

Politecnico di Milano

Polo Regionale di Lecco



Faculty of engineering

Master of Science in Architectural Engineering

Sport Center in Garlate, Italy

Relatore : Prof. Ezio Riva

Master Thesis by:

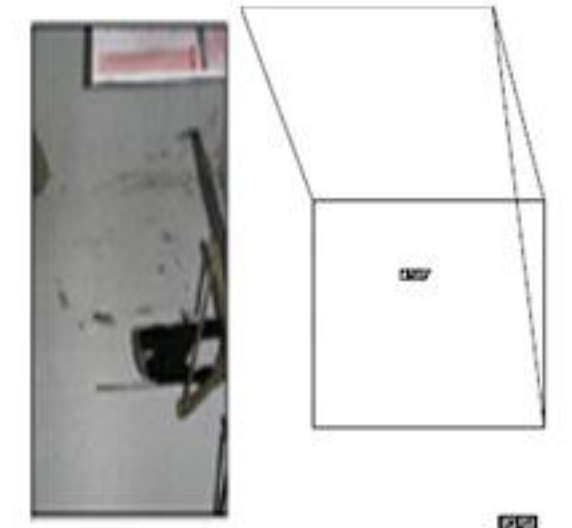
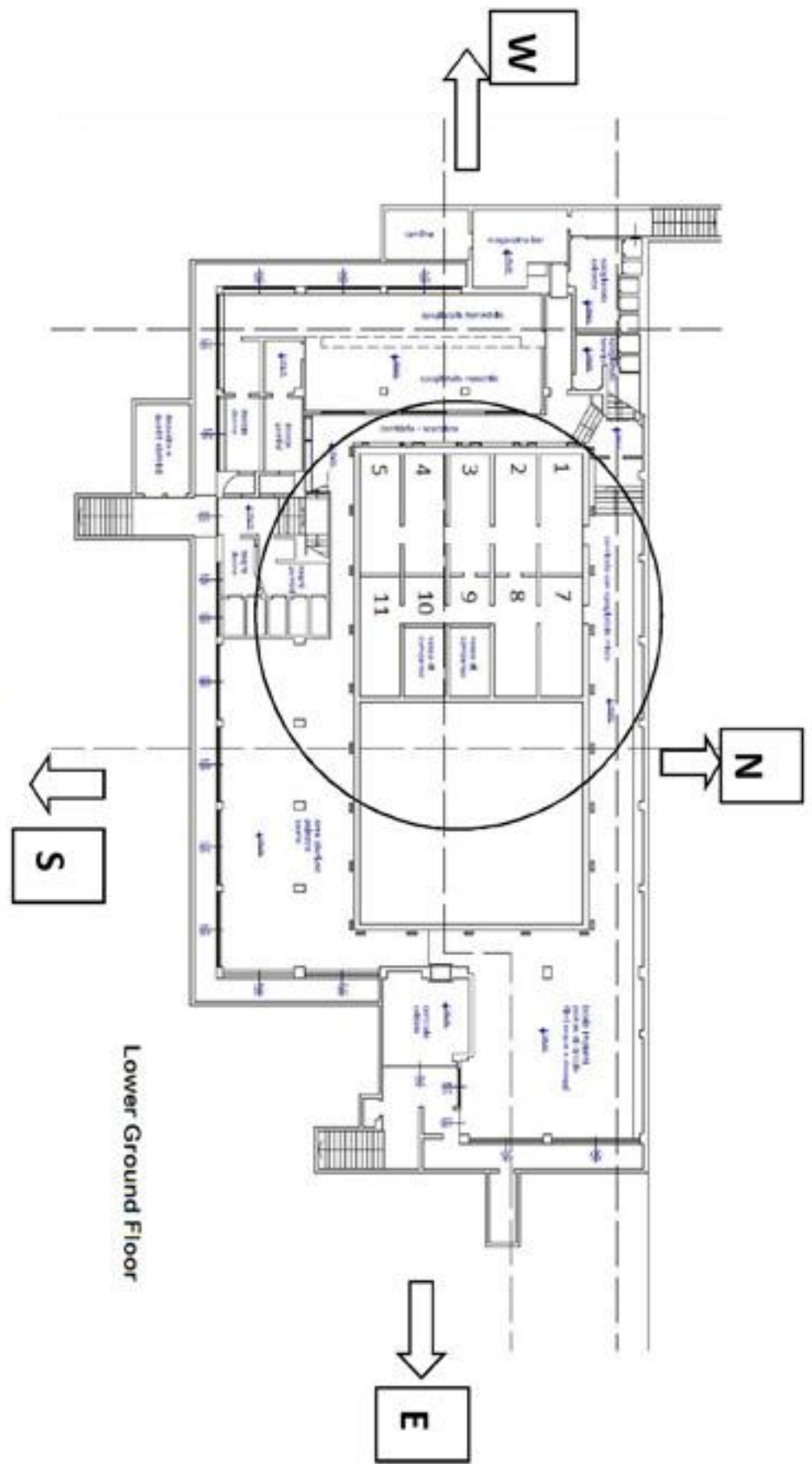
Wang Ruqian:737850

Zhang Yunfei: 73551



- 1** Residential housing
- 2** Children Playground
- 3** Water fountain- water play area
- 4** Public Parking Area : 78 positions
- 5** Lake deck
- 6** Parking Lot for Nautical Club
- 7** Extention of Municipal Gym
- 8** Basketball play ground
- 9** Tent Roofing
- 10** Sport Square



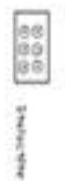


Spalling

SECTION 8-CEILING



Cracking



Spalling

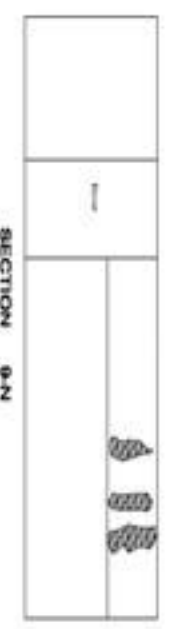
SECTION 9-CEILING



SECTION 9-GROUND



Spalling



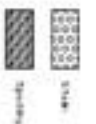
Spalling

SECTION 9-N



Cracking

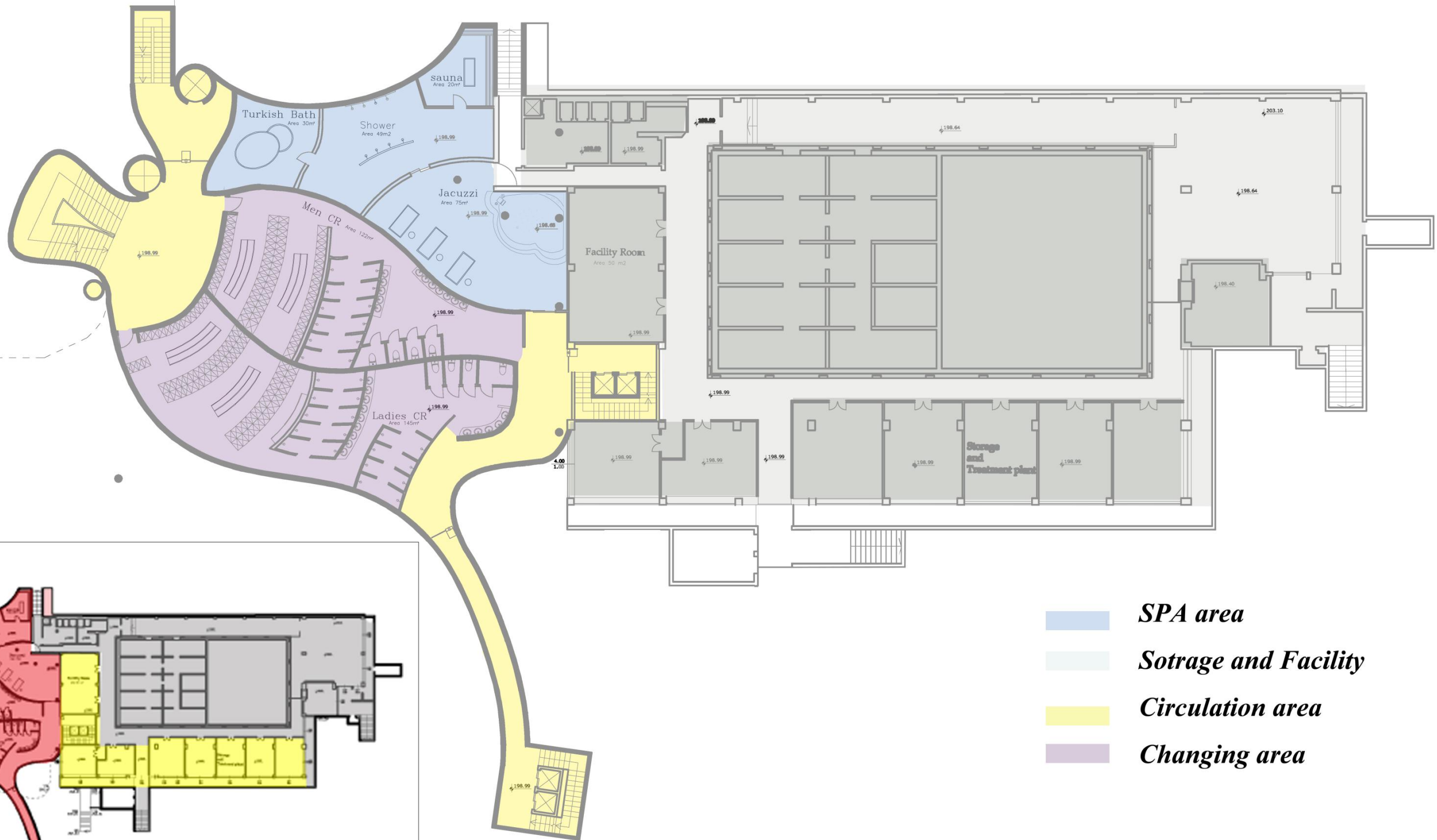
SECTION 9-E



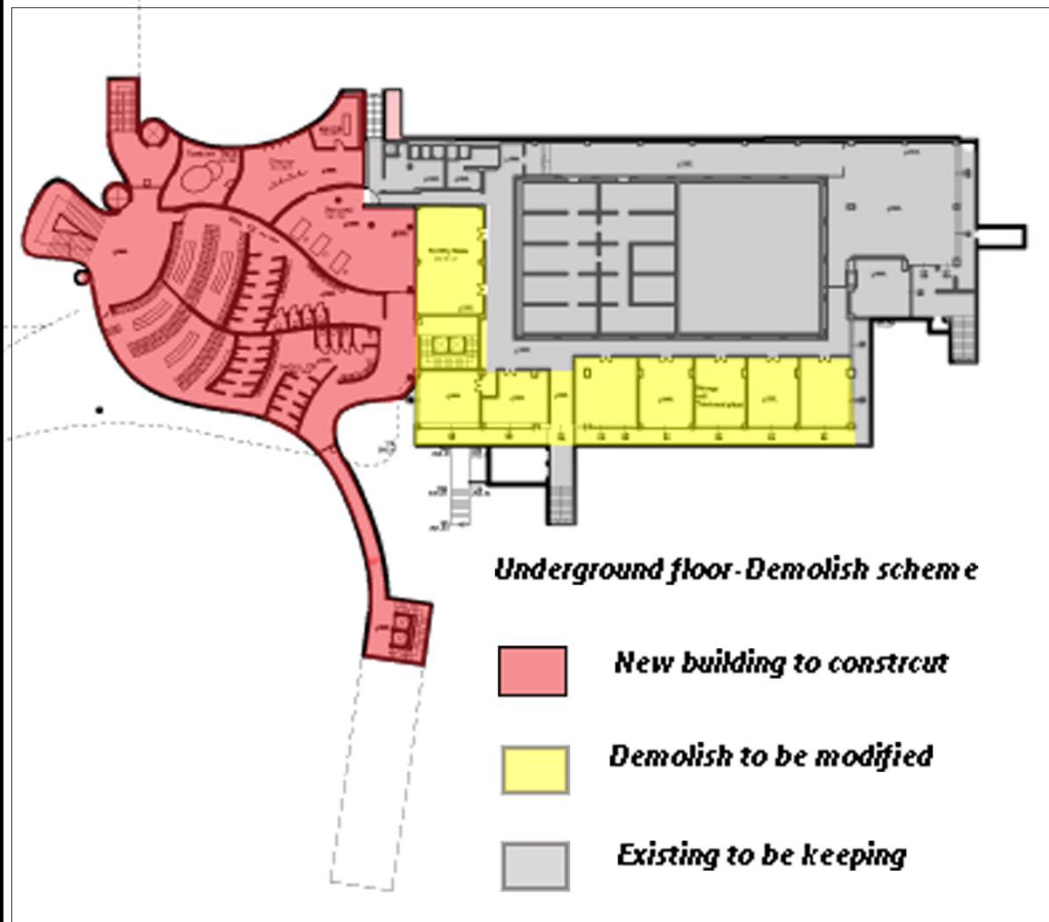
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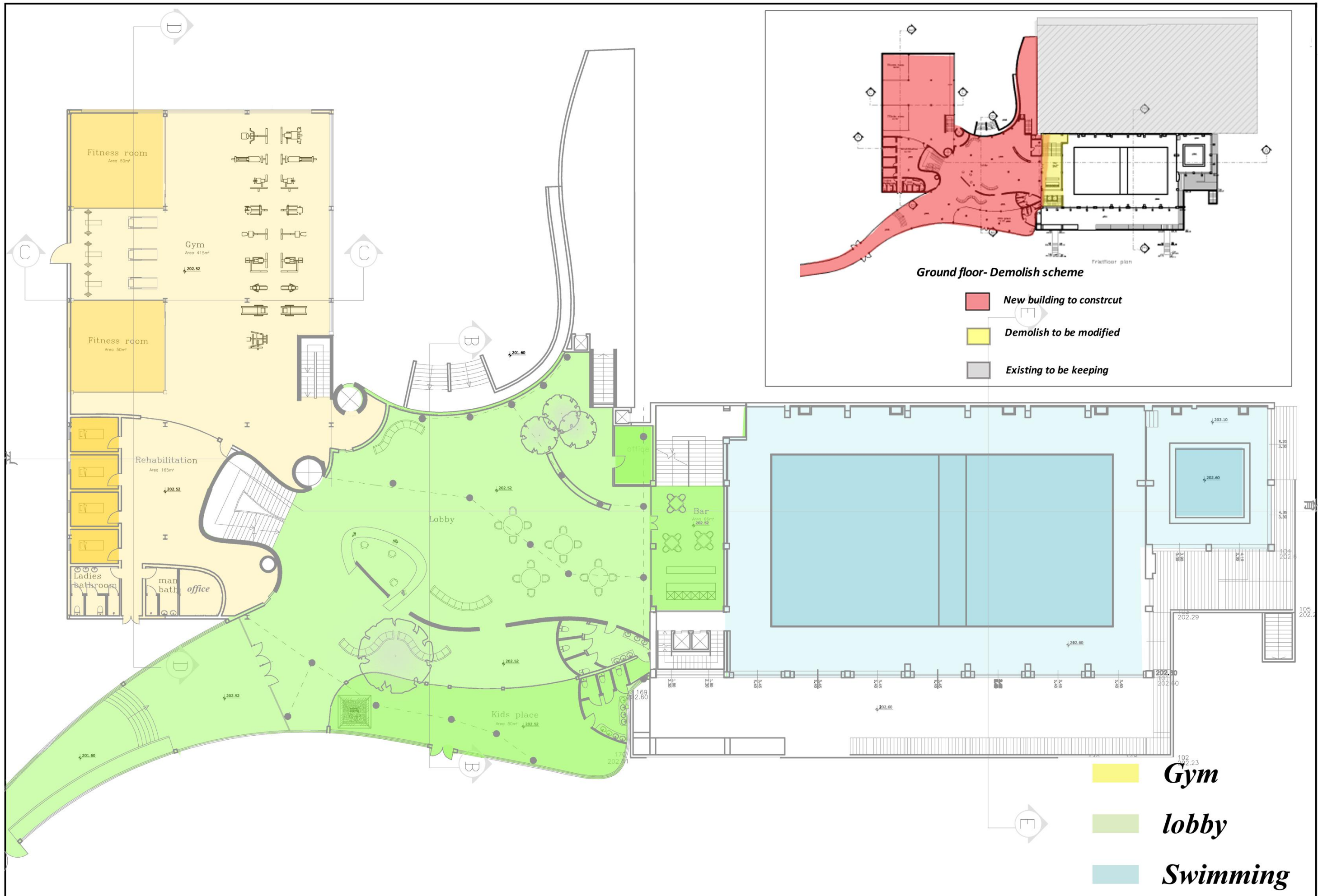
SECTION 1-N





- SPA area*
- Sotrage and Facility*
- Circulation area*
- Changing area*

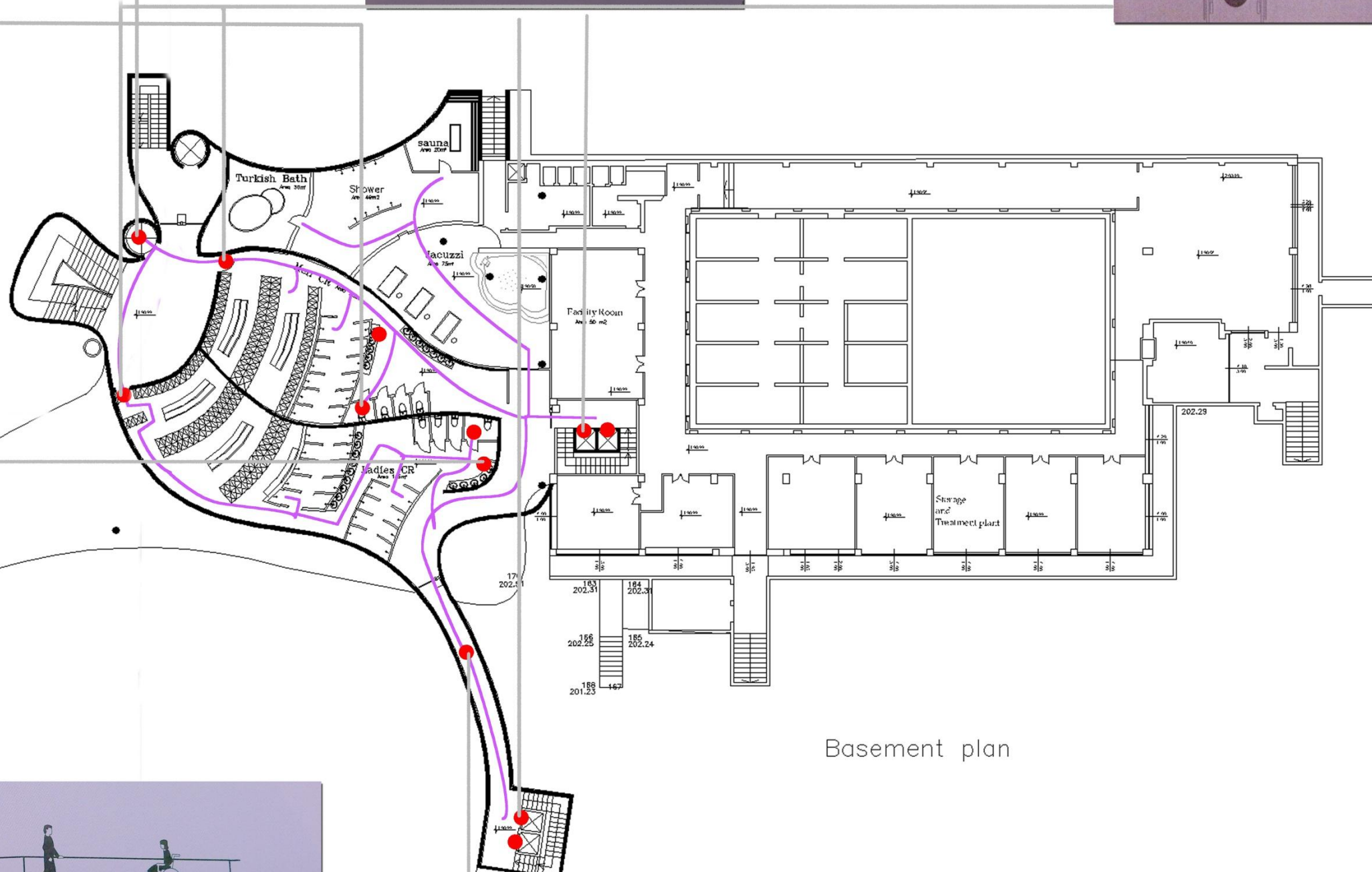
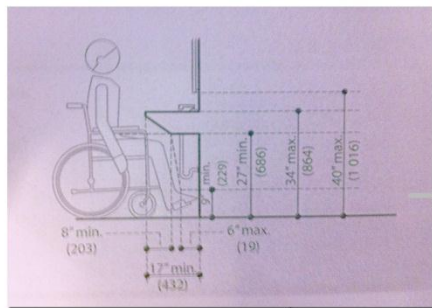
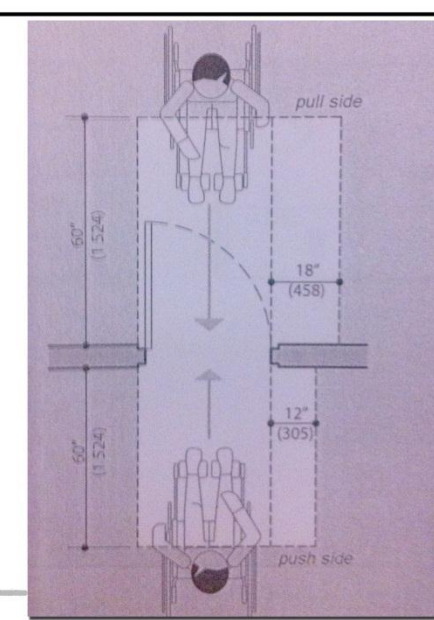
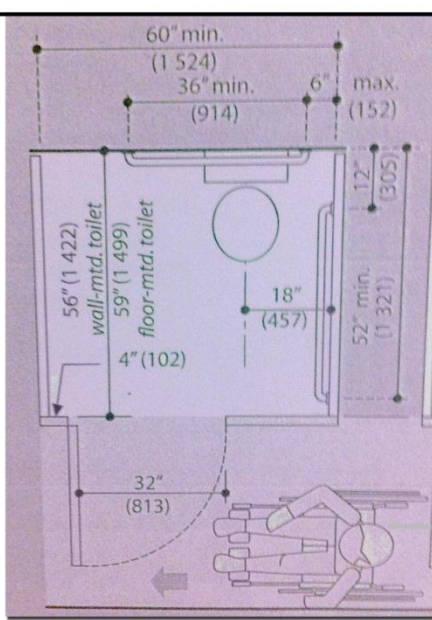




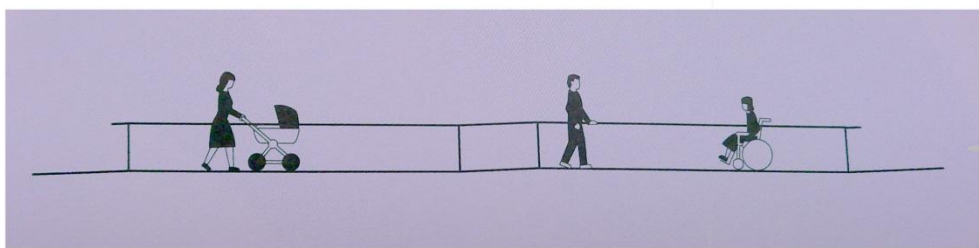


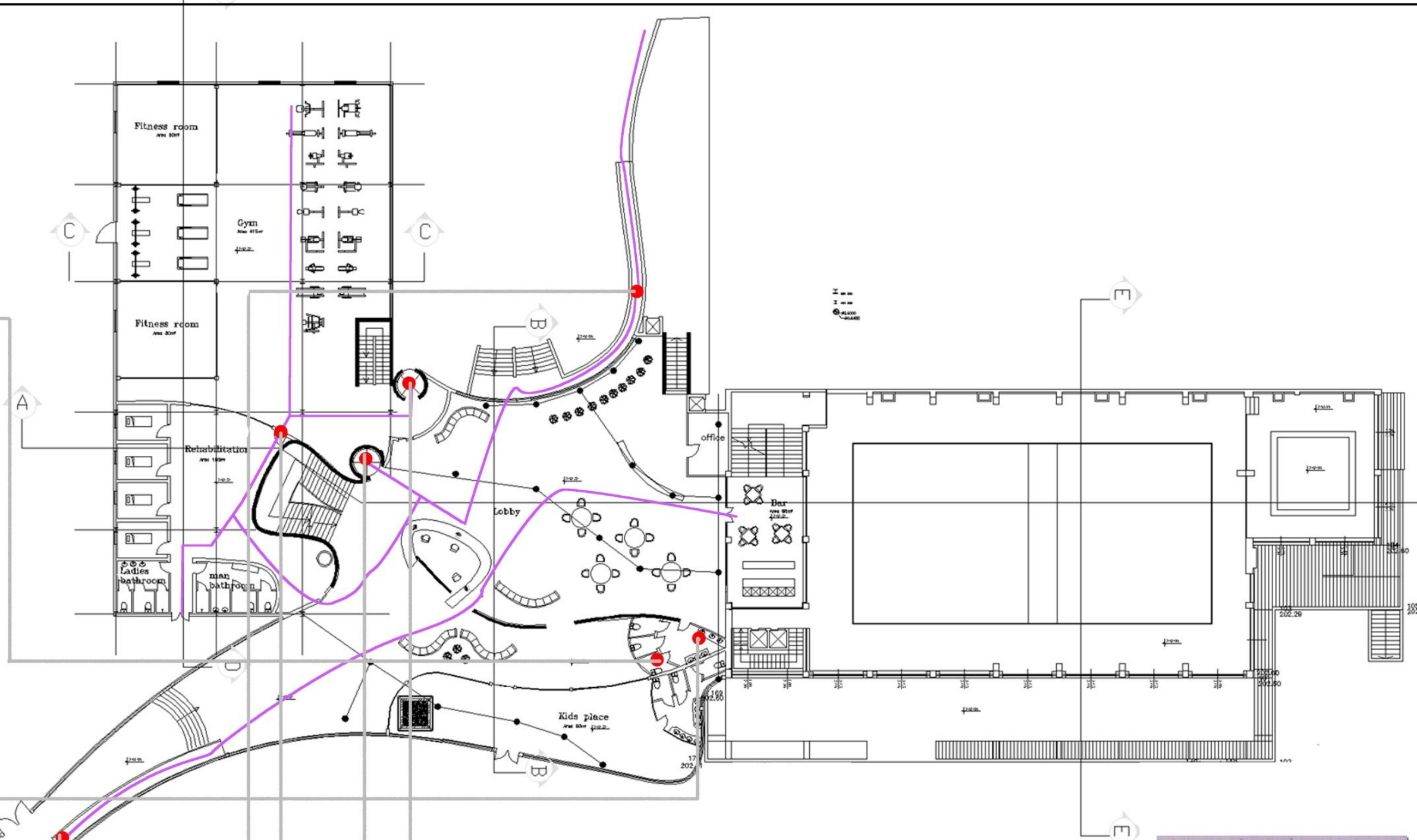
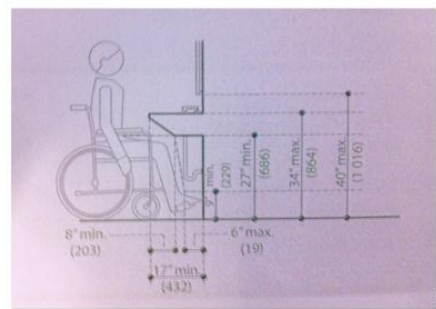
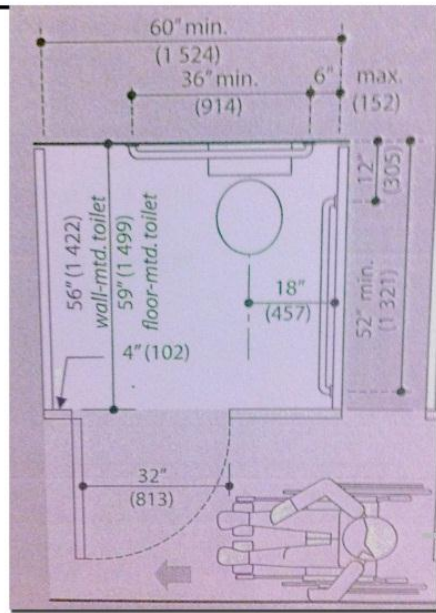
- Beauty Center*
- Restaurant*



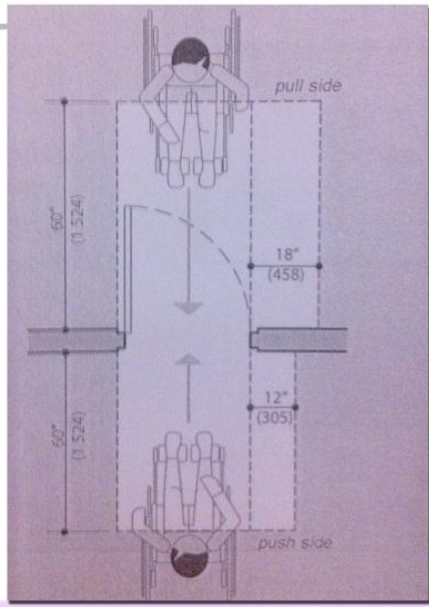
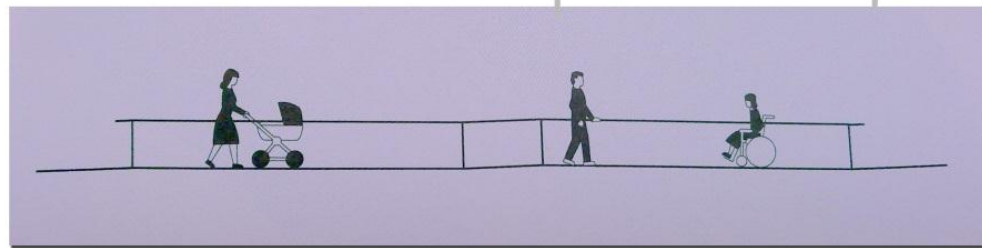


Basement plan



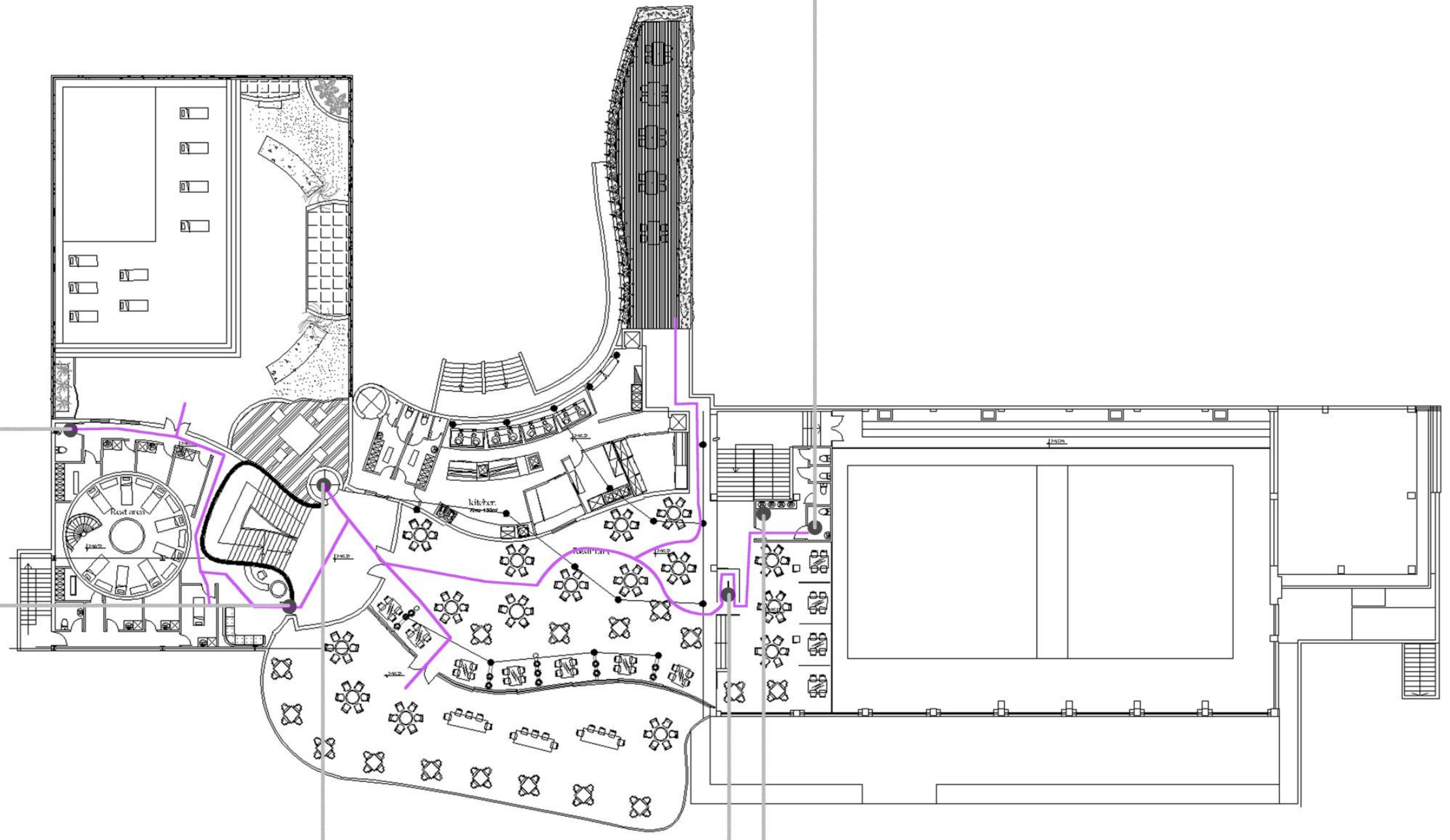
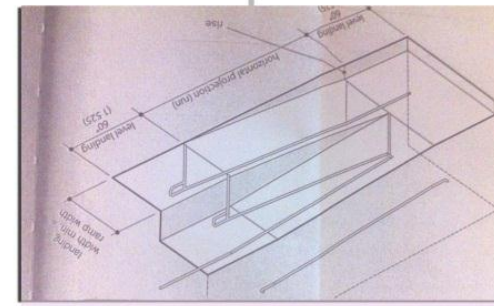
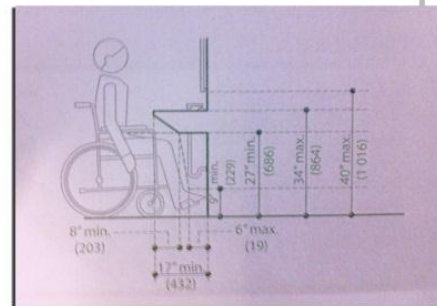
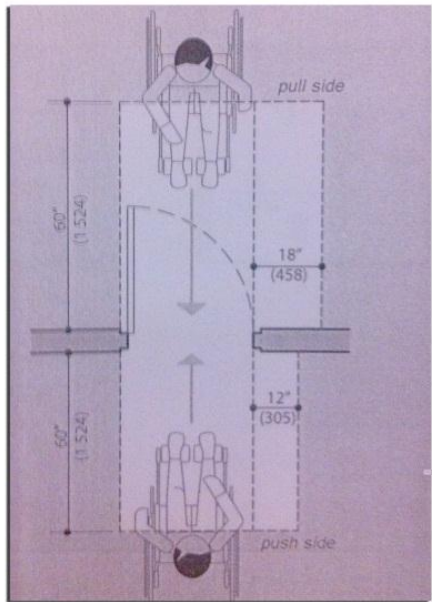
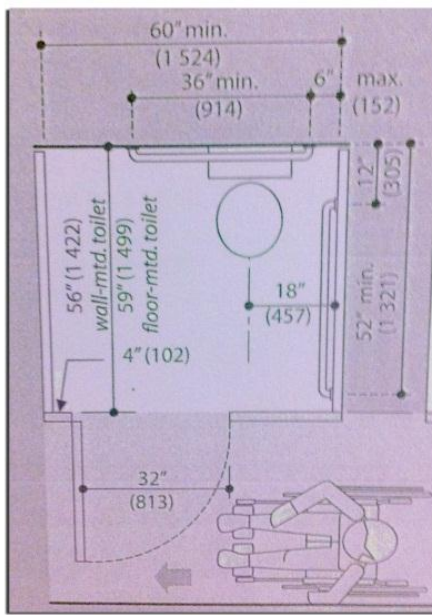


Ground Floor Plan



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Barrier Free Ground Floor
 Ruqian Wang & Yunfei Zhang

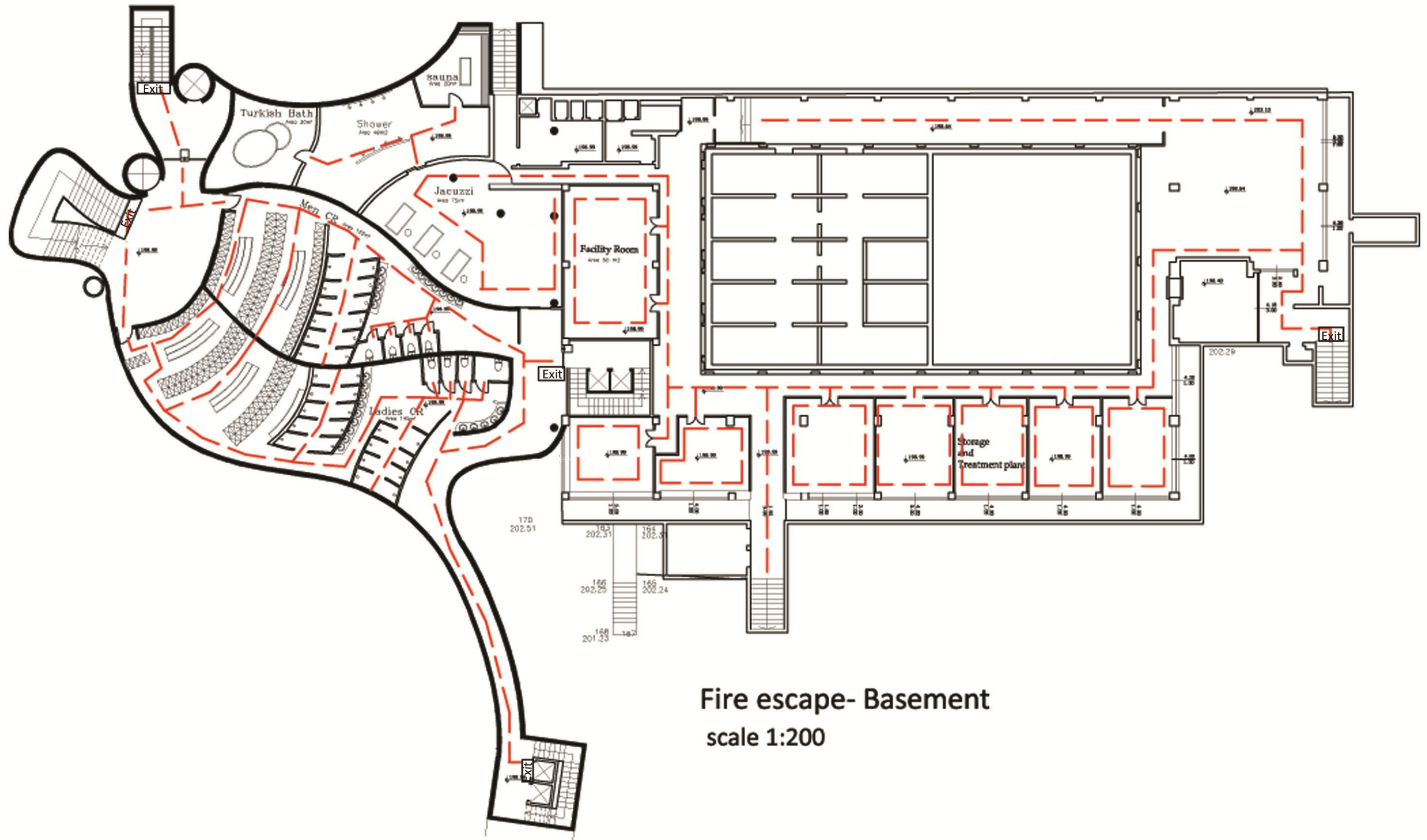


First Floor Plan



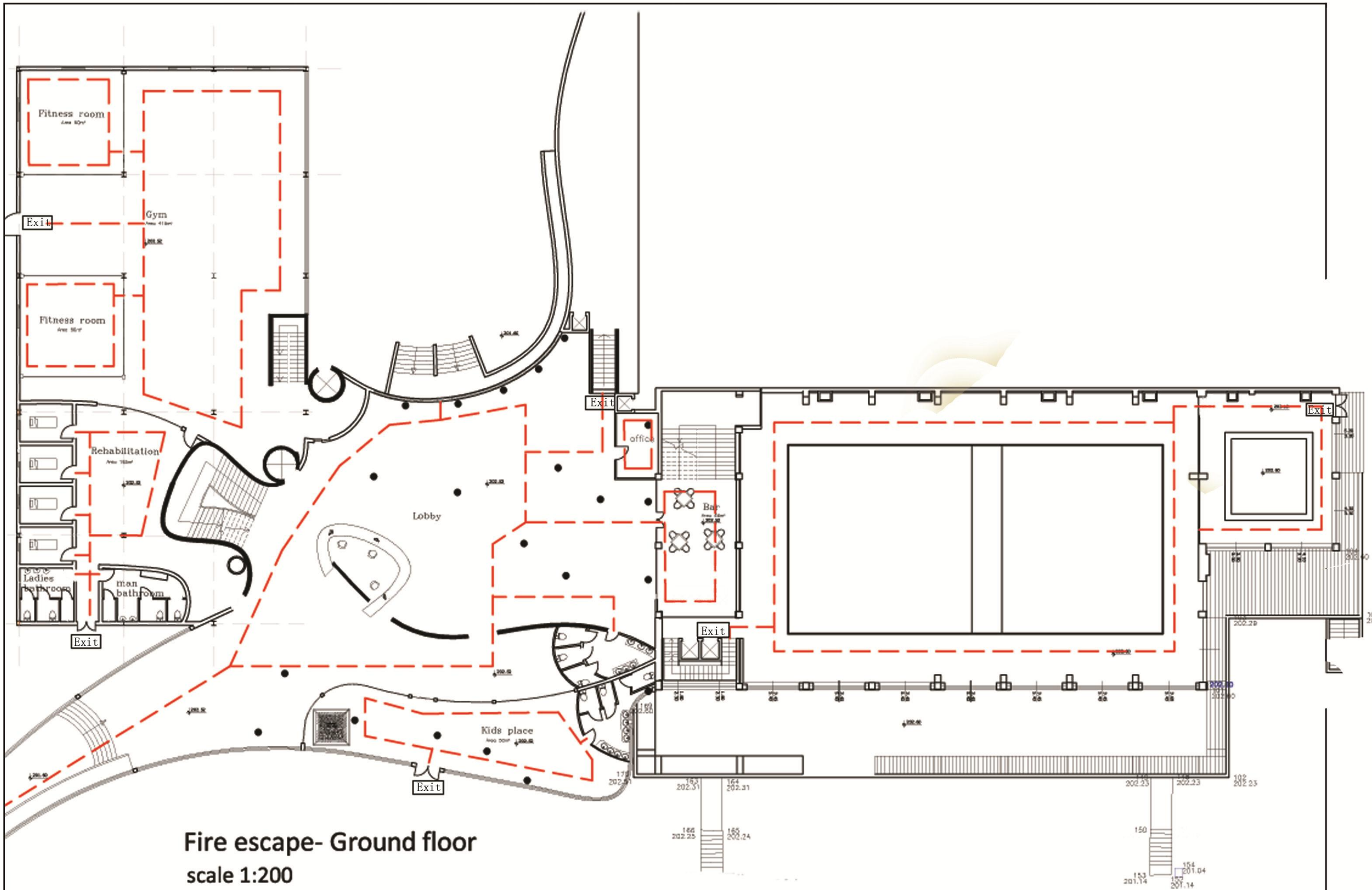
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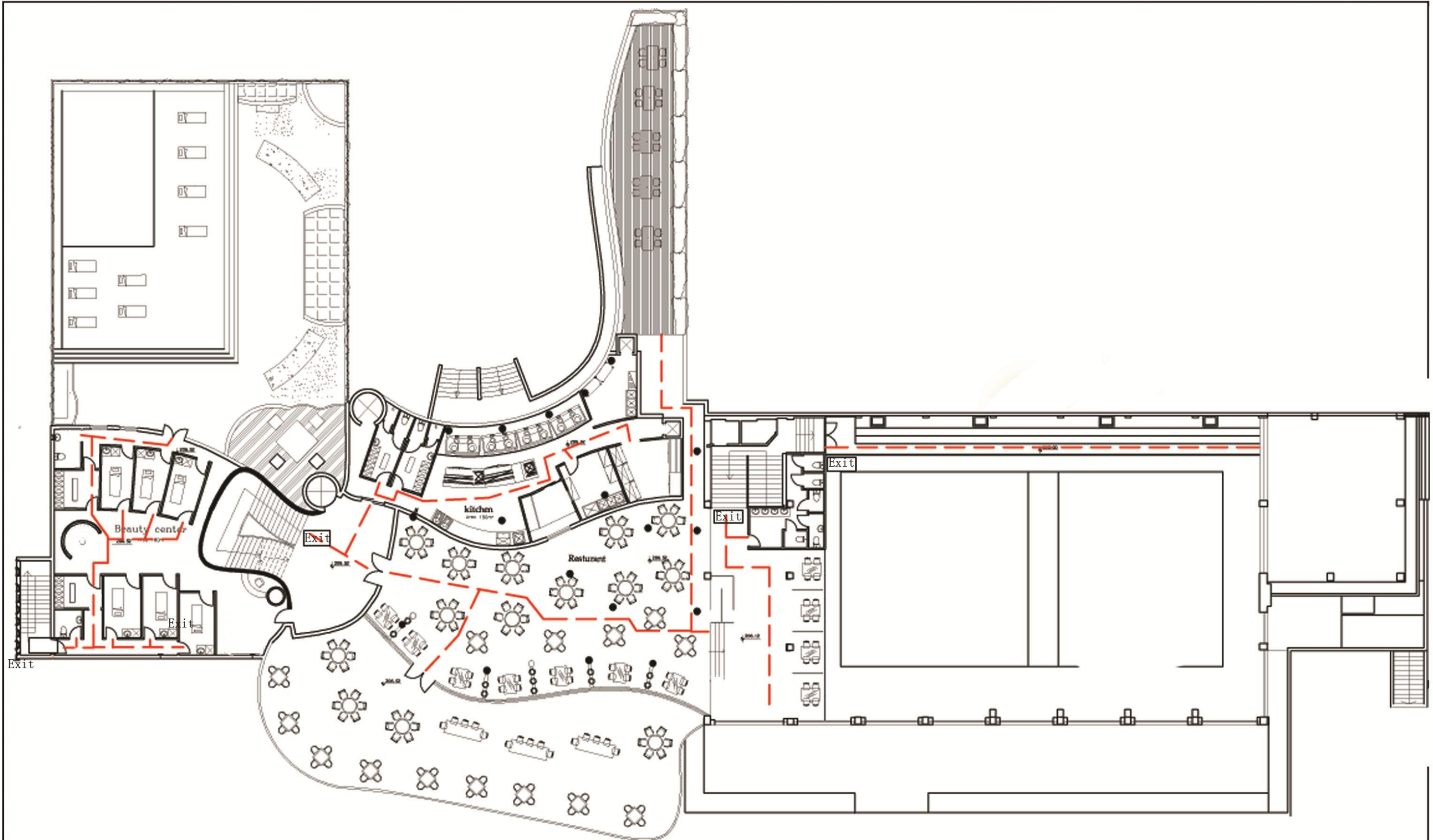
Barrier Free First Floor
Ruqian Wang & Yunfei Zhang



Fire escape- Basement
scale 1:200







Fire escape- Frist floor



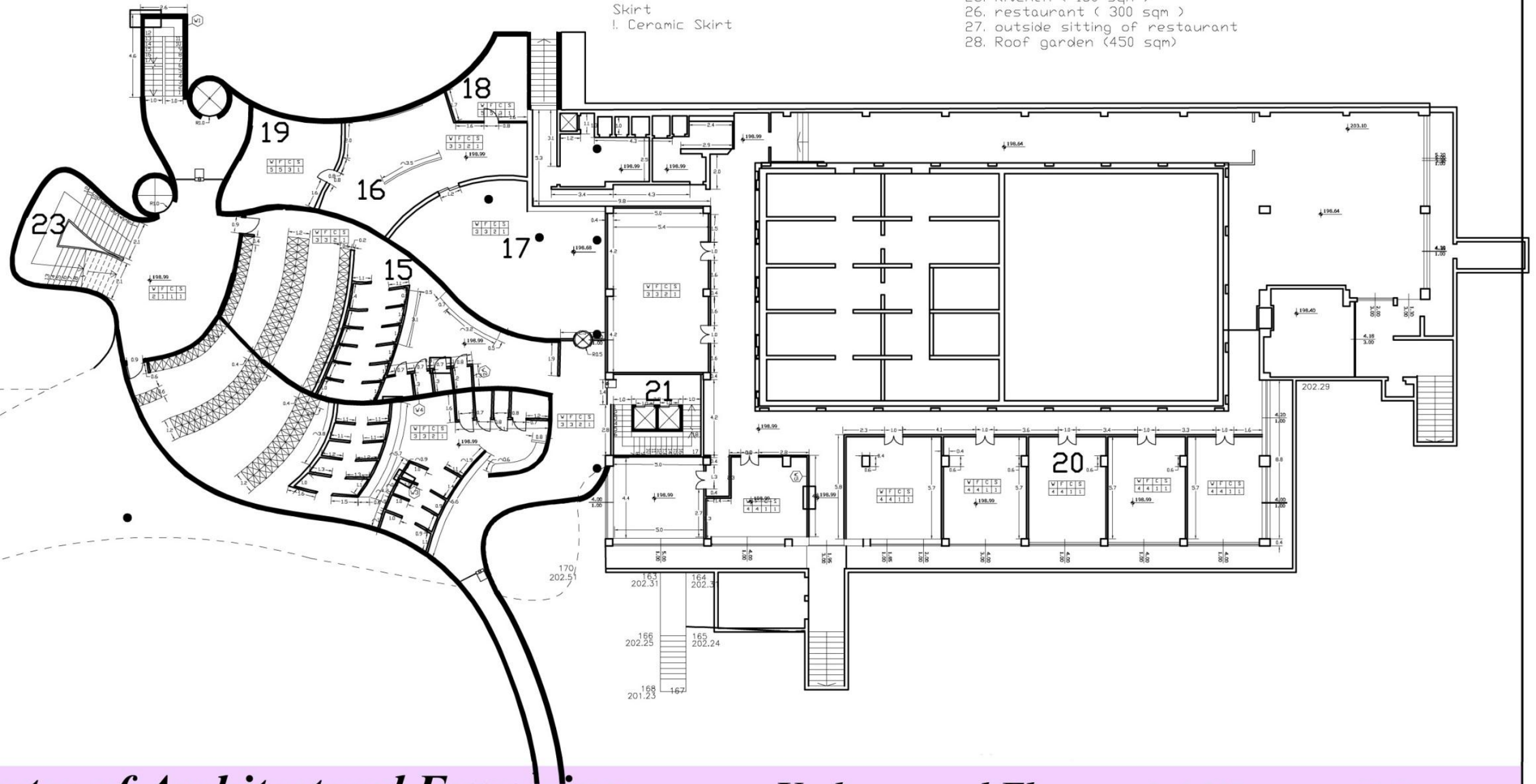
Wall
 1. Double Glazing With Argon Gas Fill
 2. knauf Wallboard
 3. Ceramic Tile 600*600 mm
 up to 2 m height
 4. Fiber Cement Board
 5. Wooden wall

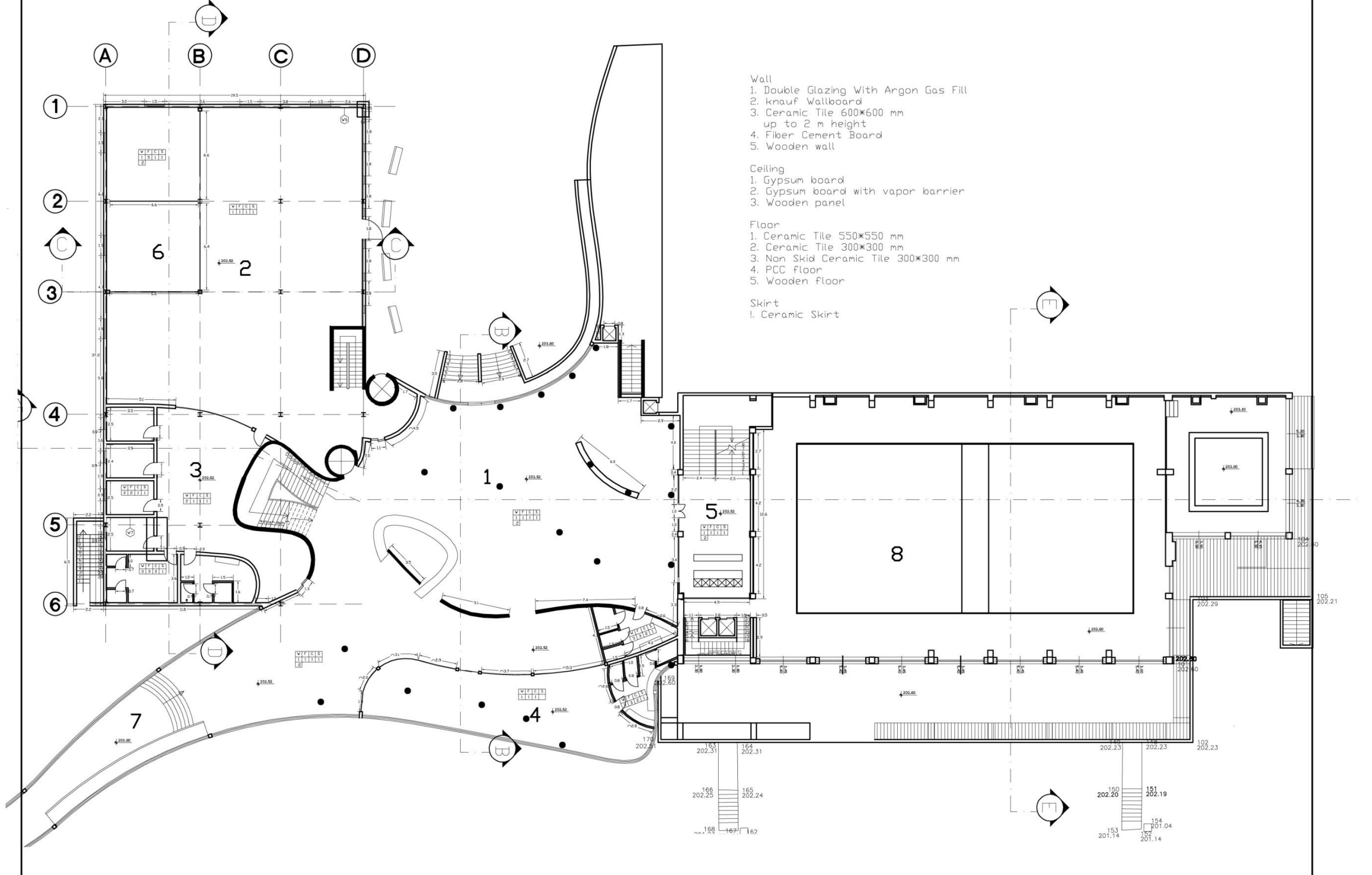
Ceiling
 1. Gypsum board
 2. Gypsum board with vapor barrier
 3. Wooden panel

Floor
 1. Ceramic Tile 550*550 mm
 2. Ceramic Tile 300*300 mm
 3. Non Skid Ceramic Tile 300*300 mm
 4. PCC floor
 5. Wooden floor

Skirt
 1. Ceramic Skirt

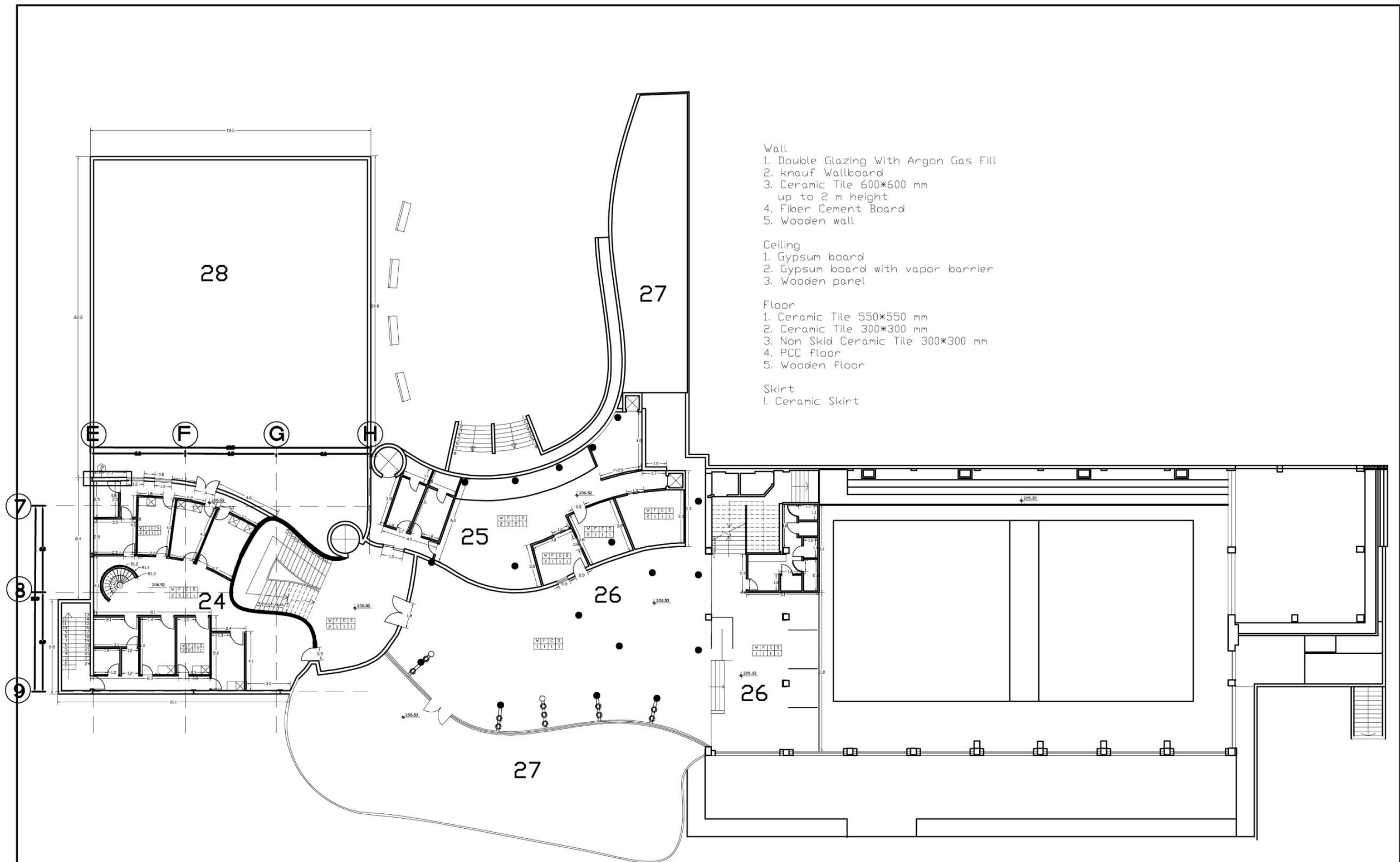
1. lobby
2. gym (415 sqm)
3. rehabilitation gym (160 sqm)
4. kids play area (140 sqm)
5. bar
6. fitness room (100 sqm)
7. corridor
8. inside swimming pool
9. outside swimming pool
10. five-a-side football
11. changing room for five-a-side football
12. entrance of parking
13. elevator and filter room
14. underground parking
15. changing room (325 sqm)
16. shower (40 sqm)
17. jacuzzi (75 sqm)
18. sauna (20 sqm)
19. turkish bath (30 sqm)
20. storage room
21. stair for outside swimming pool
22. stair for inside swimming pool
23. stair for gym
24. beauty center (180 sqm)
25. kitchen (150 sqm)
26. restaurant (300 sqm)
27. outside sitting of restaurant
28. Roof garden (450 sqm)

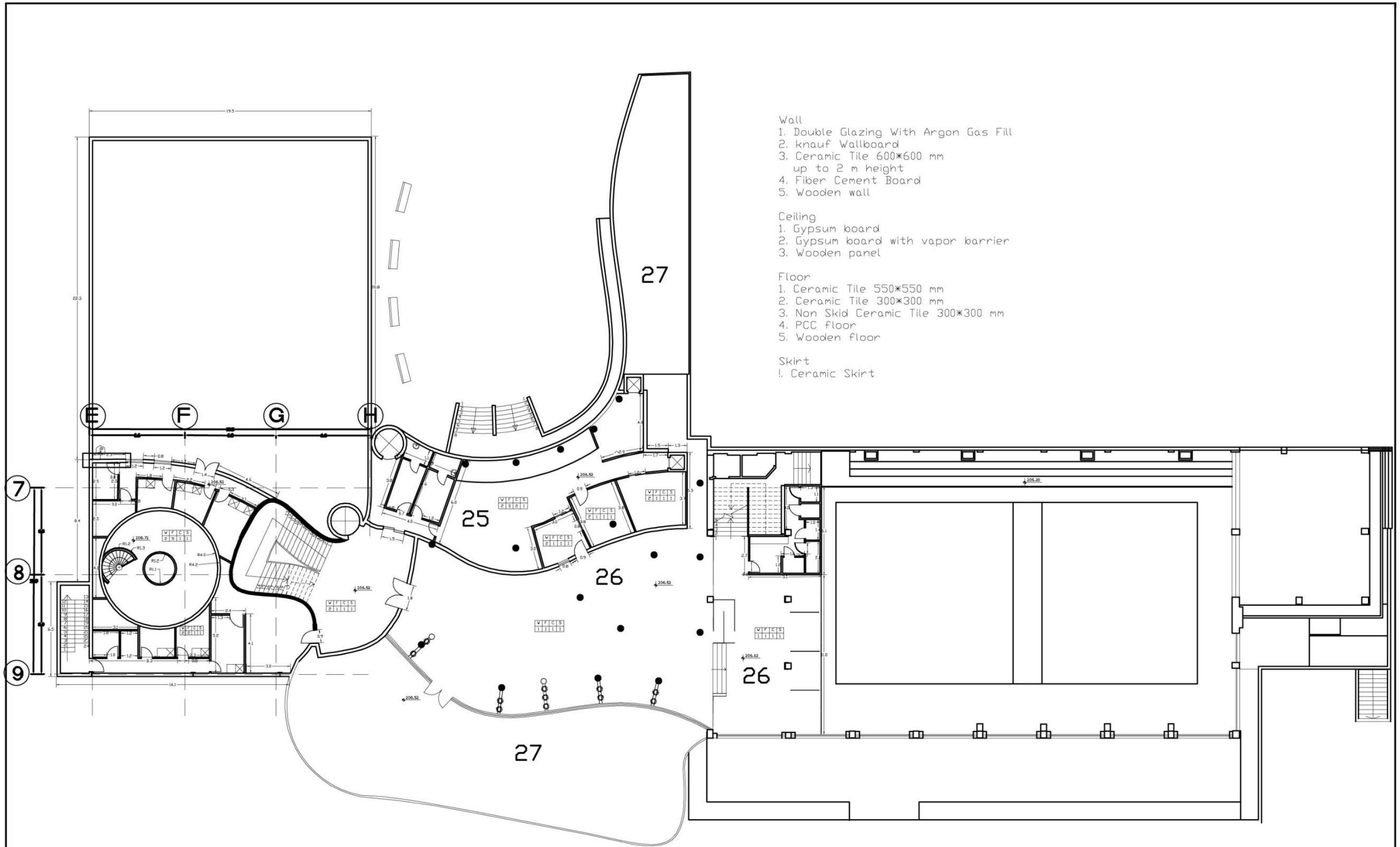




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Ground Floor scale 1:200
 Ruqian Wang & Yunfei Zhang





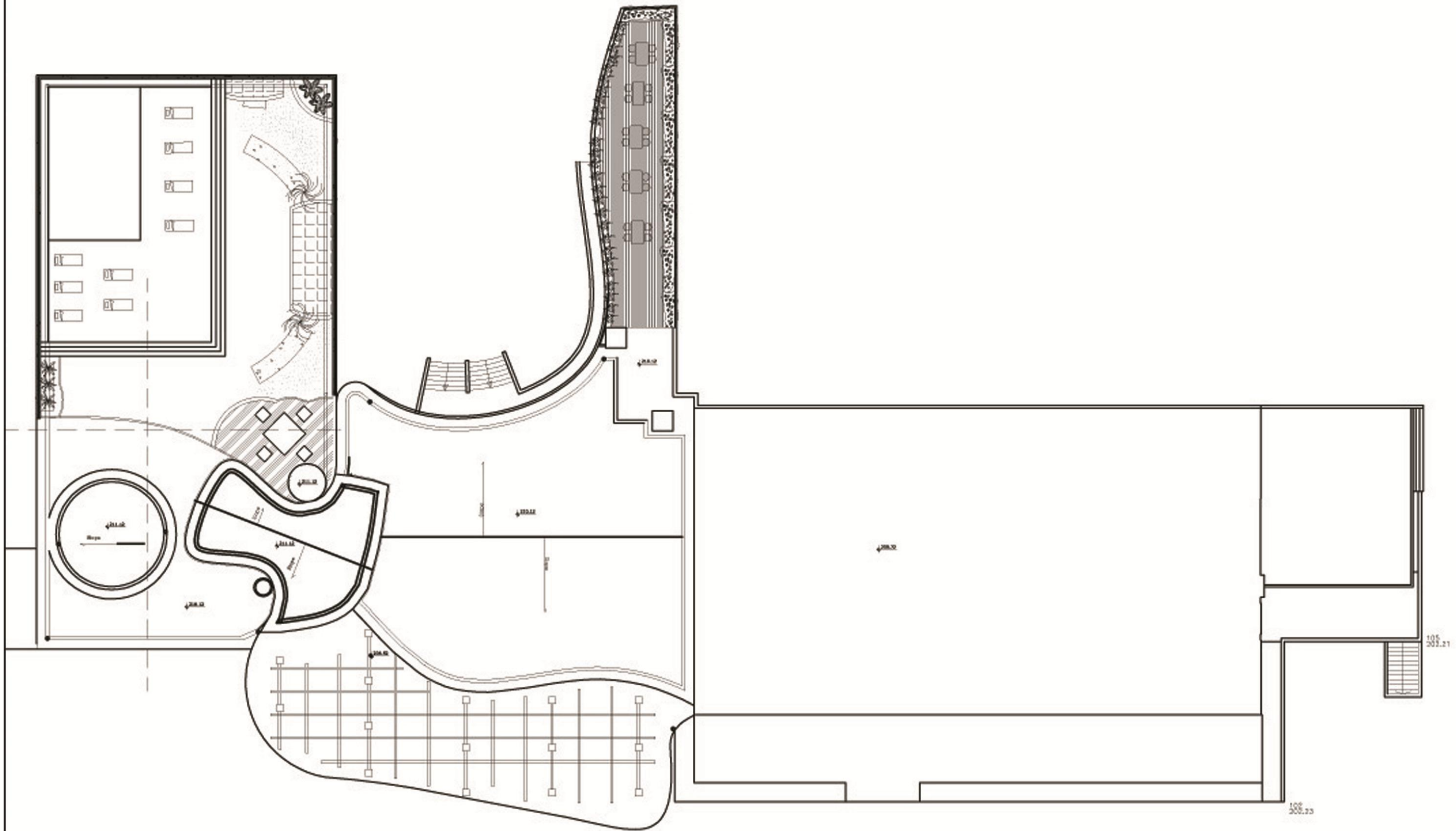
Wall
 1. Double Glazing With Argon Gas Fill
 2. knauf Wallboard
 3. Ceramic Tile 600*600 mm up to 2 m height
 4. Fiber Cement Board
 5. Wooden wall

Ceiling
 1. Gypsum board
 2. Gypsum board with vapor barrier
 3. Wooden panel

Floor
 1. Ceramic Tile 550*550 mm
 2. Ceramic Tile 300*300 mm
 3. Non Skid Ceramic Tile 300*300 mm
 4. PCC floor
 5. Wooden floor

Skirt
 1. Ceramic Skirt





Roof plan



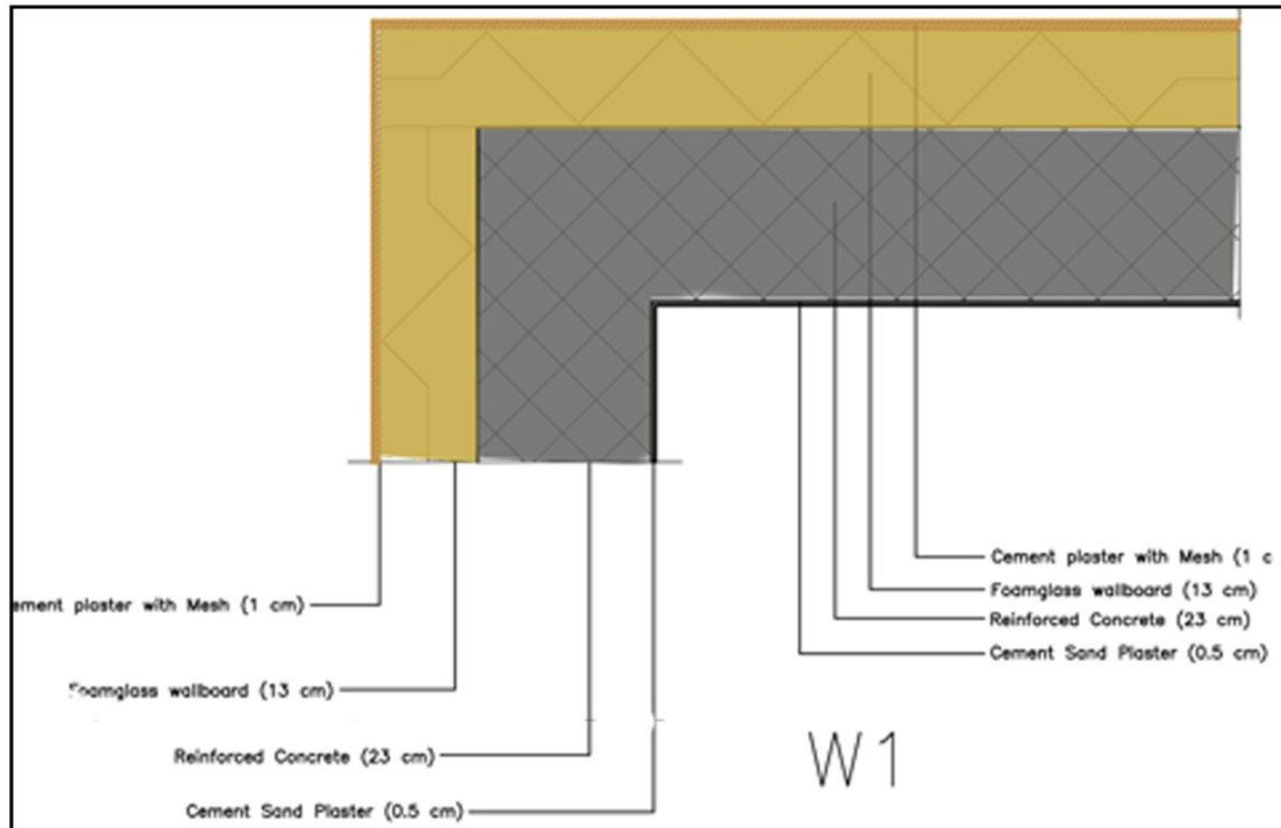
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Fitness Center in Garlate, Lecco, Italy

Roof plan

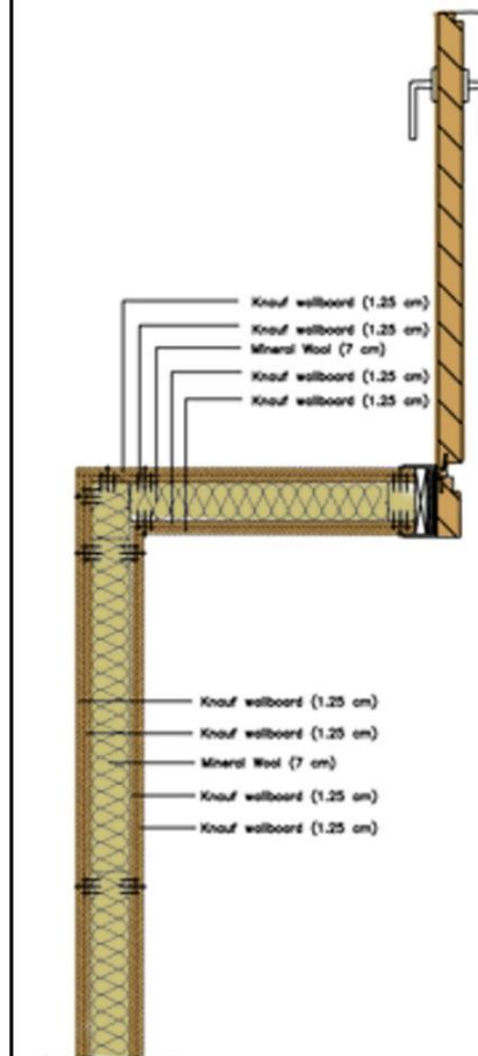
scale 1:200

Ruqian Wang & Yunfei Zhang

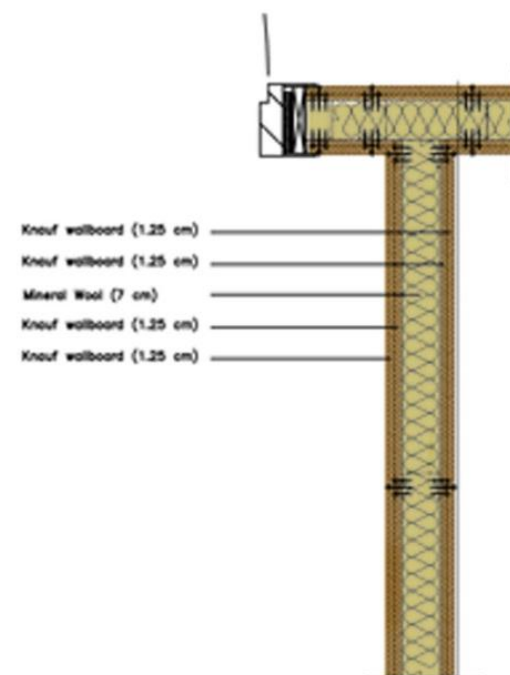
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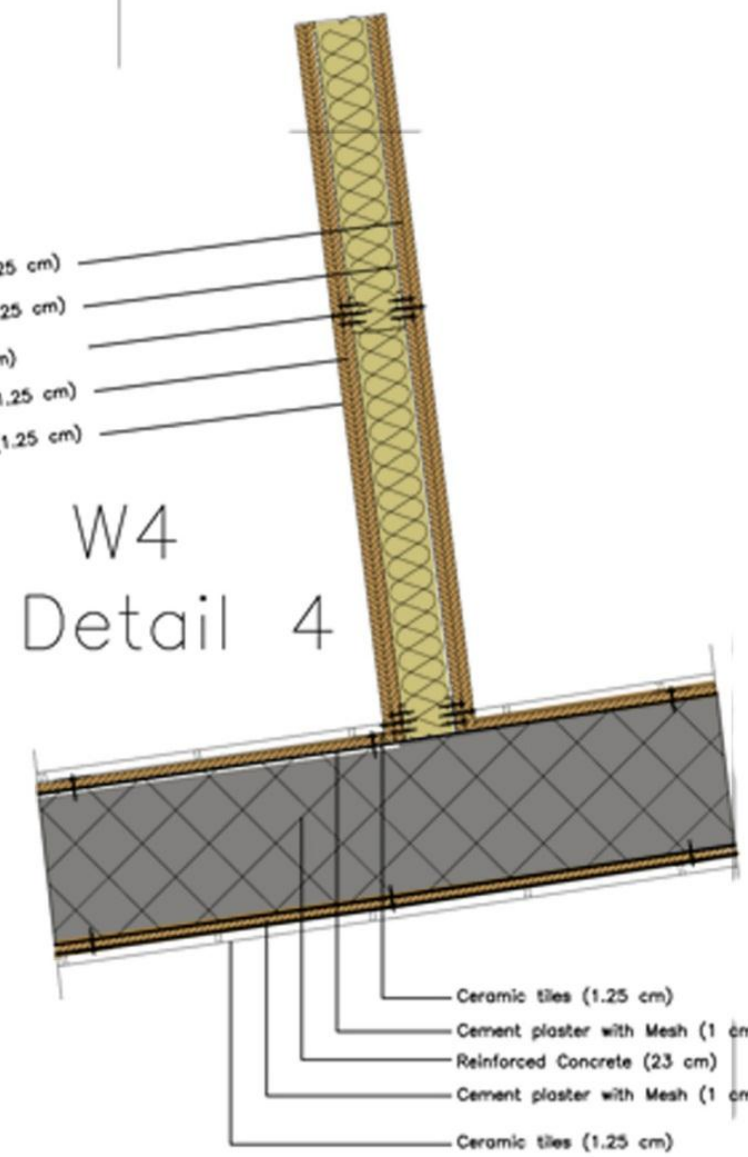
W1
Detail 1



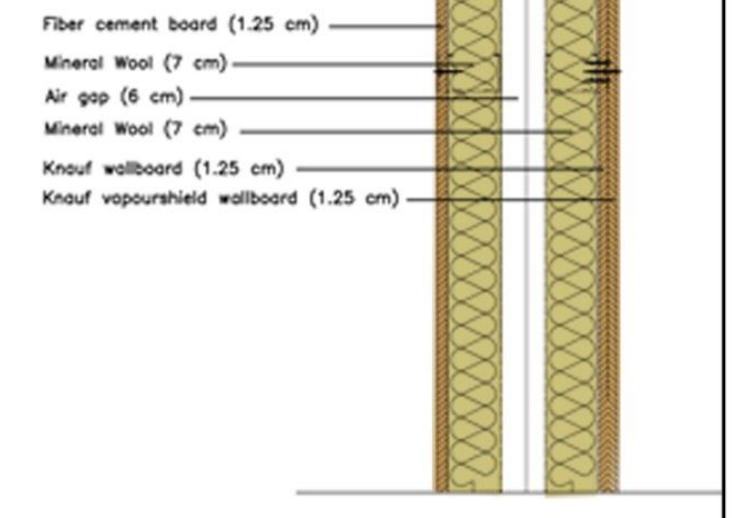
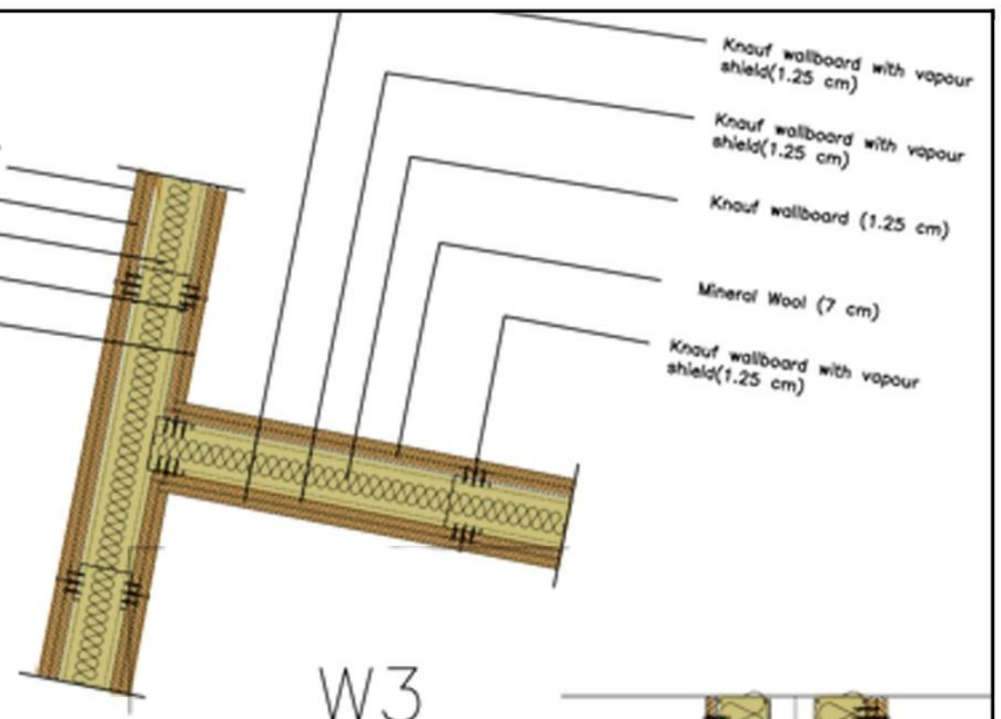
W2
Detail 2



W3
Detail 3

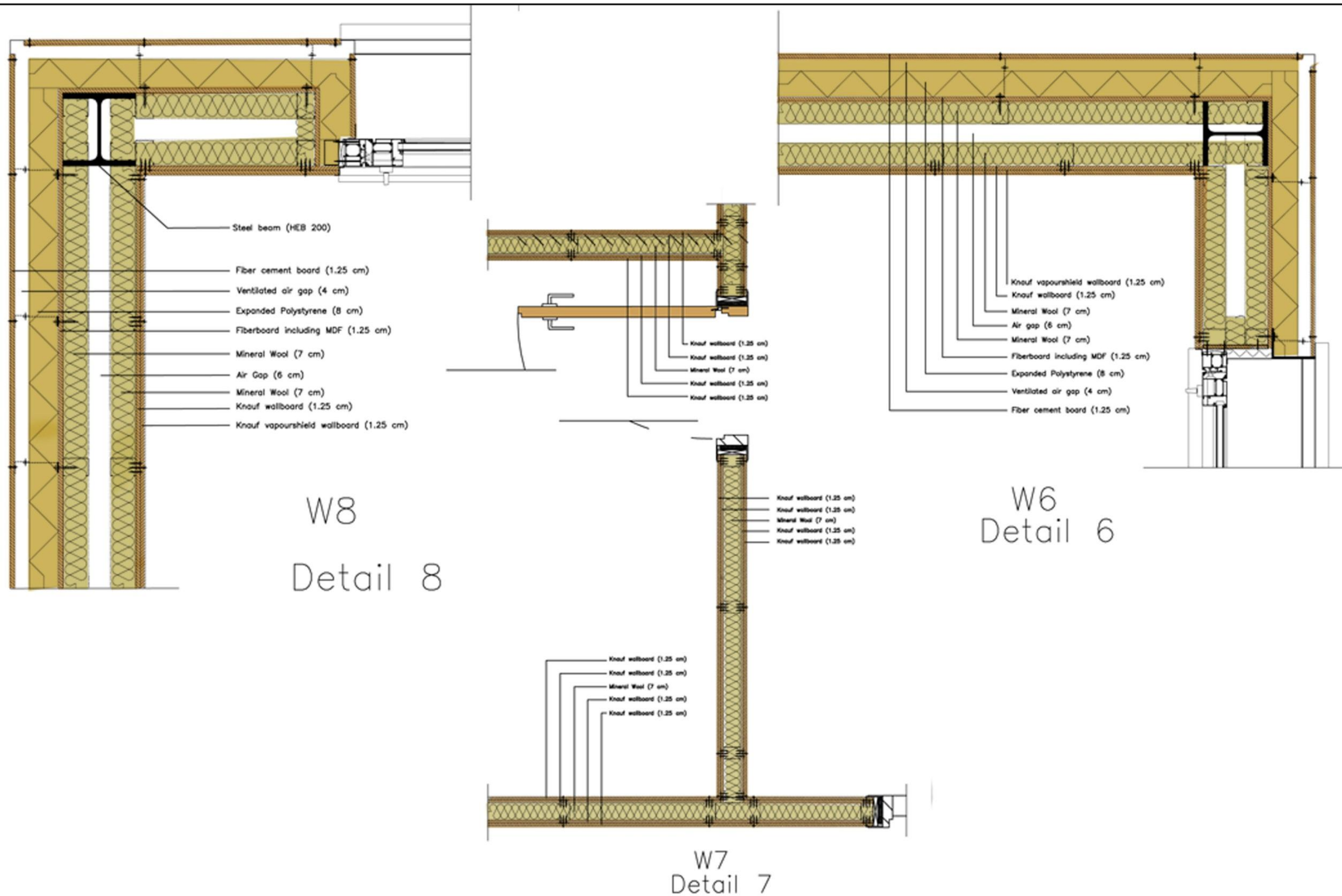


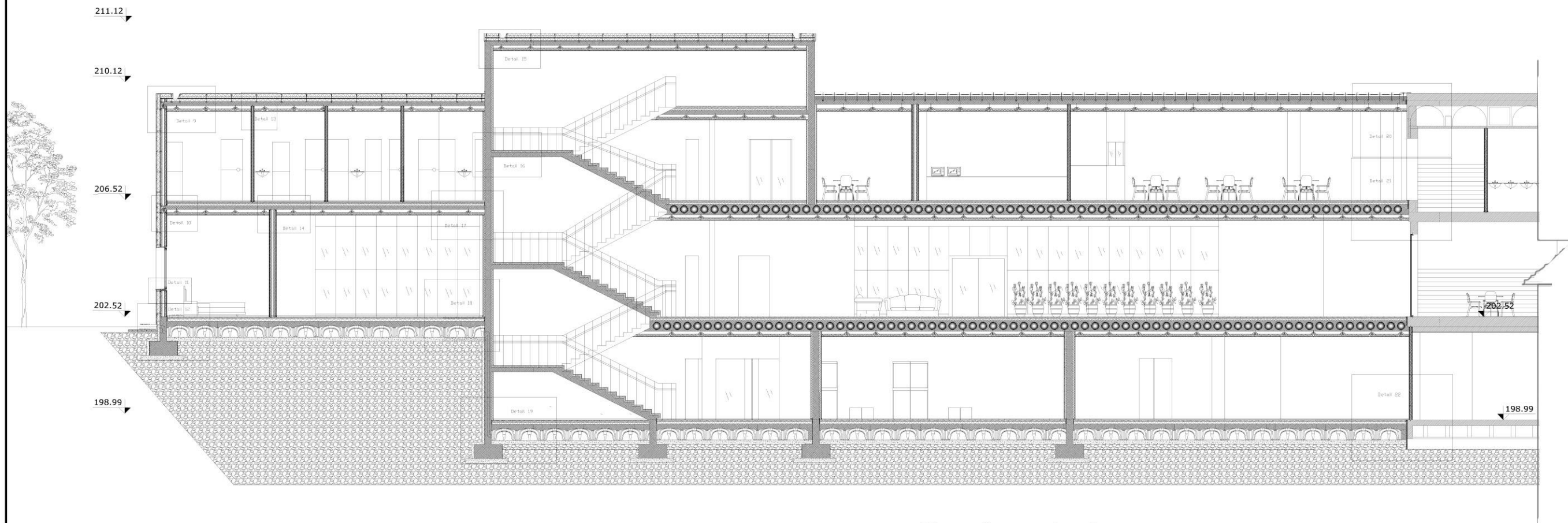
W4
Detail 4



W5
Detail 5

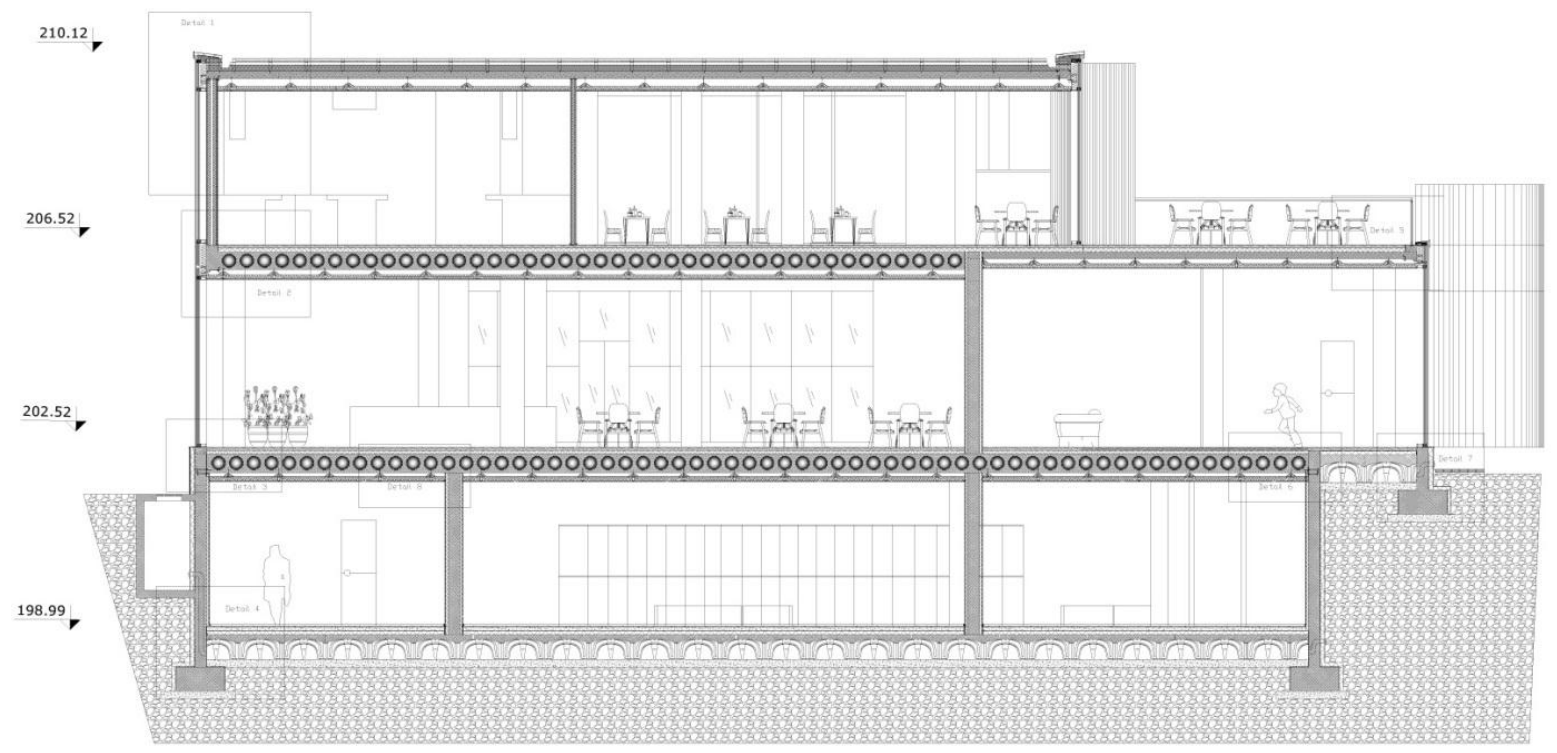
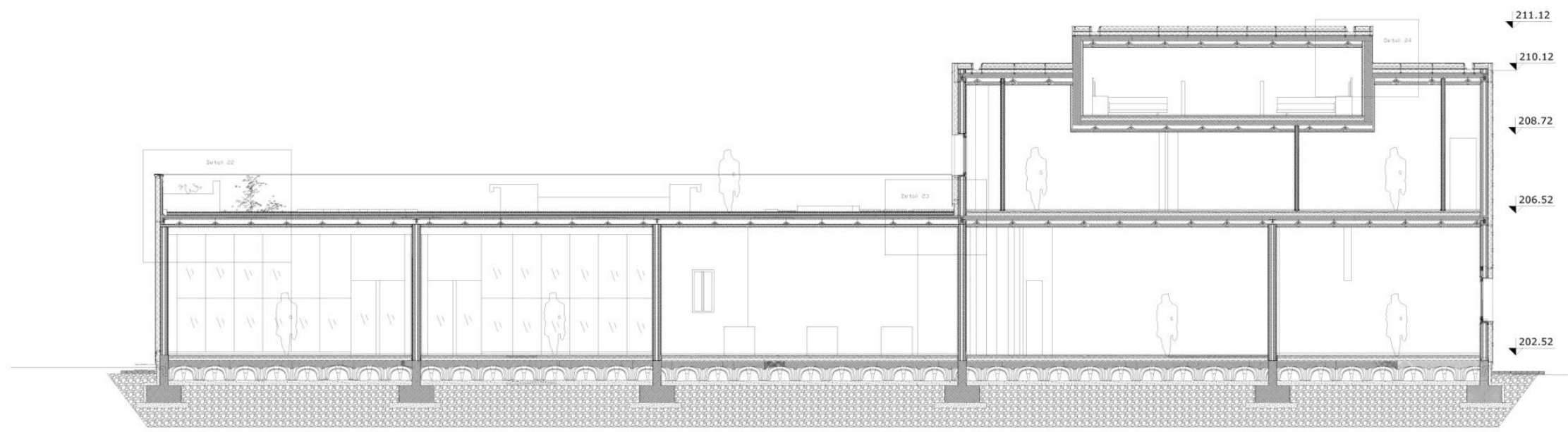






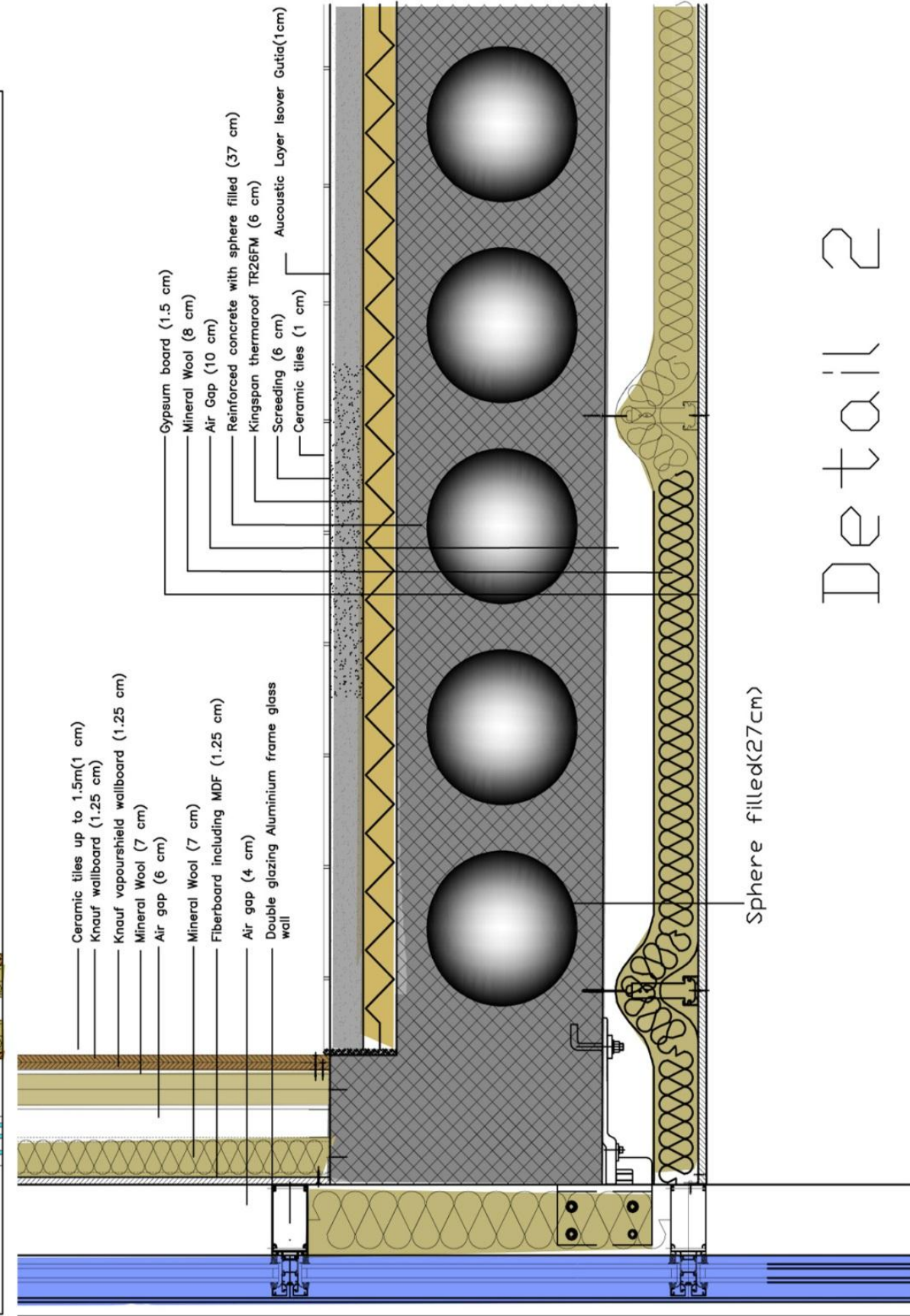
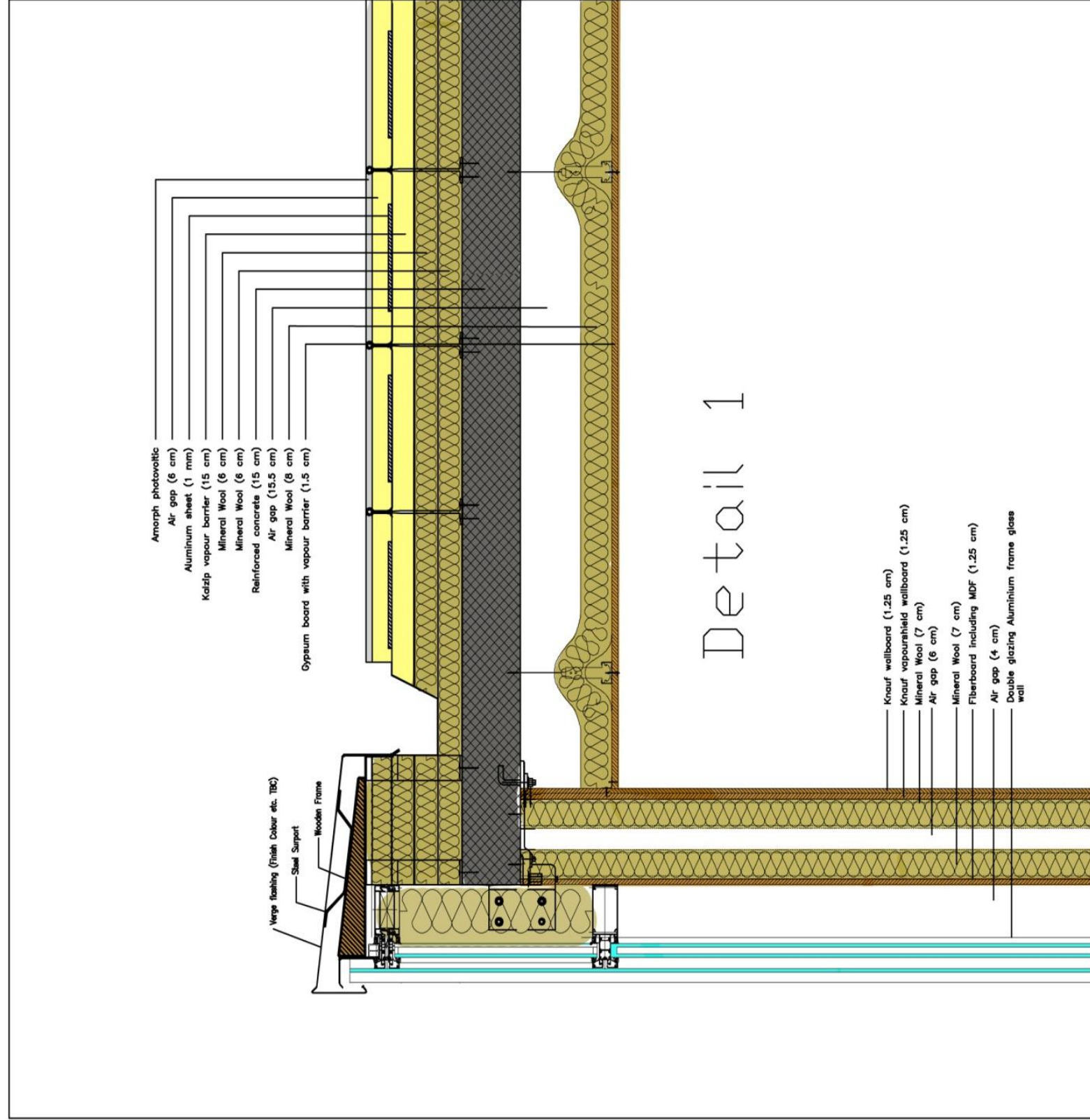
Section A-A

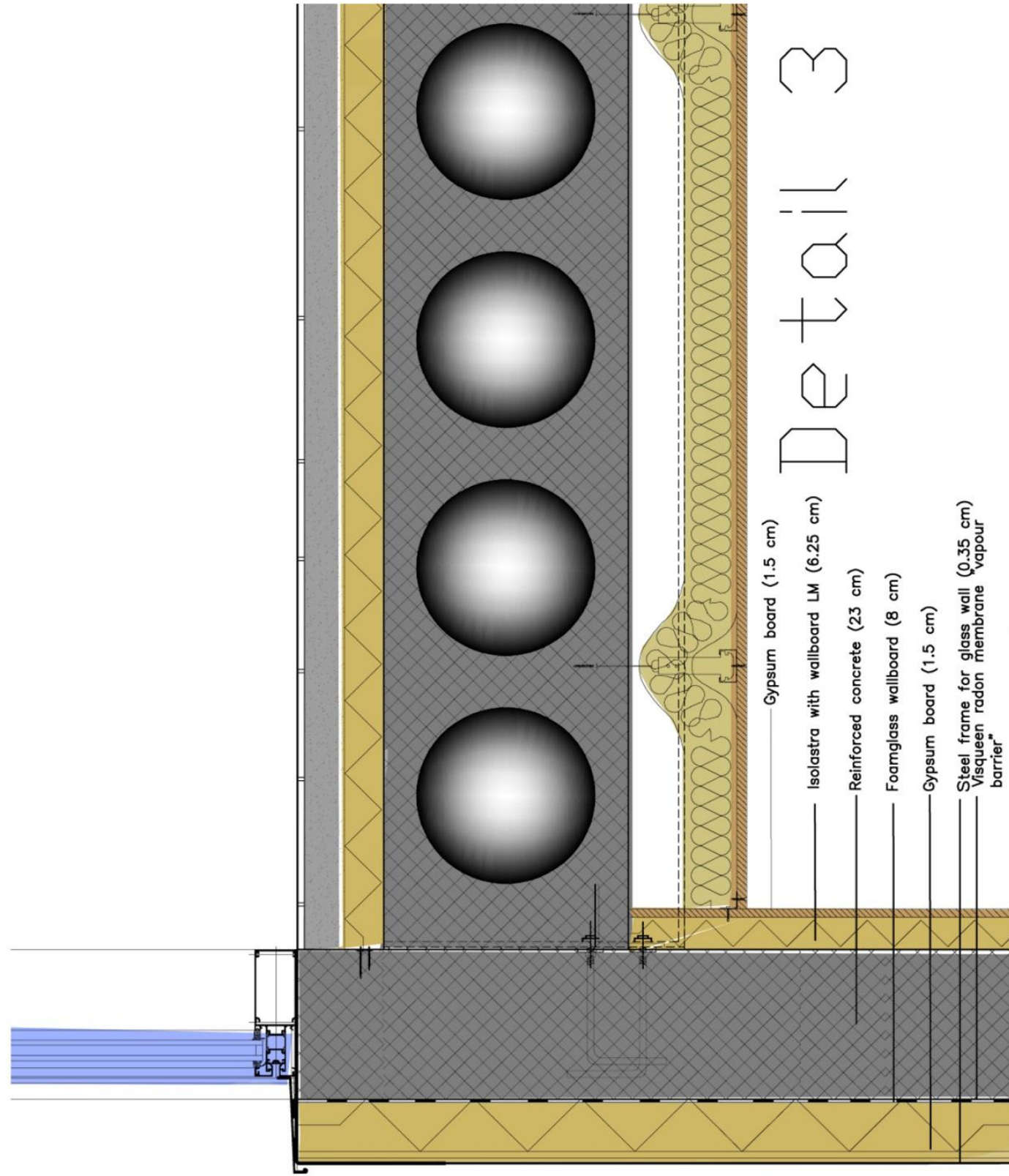




Section B-B

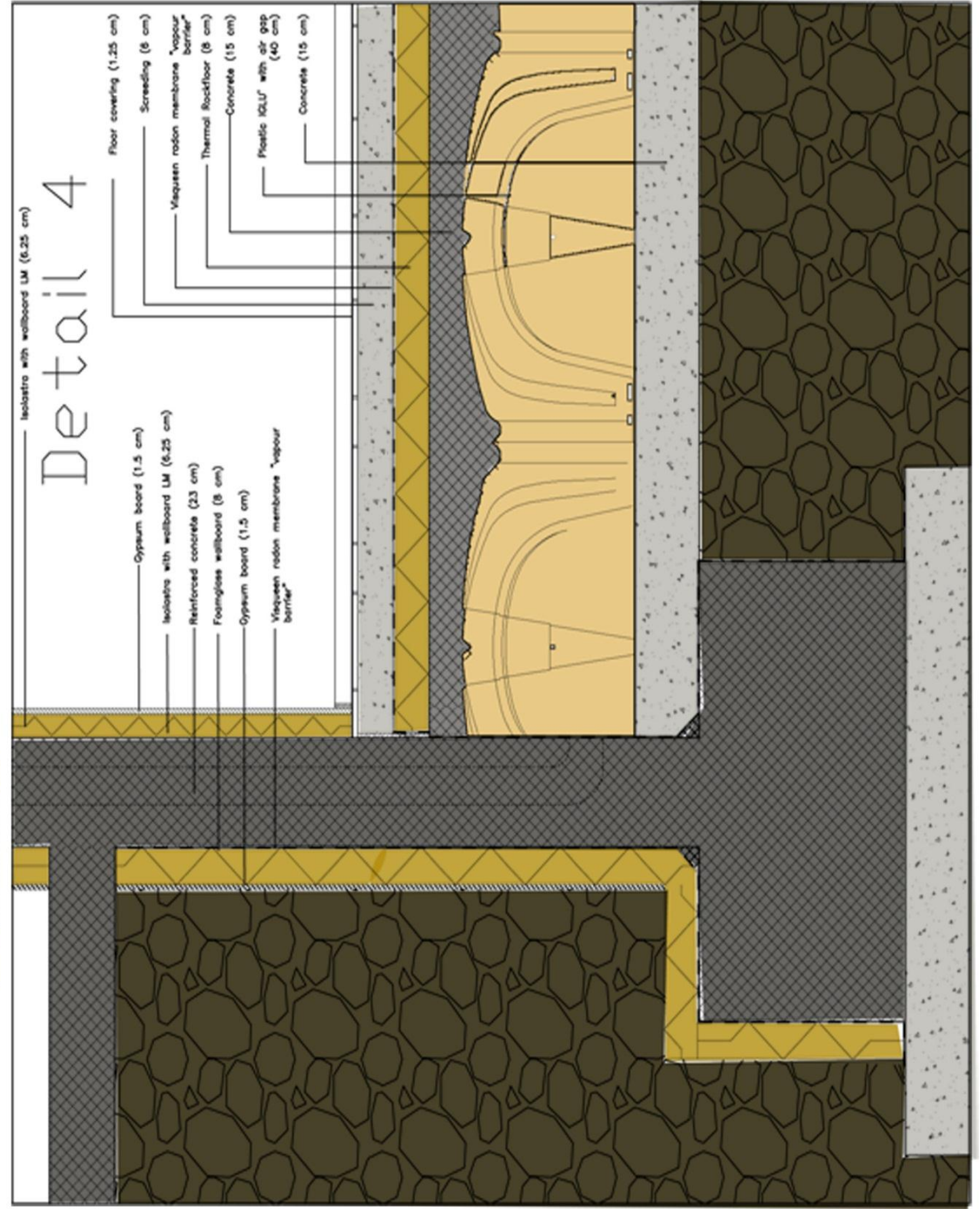






Detail 3

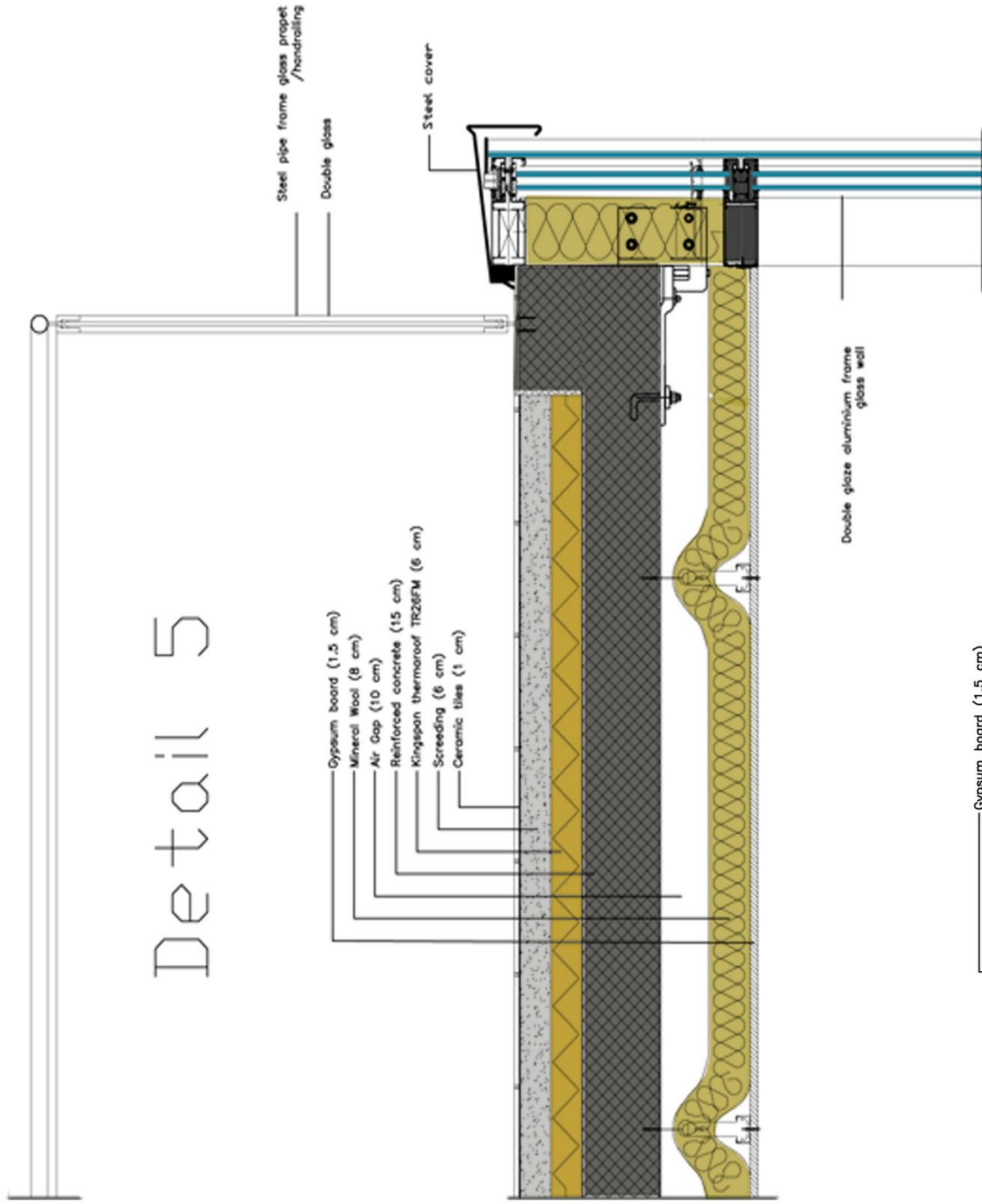
- Gypsum board (1.5 cm)
- Isostra with wallboard LM (6.25 cm)
- Reinforced concrete (23 cm)
- Foamglass wallboard (8 cm)
- Gypsum board (1.5 cm)
- Steel frame for glass wall (0.35 cm)
- Visqueen radon membrane vapour barrier



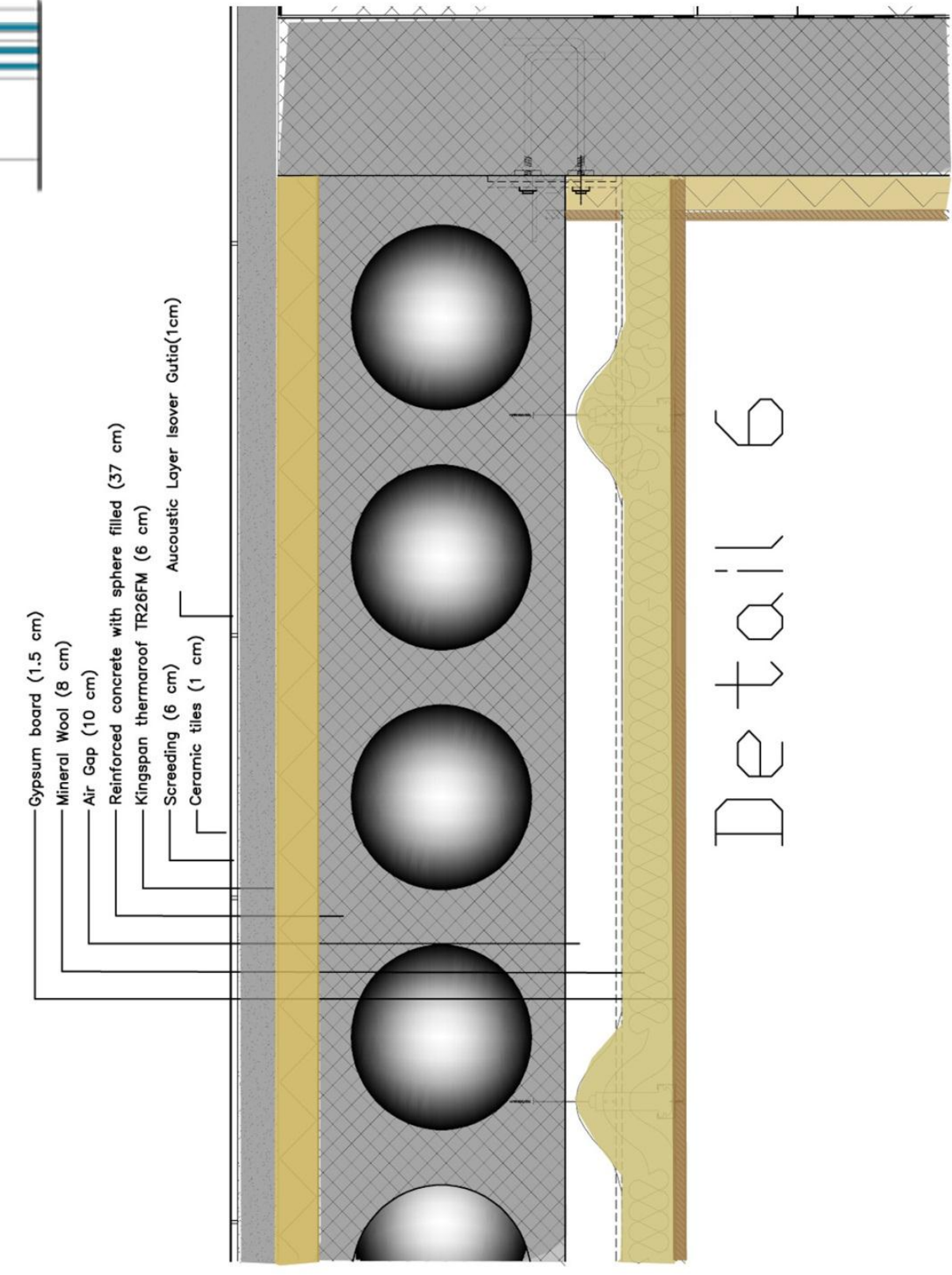
Detail 4

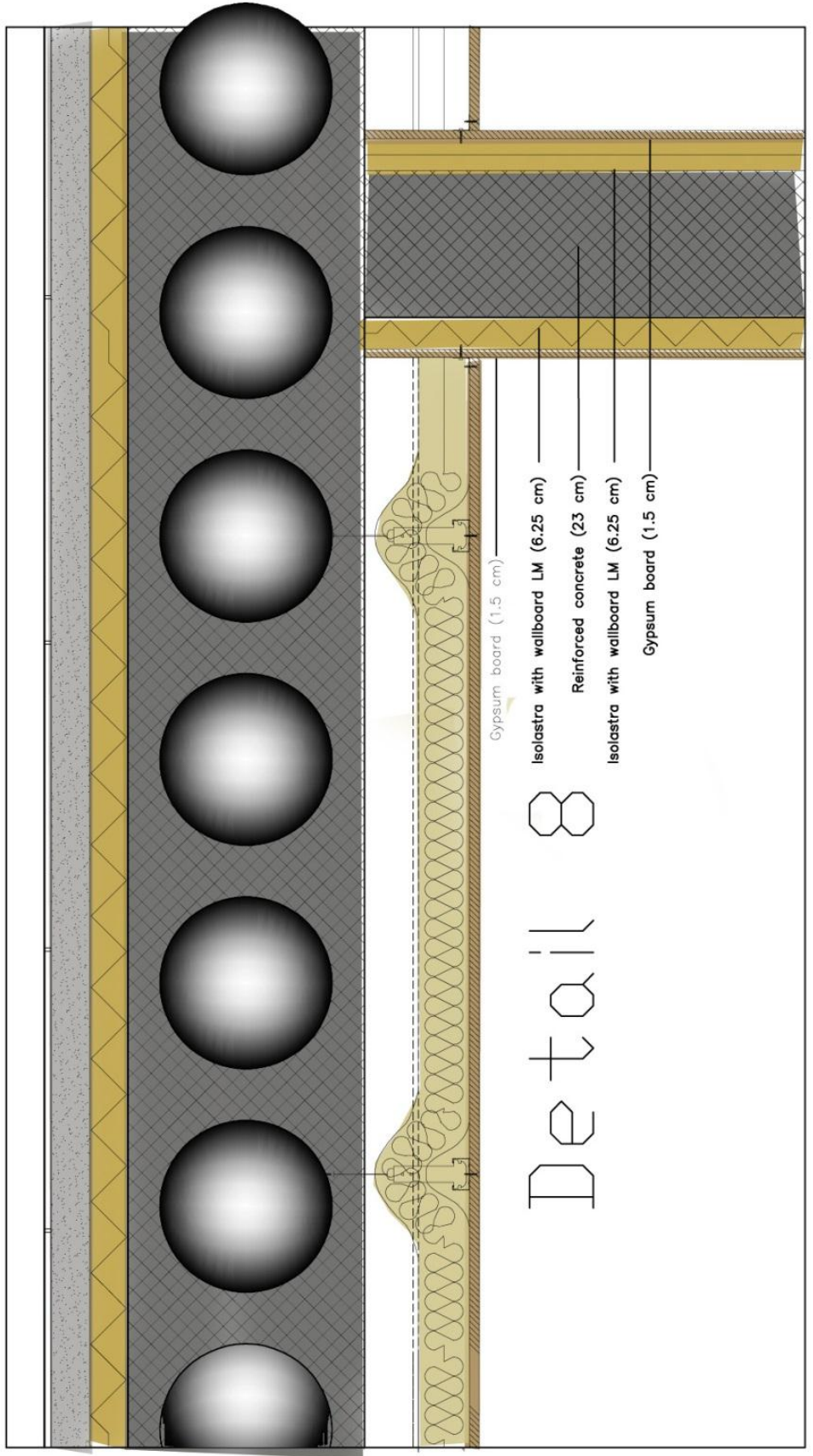
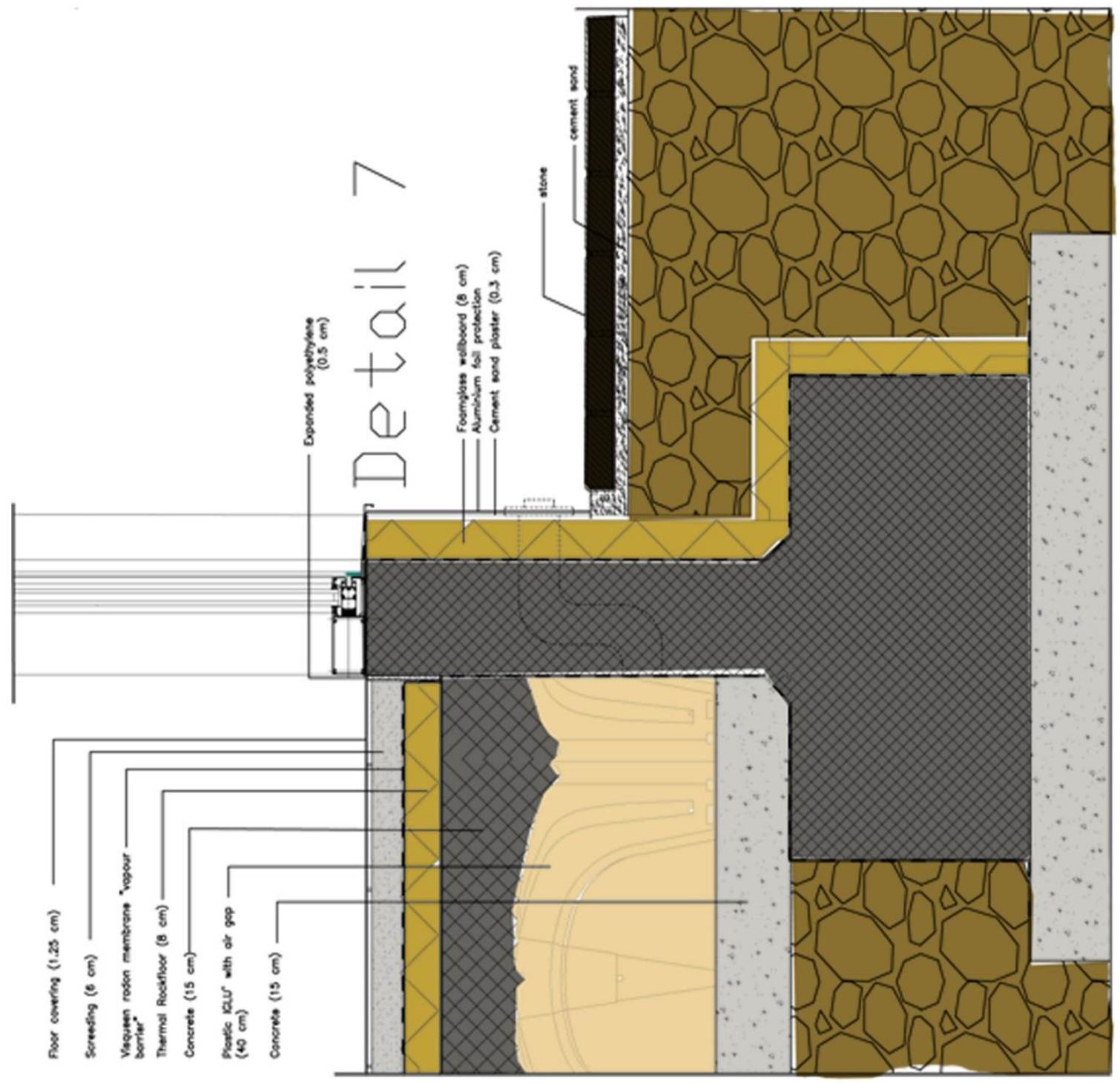
- Floor covering (1.25 cm)
- Screeding (8 cm)
- Visqueen radon membrane "vapour barrier"
- Thermal Rockfloor (8 cm)
- Concrete (15 cm)
- Plastic IGLU[®] with air gap (40 cm)
- Concrete (15 cm)
- Isostra with wallboard LM (6.25 cm)
- Gypsum board (1.5 cm)
- Isostra with wallboard LM (6.25 cm)
- Reinforced concrete (23 cm)
- Foamglass wallboard (8 cm)
- Gypsum board (1.5 cm)
- Visqueen radon membrane "vapour barrier"

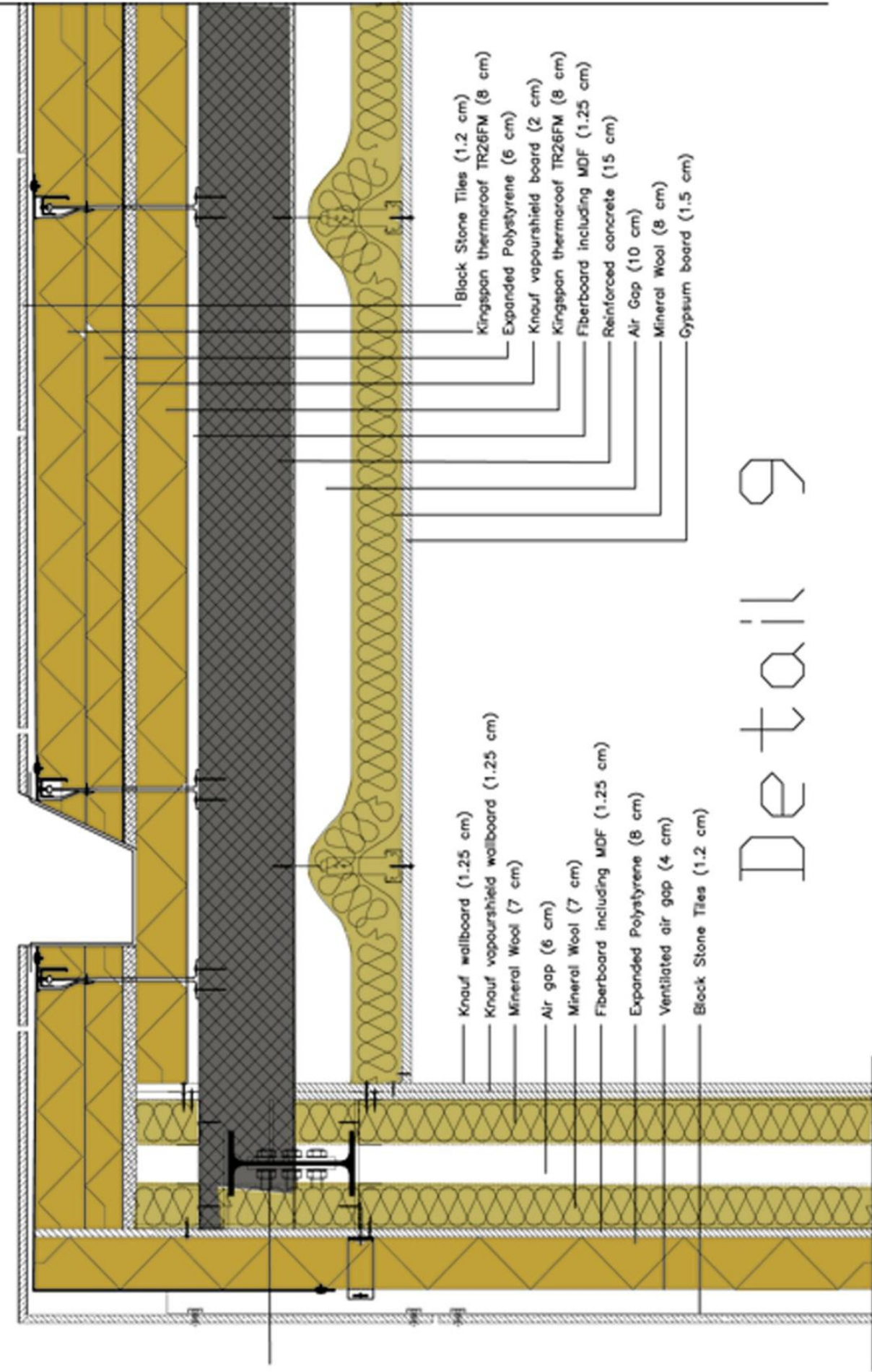
Detail 5



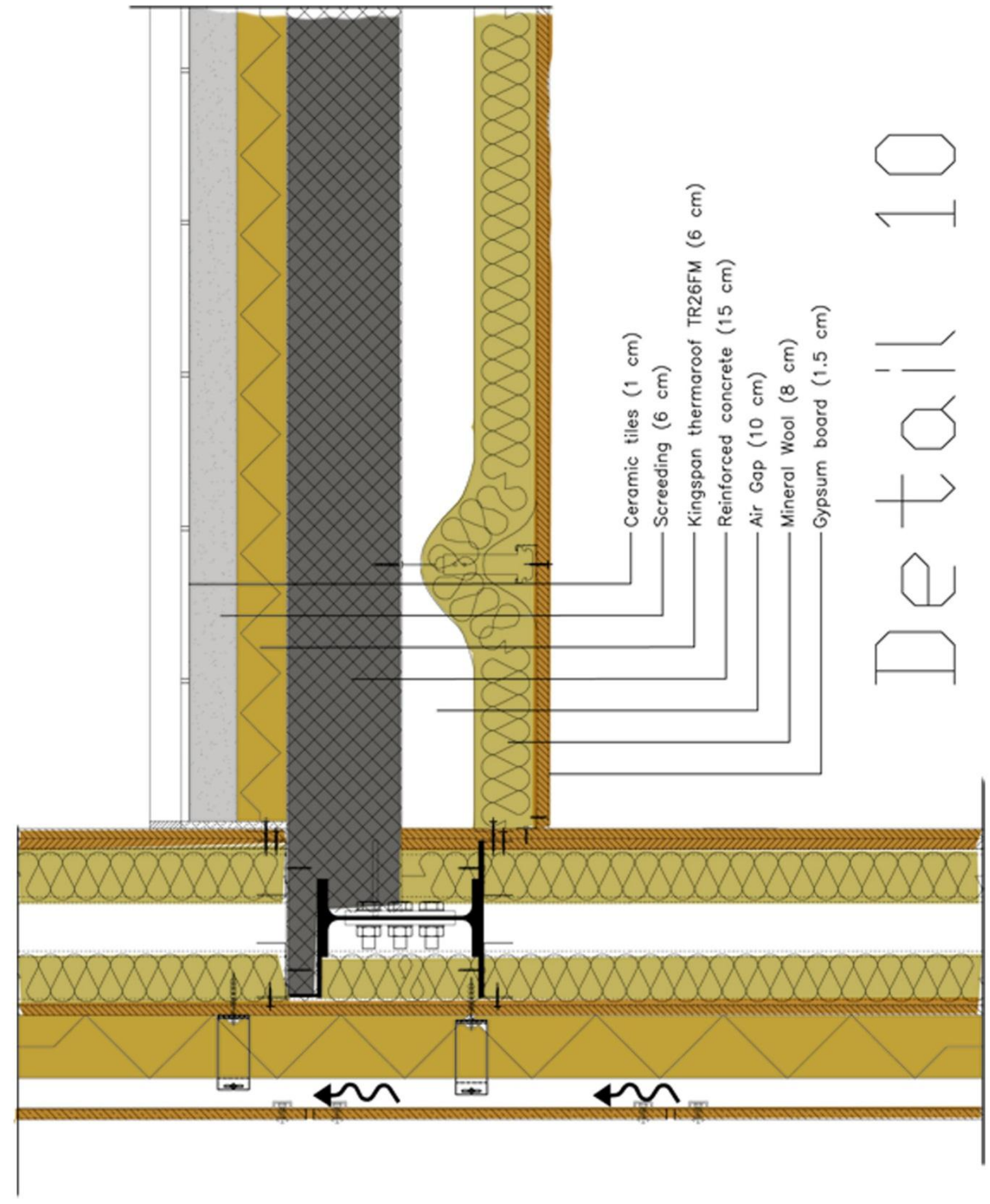
Detail 6







Detail 9

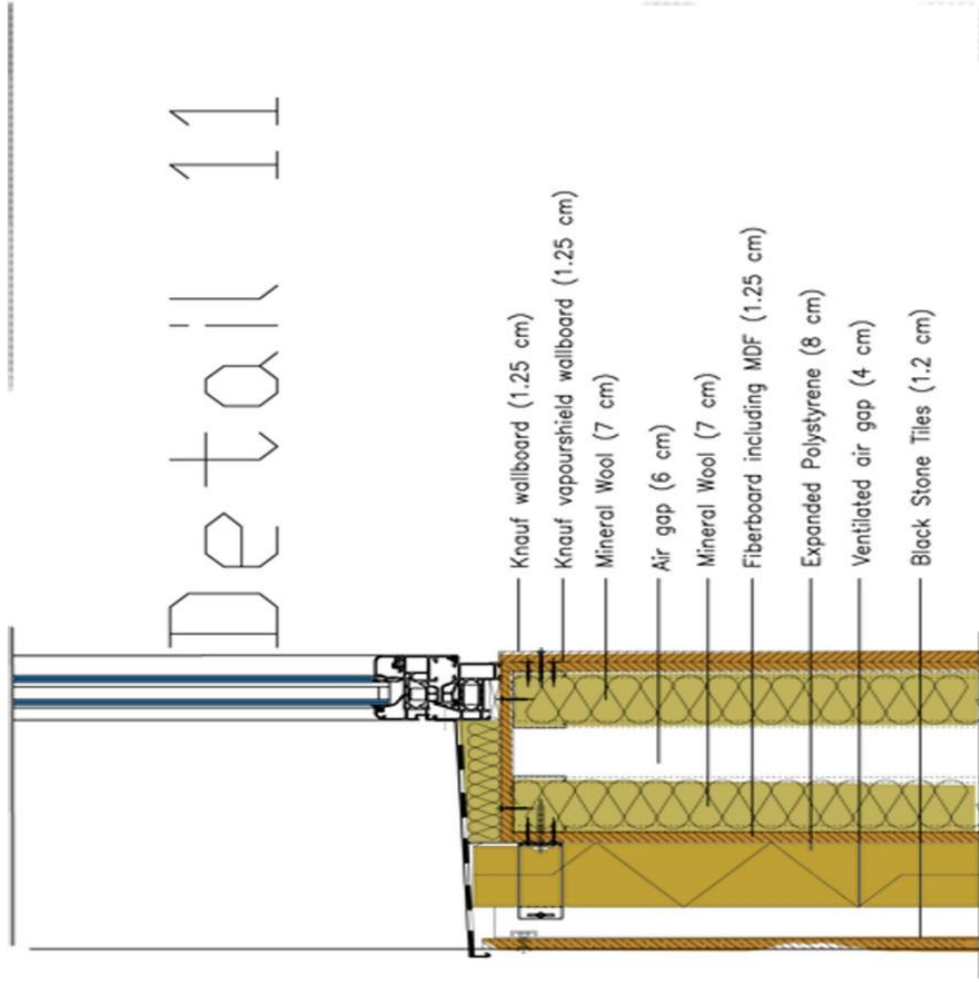


Detail 10

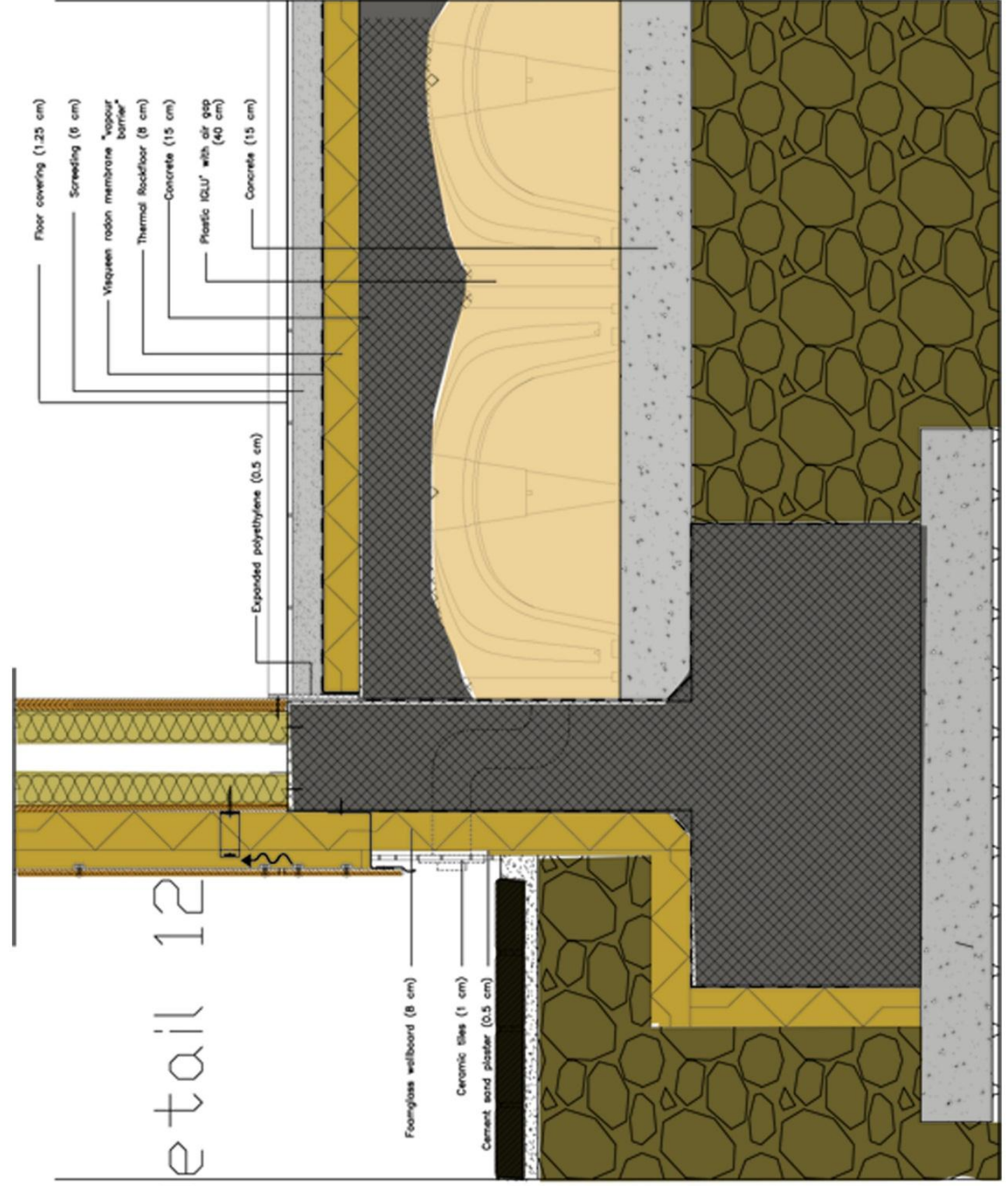


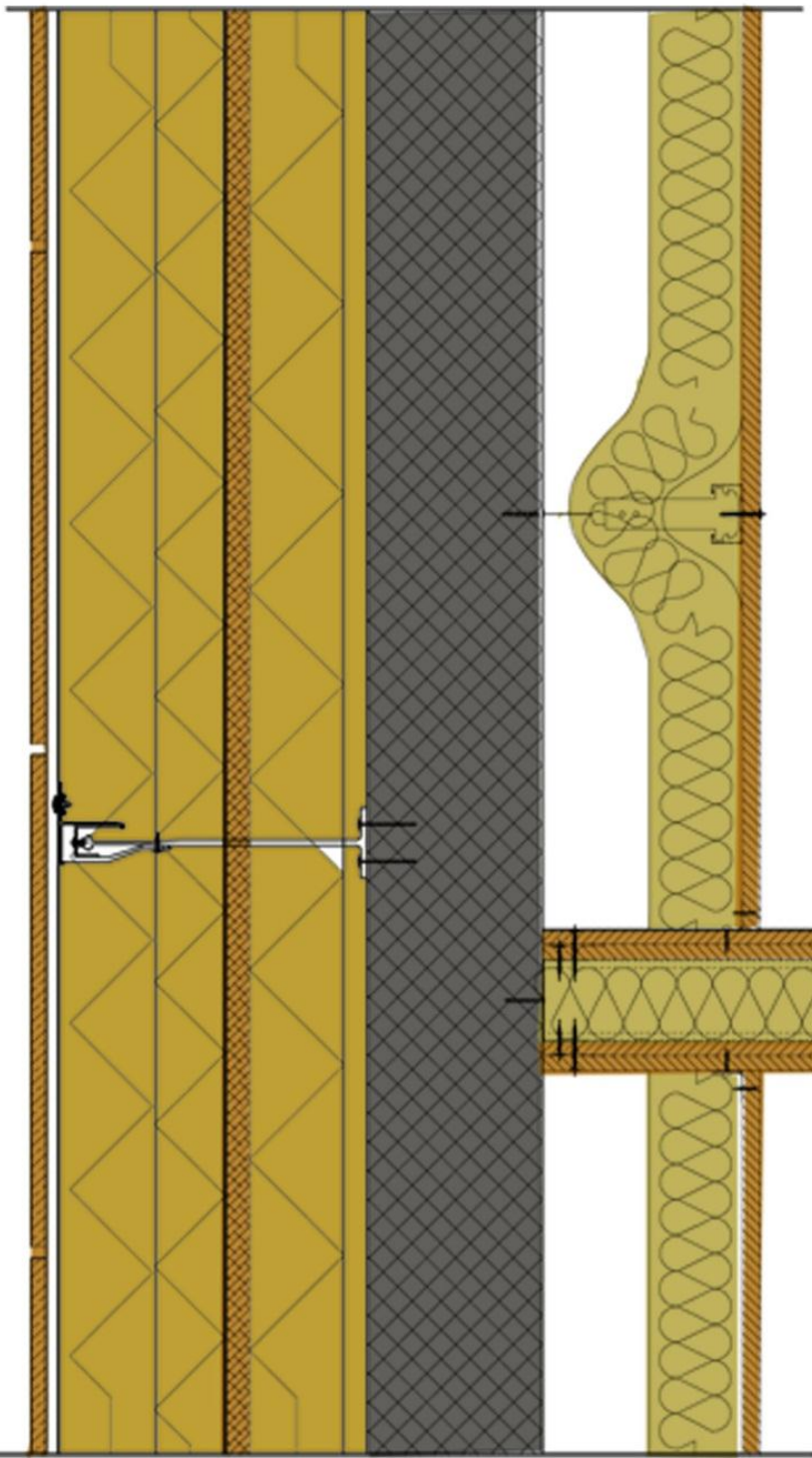
Steel beam (IPE 200)

Detail 11



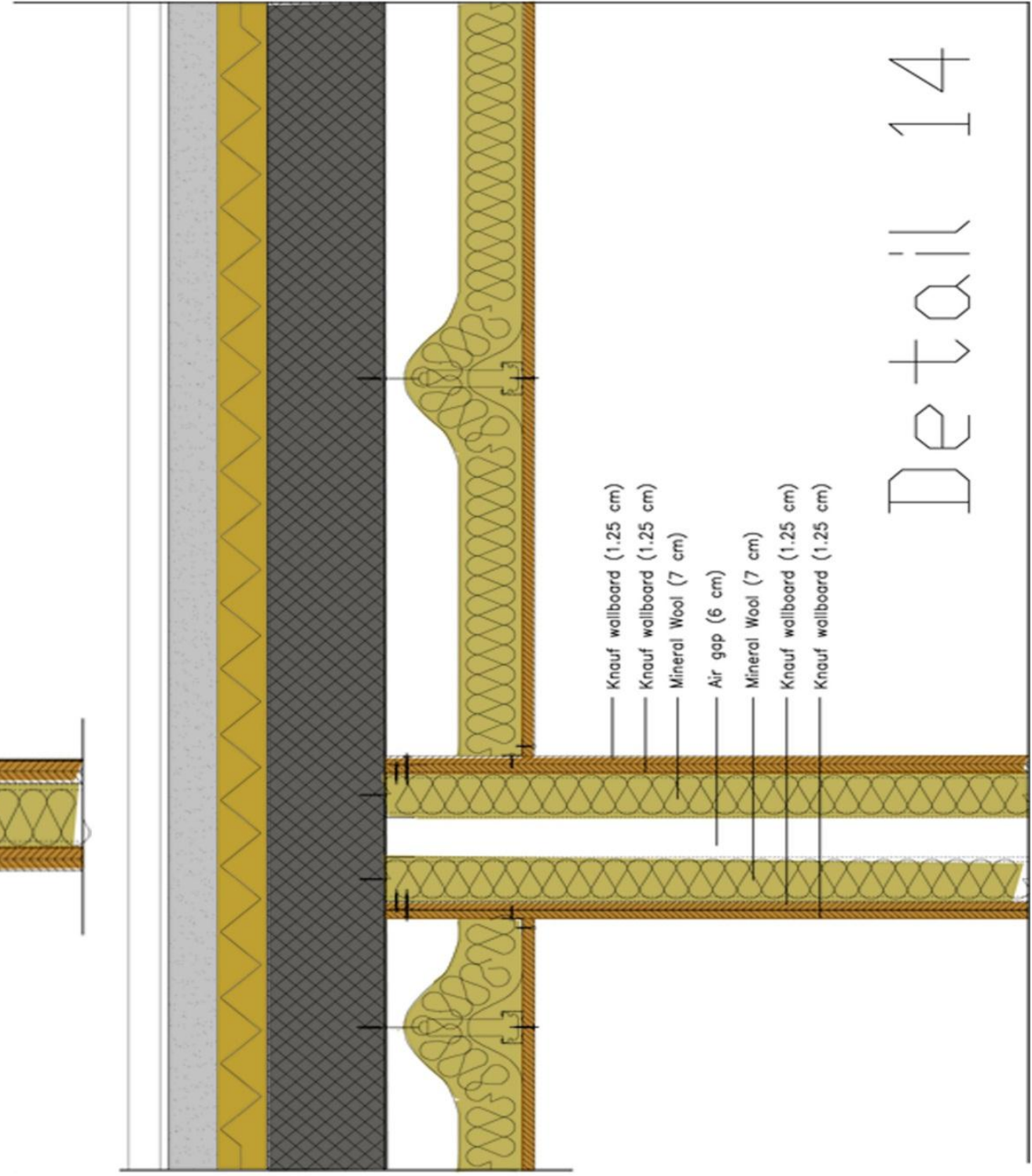
Detail 12





- Knauf wallboard (1.25 cm)
- Knauf vapourshield wallboard (1.25 cm)
- Mineral Wool (7 cm)
- Knauf wallboard (1.25 cm)
- Knauf vapourshield wallboard (1.25 cm)

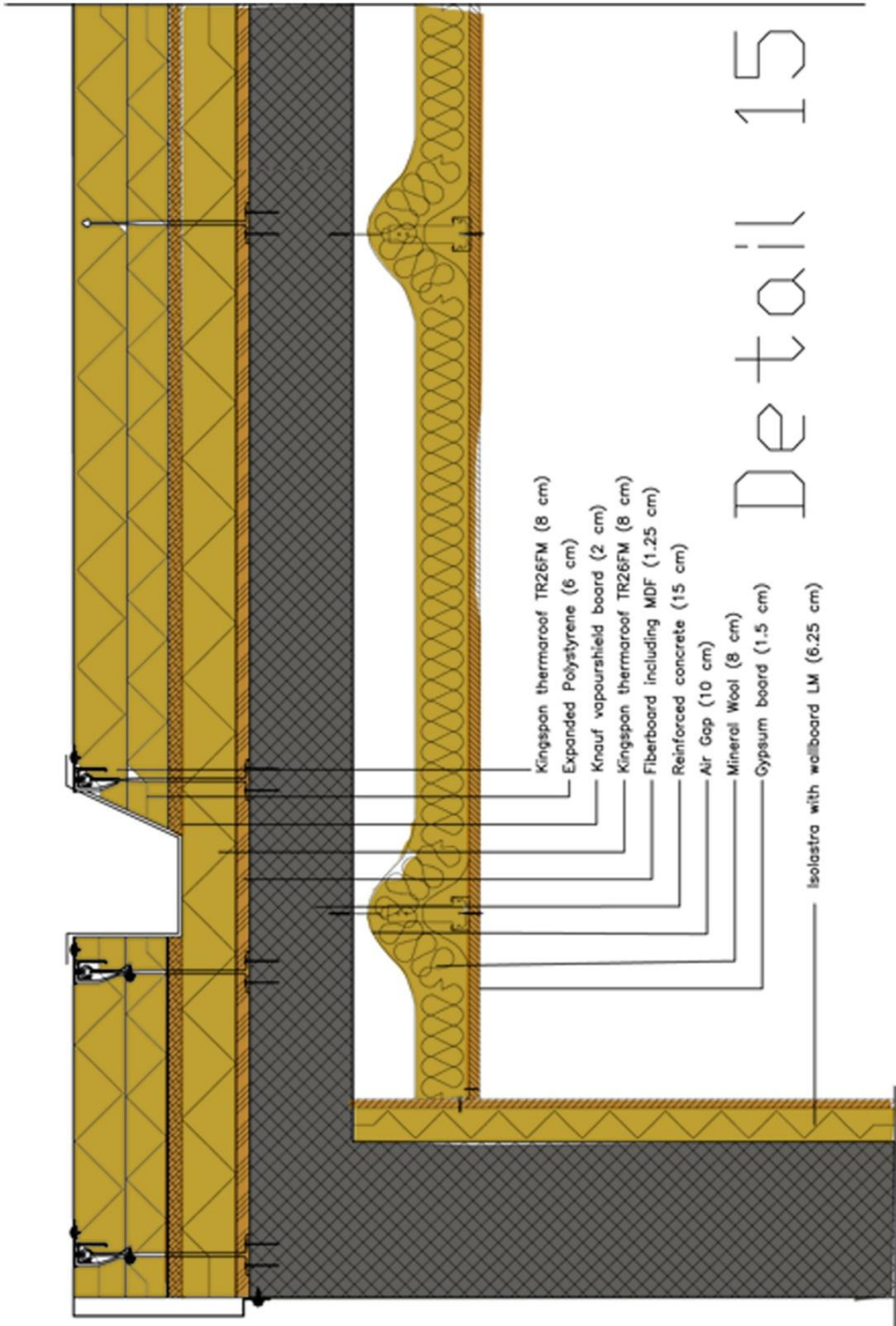
Detail 13



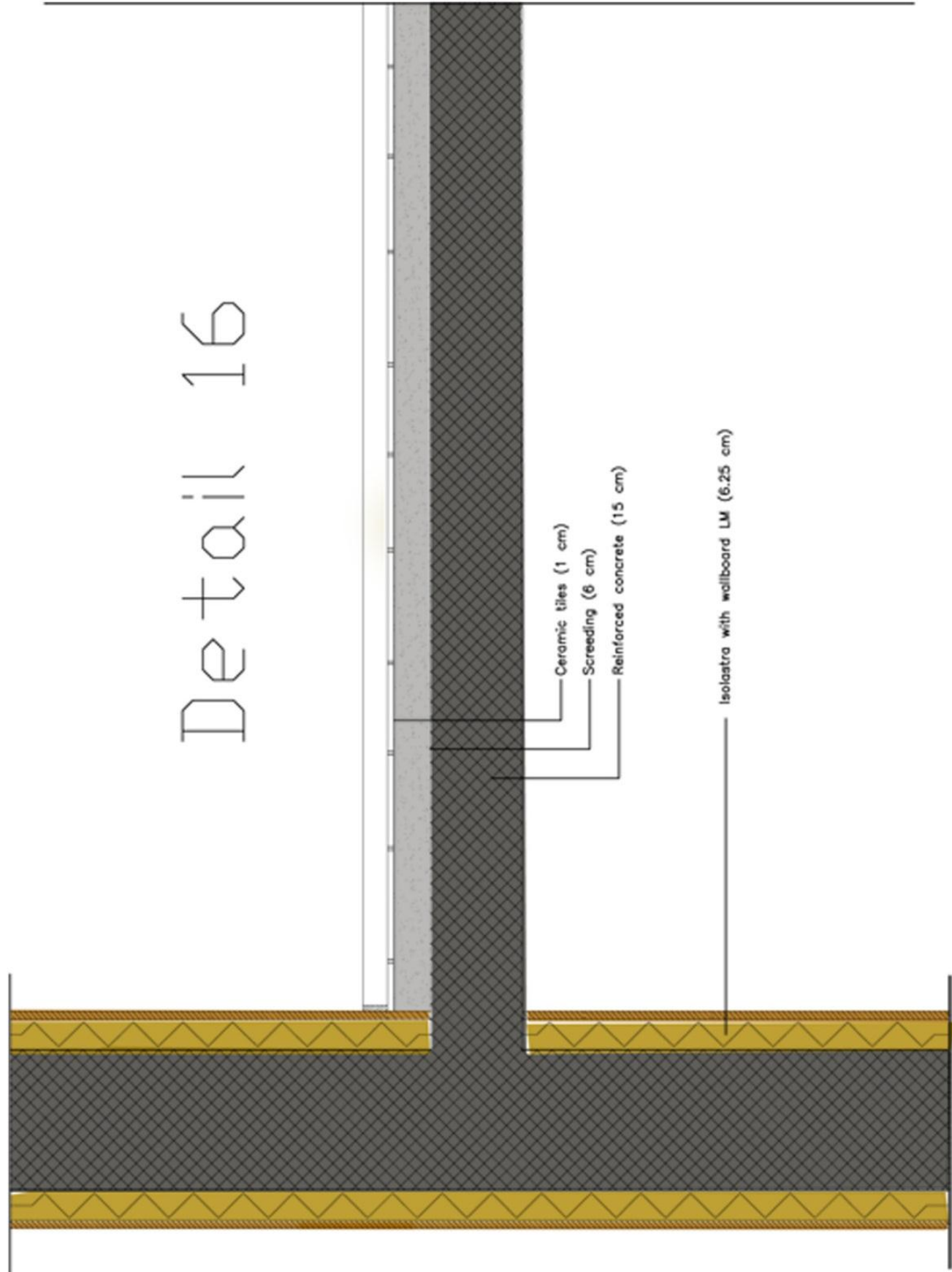
- Knauf wallboard (1.25 cm)
- Knauf wallboard (1.25 cm)
- Mineral Wool (7 cm)
- Air gap (6 cm)
- Mineral Wool (7 cm)
- Knauf wallboard (1.25 cm)
- Knauf wallboard (1.25 cm)

Detail 14



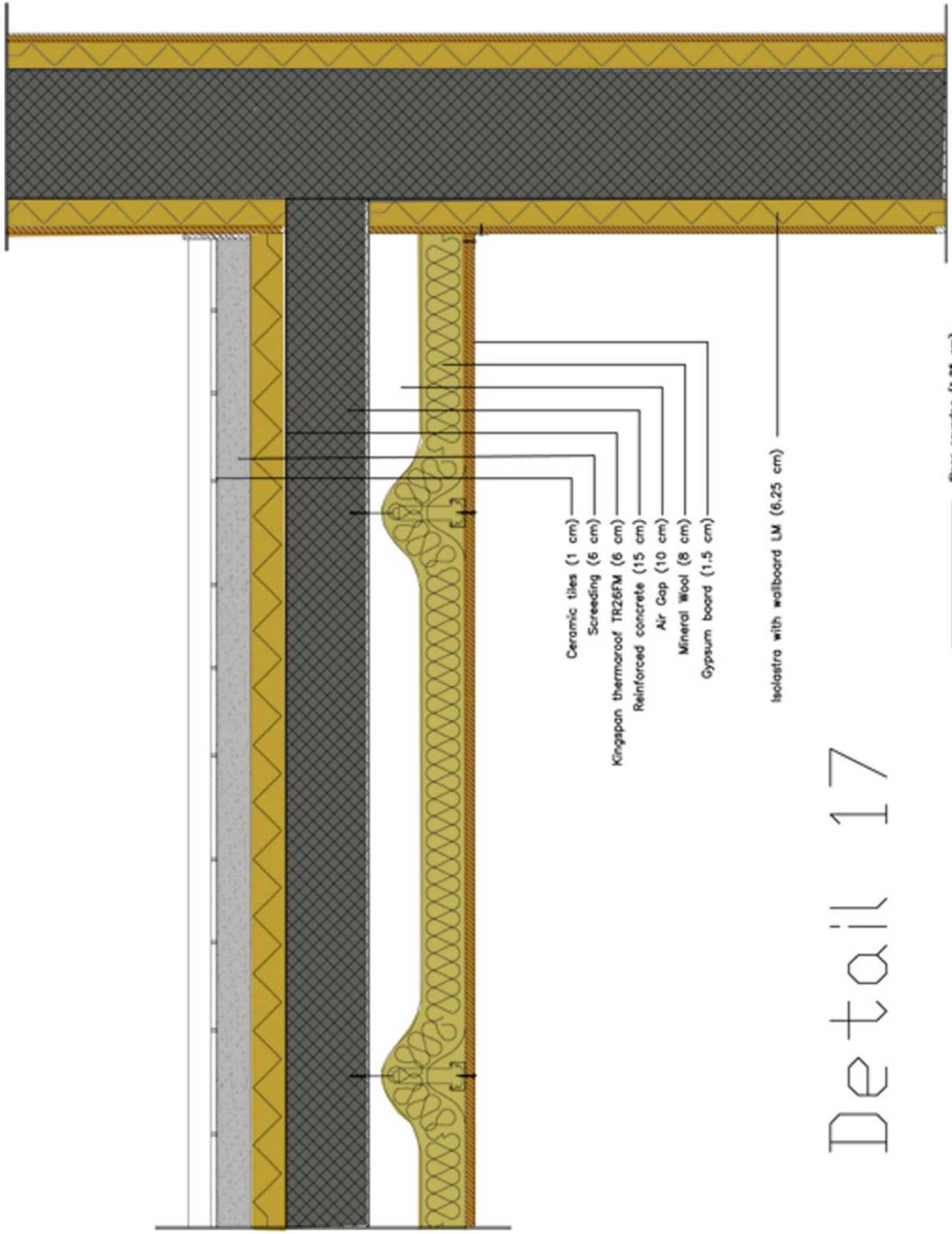


Detail 15



Detail 16

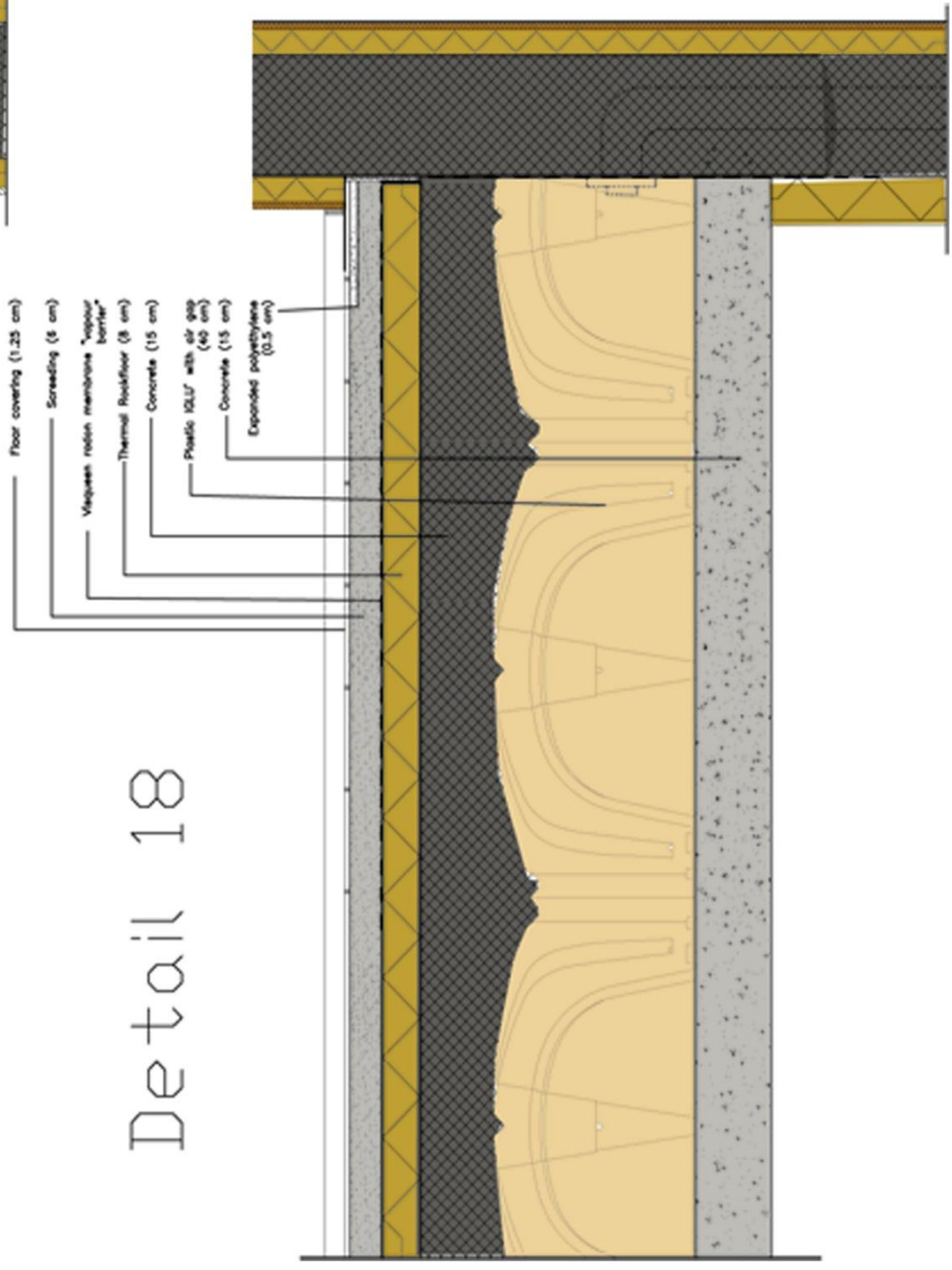




- Ceramic tiles (1 cm)
- Screeding (6 cm)
- Kingspan thermaroof TR26FM (6 cm)
- Reinforced concrete (15 cm)
- Air Gap (10 cm)
- Mineral Wool (8 cm)
- Gypsum board (1.5 cm)

Isostra with wallboard LM (6.25 cm)

Detail 17

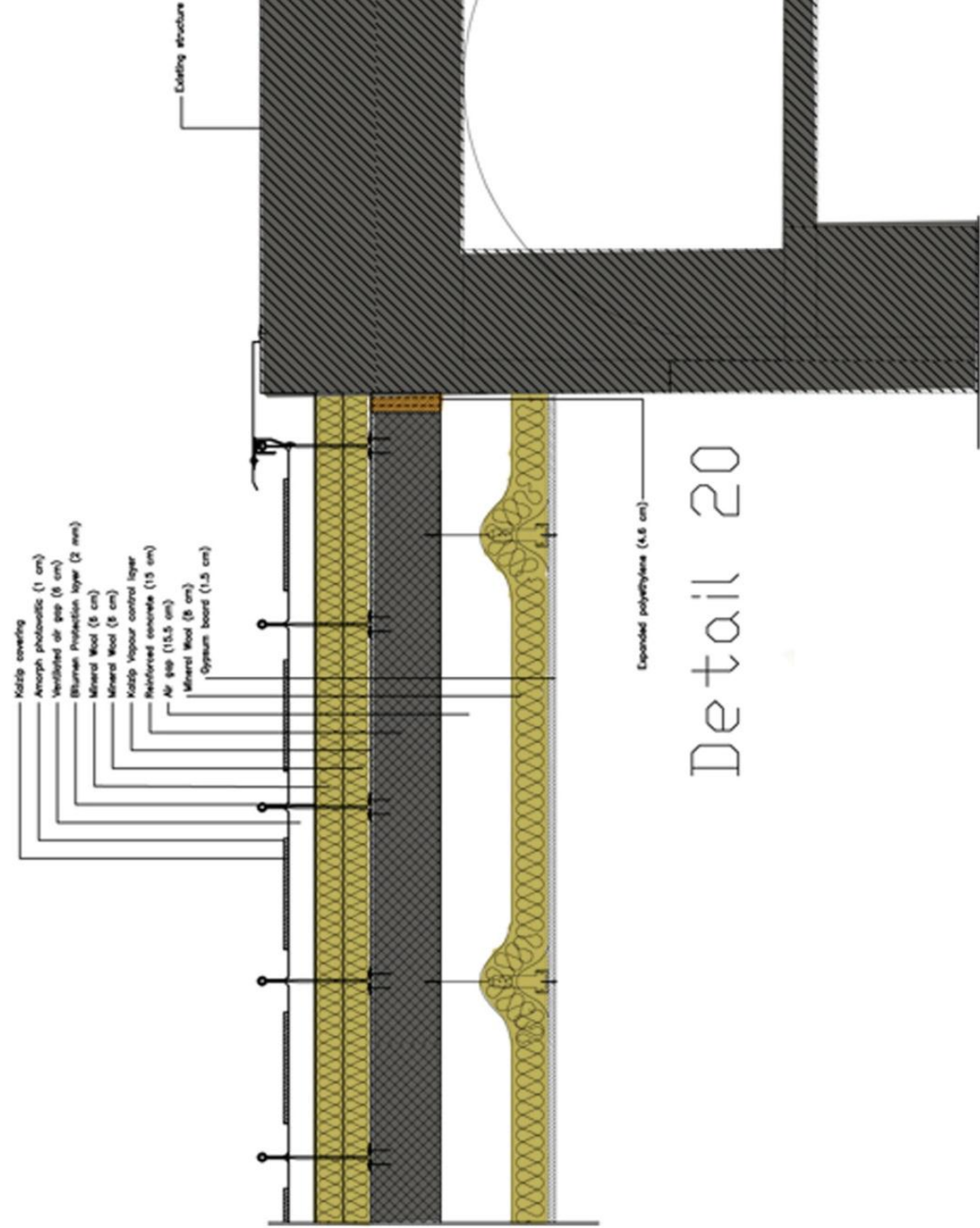
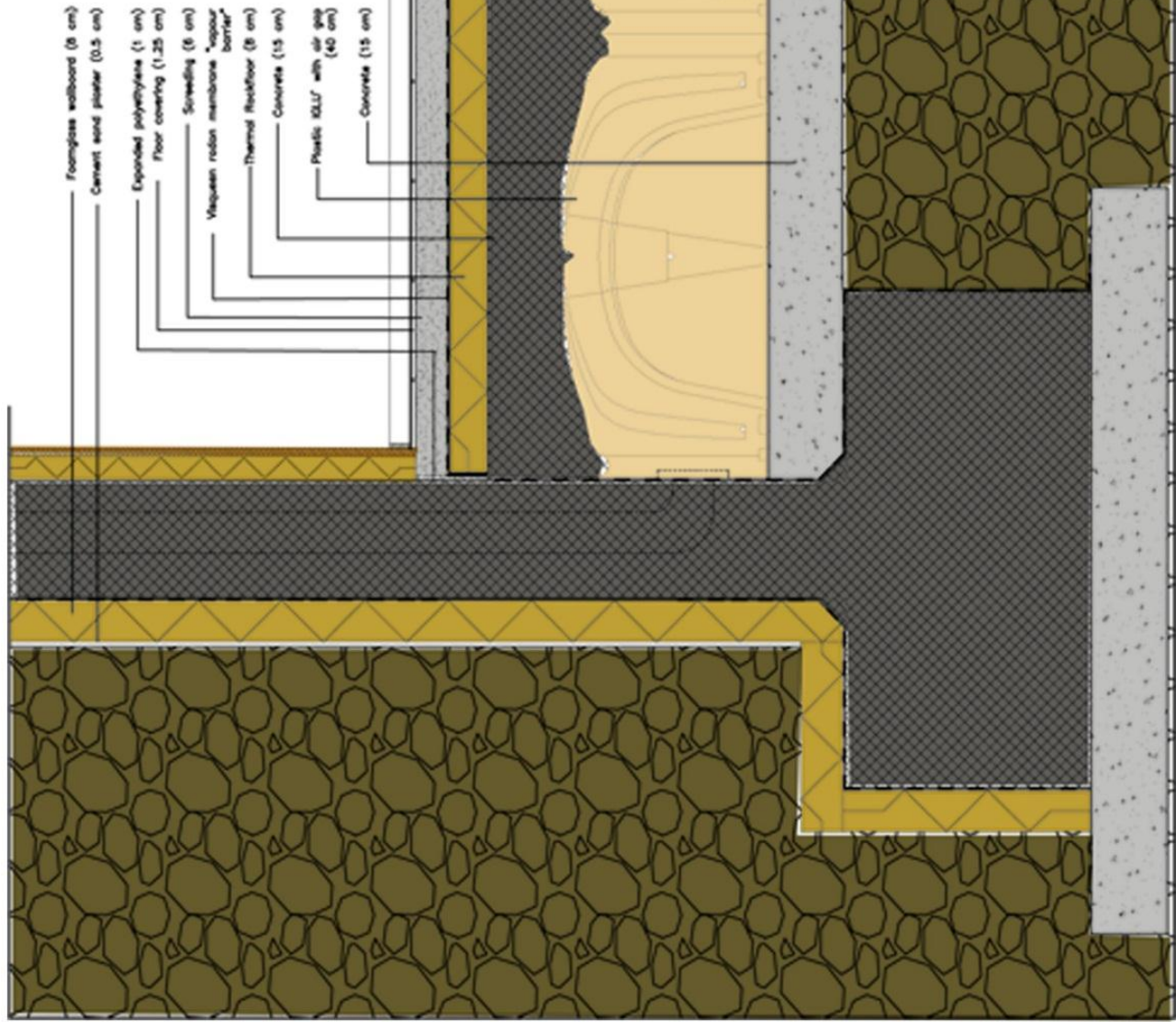


- Floor covering (1.25 cm)
- Screeding (6 cm)
- Vapqueen resin membrane "vapour barrier"
- Thermal Rockfloor (8 cm)
- Concrete (15 cm)
- Plastic XLLU with air gap (40 cm)
- Concrete (15 cm)
- Expanded polystyrene (0.5 cm)

Detail 18



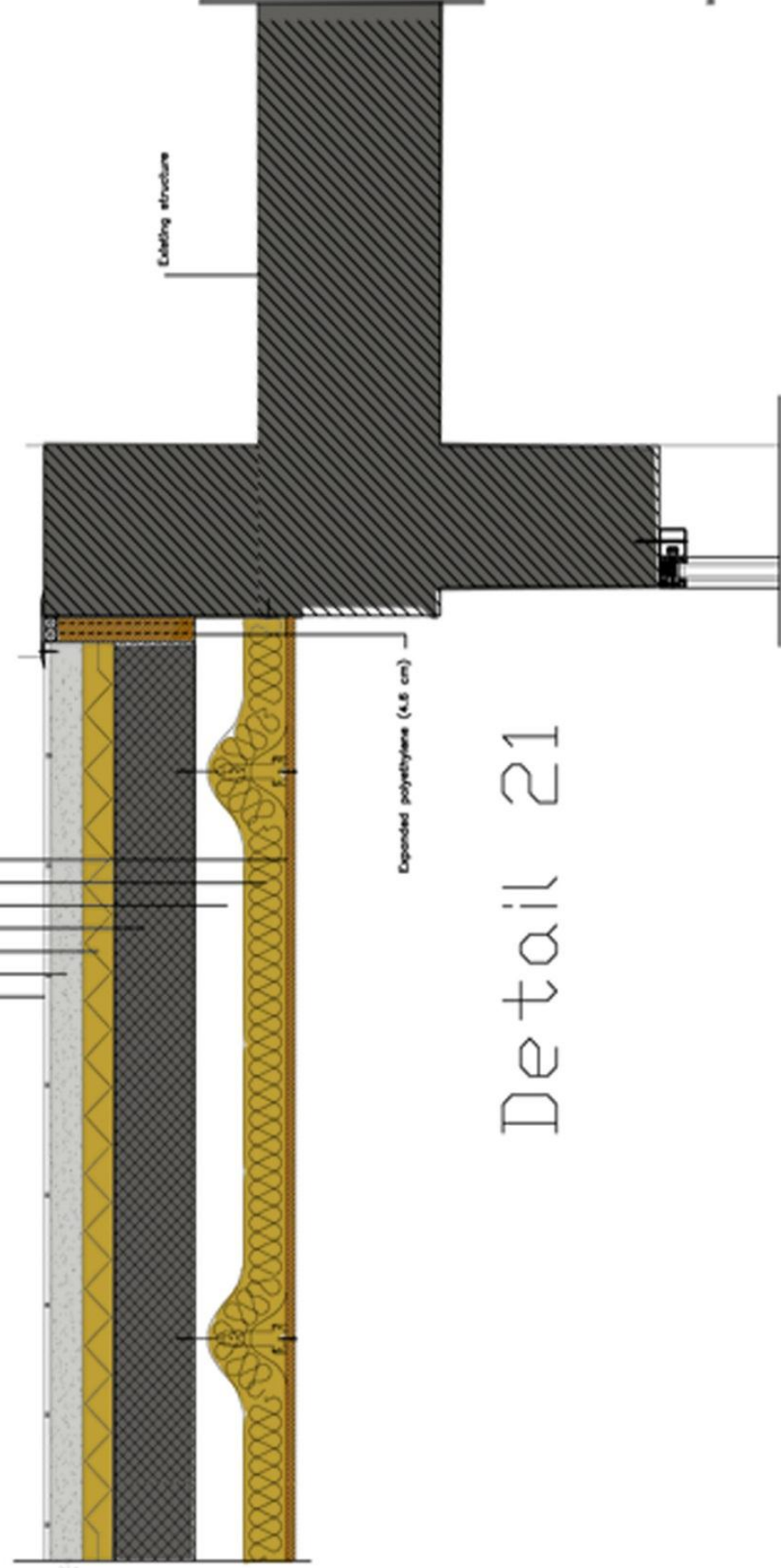
Detail 19



Detail 20



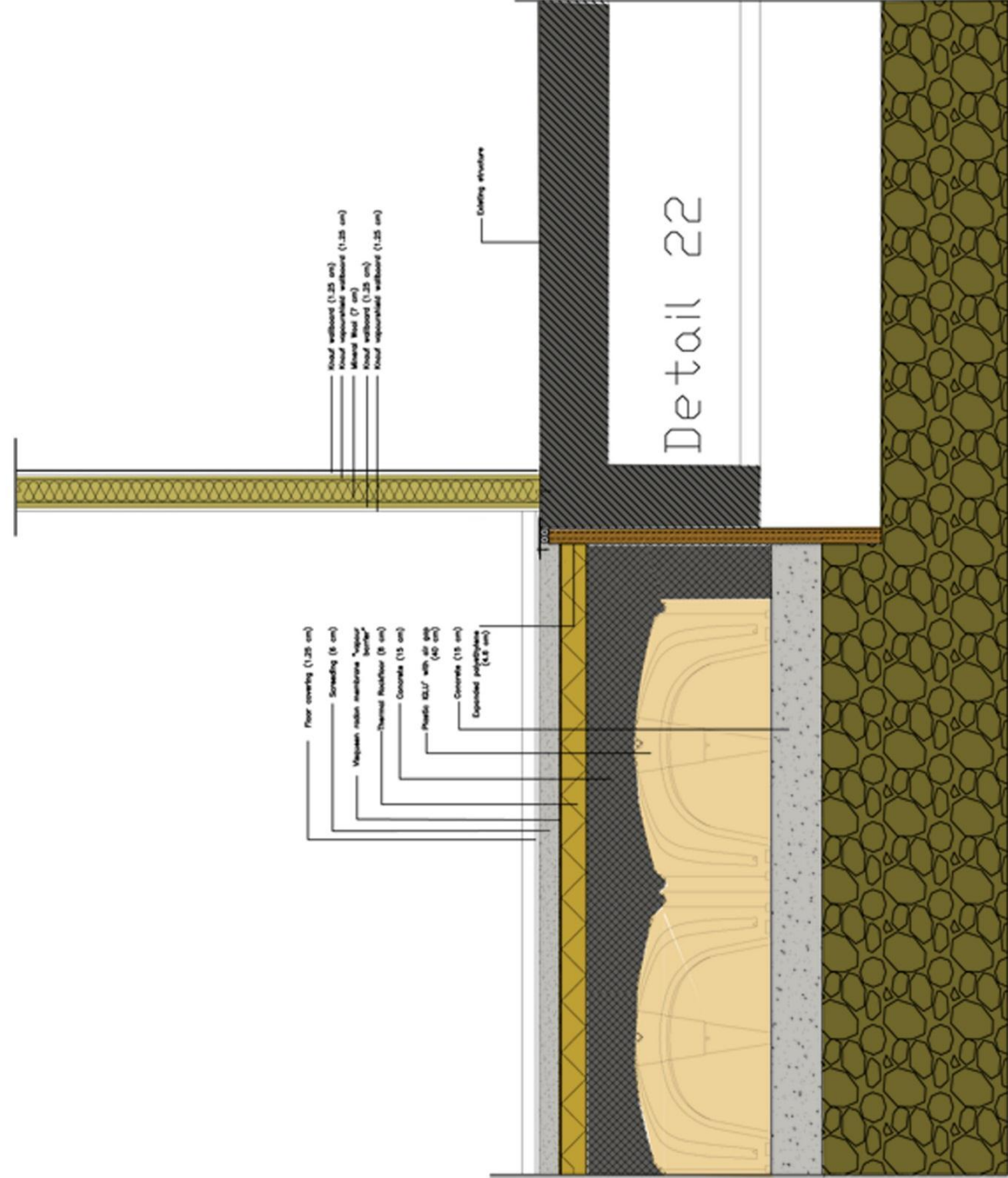
Gypsum board (1.5 cm)
 Mineral Wool (8 cm)
 Air Gap (10 cm)
 Reinforced concrete (15 cm)
 Kingspan thermal roof TR25FM (6 cm)
 Screeding (8 cm)
 Ceramic tiles (1 cm)



Expanded polystyrene (4.8 cm)

Detail 21

Floor covering (1.25 cm)
 Screeding (6 cm)
 Vapor-resist membrane "water barrier"
 Thermal insulation (8 cm)
 Concrete (15 cm)
 Pads 82L7 with air gap (40 cm)
 Concrete (15 cm)
 Expanded polystyrene (4.8 cm)

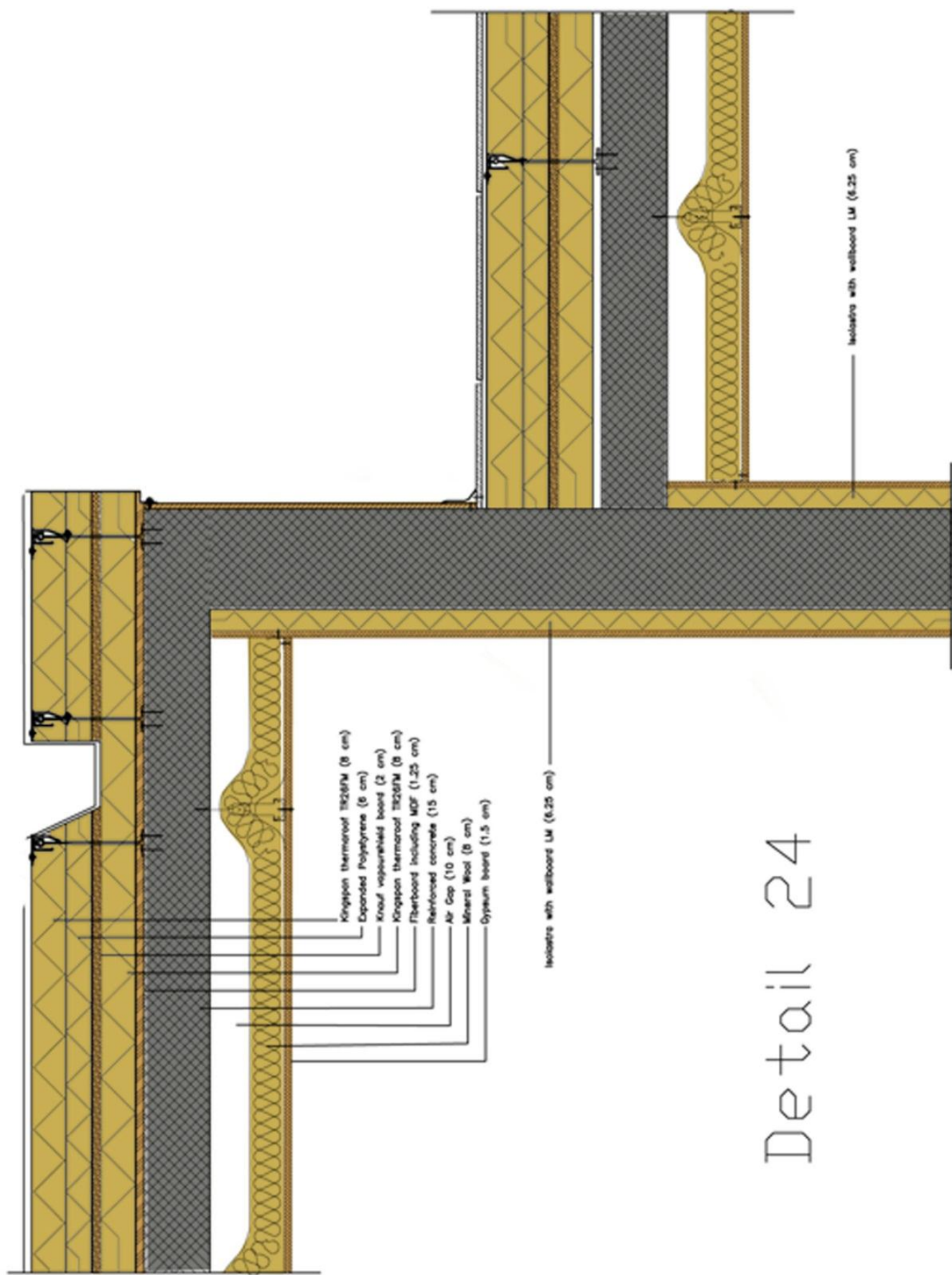
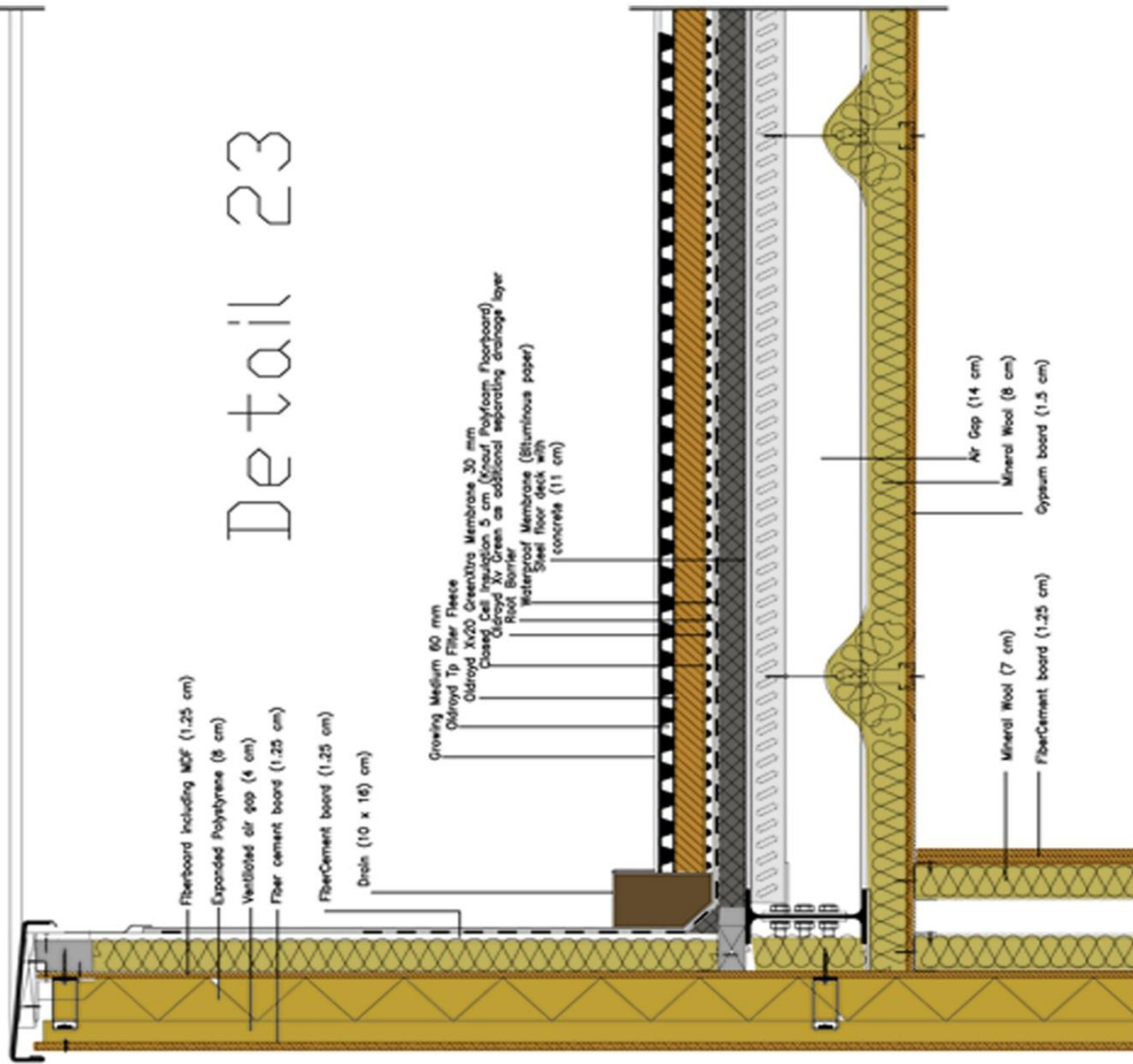


Roof waterproofing (1.25 cm)
 Mineral Wool (7 cm)
 Roof waterproofing (1.25 cm)
 Roof waterproofing (1.25 cm)

Detail 22



Detail 23



Detail 24

