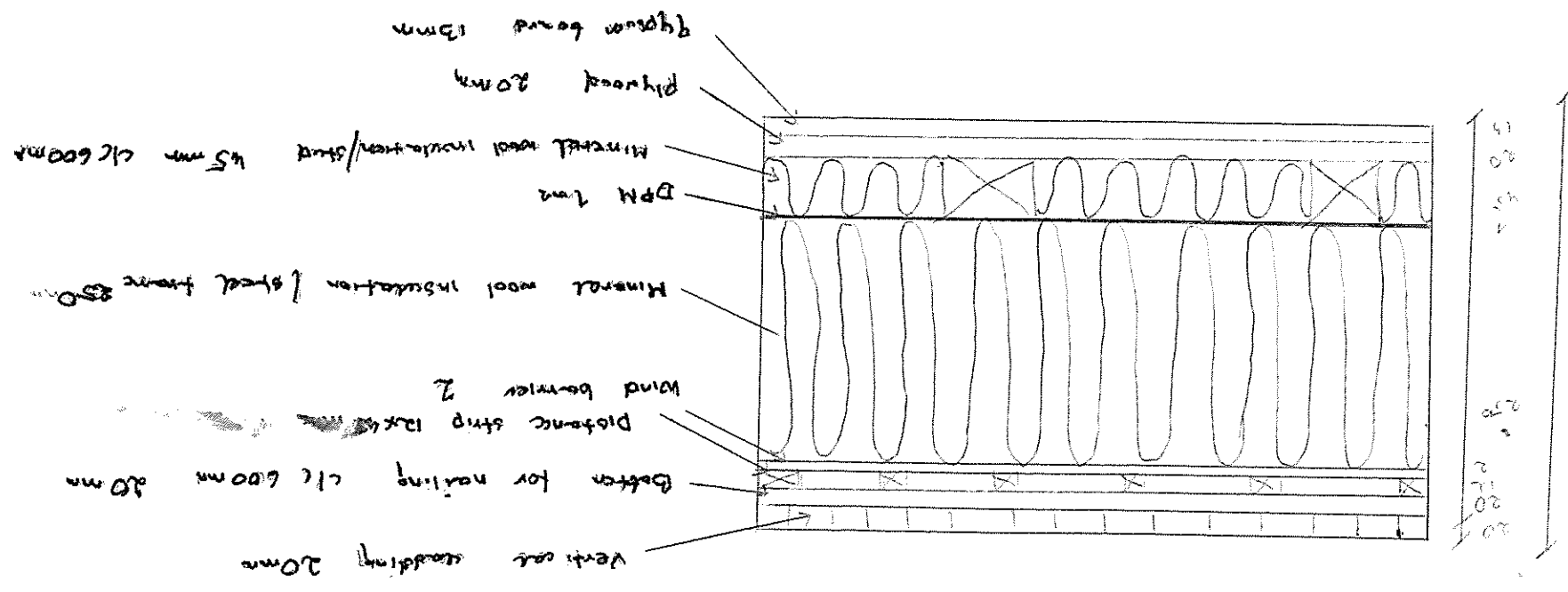


U-value = $0.20 \text{ W/m}^2\text{K}$ (acc. B10, table 4.2 p.137) (insulation 250mm p.205)

Vertical cladding: I choose vertical cladding because it will be easier to cut if for opening) and it looks better.
 Batten for nailing
 Distance strip: 12x45mm (all timber frame house p.20)

plywood: I decided to use it under gypsum board because it will be easier to mount sth on the wall without penetrating DPM having risk of gypsum board = to cover the plywood.



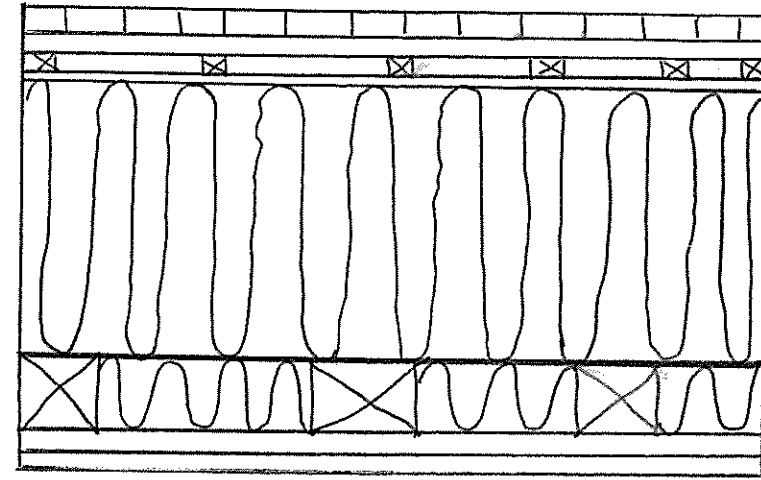
Fire: According TRAE 66 building can not be made out of wood.

U-value:

- 0,20 W/m²K (BR10, p.137)
ins. 250 mm p. 205

Moisture:

- All wood for external cladding is assumed to have 18% \pm 2% moisture content.
- All wooden structures are supposed to have 18% \pm 2% of moisture content.
- All wooden external doors and windows is assumed delivered in conformity with "Vinduesindustriens Tekniske Bestemmelser".
- rain screen - divert any precipitation falling on the building
- ventilation - removes water vapour penetrating the wall from inside by diffusion
- distance between rain screen and distance \geq 20 mm (reduce counter batten to 12 mm)
- metal flashing - (height of min. 50 mm)
distance from rain \pm screen to flashing
5-6 mm
* slope 1:5
- bitumen felt along the bottom of windows and doors
- DPM - 1/2 of wall thickness
- vapour barrier - all joints have to be airtight (glued or taped, clamped)



Strength class:

Sound:

- insulation will reduce some airborne sound (battys introduction)
- connection between external wall and internal wall:
* there must not be a contact between 2 walls
* assembly profiles on inside side of an outer wall have to be interrupted opposite the apartment division, so that they do not short-circuit the double plate wall (SB1 237 p. 14)
- wall and storey partition:
* use elastic joints
* leave a small gap from wall to floor (20 mm)

- R'_w \geq 55 dB, K'_w \geq 53 dB
(BS 480, p. 8)

Functional requirements:

- * strength and stability
- * resistance to weather and ground moisture
- * durability and freedom from maintenance
- * fire safety
- * resistance to the passage of heat
- * resistance to airborne and impact sound
- * security
- * aesthetics

Strength and stability:

- * bigger denser with hard wood than with softwood
- * strength is also affected by defects in timber such as knots, shakes, wane and slope of the grain of the wood

Fire safety:

- + unprotected areas: windows, doors, and those parts of wall that may have less than a national fire resistance.
- * the connecting external and party wall cavity barriers must be sealed to prevent the passage of smoke and fire.
- + adding mass $K_1, 10 D - 2, d_2$ (class 2 adding)
- + E1 E0 (non-load-bearing, separating)
- + ~~E1 E0~~ next to big windows (load-bearing, non-separating)

Resistance to the passage of heat:

- * timber is a good insulator
- * the layer of insulation is fixed either between the vertical studs of the frame or on the outside or inside of the framing
- * U-value of the timber stud is less than that of the insulation material, there will be a small degree of thermal bridge across the stud.

U-value:

* $0.20 \text{ W/m}^2\text{K}$

Sound:

* airborne sound 55 dB

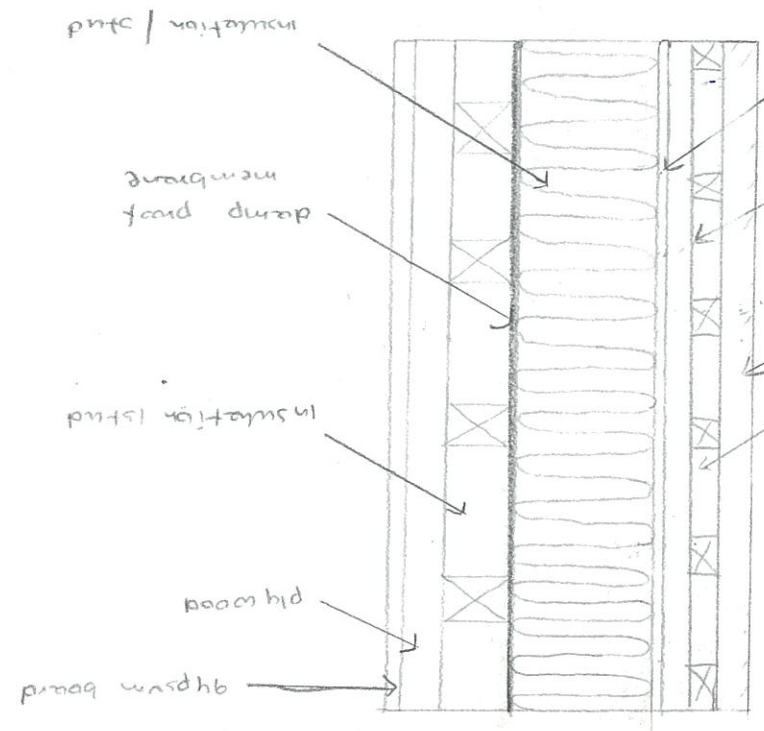
counter battens

adding

distance

dist

condensating layer



0.20 0.11 0.25 0.45 0.13

Resistance to the passage of sound:

- * the small mass of timber-framed wall affords little resistance to airborne sound, but doesn't really conduct impact sound
- * insulation will give reaction to impact sound
- * big problem through the windows and door
- * acoustic board or a plasterboard will reduce the sound transmission bc stepped and effective, joints should be staggered and to make sure that boards are not be cut into the board and no services should scatter, holes should not be cut into the board and no services should
- * inorganic materials are most used for insulation between the studs because there is no advantage in using the more expensive organic materials - rockwool

Vapour check:

- * high level of insulation required for walls may well encourage moisture vapour held by warm inside air, particularly in bathrooms and kitchens, to find its way due to moisture vapour pressure into a timber-framed wall and condense to water on cold side of the insulation
- * to prevent overheating of electrical wires that run through insulation, the wires should be derated by a factor of 0.75 by using larger cables than specified which will generate less heat.