3 - none
- i1 - fire barrier, 2-layer



Variant 3  
Sheeting

STEP 3.0

- i2 - OSB, 12.5mm



STEP 3.1

- i2 - plywood, 12.5mm

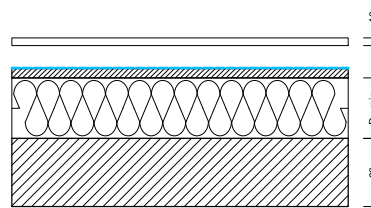
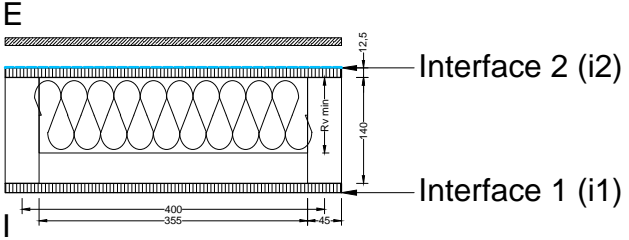
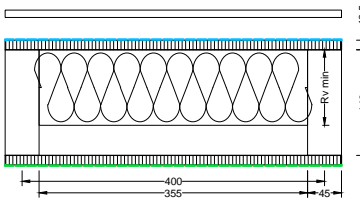
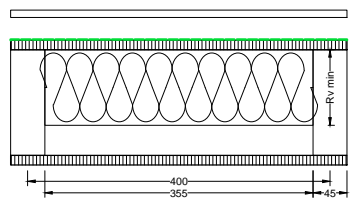
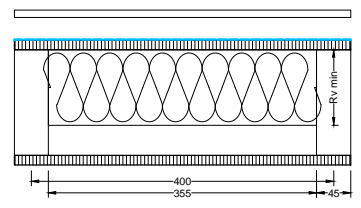
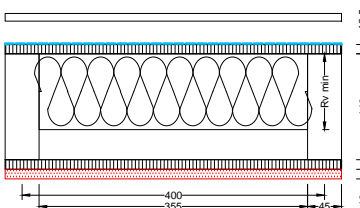
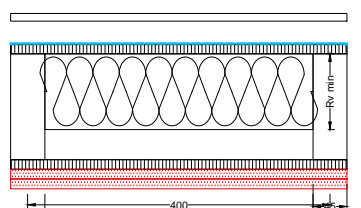
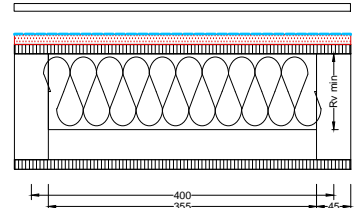
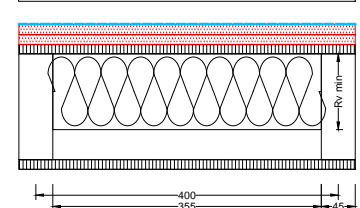
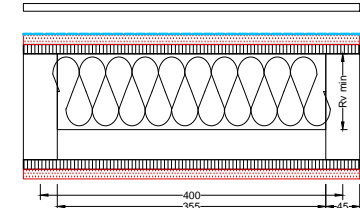
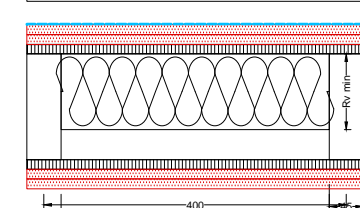
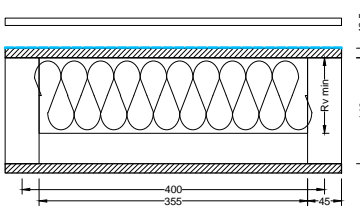
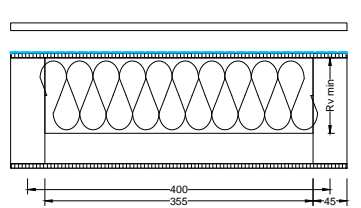
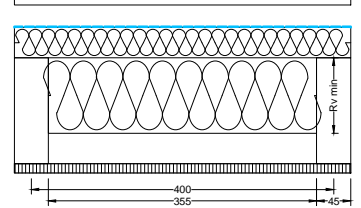
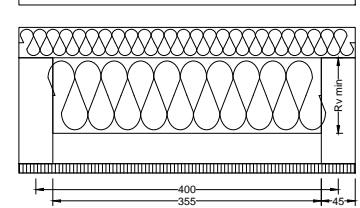
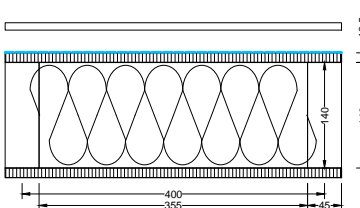
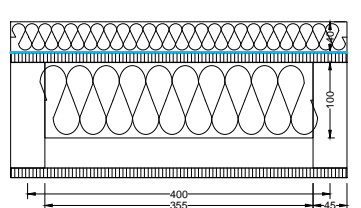
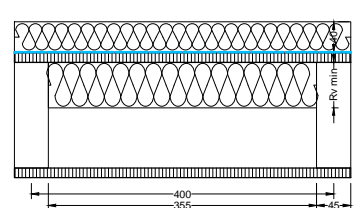
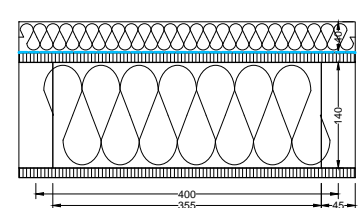
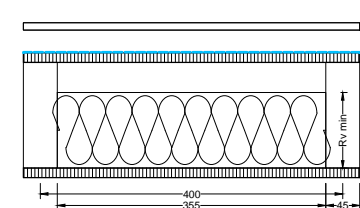
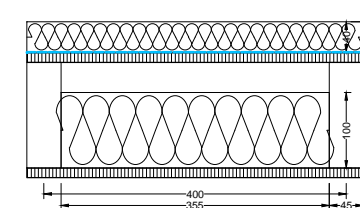
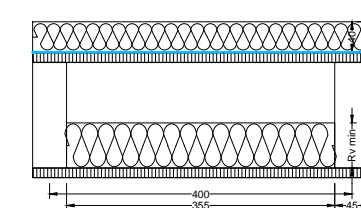


Figure S2: Timber-framed wall variants

	<div><div>TIMBER-FRAMED WALL</div><div>Climate zones 2-5-6-7</div></div>						
Reference Scenario	<div><div>STEP 0</div><div><ul style="list-style-type: none"><li>i2 - weather barrier, <math>\mu=200</math> (vapour permeable)</li><li>i1, i2 - OSB, 12.5mm</li><li>R-value (NCC compliant)</li></ul></div><div></div></div>						
Variant 1 Moisture control layers	<div><div>STEP 1.0</div><div><ul style="list-style-type: none"><li>i2 - weather barrier, <math>\mu=200</math> (as in STEP 0)</li><li>i1 - vapour barrier, <math>\mu=1.5M</math></li></ul></div><div></div></div>	<div><div>STEP 1.1</div><div><ul style="list-style-type: none"><li>i2 - weather barrier, <math>\mu=1.5M</math> (acting as vapour barrier)</li><li>i1 - none</li></ul></div><div></div></div>	<div><div>STEP 1.2</div><div><ul style="list-style-type: none"><li>i2 - weather barrier, <math>\mu=50</math> (improved permeability)</li><li>i1 - vapour barrier, <math>\mu=1.5M</math> (as in STEP 1.0)</li></ul></div><div></div></div>				
Variant 2 Fire barriers	<div><div>STEP 2.0</div><div><ul style="list-style-type: none"><li>i2 - none</li><li>i1 - fire barrier, 1-layer</li></ul></div><div></div></div>	<div><div>STEP 2.1</div><div><ul style="list-style-type: none"><li>i2 - none</li><li>i1 - fire barrier, 2-layer</li></ul></div><div></div></div>	<div><div>STEP 2.2</div><div><ul style="list-style-type: none"><li>i2 - fire barrier, 1-layer</li><li>i1 - none</li></ul></div><div></div></div>	<div><div>STEP 2.3</div><div><ul style="list-style-type: none"><li>i2 - fire barrier, 2-layer</li><li>i1 - none</li></ul></div><div></div></div>	<div><div>STEP 2.4</div><div><ul style="list-style-type: none"><li>i2 - fire barrier, 1-layer</li><li>i1 - fire barrier, 1-layer</li></ul></div><div></div></div>	<div><div>STEP 2.5</div><div><ul style="list-style-type: none"><li>i2 - fire barrier, 2-layer</li><li>i1 - fire barrier, 2-layer</li></ul></div><div></div></div>	
Variant 3 Sheeting	<div><div>STEP 3.0</div><div><ul style="list-style-type: none"><li>i2 - plywood, 12.5mm</li><li>i1 - plywood, 12.5mm</li></ul></div><div></div></div>	<div><div>STEP 3.1</div><div><ul style="list-style-type: none"><li>i2 - OSB, 6mm</li><li>i1 - OSB, 6mm</li></ul></div><div></div></div>	<div><div>STEP 3.2</div><div><ul style="list-style-type: none"><li>i2 - insulation, 40mm (R-value improved)</li><li>i1 - OSB, 12.5mm</li></ul></div><div></div></div>	<div><div>STEP 3.3</div><div><ul style="list-style-type: none"><li>i2 - insulation, 40mm (R-value improved)</li><li>i1 - OSB, 12.5mm</li><li>no weather barrier</li></ul></div><div></div></div>			
Variant 4 Insulation	<div><div>STEP 4.0</div><div><ul style="list-style-type: none"><li>R-value improved</li><li>filled cavity</li></ul></div><div></div></div>	<div><div>STEP 4.1</div><div><ul style="list-style-type: none"><li>R-value improved (as in STEP 4.0)</li><li>40mm external insulation</li><li>cavity gap</li></ul></div><div></div></div>	<div><div>STEP 4.2</div><div><ul style="list-style-type: none"><li>R-value (as in STEP 0)</li><li>40m external insulation</li><li>cavity gap</li></ul></div><div></div></div>	<div><div>STEP 4.3</div><div><ul style="list-style-type: none"><li>R-value improved (higher than STEP 4.0)</li><li>40mm external insulation</li><li>filled cavity</li></ul></div><div></div></div>	<div><div>STEP 4.4</div><div><ul style="list-style-type: none"><li>R-value (as in STEP 0)</li><li>cavity gap (external)</li></ul></div><div></div></div>	<div><div>STEP 4.5</div><div><ul style="list-style-type: none"><li>R-value improved (as in STEP 4.0)</li><li>40mm external insulation</li><li>cavity gap (external)</li></ul></div><div></div></div>	<div><div>STEP 4.6</div><div><ul style="list-style-type: none"><li>R-value (as in STEP 0)</li><li>40mm external insulation</li><li>cavity gap (external)</li></ul></div><div></div></div>