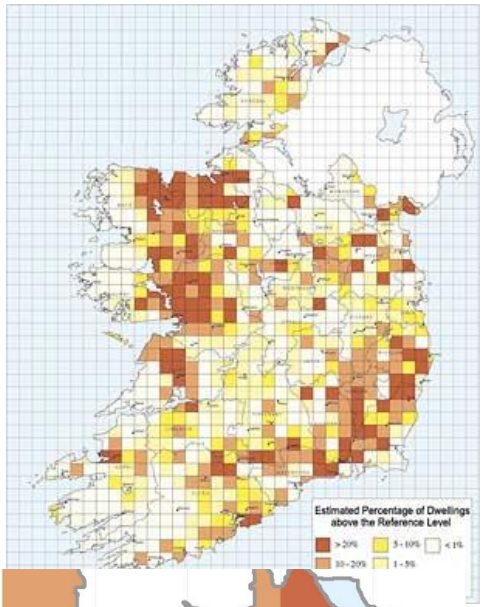
Floors and Radon Barriers

Radon

- *Tasteless*
- *Colourless*
- *Odourless*
- *Radioactive gas*
- *Given off by the decay of radioactive material*

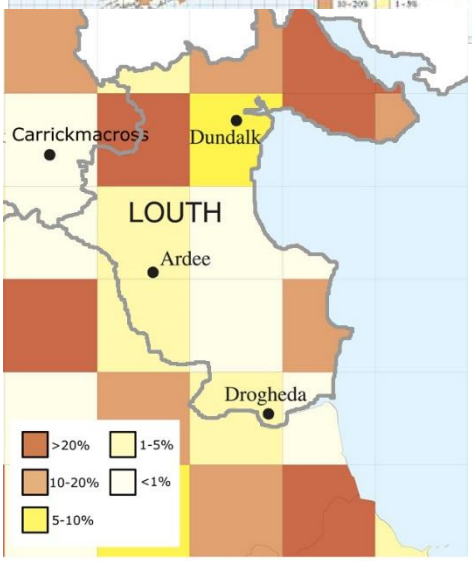
Radon enters a building :

- *Cracks through the walls and floors*
- *Gaps in floors and around services*
- *Junctions between floors and walls*



Example of a Radon Map

The darker the area the greater the number of homes above the reference level for radon



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Radon System: Passive

Passive system

- A radon-proof membrane is laid down on top and is sealed at all junctions.

Result

- Radon given off under the house cannot pass above the layer of radon membrane.

Radon System: Active

Active system

- A void is created in the hardcore with a pipe leading to the exterior of the building.
- A radon-proof membrane is laid over the foundations similar to the passive system.
- A fan may also be attached to the pipe from the sump to aid ventilation.

Result

- Radon will find its way into the void from the hardcore and then filter out to the exterior along the pipe.

"Top hat" seal around services passing through the radon barrier

Ground Floors:

Solid floor

- Hardcore
- Blinding
- Radon barrier/DPM & DPC
- Insulation
- Sub floor

Suspended Timber Floor

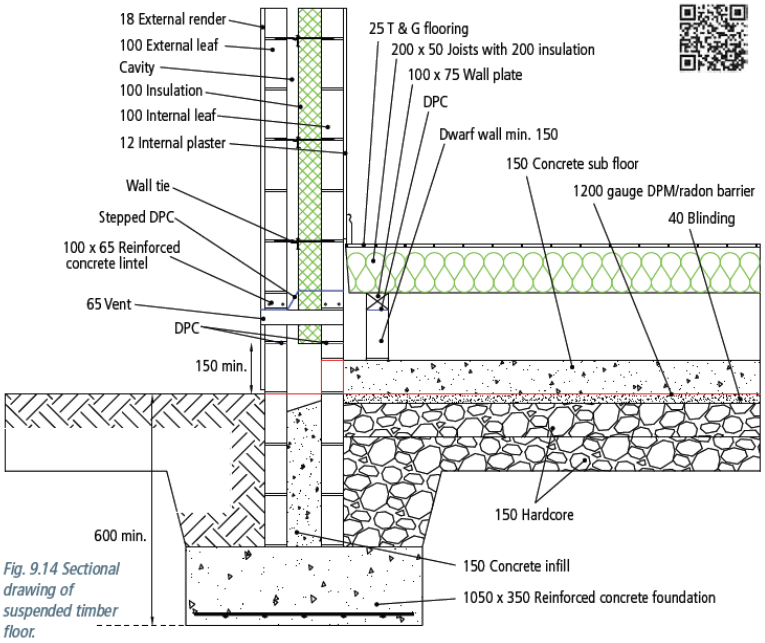
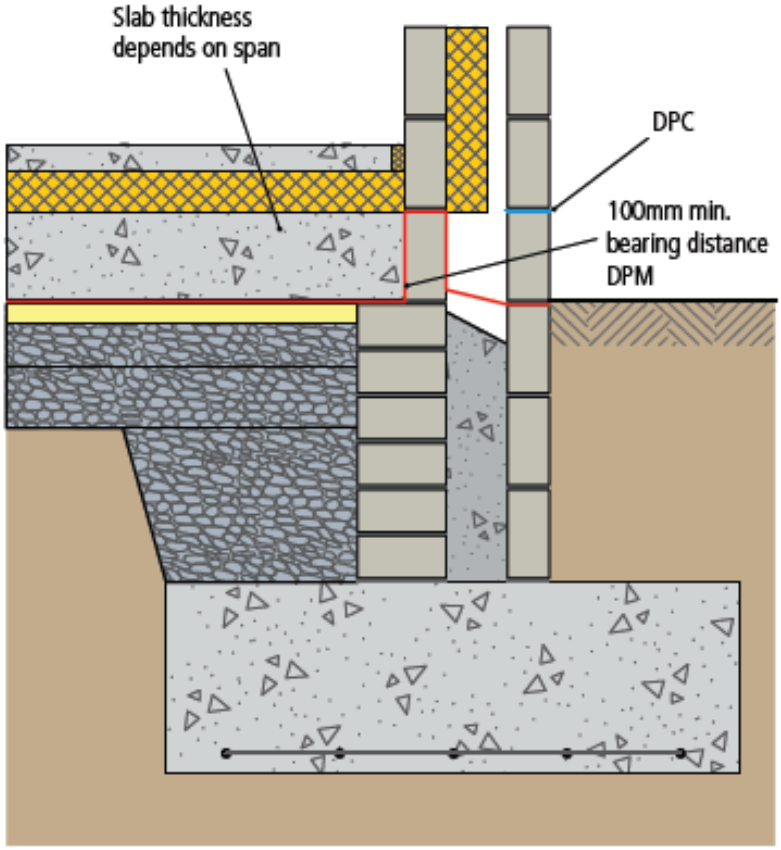


Fig. 9.14 Sectional drawing of suspended timber floor.

My Sketch



Suspended Concrete Floor

Quick Sketch

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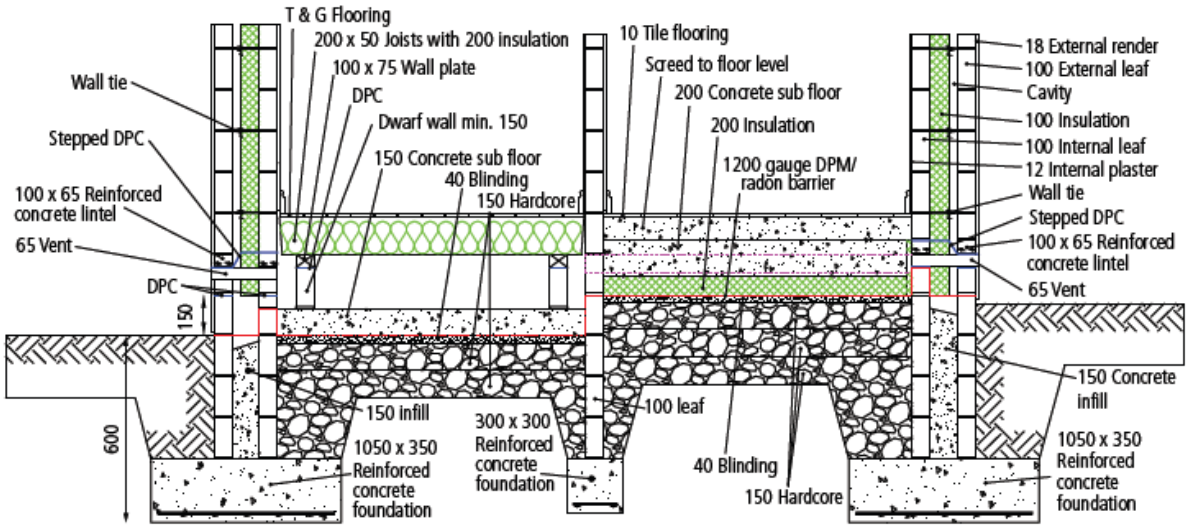
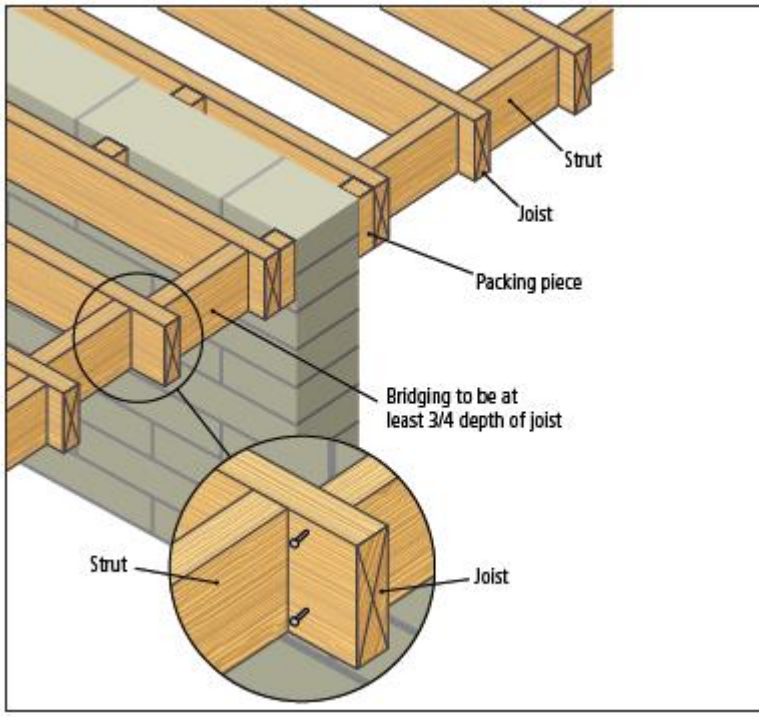
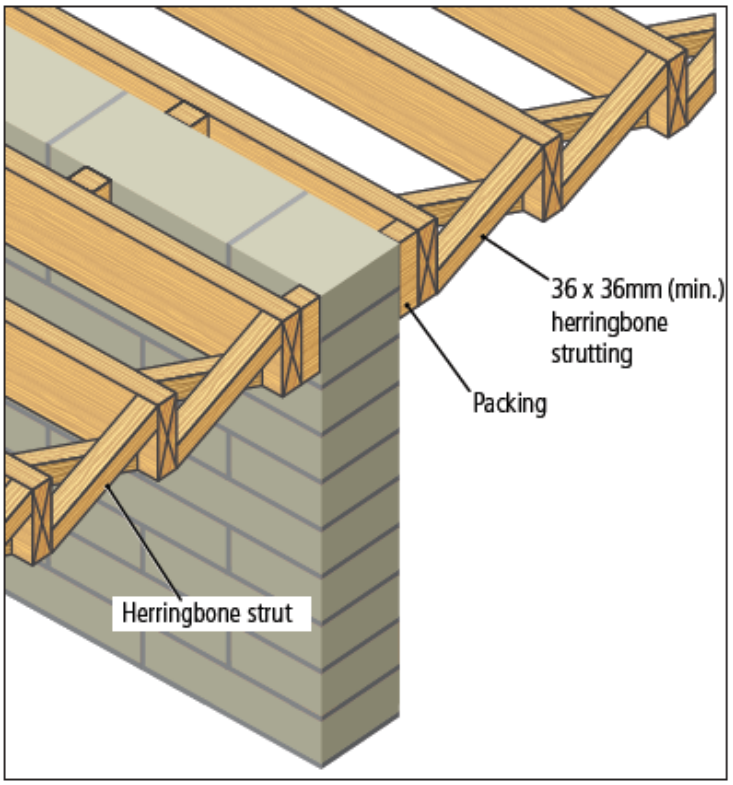

T & G Flooring
200 x 50 Joists with 200 insulation
100 x 75 Wall plate
DPC
Dwarf wall min. 150
150 Concrete sub floor
40 Blinding
150 Hardcore
Wall tie
Stepped DPC
100 x 65 Reinforced concrete lintel
65 Vent
DPC
150
600
150 infill
1050 x 350 Reinforced concrete foundation
300 x 300 Reinforced concrete foundation
10 Tile flooring
Screed to floor level
200 Concrete sub floor
200 Insulation
1200 gauge DPM/ radon barrier
100 leaf
40 Blinding
150 Hardcore
18 External render
100 External leaf
Cavity
100 Insulation
100 Internal leaf
12 Internal plaster
Wall tie
Stepped DPC
100 x 65 Reinforced concrete lintel
65 Vent
150 Concrete infill
1050 x 350 Reinforced concrete foundation

My Sketch

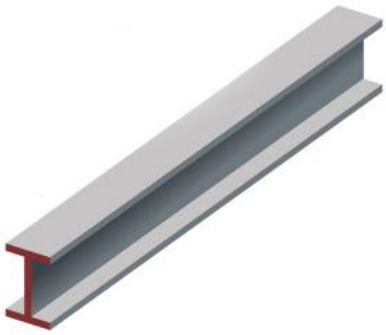
Solid Bridging



Herringbone Bridging



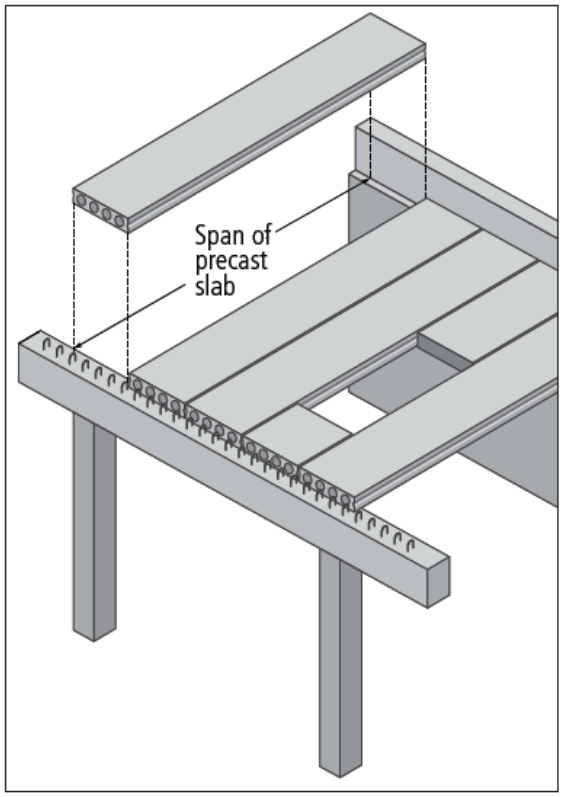
I-Joists



- Laminated veneered lumber (LVL)
- Orientated strand board (OSB)
- Beam-bearing details:
  - Om wall
  - Wall hanger

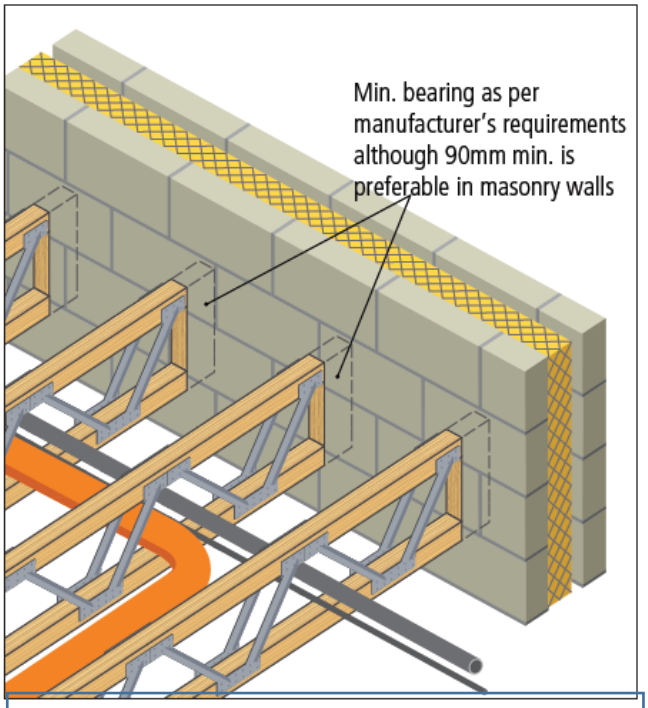
Alternative Floors

Concrete



My Sketch

Timber and Steel open web joist



My Sketch

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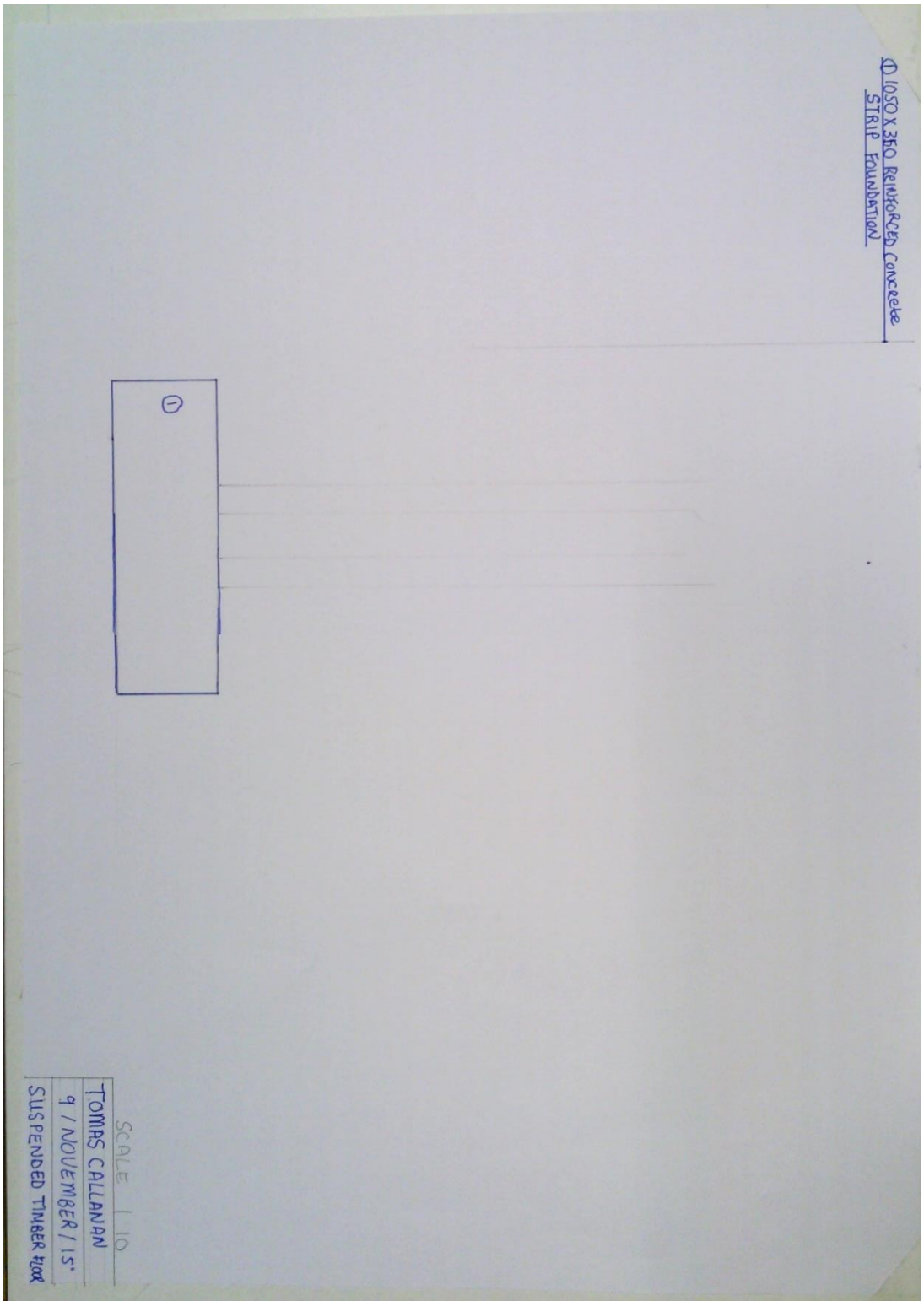
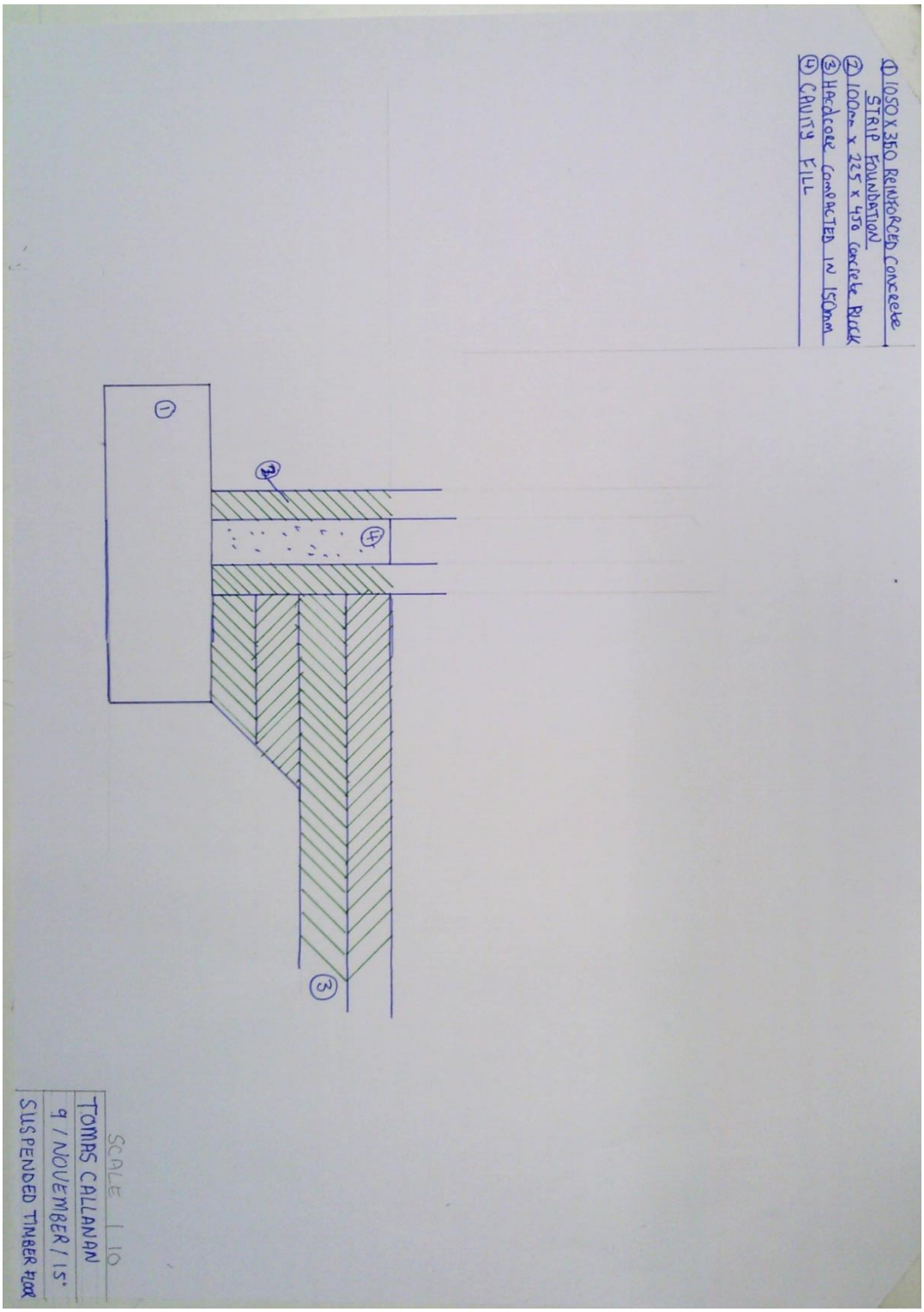
Suspended Timber Floor Question 1 Compulsory

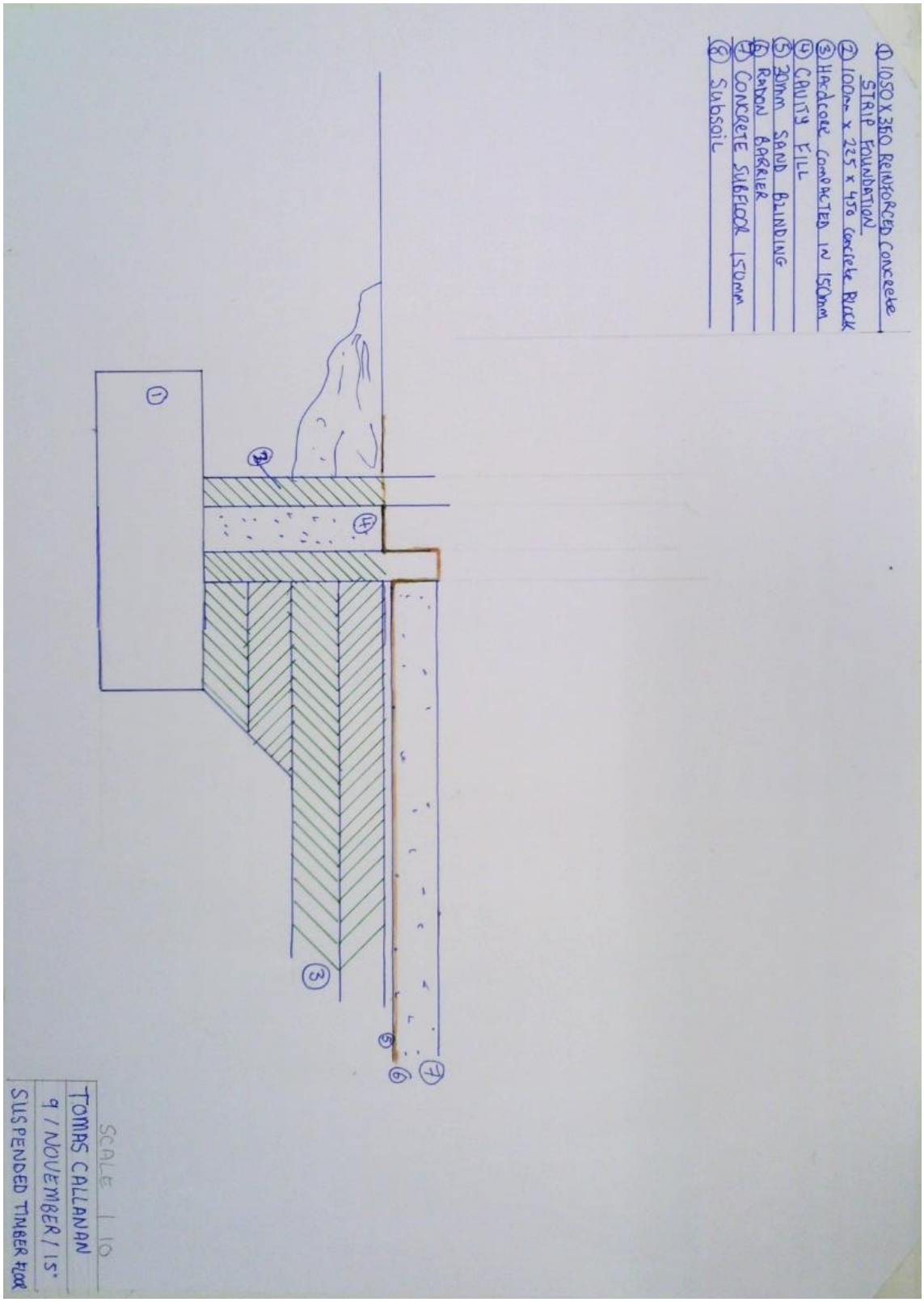
Step 1



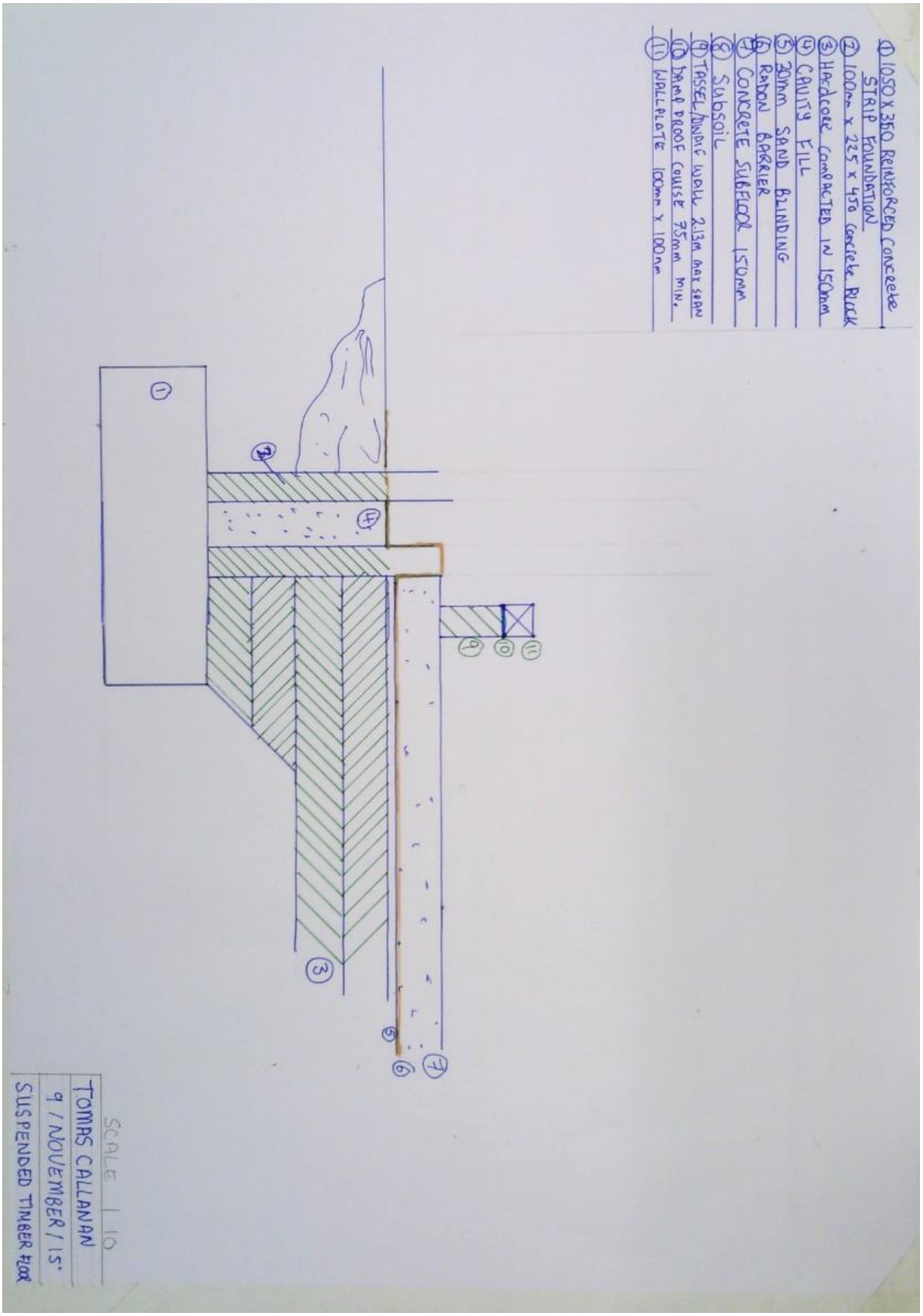
Step 2


1050 X 350 REINFORCED CONCRETE STRIP FOUNDATION
100mm x 225 x 450 CONCRETE BLOCK
HARDCORE COMPACTED IN 150mm
CAVITY FILL
SCALE 1:10
TOMAS CALLANAN
9 / NOVEMBER / 15'
SUSPENDED TIMBER FLOOR

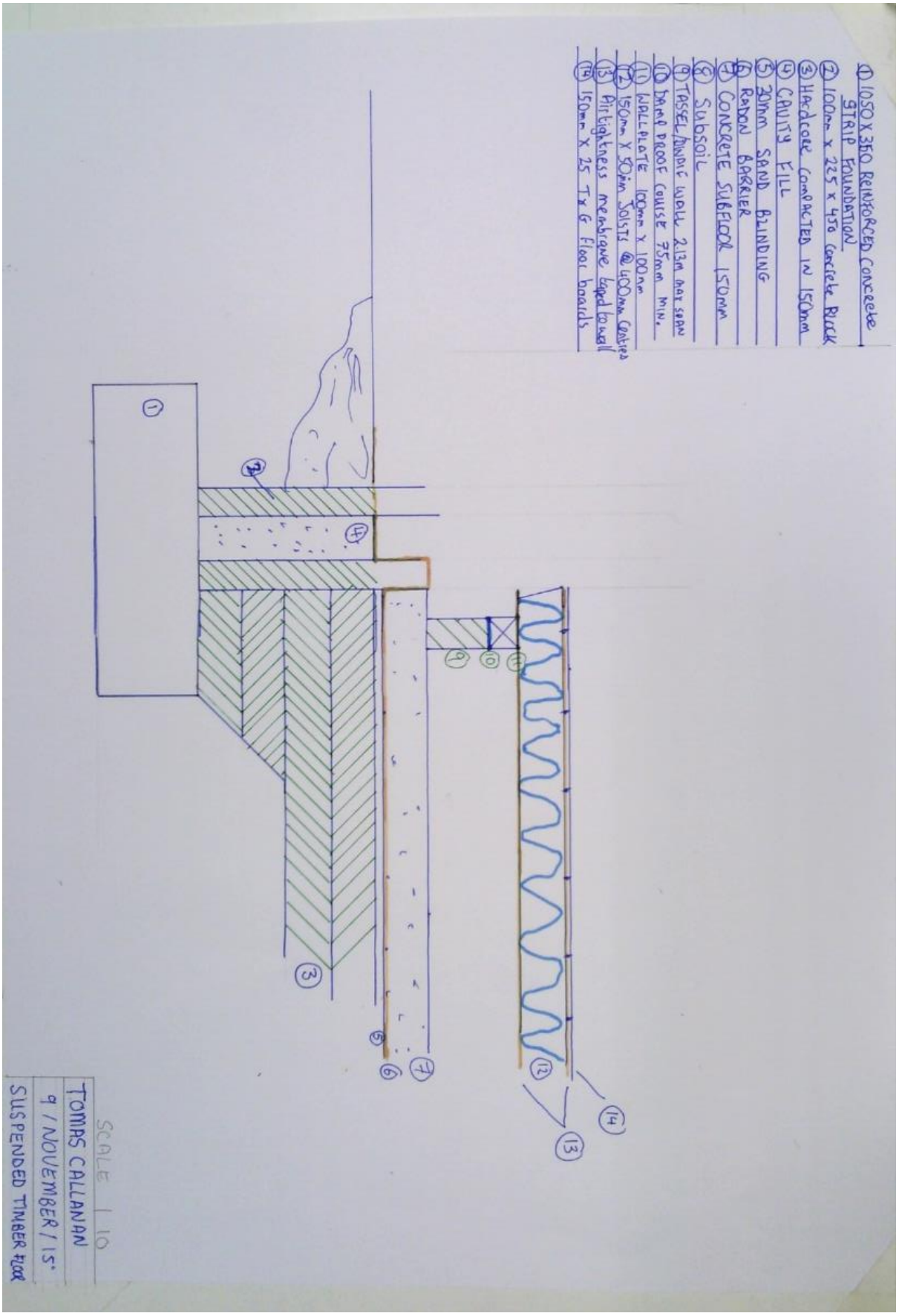
Step 3


1050 X 250 REINFORCED CONCRETE STRIP FOUNDATION
100mm x 225 x 450 concrete BLOCK
HARDCORE COMPACTED IN 150mm
CAVITY FILL
20mm SAND BLINDING
RADON BARRIER
CONCRETE SUBFLOOR 150mm
SUBSOIL
SCALE 1:10
TOMAS CALLANAN
9 / NOVEMBER / 15'
SUSPENDED TIMBER FLOOR

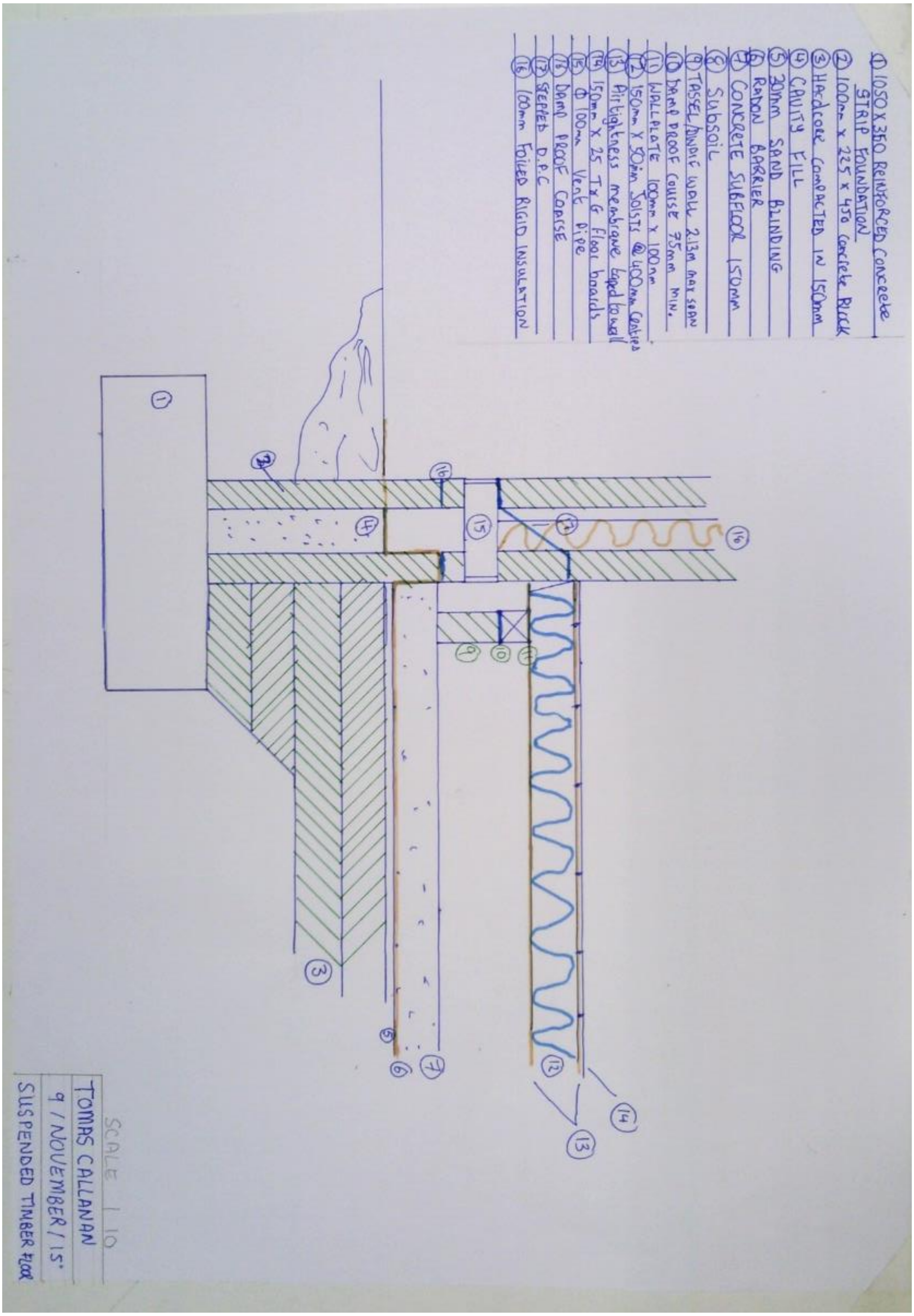
Step 4


1050 X 350 REINFORCED CONCRETE STRIP FOUNDATION
2 100mm x 225 x 450 Concrete Block
3 Hardcore compacted in 150mm
4 CAVITY FILL
5 20mm SAND BLINDING
6 RADON BARRIER
7 CONCRETE SUBFLOOR 150mm
8 Subsoil
9 TASSEL/TIMBER WALL 2.13m MAX SPAN
10 DAMP PROOF COURSE 75mm MIN.
11 WALLPLATE 100mm x 100mm
SCALE 1:10
TOMAS CALLANAN
9 / NOVEMBER / 15'
SUSPENDED TIMBER FLOOR

Step 5


1050 X 350 REINFORCED CONCRETE STRIP FOUNDATION
100mm x 225 x 450 Concrete Block
Hardcore compacted in 150mm
CAVITY FILL
20mm SAND BLINDING
RADON BARRIER
CONCRETE SUBFLOOR 150mm
SUBSOIL
TASSEL/BUNDLE WALL 2.13m max span
DAMP PROOF COURSE 75mm min.
WALLPLATE 100mm X 100mm
150mm X 50mm JOISTS @ 400mm Centres
Airtightness membrane taped to wall
150mm X 25 Tx G Floor boards
SCALE 1:10
TOMAS CALLANAN
9 / NOVEMBER / 15'
SUSPENDED TIMBER FLOOR

Step 6



1 1050 X 350 REINFORCED CONCRETE STRIP FOUNDATION
2 100mm x 225 x 450 Concrete Block
3 Hardcore compacted in 150mm
4 CAVITY FILL
5 30mm SAND BLINDING
6 RADON BARRIER
7 CONCRETE SUBFLOOR 150mm
8 Subsoil
9 TASSEL/ANDIE WALL 2.13m max span
10 DAMP PROOF COURSE 75mm MIN.
11 WALLPLATE 100mm X 100mm
12 150mm X 50mm JOISTS @ 400mm Centres
13 Airtightness membrane taped to wall
14 150mm X 25 T&G floor boards
15 Ø 100mm Vent Pipe
16 DAMP PROOF COURSE
17 STEPPED D.P.C
18 100mm FOILED RIGID INSULATION
SCALE 1:10
TOMAS CALLANAN
9 / NOVEMBER / 15'
SUSPENDED TIMBER FLOOR

Final Drawing