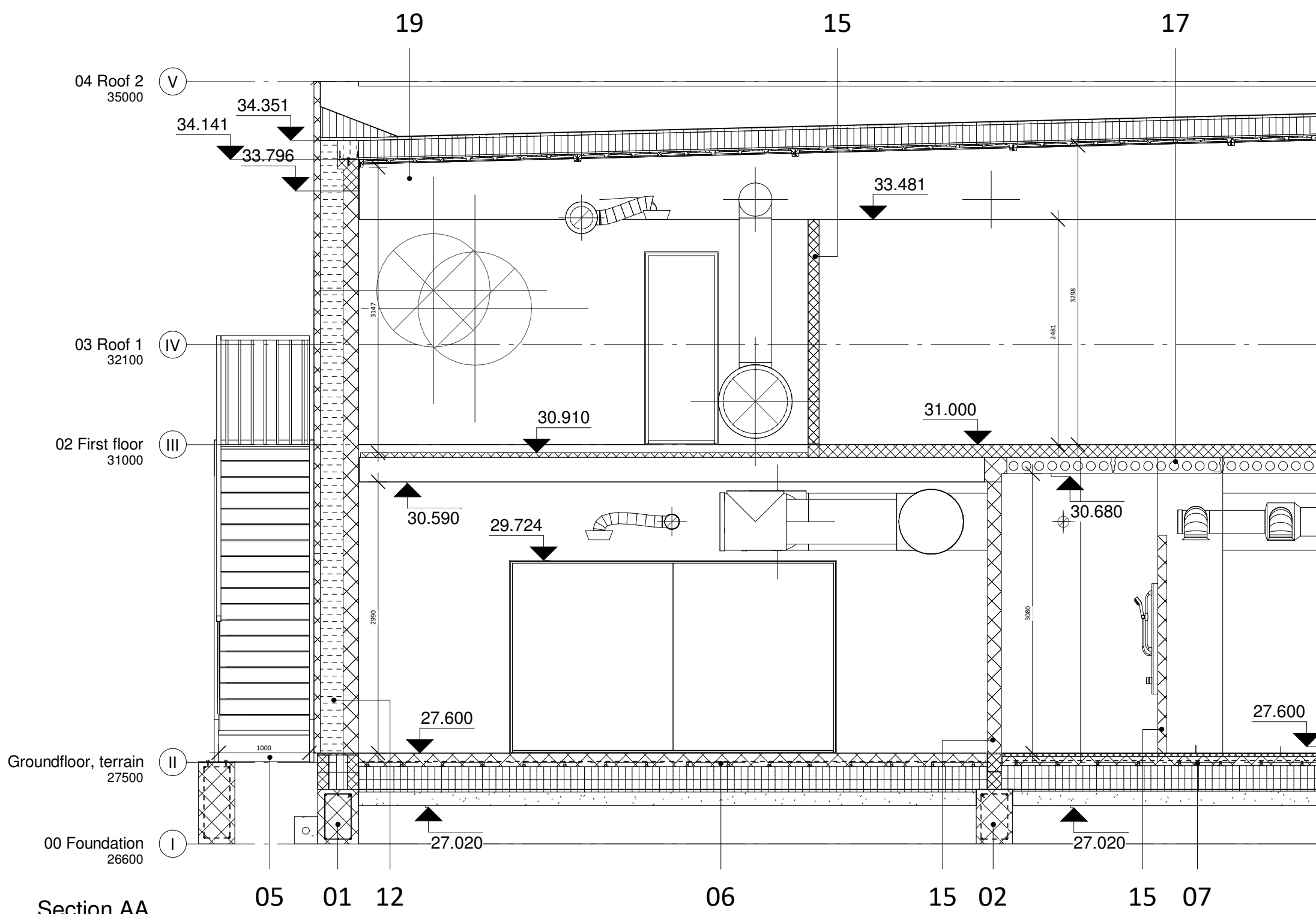




Section AA
1 : 50

01. EXTERNAL FOUNDATION IN CONCRETE PART

- 450 x 600 mm cast-in-situ concrete strip foundation
- 6 x Ø12 mm stainless Y-steel bars placed each 1000 mm
- Ø8 mm support stirrups placed each 1000 mm
- 2 x LECA® termblok with 210 mm polystyrene insulation
- w: 450 mm; h: 190 mm; l: 490 mm
- density: 600 kg/m³
- λ_{polystyrene} = 0,036 W/mK

02. INTERNAL FOUNDATION IN CONCRETE PART

- 400 x 600 mm cast-in-situ concrete strip foundation
- 4 x Ø12 mm stainless Y-steel bars placed each 1000 mm
- Ø8 mm support stirrups placed each 1000 mm
- 2 x LECA blocks
- w: 150 mm; h: 190 mm; l: 490 mm
- density: 600 kg/m³
- 10 mm cement mortar

03. EXTERNAL FOUNDATION IN WOODEN PART

- 300 x 700 mm cast-in-situ strip foundation
- 6 x Ø12 mm stainless Y-steel bars placed each 1000 mm
- Ø8 mm support stirrups placed each 1000 mm
- 2 x LECA 600 block (w: 230 mm; h: 190 mm; l: 490 mm)
- Ø80 mm drainage pipe covered with fiber cloth
- XPS polystyrene insulation

04. INTERNAL FOUNDATION IN WOODEN PART

- 250 x 580 mm cast-in-situ strip foundation
- 6 x Ø12 mm stainless Y-steel bars placed each 1000 mm
- Ø8 mm support stirrups placed each 1000 mm
- 2 x LECA 600 blok (w: 230 mm; h: 190 mm; l: 490 mm)
- 50 x 212 mm timber plate distributing load fixed with stainless steel rod

05. EXTERNAL STAIRCASE

- 350 x 600 mm cast-in-situ concrete strip foundation
- 4 x Ø12 mm stainless Y-steel bars placed each 1000 mm
- Ø8 mm support stirrups placed each 1000 mm
- 80 mm drain with slope 1‰
- Base plate 400 x 120 x 12 mm
- 2 x 25mm anchor bolts to be welded
- Prefabricated steel stair with handrails
- Riser height: 175 mm
- Treader depth: 280 mm
- Stair stringers. Both stringers are supported with the same supporting beam (HEB500) through 2 steel plates with 3xM20 bolts

06. CONCRETE FLOOR IN OFFICE CONCRETE BUILDING

- U-value: Actual: U= 0,11 W/m²K
- Required: U= 0,20 W/m²K
- Sand for soil levelling
- 2 x 140 mm Jackodur KF 300 XPS polystyrene insulation
- λ = 0,035 W/mK
- 2 mm DPM
- 2 mm bitumen felt as moisture and radon barrier
- 20 mm edge polysterene insulation
- power floated cast-in-site concrete slab
- Ø5 mm reinforcement mesh with 150 mm between bars supported by 50 mm grade plate spacers

07. CONCRETE FLOOR IN WET ROOM

- Cast-in-situ concrete slab
- Ø5 mm reinforcement mesh with 150 mm between bars
- 100 mm x 100 mm (from floor finish) cast-in-situ concrete basin
- Concrete non-loadbearing partition
- LIP foil system as watertight membrane (0,5 mm thick, glued on LIP 2K primer, sealed with LIP tape)
- Screeding mortar as leveling compound
- Tarkett cove former PA30 fixed with contact adhesive on Tarkett primer
- 1 mm layer of acrylic adhesive for floors and 1 mm layer of contact adhesive for walls
- 2 mm Tarkett Multisafe Granit vinyl flooring
- Tarkett PJ30 transition strip
- 0,92 mm Tarkett Aquarelle Wall HFS vinyl wall covering with 30 mm overhang, fixed to vinyl flooring by groover machine for hot welding

08. FLOOR CONSTRUCTION IN GLASS HALL (U-value = 0,11 W/m²K)

- Sand for soil levelling
- 2 x 140 mm Jackodur KF 300 XPS polystyrene insulation
- λ = 0,035 W/mK
- 0,2 mm damp proof membrane with an overlap of 200 mm at all joints and walls
- Extended powerfloated cast-in-site concrete slab
- Ø5 mm reinforcement mesh with 150 mm between bars supported by 50 mm grade plate spacers
- polishing as floor finish

09. FLOOR CONSTRUCTION IN WOODEN PART (U-value = 0,10 W/m²K)

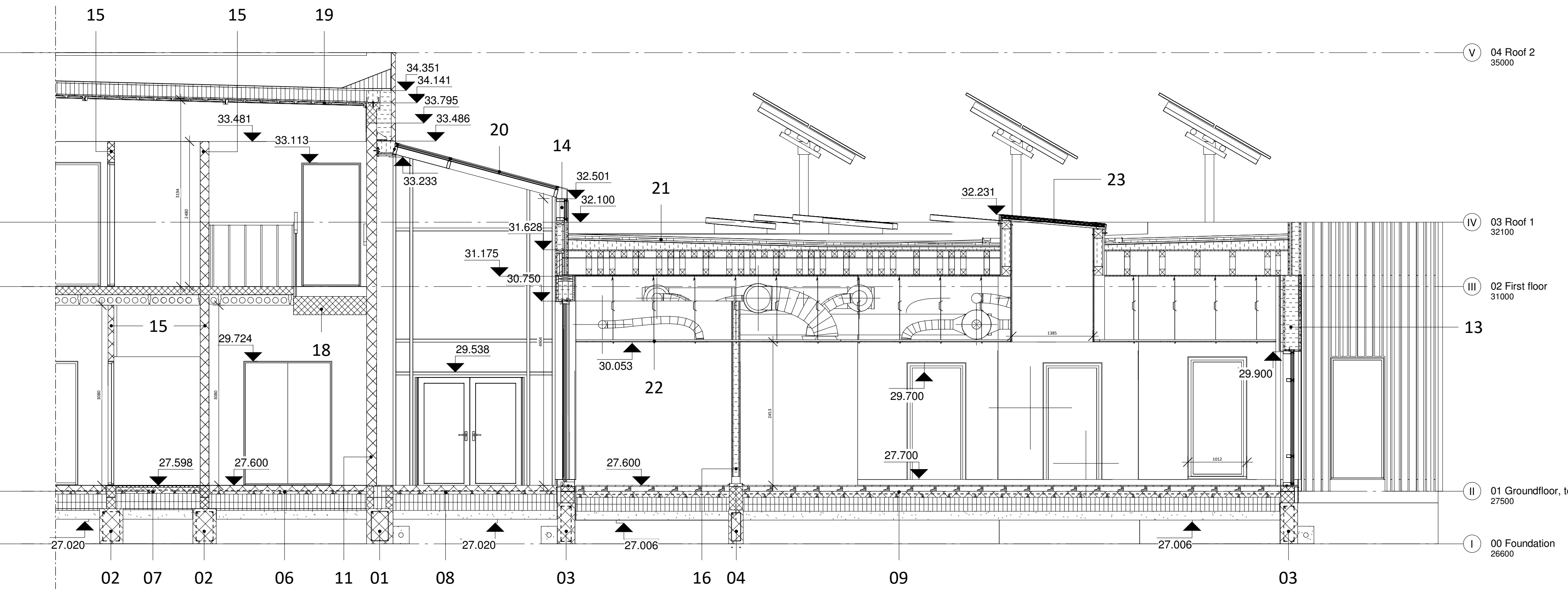
- 150 mm sand
- 2 x 120 mm Jackodur KF 300 XPS polystyrene insulation, λ = 0,035 W/mK
- 100 mm power floated cast-in-situ concrete slab with Ø5 mm reinforcement mesh with 150 mm between bars supported by 50 mm grade plate spacers
- 20 mm edge insulation Jackodur KF 300 XPS
- 2 mm bitumen felt as radon barrier
- 0,2 mm DPM
- 4,5 mm step sound reduction pad
- 40 mm Junckers DuoWedges
- 39 x 40 mm engineered battens
- 140 x 3000 x 20,5 mm textured oak planks

10. FLOOR CONSTRUCTION IN SPORTS HALL (U-value = 0,10 W/m²K)

- Sand for soil levelling
- 2 x 140 mm Jackodur KF 300 XPS polystyrene insulation, λ = 0,035 W/mK
- 2 mm bitumen felt as moisture and radon barrier
- 10 mm impervious plinth rendering
- 0,2 mm damp proof membrane with an overlap of 200 mm at all joints and walls
- Power floated cast-in-site concrete slab
- Ø5 mm reinforcement mesh with 150 mm between bars supported by 50 mm grade plate spacers
- 9 x 4 mm resilient rubber band pre-mounted in grooves
- 19 x 45 x 3000 mm laminated batten
- 22 x 129 x 3700 mm beech hardwood floor boards fixed with 2,2 x 45 mm nails to the batten sub-structure
- point load: 6 kN
- rolling load: 3,5 kN

11. CUSTOMIZED SANDWICH ELEMENT WALL

- Prefabricated SPÆNCOM sandwich element
- consisting of 170 mm inner leaf, except upper 1513 mm
- l: 2400 mm; h: 7400 mm
- fire classification: REI120 A2-s1,d0
- tolerance: 12 mm



12. SANDWICH ELEMENT WALL

- U-value: Actual: U = 0,15 W/m²K
- Required: U = 0,3 W/m²K
- Prefabricated SPÆNCOM sandwich element
- w: 490 mm (170/250/70); l: 2400 mm; h: 7400 mm
- fire classification: REI120 A2-s1,d0
- tolerance: 12 mm
- 2 x 125 mm pressure-resistant polystyrene insulation first 600 mm
- 250 x 600 x 1200 mm mineral wool batts above 600 mm

13. WOODEN FACADE WITH CLADDING (U = 0,11 W/m²K)

- 245/120 mm x 45 mm construction timber stud
- 30 mm internal WISA spruce plywood
- 0,2 mm DAFA ProFoil damp proof membrane
- 45 x 45 mm construction timber stud
- 45 mm Rockwool Flexibatts λ34
- 2 x 12,5 mm GNE 13 Normal Ergo gypsum boards
- 245/120 mm Rockwool Flexibatts λ34
- 45 x 370 mm EWP rim board
- 30 mm external WISA birch plywood as wind barrier
- 25 x 25 mm construction timber batten
- metal flashing
- 25 x 45 mm distance strip c/c 600 mm
- 38 x 56 mm battens c/c 600 mm
- 21 mm vertical wooden cladding

14. GLASS FACADE

- SAPA 4150 SX high-insulated tripple glazed glass facade
- 135,5 mm mullion width
- design wind load: 2000Pa
- fire classification: EI30
- U-value: 0,78 W/m²K
- Backfilling with ROCKWOOL facadebatt mineral wool insulation
- U-value: 0,37 W/m²K

15. INTERNAL CONCRETE WALL

- Prefabricated SPÆNCOM concrete element
- load-bearing wall strenghted with net reinforcement of cold-drawn profiled steel
- w: 150/100 mm; l: 3600 mm
- sound insulation: 53 dB
- fire classification: REI120 A2-s1,d0

16. INTERNAL WALL DOUBLE SKELETON 70/70 x 2 (450) 2-2 M140

- sound classification: 55-60 dB
- fire classification: EI60 A2-s1,d0
- 70 mm head rail made of 1,2 mm reinforced steel, fixed with fastener max. each 450 mm/150 mm from the end
- 70 mm wall lining steel stud placed each 450 mm
- A-Pladebatts 10 mineral wool insulation boards, λ = 0,035 W/mK
- 2 x 15,4 mm fire proof gypsum, fire classification: A2-s1, d0, λ = 0,25 W/mK
- 50 x 150 mm timber wall plate distributing load
- fire, smoke, acoustic proof water-based acrylic sealant
- optional plywood splice for stability of easi-joists

17. CONCRETE HEAVY FLOOR PARTITION

- SPÆNCOM 270 mm hollow core reinforced element EX18/EX27
- tolerance: 8 mm
- modular width: 1200 mm
- thickness: 180/270 mm
- fire classification: REI60

18. INTERNAL STAIRCASE

- Reinforced concrete footing
- Cast-in-situ concrete internal staircase with reinforcement inside with the width of 1135 mm
- Riser height: 171 mm
- Treader depth: 280 mm
- Metal railings for safety
- Staircase laying on heavy floor partition deck and supported by a beam
- Cast-in-situ concrete reinforced landing mounted to the loadbearing walls with steel bars

19. CONCRETE ROOF CONSTRUCTION (U = 0,16 W/m²K)

- SPÆNCOM TTS 102 roof element with Ø12,5 mm pre-stressed reinforcement
- slope: 1:40
- module width: 2400 mm; module length: 28800 mm
- weight: 22,8 ton
- SPÆNCOM VBS 240 waffle plate U = 0,16 W/m²K
- module width: 2400 mm
- module length: 2400 mm
- fire classification: BD60 with 2 layers of mineral wool on top
- UNP steel string fixed along facades
- HILTI HUS mechanical anchor H14x80 mm
- Welding on site between two waffle plates
- 230 mm x 2000 mm x 210 mm ROCKWOOL Lamel mineral wool batt, λ = 0,033 W/mK
- 50 x 2 m x 0,2 mm DAFA EcoFoil PE-damp proof membrane
- Jackson Super EPS 90 polystyrene as corner insulation, λ = 0,033 W/m²K
- 2 x 2 mm roofing bitumen felt
- 900 x 900 x 25 mm acoustic boards fixed with precasted fixing, fire classification B-s1,d0

20. GLASS ROOF

- BS Falsen fiber cement board in order to prevent thermal bridge, Ψk = 0,01 W/mK, fixed with Simpson bracket
- 11 mm x 100 mm steel flat bar fixed to sandwich wall
- 70 mm x 10 mm pregalvanized concrete anchor, screwed each 1000 mm along the middle of the profile
- SAPA 5050 pressure-resistant, air- and vapor-tight triple glazed roof with 15° slope to avoid high now load. Mullions with built-in drainage channels.
- Mounting bracket fixing mullion to steel bar
- Backfilling with ROCKWOOL facadebatt mineral wool insulation, λ = 0,037 W/mK
- Cut profile for dripping water
- Weather-proof silicone sealant

21. GREEN ROOF (U = 0,14 W/m²K)

- maximum water absorption: 40 l/m²
- water retention of annual precipitation: approx. 60%
- weight with saturation: 100 kg/m²

- Easi-joist® WS417 supported by IPE 330 galvanized beam
- bottom/top chord: 47 mm, web: 323 mm
- BPC B610 timber to timber joist hanger made of 1,5 mm pregalvanised steel

- fixed with 30 x 3,75 mm sheradised square twisted nails
- 340 mm Rockwool Flexibatts λ37
- 18 mm plywood deck primed with vapour control layer
- 0,2 mm DAFA EcoFoil PE-damp proof membrane
- 1200 x 2400 x 120/60 mm Jackson Super EPS 60 polystyrene insulation
- λ = 0,033 W/m²K
- Hardkile mineral wool levelling insulation mechanically fixed with telescopic tube fastener
- λ = 0,039 W/m²K

- 2 mm roofing bitumen felt
- 1 mm top roofing felt PF 5000 SBS
- 0,2 mm waterproof membrane
- 0,4 mm root protection LDPE foil
- 0,8 mm moisture proof polypropylene geotextile protective cloth
- 2020 x 1100 x 25 mm drainage water reservoir Diadrain 25H
- maximum water capacity: 13,5 l/m²
- drainage length: max. 29 m
- 0,2 mm filter cloth VLF150 with high permeability
- 40 mm extensive growing medium
- 1040 x 780 x 30 mm premium sedum mat
- L-shaped aluminium extending gravel board with perforations
- perimeter gravel strip

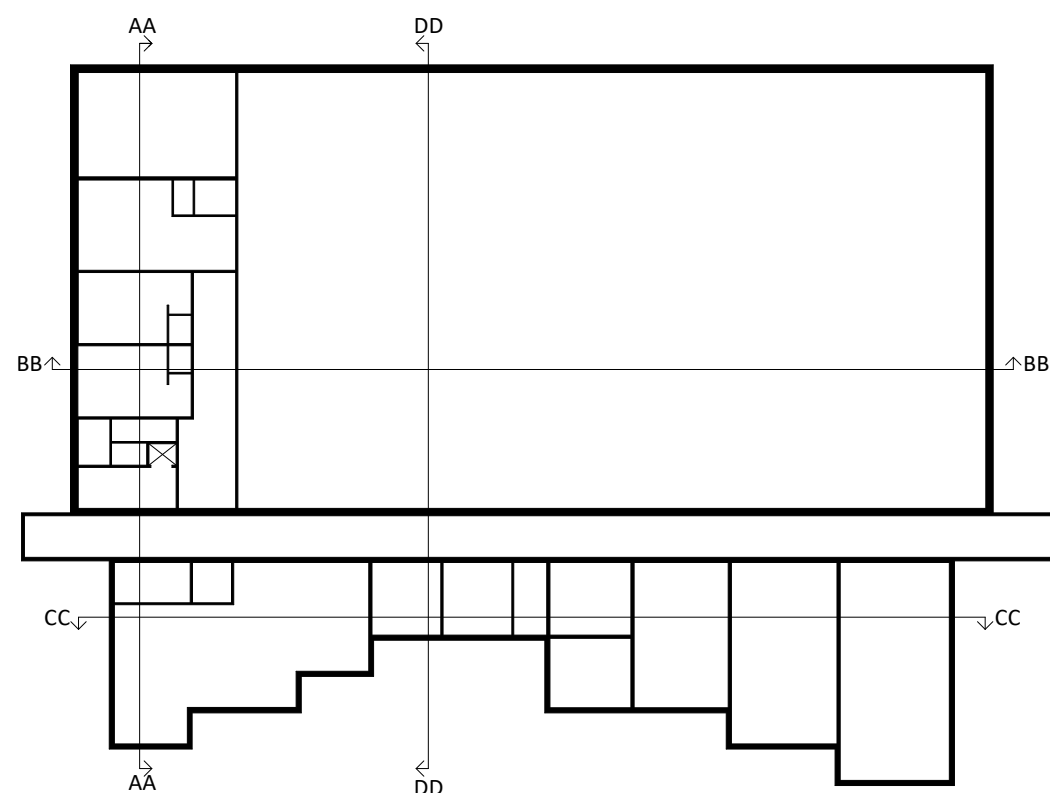
22. SUSPENDED CEILING

- 18 mm plywood supporting ceiling board
- edge rail (h: 33 mm; w: 30 mm; l: 3000 mm)
- fixed with flat head screw each 300 mm
- suspension hook for lengths 90 - 1500 mm
- fixed into the structure in rows each 1200 mm
- 3 m carrying profile each 600/1200 mm
- 600/1200 mm connection profile
- 600 x 600 x 12,5 mm removable ceiling gypsum board with hexagonal holes

23. SKYLIGHT

- λ = 1,2 W/mK
- 78% light transmission
- solar G-value: 0,68 (0,41 solar control)

- 150 mm insulated timber kerb fixed as circular as possible
- 1800 mm x 1800 mm triple glazes circular skylight
- kerb adaptor bedded on expanding tape or butyl
- butyl seal
- structured black silicone joint
- thermal barriers



Floor plan - groundfloor
1 : 500

PROJECT: Multi-purpose hall at Bygholm Lake, Horsens	DATE: 11/02/18	K01_TXX_H4_EX_N05
SUBJECT: Cross section A-A	SCALE: As indicated	
DRAWN BY: Carina Pronsaica (group 5)	CLASS: AH31-A18	

GENERAL INFORMATION:

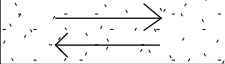
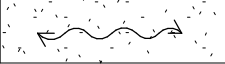
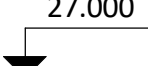
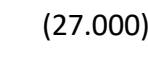
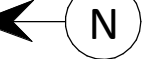
ADDRESS:
Lovbyvej 54, Horsens 8700

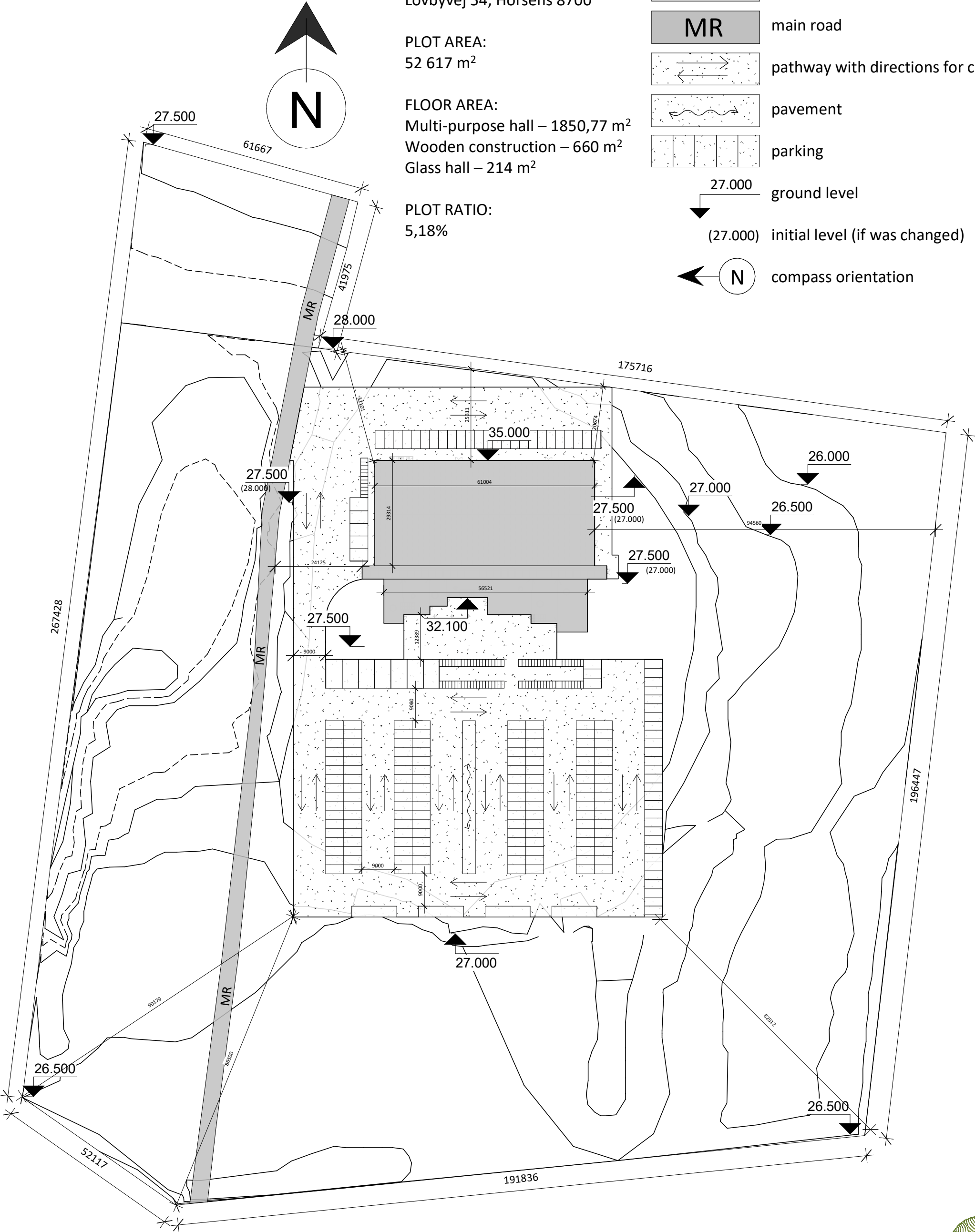
PLOT AREA:
52 617 m²

FLOOR AREA:
Multi-purpose hall – 1850,77 m²
Wooden construction – 660 m²
Glass hall – 214 m²

PLOT RATIO:
5,18%

LEGEND

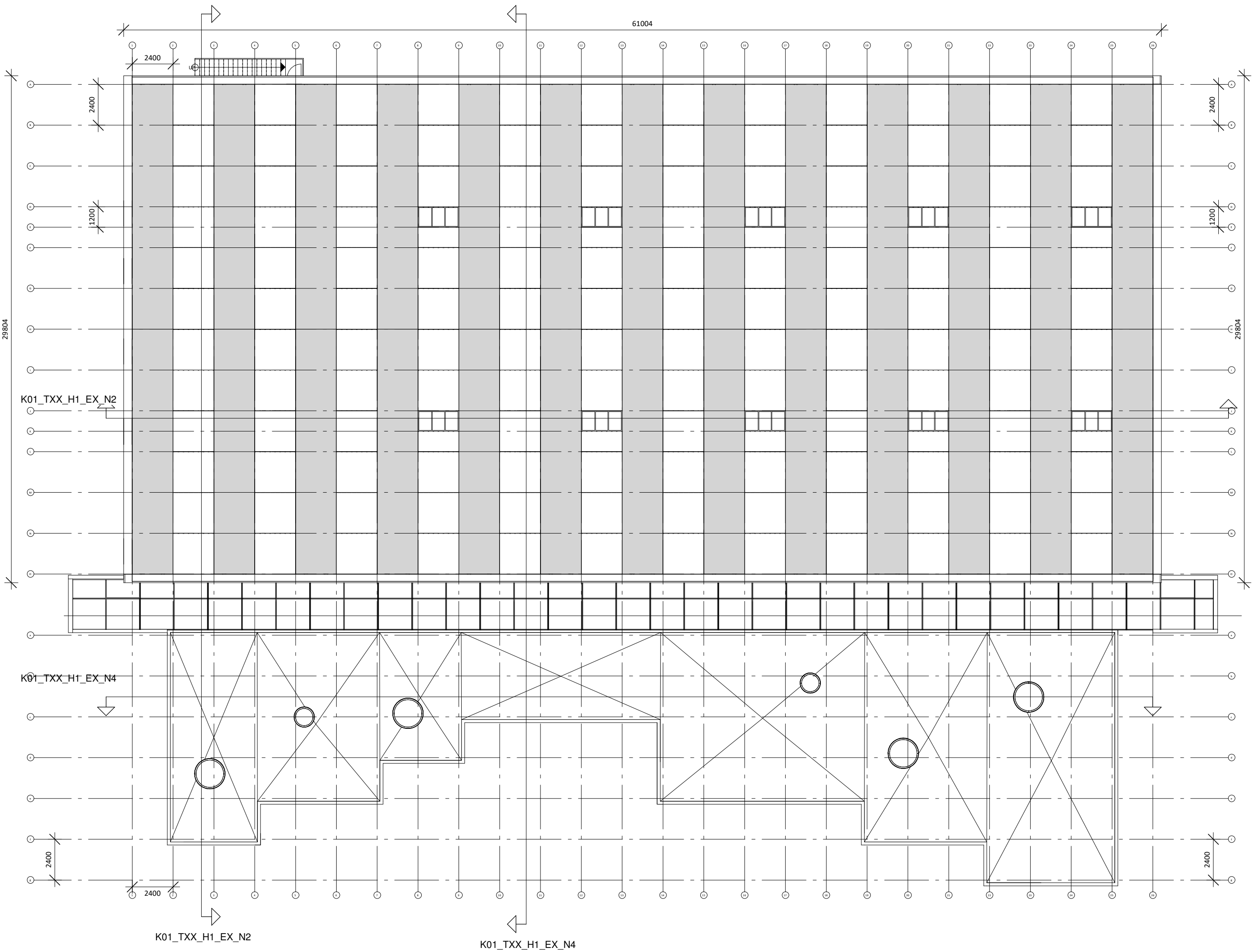
-  actual building
-  main road
-  pathway with directions for cars
-  pavement
-  parking
-  27.000 ground level
-  (27.000) initial level (if was changed)
-  compass orientation



GREENLINE ARCHITECTS
Chr M Østergaards Vej 4, 8700 Horsens



PROJECT: Multi-purpose hall at Bygholm Lake, Horsens	DATE: 10/23/18	K01_TXX_H1_EX_N10
SUBJECT: Site plan	SCALE: As indicated	
DRAWN BY: Carina Pronsaia (group 5)	CLASS: AH31-A18	



04 Roof 2
1 : 200

CONCRETE HALL ROOF CONSTRUCTION

actual: U = 0,16 W/m²K

required: U = 0,2 W/m²K

SPÆNCOM TTS 102 roof element with Ø12,5 mm pre-stressed reinforcement

- slope: 1:40
- module width: 2400 mm; module length: 28800 mm
- tolerance: 8 mm
- intervals: 4800 mm
- weight: 22,8 ton

SPÆNCOM VBS 120/240 waffle plate

- module width: 1200/2400 mm
- module length: 2400 mm
- fire classification: BD60 with 2 layers of mineral wool on top
- tolerance: 2 mm
- 600 x 2000 x 20 mm mineral wool with 50 mm overlap on TTS; 0,2 mm DAFA EcoFoil PE-damp proof membrane; 190/210 mm Jackson Super EPS 60 polystyrene insulation ($\lambda = 0,033$ W/mK); 30 mm Toprock Topplade hard mineral wool insulation ($\lambda = 0,038$ W/mK); 2 x 2 mm roofing bitumen felt

MULTI-SECTION FLATGLASS ROOFLIGHT (1200 X 2400 mm)

- aluminium with polyester powder coating colour
- light transmission: 78%
- U-value: 1,3 W/m²K
- solar G value: 0,63
- weight: 43 kg/m²
- acoustic: 34 Rw dB

GLASS HALL ROOF CONSTRUCTION

SAPA 5050 glass roof

- slope: 15°
- span: 69 230 mm
- supported by square 160 x 160 mm column with steel quality S235

WOODEN PART ROOF CONSTRUCTION

actual: U = 0,14 W/m²K

required: U = 0,2 W/m²K

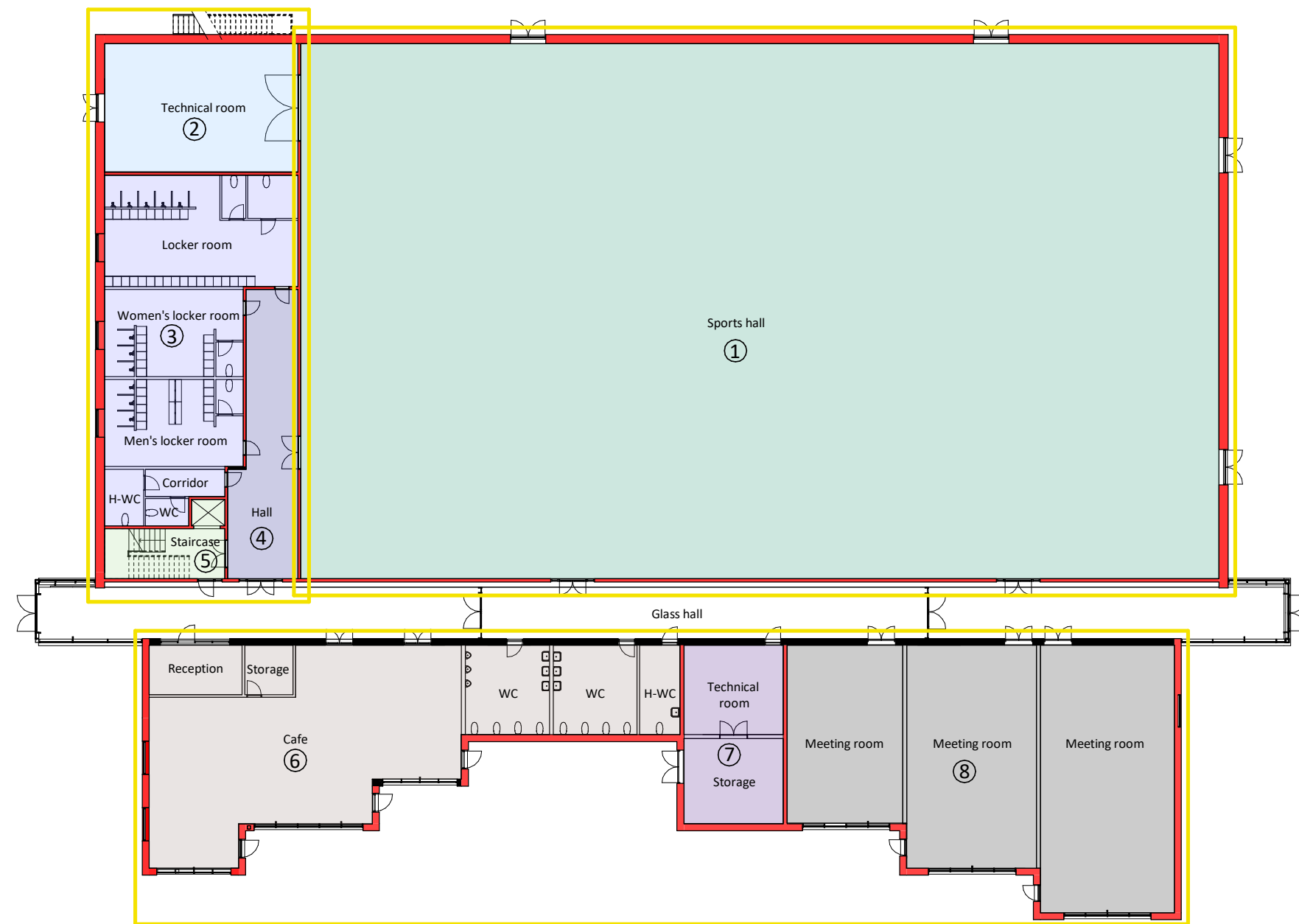
GREEN ROOF SEDUM 100 ON EASI JOISTS WS417

- 18 mm plywood deck primed with vapour control layer; 0,2 mm DAFA EcoFoil PE-DPM; 120/60 mm Super EPS 60 polystyrene ($\lambda = 0,033$ W/m²K); sloping mechanically fixed hard mineral wool insulation ($\lambda = 0,039$ W/m²K); 2 mm bitumen roof underlay; 1 mm top roofing felt; 0,2 mm waterproof membrane; 0,4 m root protection LDPE foil; 0,8 mm moisture proof polypropylene potective cloth; 25 mm drainage water reservoir; 0,2 mm filter cloth; 40 mm extensive growing medium; 30 mm remium sedum mat; gravel in extending gravel board along the roof perimeter

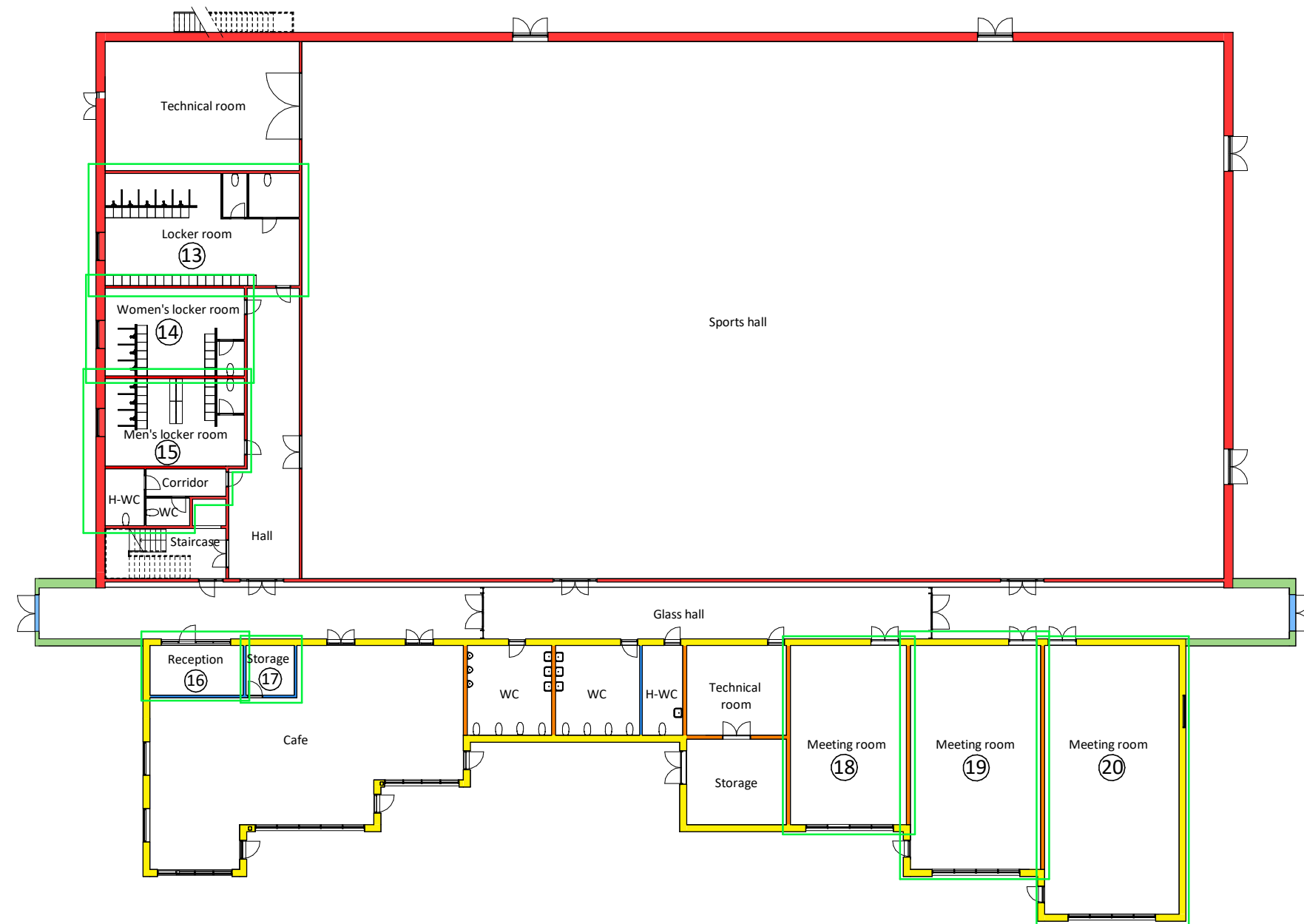
CIRCULAR FLAT ROOFLIGHT 1800 x 1800

- light transmission - 70%
- U-value: 1,2 W/m²K
- solar G-value: 0,68

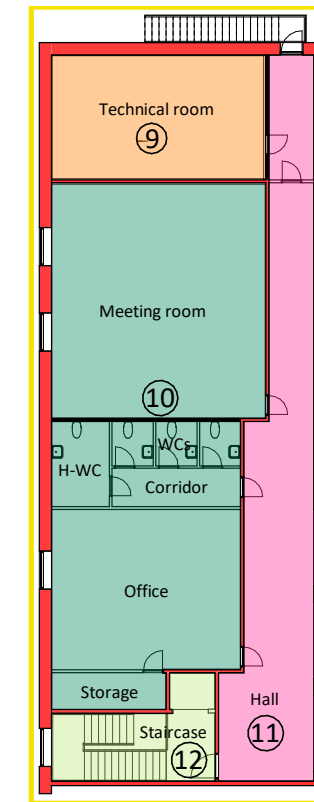
PROJECT: Multi-purpose hall at Bygholm Lake, Horsens	DATE: 10/31/18	K01_TXX_H1_EX_N09
SUBJECT: Roof plan	SCALE: As indicated	
DRAWN BY: Michaela Machová, Carina Pronsaia (Group 5)	CLASS: AH31-S18	



07.1.1 Fire analysis, groundfloor



07.1.2 Fire analysis, groundfloor



07.2.1 Fire analysis, first floor

LEGEND



Fire sections (sports hall, administrative wooden building), must be divided with [R]EI60 A2-s1,d0 fire safe partitions

① - ⑫

Fire section in fire section (corridors, staircase, technical rooms), must be divided with [R]EI60 A2-s1,d0 fire safe partitions



⑬ - ⑳

Fire compartments (meeting rooms, office, cafe), must be divided with [R]EI60 fire resistant partition

BUILDING COMPONENTS' CLASSIFICATION



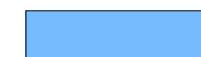
- REI120 A2-s1,d0
490 mm sandwich wall element (Spaencom)
- REI120 A2-s1,d0
150 mm reinforced concrete wall (Spaencom)



- REI90 A2-s1,d0
212 mm steel stud gypsum wall (Gyproc)



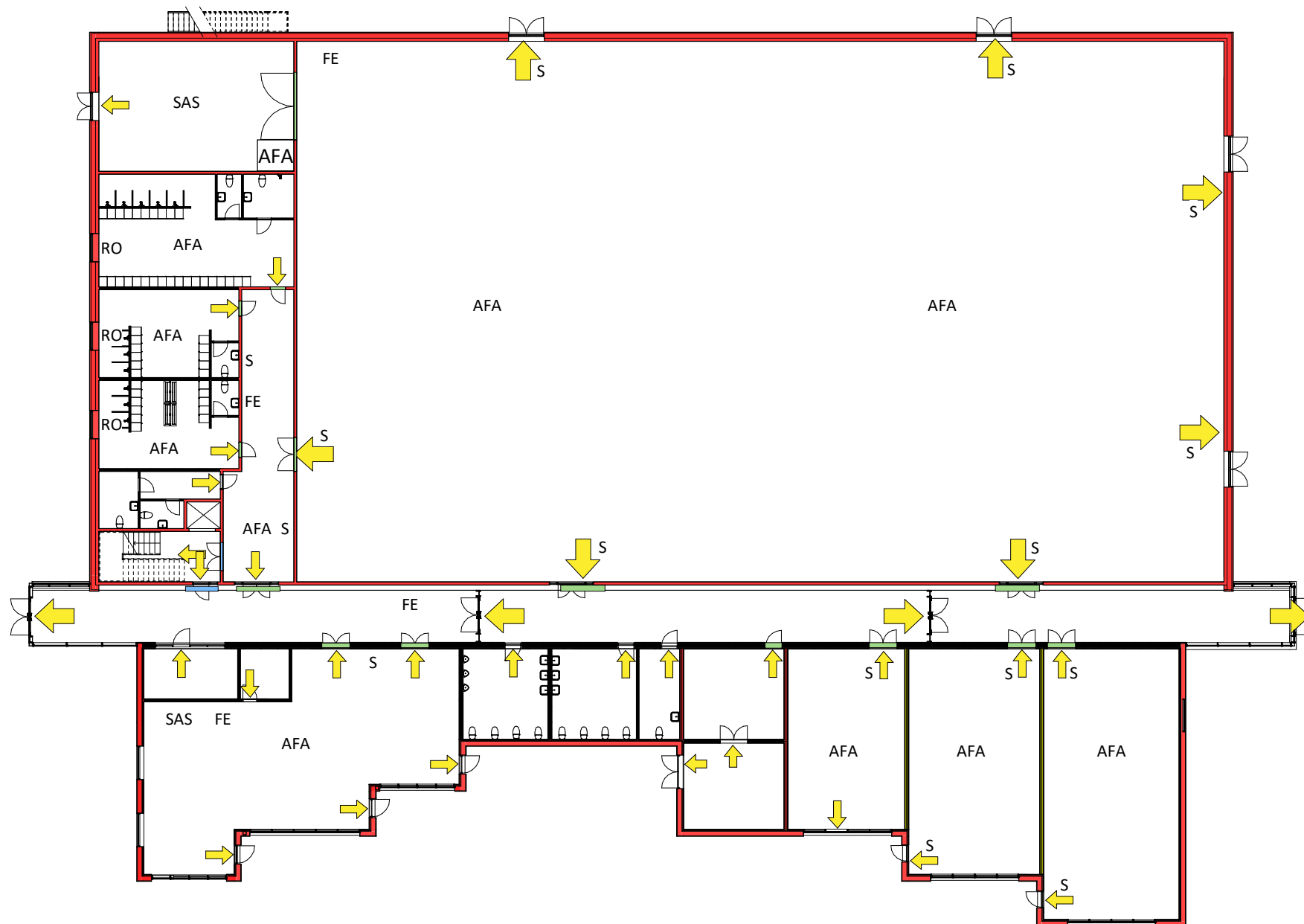
- REI60
459 mm wooden facade wall
- REI60 A2-s1,d0
concrete deck
- REI60 A2-s1,d0
easi-joist roof construction



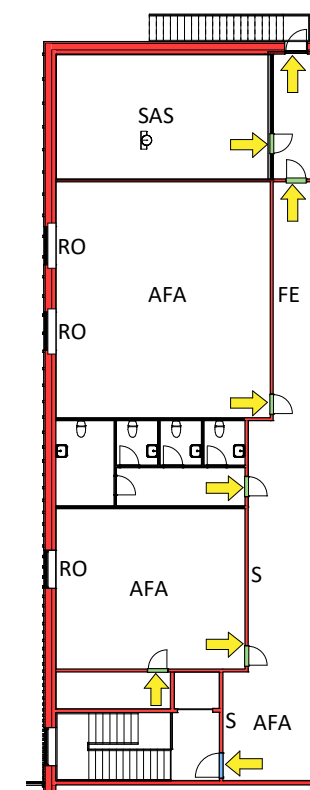
- EI60 A2-s1,d0
120 mm lightweight concrete wall up to 3m (Spaencom)
- EI60 A2-s1,d0
145 mm steel stud gypsum wall (Knauf)
- EI60 A2-s1,d0
TTS and waffle roof
- EI60
SAPA thermo glass door



- EI30
Sapa energy glass facade and roof



07.1.3 Fire analysis, groundfloor - escape routes



07.2.2 Fire analysis, first floor - escape routes

LEGEND

- EI₂30-C (BD door 30) + ABDL automatic closing system
 - between room and escape route
 - min. 4 escape doors from sports hall
 - min. 1200 mm width for wheelchair, areas for more than 150 people

- EI₂60-C (BD door 60) + ABDL automatic closing system
 - between escape route and staircase

- min. 1300 mm corridor width
- min. 1000 mm staircase width
- elevator door - BD 60

RO Additional rescue openings

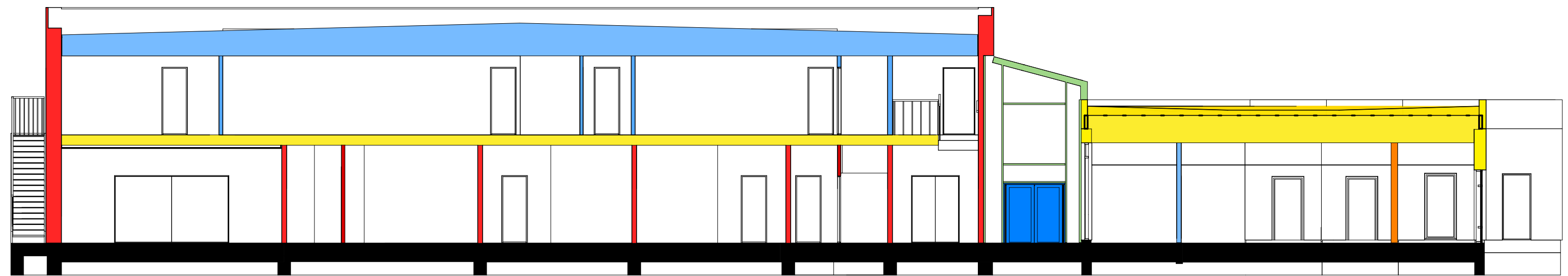
Fire safety installations:

- AFA Automatic fire alarm + warning system
- SAS Smoke alarm system
- FE Fire extinguisher
- S Sign for escape route

GREENLINE ARCHITECTS
Chr M Østergaards Vej 4, 8700 Horsens



PROJECT: Multi-purpose hall at Bygholm Lake, Horsens	DATE: 09/04/18	K01_TXX_H1_EX_N12
SUBJECT: Fire analysis - escape routes	SCALE: As indicated	
DRAWN BY: Carina Pronascaia (Group 5)	CLASS: AH31-A18	



Fire analysis - section AA
1 : 120



- REI120 A2-s1,d0
490 mm sandwich wall element (Spaencom)
- REI120 A2-s1,d0
150 mm reinforced concrete wall (Spaencom)



- REI90 A2-s1,d0
212 mm steel stud gypsum wall (Gyproc)



- REI60
459 mm wooden facade wall
- REI60 A2-s1,d0
concrete deck
- REI60 A2-s1,d0
easi-joist roof construction

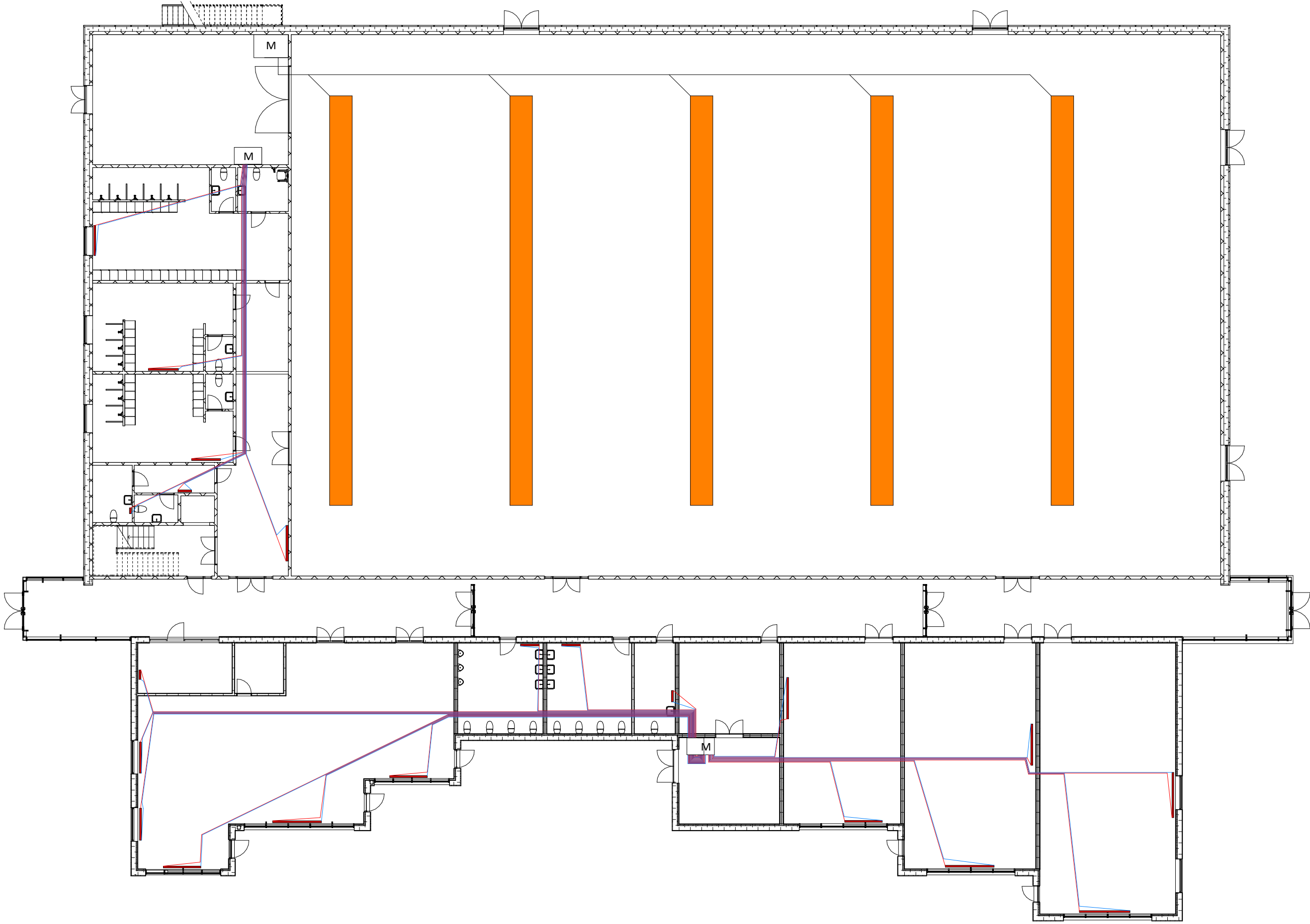


- EI60 A2-s1,d0
120 mm lightweight concrete wall up to 3m (Spaencom)
- EI60 A2-s1,d0
145 mm steel stud gypsum wall (Knauf)
- EI60 A2-s1,d0
TTS and waffle roof
- EI60
SAPA thermo glass door

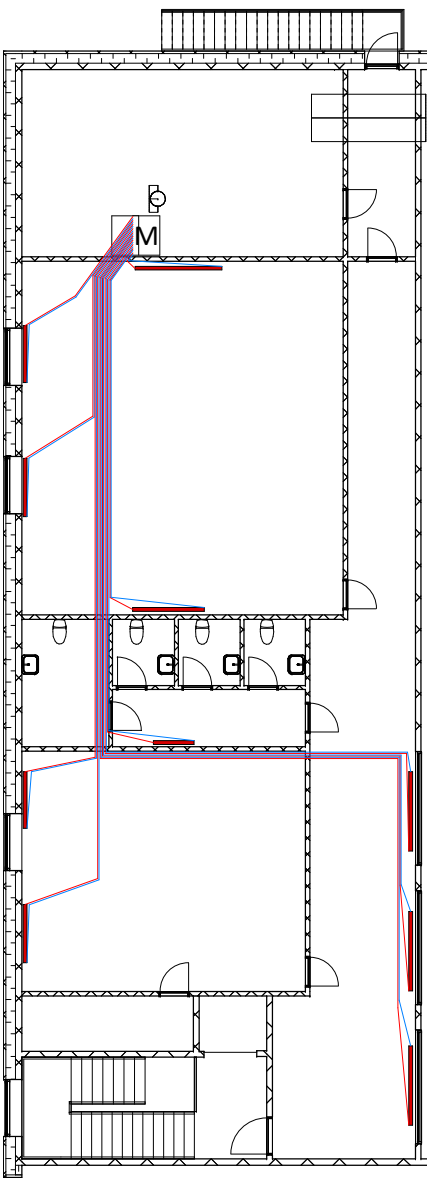


- EI30
Sapa energy glass facade and roof

PROJECT: Multi-purpose hall at Bygholm Lake, Horsens	DATE: 09/04/18	K01_TXX_H4_EX_N04
SUBJECT: Fire analysis - cross section	SCALE: As indicated	
DRAWN BY: Carina Pronsaia (group 5)	CLASS: AH31-A18	



15.1 Heating plan, groundfloor
1 : 200

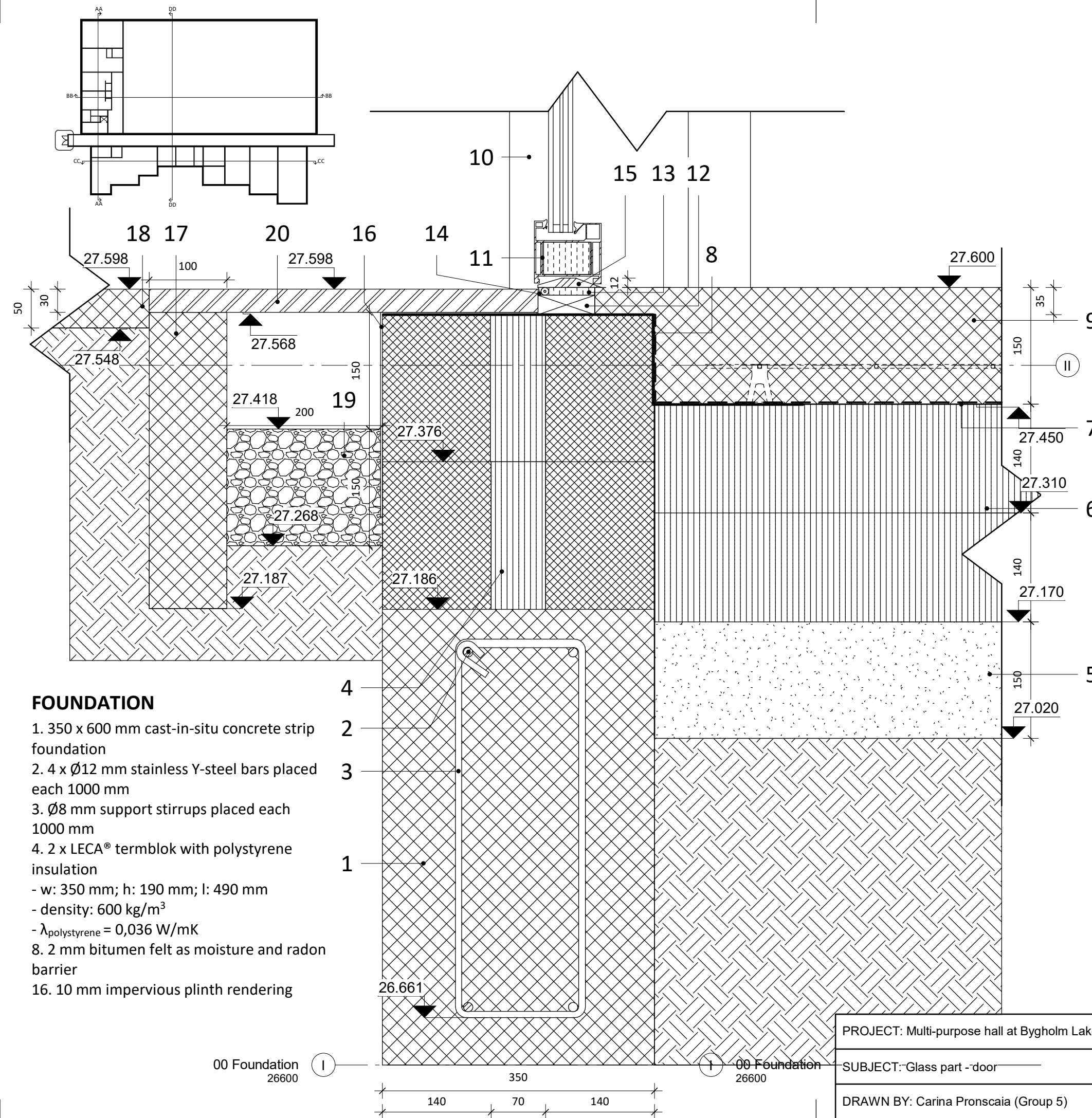


15.2. Heating plan, first floor
1 : 200

LEGEND

- M Manifold
- Radiator
- Heating forward
- Heating backward
- Heating pannel

PROJECT: Multi-purpose hall at Bygholm Lake, Horsens	DATE: 03/10/18	K01_TXX_H1_EX_N07
SUBJECT: Heating plan	SCALE: As indicated	
DRAWN BY: Carina Pronsaia (group 5)	CLASS: AH31-A18	



FOUNDATION

1. 350 x 600 mm cast-in-situ concrete strip foundation
2. 4 x Ø12 mm stainless Y-steel bars placed each 1000 mm
3. Ø8 mm support stirrups placed each 1000 mm
4. 2 x LECA® termblok with polystyrene insulation
 - w: 350 mm; h: 190 mm; l: 490 mm
 - density: 600 kg/m³
 - $\lambda_{\text{polystyrene}} = 0,036 \text{ W/mK}$
8. 2 mm bitumen felt as moisture and radon barrier
16. 10 mm impervious plinth rendering

FLOOR CONSTRUCTION (U-VALUE = 0,11 W/m²K)

5. Sand for soil levelling
6. 2 x 140 mm Jackodur KF 300 XPS polystyrene insulation
 - $\lambda = 0,035 \text{ W/mK}$
7. 0,2 mm damp proof membrane with an overlap of 200 mm at all joints and walls
9. Extended powerfloated cast-in-site concrete slab
 - Ø5 mm reinforcement mesh with 150 mm between bars supported by 50 mm grade plate spacers
 - polishing as floor finish

01 Groundfloor, terrain
27500

DOOR (U-VALUE = 0,54 W/m²K) AND LEVEL ACCESS

10. SAPA 4150 SX high-insulated glass facade
 - tripple glazed
 - 135,5 mm mullion width
 - design wind load: 2000Pa
 - fire classification: EI30
 - U-value: 0,78 W/m²K
11. SAPA 2086 high insulated double door
 - filling for U-value = 0,54 W/m²K:
 - 1,5 mm aluminium plate
 - 60 mm insulation
 - 1,5 mm aluminium plate
 - fire classification: EI60
 - clamp-free hinge
12. 73 mm x 25 mm timber plate for door fixture
13. Caulking with mineral wool and polyethylene sealant backer rod
14. Weather-proof silicone sealant
15. Low aluminium doorstep for a wheelchair access
17. Prefabricated concrete plate
18. Minimum 1500 x 1500 mm concrete level landing
 - continuing with concrete ramp with max. slope 1:20
19. 100 mm large sea stones moat
20. 350 mm x 1000 mm x 30 mm steel grating
 - extra safe against slipping
 - 33 mm x 37 mm mesh size
 - 136,6 kN/m² - permitted uniform load

GREENLINE ARCHITECTS

Chr M Østergaards Vej 4, 8700 Horsens



PROJECT: Multi-purpose hall at Bygholm Lake, Horsens

DATE: 10/29/18

SUBJECT: Glass part -door

SCALE: As
indicated

DRAWN BY: Carina Pronascaia (Group 5)

CLASS: AH31-A18

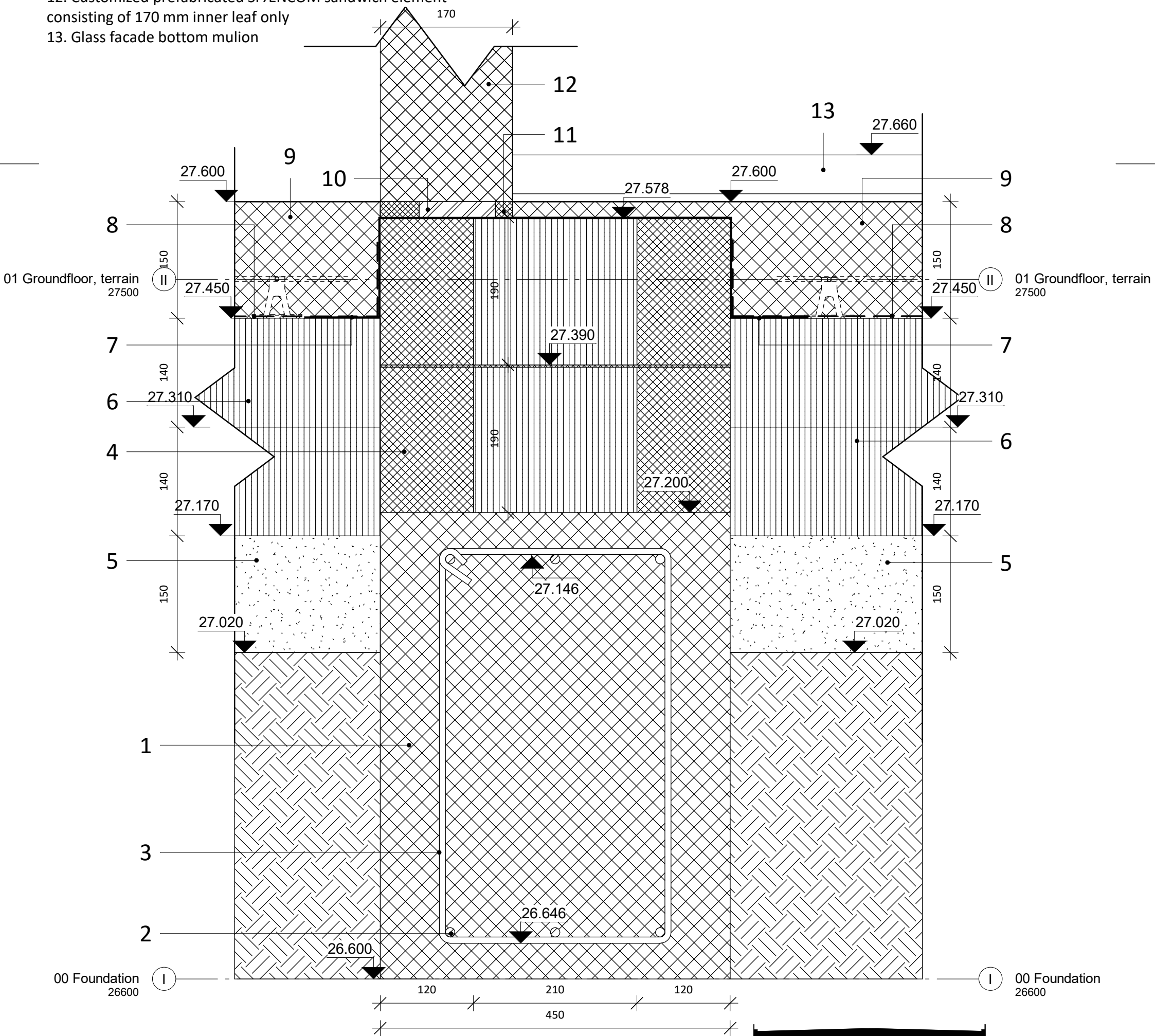
K01_TXX_H5_E1_N02

FOUNDATION AND EXTERNAL WALL

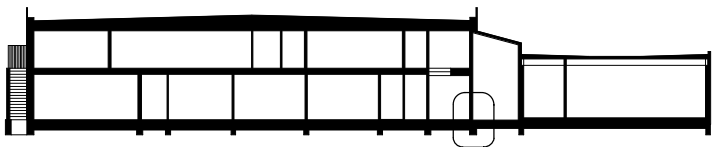
- 1. 450 x 600 mm cast-in-situ concrete strip foundation
- 2. 6 x Ø12 mm stainless Y-steel bars placed each 1000 mm
- 3. Ø8 mm support stirrups placed each 1000 mm
- 4. 2 x LECA® termblok with 210 mm polystyrene insulation
- w: 450 mm; h: 190 mm; l: 490 mm
- density: 600 kg/m³
- λ_{polystyrene} = 0,036 W/mK
- linear loss ψ_f = 0,2 W/mK
- 7. 2 mm bitumen felt as moisture and radon barrier
- 10. Steel plate clipping for easier clamping of the element
- 11. Cement mortar
- 12. Customized prefabricated SPÆNCOM sandwich element consisting of 170 mm inner leaf only
- 13. Glass facade bottom mulion

GROUND SUPPORTED FLOOR IN CONCRETE AND GLASS PART
(U-value = 0,11 W/m²K)

- 5. Sand for soil levelling
- 6. 2 x 140 mm Jackodur KF 300 XPS polystyrene insulation
- λ = 0,035 W/mK
- 8. 0,2 mm damp proof membrane with an overlap of 200 mm at all joints and walls
- 9. Extended powerfloated cast-in-site concrete slab
- Ø5 mm reinforcement mesh with 150 mm between bars
- supported by 50 mm grade plate spacers
- polishing as floor finish



Sandwich wall and glass corridor floor
1 : 5

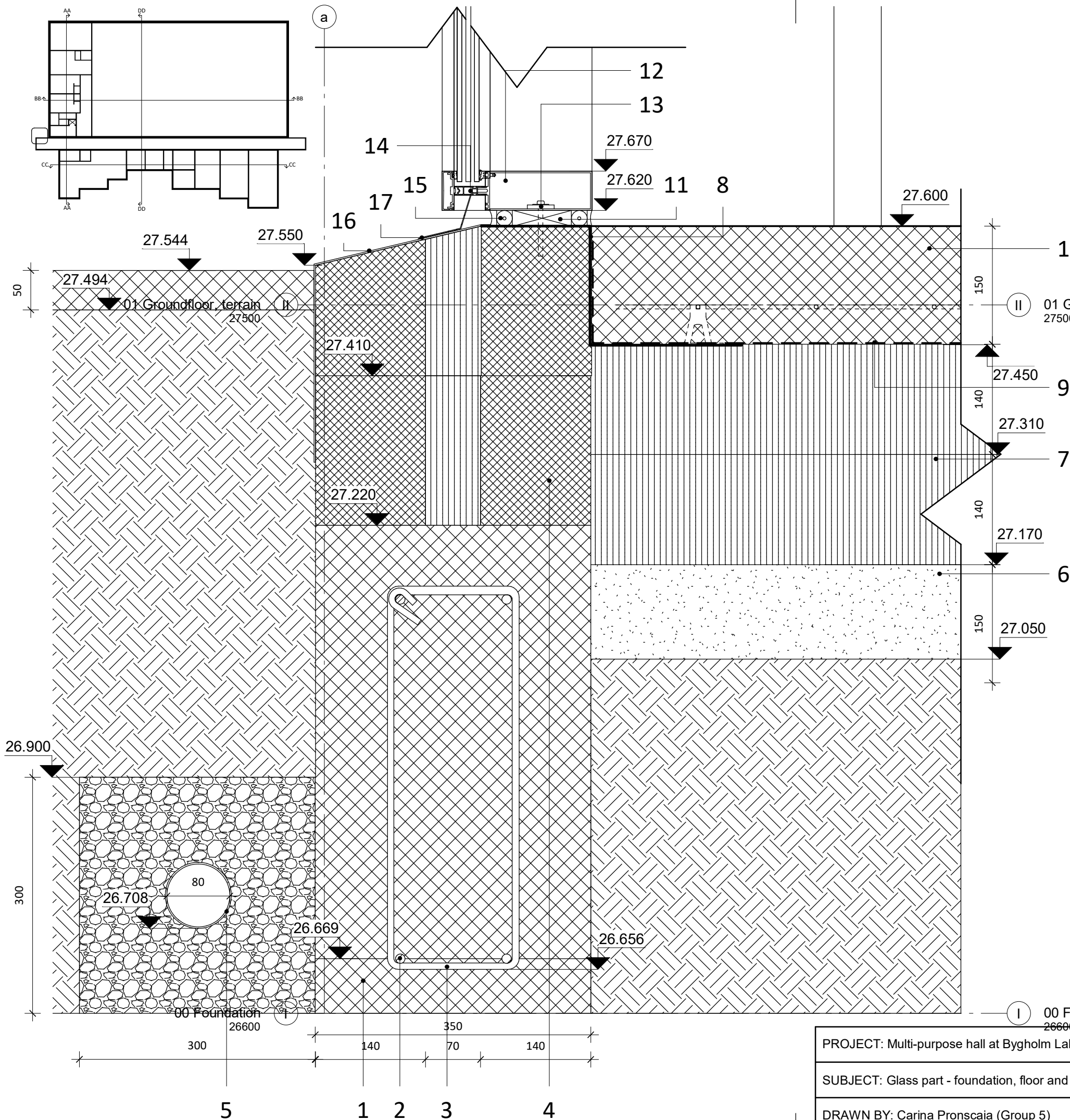


Section AA
1 : 500

GREENLINE ARCHITECTS
Chr M Østergaards Vej 4, 8700 Horsens



PROJECT: Multi-purpose hall at Bygholm Lake, Horsens	DATE: 11/08/18	K01_TXX_H5_E0_N06
SUBJECT: Foundation, customized sandwich element and glass corridor floor	SCALE: As indicated	
DRAWN BY: Carina Pronsaia (group 5)	CLASS: AH31-A18	



FOUNDATION

- 350 x 600 mm cast-in-situ concrete strip foundation
- 4 x Ø12 mm stainless Y-steel bars placed each 1000 mm
- Ø8 mm support stirrups placed each 1000 mm
- 2 x LECA® termblok with polystyrene insulation
- w: 350 mm; h: 190 mm; l: 490 mm
- density: 600 kg/m³
- $\lambda_{\text{polystyrene}} = 0,036 \text{ W/mK}$
- Ø80 mm drainage pipe covered with fiber cloth
- 2 mm bitumen felt as moisture and radon barrier
- 10 mm impervious plinth rendering

FLOOR CONSTRUCTION IN GLASS CORRIDOR (U-VALUE =

- Sand for soil levelling
- 2 x 140 mm Jackodur KF 300 XPS polystyrene insulation
- $\lambda = 0,035 \text{ W/mK}$
- 0,2 mm damp proof membrane with an overlap of 200 mm at all joints and walls
- Extended powerfloated cast-in-site concrete slab
- Ø5 mm reinforcement mesh with 150 mm between bars supported by 50 mm grade plate spacers

GLASS FACADE (U-VALUE = 0,78 W/m²K)

- 75 mm x 20 mm timber plate for fixing mullion brackets
- SAPA 4150 SX high-insulated glass facade
- tripple glazed
- 135,5 mm mullion width
- design wind load: 2000Pa
- fire classification: EI30
- U-value: 0,78 W/m²K
- 60 mm x 10 mm galvanized concrete anchor
- Mullion-mounted drainage path leading out water
- Weather-proof silicone sealant
- Eaves flashing

GREENLINE ARCHITECTS
Chr M Østergaards Vej 4, 8700 Horsens



PROJECT: Multi-purpose hall at Bygholm Lake, Horsens

DATE: 10/28/18

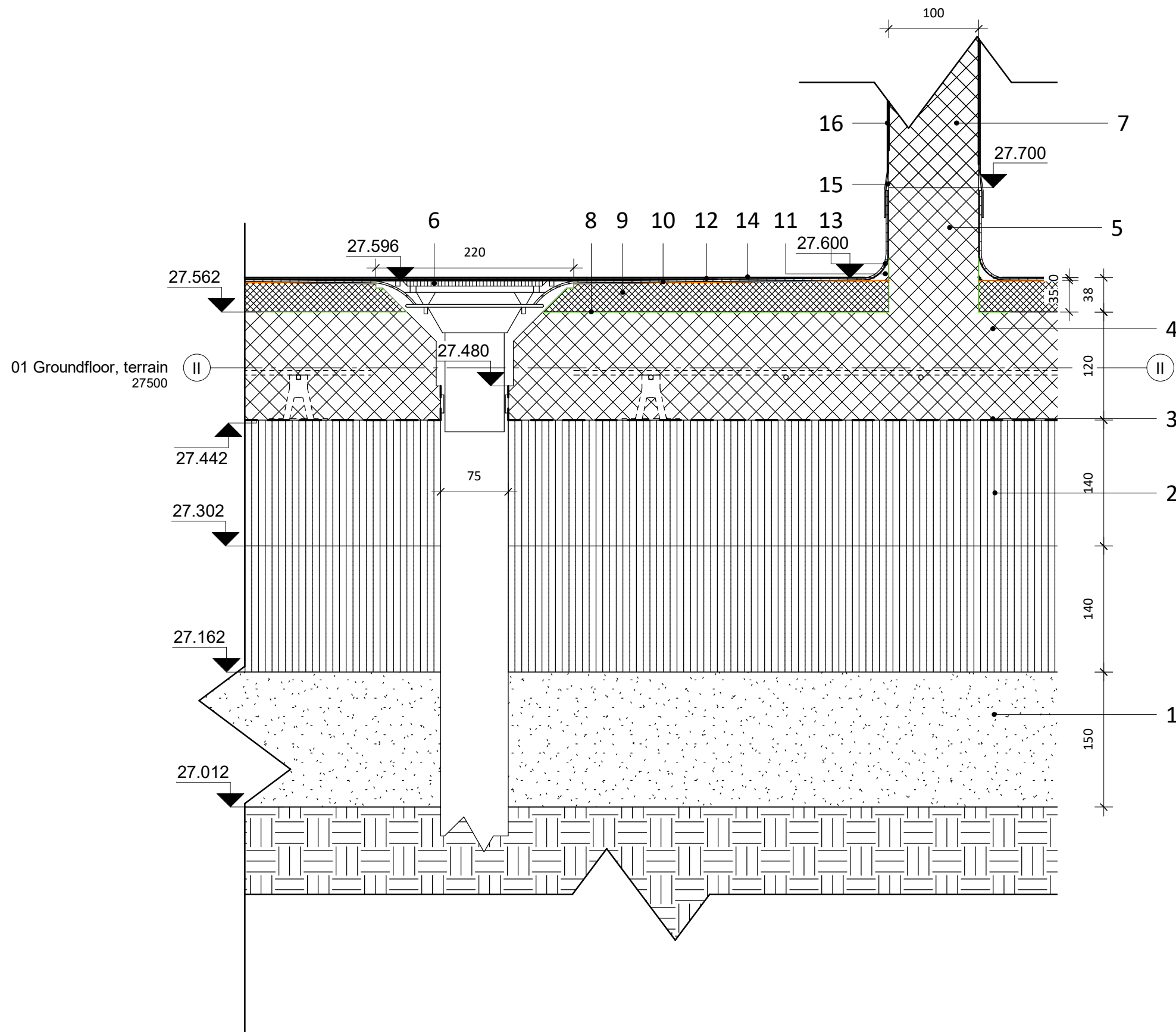
SUBJECT: Glass part - foundation, floor and curtain wall

SCALE: As
indicated

DRAWN BY: Carina Pronascaia (Group 5)

CLASS: AH31-A18

K01_TXX_H5_E0_N03

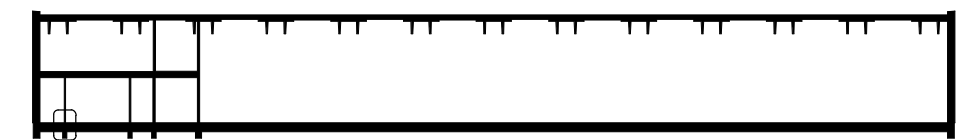


FLOOR AND WALL CONSTRUCTION

1. Sand for soil levelling
2. 2 x 140 mm Jackodur KF 300 XPS polystyrene insulation
- $\lambda = 0,035 \text{ W/mK}$
3. 0,2 mm damp proof membrane with an overlap of 200 mm at all joints and walls
4. Cast-in-situ concrete slab
- Ø5 mm reinforcement mesh with 150 mm between bars supported by 50 mm grade plate spacers
5. 100 mm x 100 mm (from floor finish) cast-in-situ concrete basin
6. Shower drain with acid proof grid and built-in water trap connected to PVC wastewater pipe
7. Concrete non-loadbearing partition for locker room and shower division

TANKING WET ROOM

8. LIP foil system as watertight membrane
- thickness: 0,5 mm
- glued on 1 layer of LIP 2K primer
- sealed with LIP tape
9. Screeding mortar as leveling compound
- self-weight: 45 kg/m²
- 3-hour dry time for foot traffic
10. 1 layer of Tarkett primer
11. 40mm x 40 mm Tarkett cove former PA30 fixed with contact adhesive
12. 1 mm layer of acrylic adhesive for floors
13. 1 mm layer of contact adhesive for walls
14. 2 mm Tarkett Multisafe Granit vinyl flooring, laid 100 mm up on wall
15. Tarkett PJ30 transition strip
16. 0,92 mm Tarkett Aquarelle Wall HFS vinyl wall covering with 30 mm overhang
- fixed to vinyl flooring by groover machine for hot welding



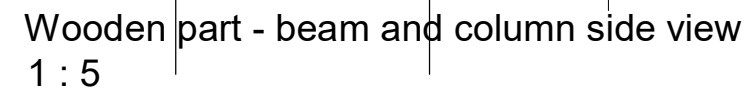
Section BB
1 : 500

GREENLINE ARCHITECTS
Chr M Østergaards Vej 4, 8700 Horsens

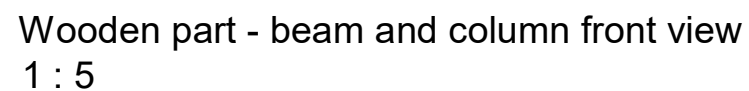


Wet room - concrete part
1 : 5

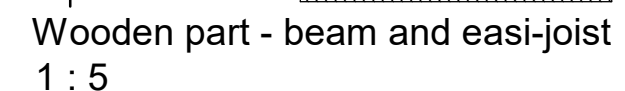
PROJECT: Multi-purpose hall at Bygholm Lake, Horsens	DATE: 10/27/18	K01_TXX_H5_E1_N09
SUBJECT: Concrete hall - wet room	SCALE: As indicated	
DRAWN BY: Carina Pronsaia (Group 5)	CLASS: AH31-A18	



2. Gypsum boards
3. Mineral wool insulation
4. Damp proof membrane
5. Horizontal wooden stud
6. Impregnate fibre board as wind barrier
7. EWP rim board
8. Distance strip
9. Vertical wooden cladding



1. Galvanized square hollow hot rolled column
10. IPE 360 galvanized beam
11. 80mm x 80mm x 8mm top and bottom angle plates welded to steel column
12. 80mm x 80mm x 8mm double web cleats welded to steel column
13. 2 grade 8.8 bolts fixed to I-beam
14. Spray foam

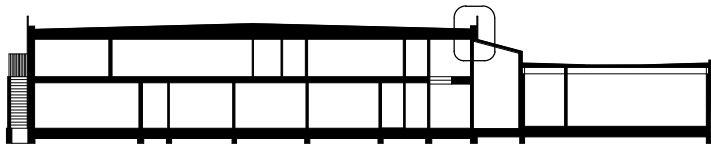


15. Timber packer fixed to steel
16. Wall plate
17. Easi-joist® WS417
18. 340 mm mineral wool insulation
19. Plywood deck primed with vapour control layer
20. Super EPS 60 polystyrene insulation
21. Hard mineral wool insulation
- mechanically fixed with telescopic tube fastener
22. Green roof construction
23. Plywood supporting board

PROJECT: Multi-purpose hall at Bygholm Lake, Horsens	DATE: 10/02/18	K01_TXX_H5_E2_N08
SUBJECT: Wooden part - beam and column	SCALE: 1 : 5	
DRAWN BY: Carina Pronascaia (Group 5)	CLASS: AH31-A18	

GLAZED ROOF (U-VALUE = 1,17 W/m²K) AND SANDWICH ELEMENT (U-VALUE = 0,15 W/m²K)

1. Prefabricated SPÆNCOM sandwich element
Above:
- w: 490 mm (170/250/70); l: 2400 mm; h: 7400 mm
- fire demand: REI120 A2-s1,d0
- tolerance: 12 mm
- 250 x 600 x 1200 mm mineral wool batts
Below:
-170 mm inner leaf
2. BS Falsen fiber cement board in order to prevent thermal bridge
- $\Psi_k = 0,01 \text{ W/mK}$
3. Function glue
4. Simpson bracket
5. SAPA 4150 SX high-insulated glass facade
- tripple glazed
- 135,5 mm mullion width
- design wind load: 2000Pa
- fire classification: EI30
- U-value: 0,78 W/m²K
6. 11 mm x 100 mm steel flat bar fixed on site to sandwich wall
7. 70 mm x 10 mm pregalvanized concrete anchor
- screwed each 1000 mm along the middle of the profile
8. SAPA 5050 triple glazed roof with 15° slope to avoid high snow load
- mullions with built-in drainage channels
- pressure-resistant, air- and vapor-tight
9. Mounting bracket fixing mullion to steel bar
10. Backfilling with ROCKWOOL facadebatt mineral wool insulation
- U-value: 0,37 W/m²K
11. Head flashing sealed to the wall
12. Ceiling gypsum board fixed with edge rails to sandwich wall and end mullion



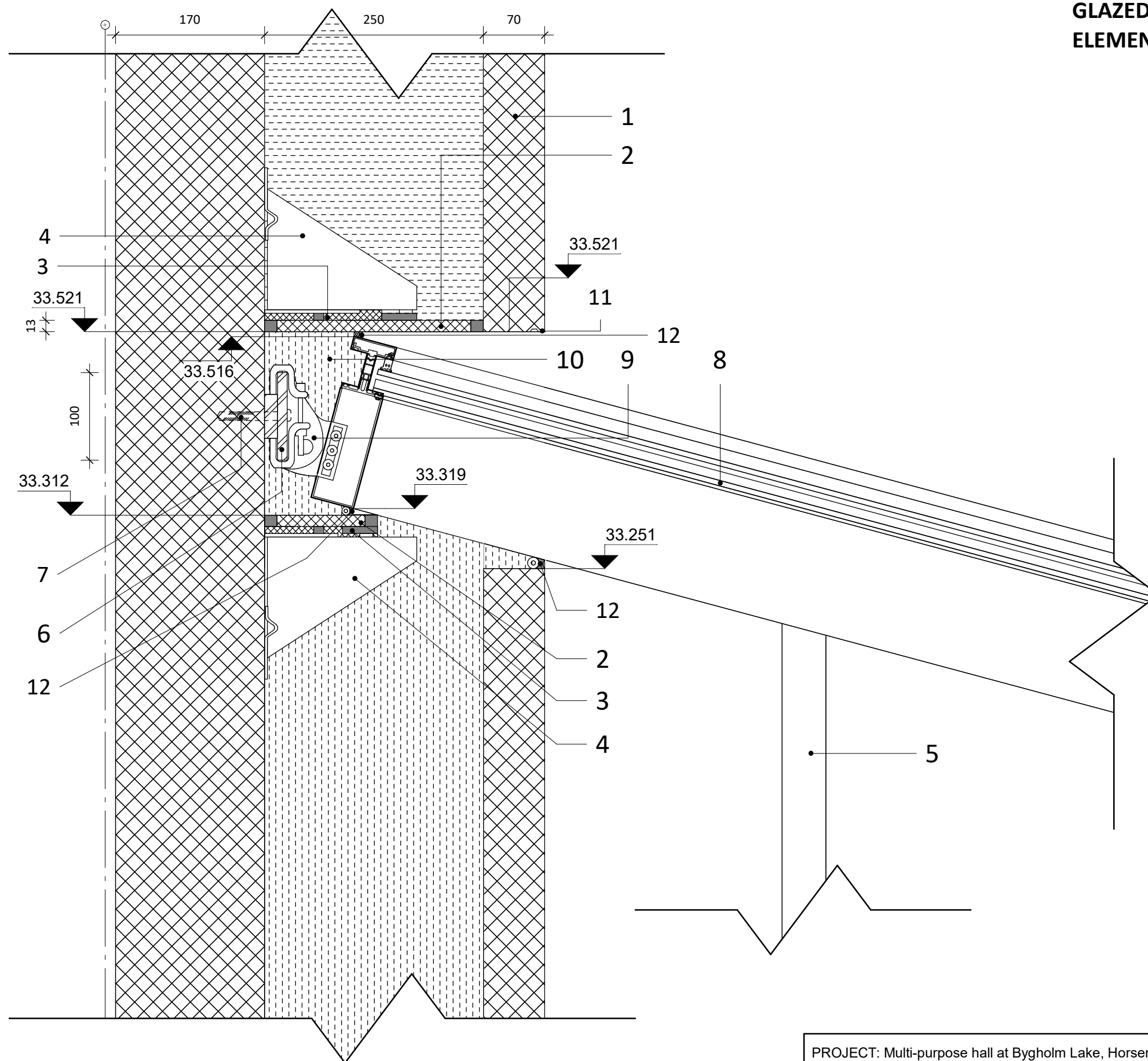
Section AA
1 : 500

GREENLINE ARCHITECTS
Chr M Østergaards Vej 4, 8700 Horsens



Glass part - roof + concrete wall
1 : 5

PROJECT: Multi-purpose hall at Bygholm Lake, Horsens	DATE: 11/07/18	K01_TXX_H5_E3_N07
SUBJECT: Sandwich element and glass roof	SCALE: As indicated	
DRAWN BY: Carina Pronascaia (Group 5)	CLASS: AH31-A18	



GLAZED ROOF (U-VALUE = 1,17 W/m²K) AND SANDWICH ELEMENT (U-VALUE = 0,15 W/m²K)

1. Prefabricated SPÆNCOM sandwich element
 - w: 490 mm (170/250/70); l: 2400 mm; h: 7400 mm
 - fire demand: REI120 A2-s1,d0
 - tolerance: 12 mm
 - 2 x 125 mm pressure-resistant polystyrene insulation first 600 mm
 - 250 x 600 x 1200 mm mineral wool batts above 600 mm
2. BS Falsen fiber cement board in order to prevent thermal bridge
 - $\Psi_k = 0,01$ W/mK
3. Function glue
4. Simpson bracket
5. SAPA 4150 SX high-insulated glass facade
 - tripple glazed
 - 135,5 mm mullion width
 - design wind load: 2000Pa
 - fire classification: EI30
 - U-value: 0,78 W/m²K
6. 11 mm x 100 mm steel flat bar fixed to sandwich wall
7. 70 mm x 10 mm pregalvanized concrete anchor
 - screwed each 1000 mm along the middle of the profile
8. SAPA 5050 triple glazed roof with 15° slope to avoid high snow load
 - mullions with built-in drainage channels
 - pressure-resistant, air- and vapor-tight
9. Mounting bracket fixing mullion to steel bar
10. Backfilling with ROCKWOOL facadebatt mineral wool insulation
 - U-value: 0,37 W/m²K
11. Cut profile for dripping water
12. Weather-proof silicone sealant

Glass part - roof + concrete wall
1 : 5

GREENLINE ARCHITECTS
Chr M Østergaards Vej 4, 8700 Horsens



PROJECT: Multi-purpose hall at Bygholm Lake, Horsens

DATE: 10/30/18

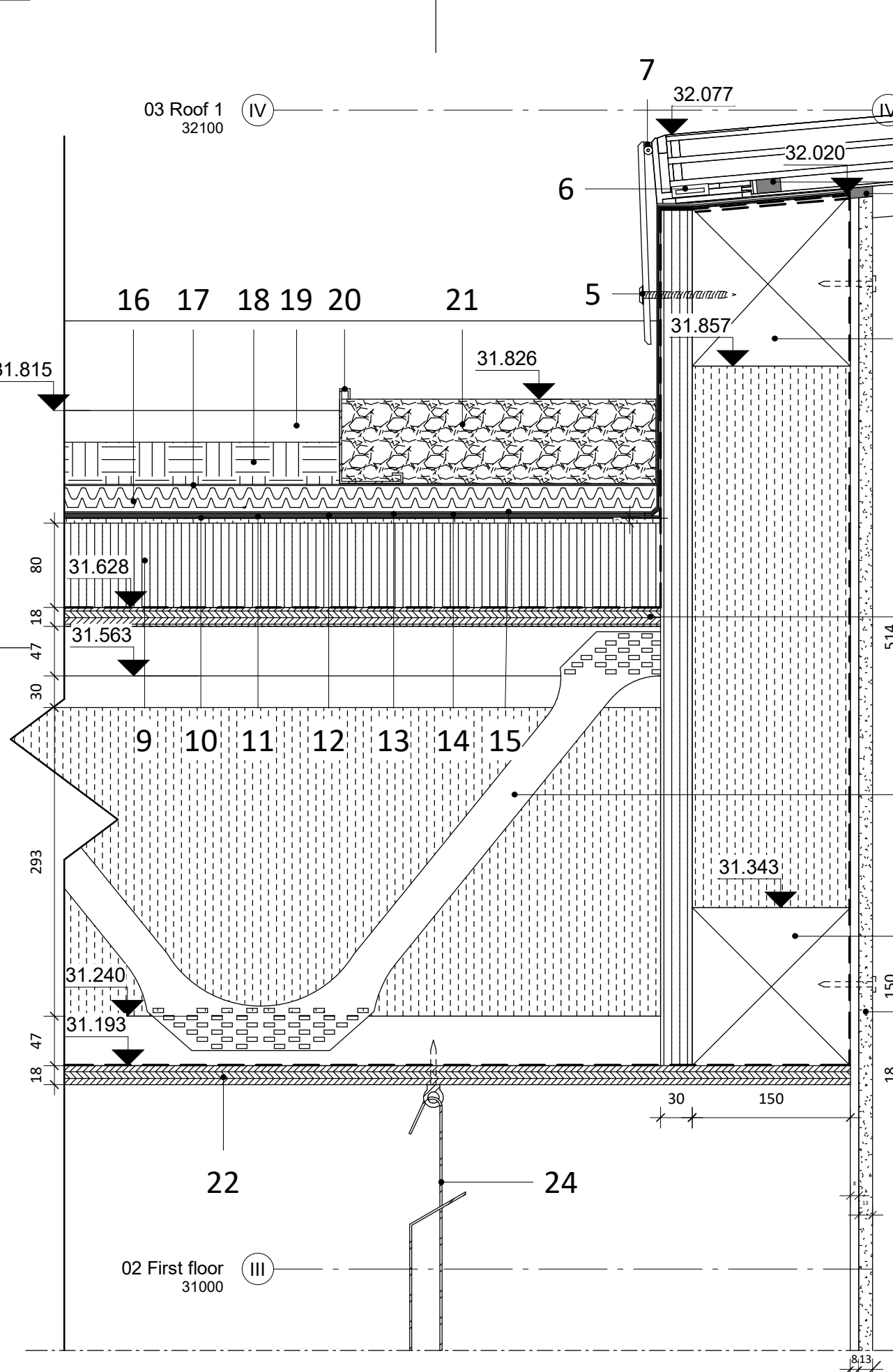
SUBJECT: Glass part - roof, sandwich

SCALE: 1 : 5

DRAWN BY: Carina Pronsaia (Group 5)

CLASS: AH31-A18

K01_TXX_H5_E2_N05



ROOF AND WINDOW CONSTRUCTION

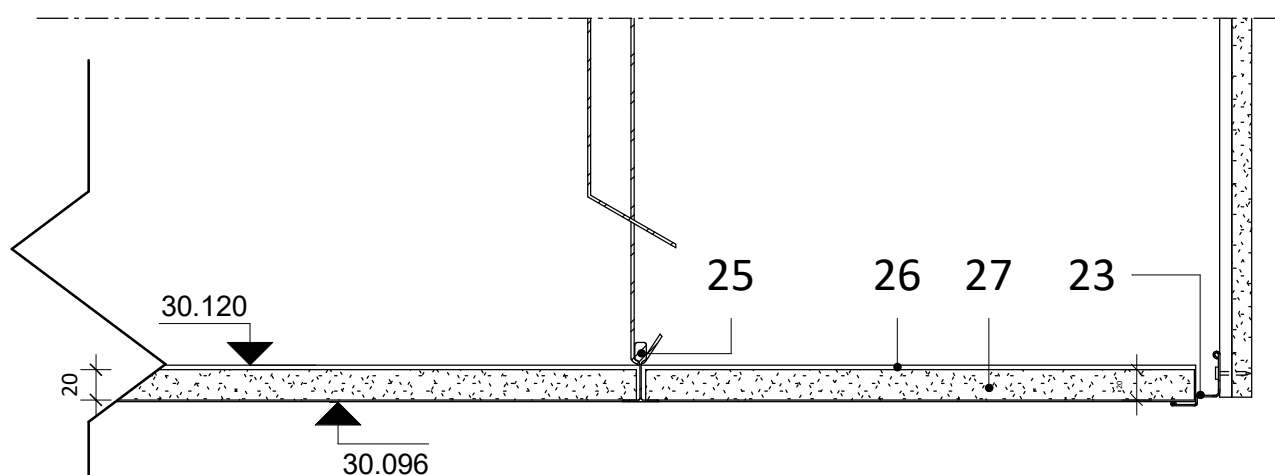
1. Easi-joist® WS417
- bottom/top chord 47 mm, web: 323 mm
2. 18 mm plywood deck primed with vapour control layer
3. 150 mm insulated timber kerb fixed as circular as possible
4. 1800 mm x 1800 mm ROOFGLAZE circular skylight
- triple glazed
- $\lambda = 1,2 \text{ W/mK}$
- 44 kg/m^2
- 78% light transmission
- solar G-value: 0.68 (0.41 solar control)
5. Kerb adaptor bedded on expanding tape or butyl
6. Butyl seal
7. Structured black silicone joint
8. Thermal barriers (white indoors/black outdoors)

GREEN ROOF CONSTRUCTION

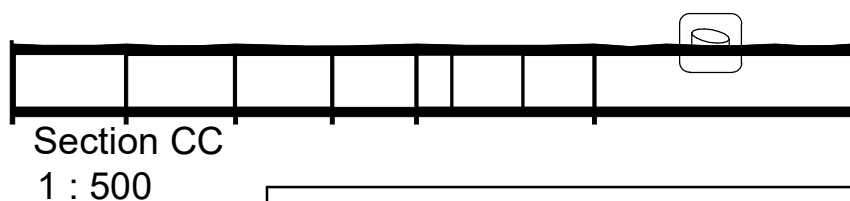
9. 1200 x 2400 x 210 mm Jackson Super EPS 60 polystyrene insulation
- $\lambda = 0,033 \text{ W/mK}$
10. Hardkile mineral wool levelling insulation mechanically fixed with telescopic tube fastener
- $\lambda = 0,039 \text{ W/mK}$
11. 2 mm roofing bitumen felt
12. 1 mm top roofing felt PF 5000 SBS
13. 0,2 mm waterproof membrane
14. 0,4 mm root protection LDPE foil
15. 0,8 mm moisture proof polypropylene geotextile protective cloth
16. 2020 x 1100 x 25 mm drainage water reservoir Diadrain 25H
- maximum water capacity: $13,5 \text{ l/m}^2$
- drainage length: max. 29 m
17. 0,2 mm filter cloth VLF150 with high permeability
18. 40 mm extensive growing medium
19. 1040 x 780 x 30 mm premium sedum mat
20. Extending gravel board
21. Gravel

SUSPENDED CEILING CONSTRUCTION

22. Plywood supporting board
23. Edge rail
- h: 33 mm; w: 30 mm; l: 3000 mm
- fixed with flat head screw each 300 mm (first screw max. 50 mm from the corner)
24. Suspension hook for lengths 90 - 1500 mm
- fixed into the structure in rows each 1200 mm
- clamped to the profile with pliers
25. Carrying profile
- l: 3600 mm
- distance: 600/1200 mm
26. Connection profile
- l: 600/1200 mm
27. 600 x 600 x 12,5 mm removable ceiling gypsum board with hexagonal holes
28. Gypsum board nailed to timber kerb



Skylight + green roof left - top
1 : 5



Section CC
1 : 500

GREENLINE ARCHITECTS
Chr M Østergaards Vej 4, 8700 Horsens



PROJECT: Multi-purpose hall at Bygholm Lake, Horsens	DATE: 10/29/18	K01_TXX_H5_E2_N03
SUBJECT: Wooden part - skylight in green roof - left part	SCALE: As indicated	
DRAWN BY: Carina Pronascaia (Group 5)	CLASS: AH31-A18	

ROOF AND WINDOW CONSTRUCTION

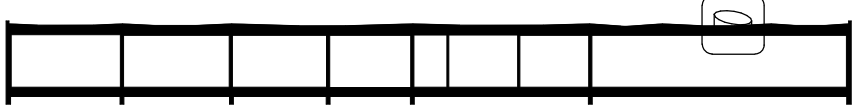
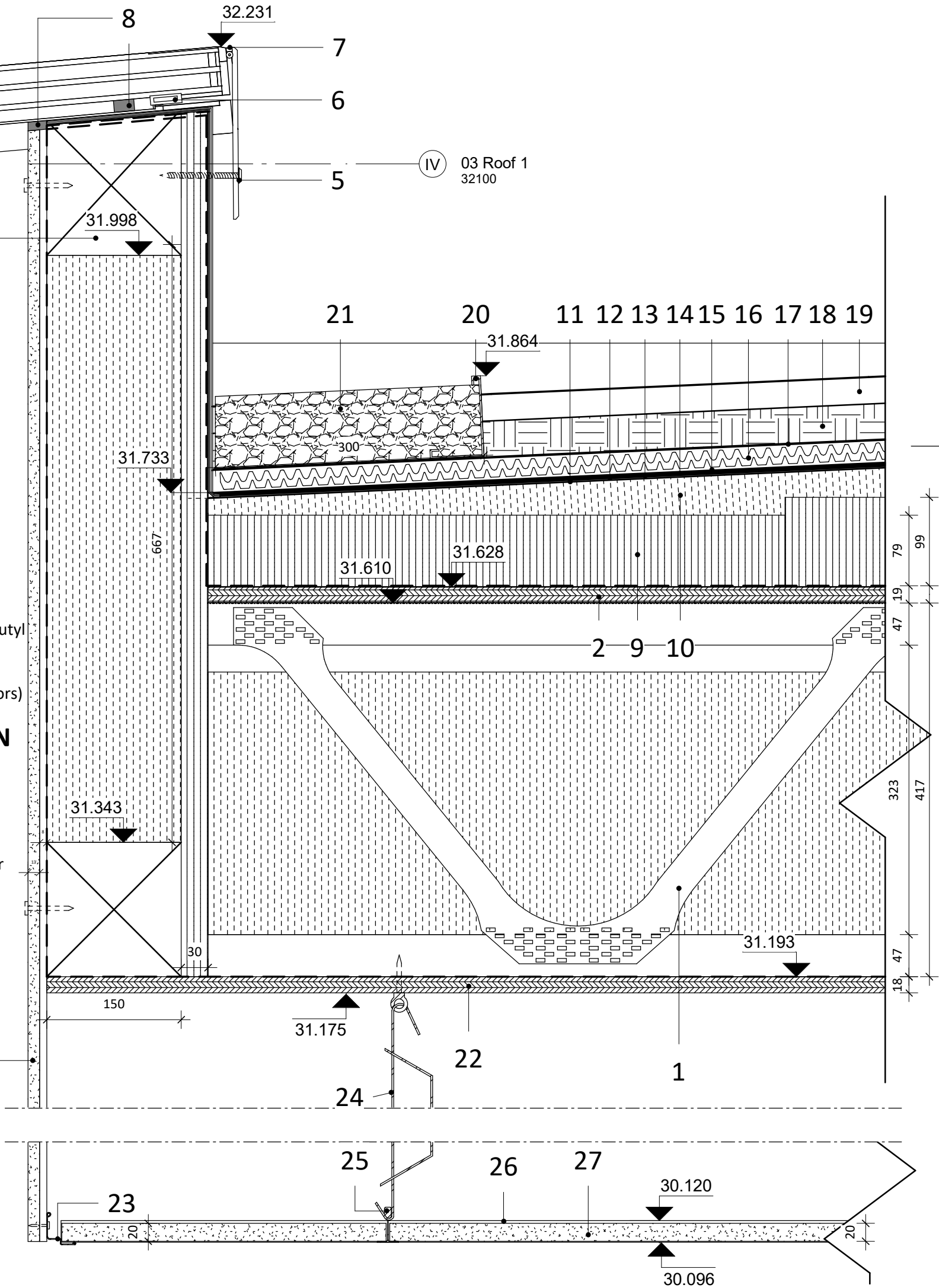
1. Easi-joist® WS417
- bottom/top chord 47 mm, web: 323 mm
2. 18 mm plywood deck primed with vapour control layer
3. 150 mm insulated timber kerb as circular as possible
4. 1800 mm x 1800 mm ROOFGLAZE circular skylight
- triple glazed
- $\lambda = 1,2 \text{ W/mK}$
- 44 kg/m^2
- 78% light transmission
- solar G-value: 0.68 (0.41 solar control)
5. Kerb adaptor bedded on expanding tape or butyl
6. Butyl seal
7. Structured black silicone joint
8. Thermal barriers (white indoors/black outdoors)

GREEN ROOF CONSTRUCTION

9. 1200 x 2400 x 210 mm Jackon Super EPS 60 polystyrene insulation
- $\lambda = 0,033 \text{ W/mK}$
10. Hardkile mineral wool levelling insulation mechanically fixed with telescopic tube fastener
- $\lambda = 0,039 \text{ W/mK}$
11. 2 mm roofing bitumen felt
12. 1 mm top roofing felt PF 5000 SBS
13. 0,2 mm waterproof membrane
14. 0,4 mm root protection LDPE foil
15. 0,8 mm moisture proof polypropylene geotextile protective cloth
16. 2020 x 1100 x 25 mm drainage water reservoir Diadrain 25H
- maximum water capacity: $13,5 \text{ l/m}^2$
- drainage length: max. 29 m
17. 0,2 mm filter cloth VLF150 with high permeability
18. 40 mm extensive growing medium
19. 1040 x 780 x 30 mm premium sedum mat
20. Extending gravel board
21. Gravel

SUSPENDED CEILING CONSTRUCTION

22. Plywood supporting board
23. Edge rail
- h: 33 mm; w: 30 mm; l: 3000 mm
- fixed with flat head screw each 300 mm (first screw max. 50 mm from the corner)
24. Suspension hook for lengths 90 - 1500 mm
- fixed into the structure in rows each 1200 mm
- clamped to the profile with pliers
25. Carrying profile
- l: 3600 mm
- distance: 600/1200 mm
26. Connection profile
- l: 600/1200 mm
27. 600 x 600 x 12,5 mm removable ceiling gypsum board with hexagonal holes
28. Gypsum board nailed to timber kerb

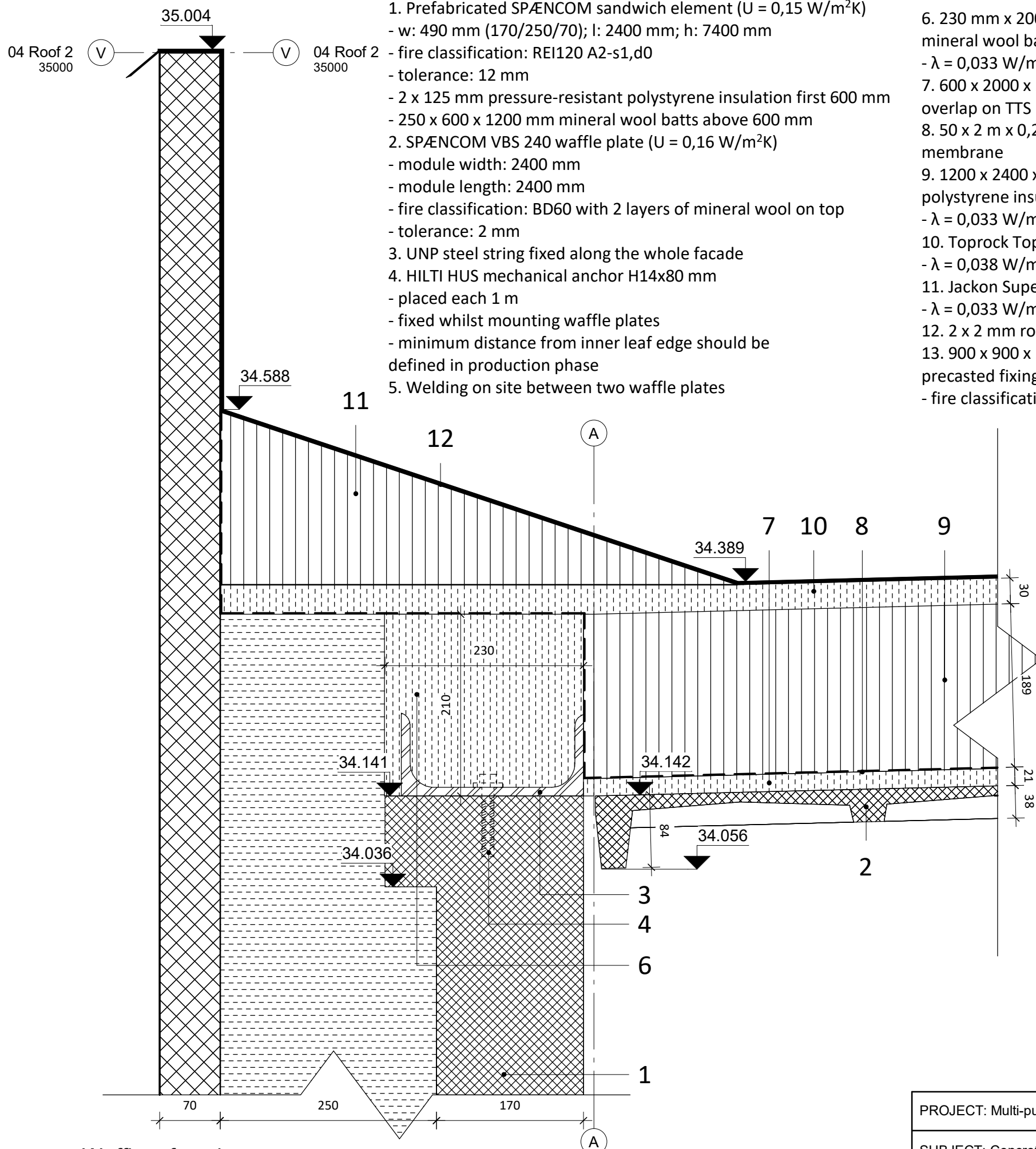


Section CC
1 : 500

GREENLINE ARCHITECTS
Chr M Østergaards Vej 4, 8700 Horsens

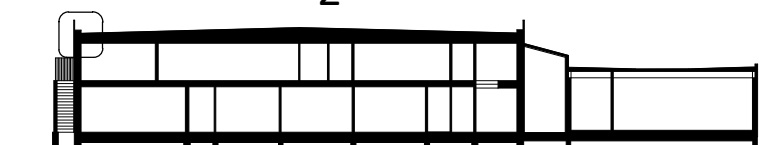
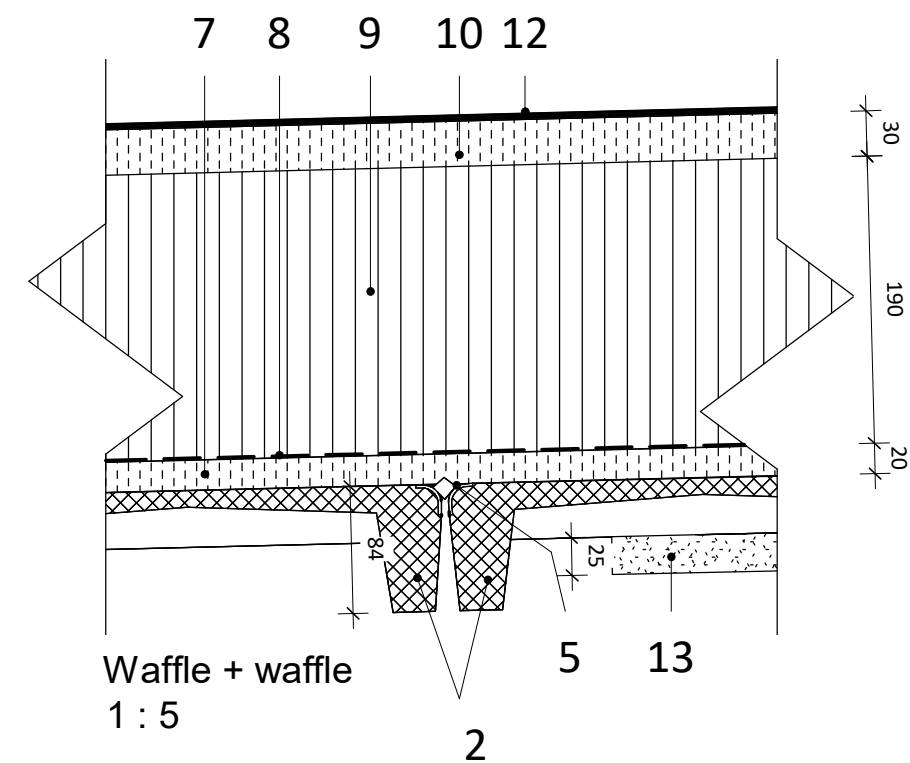
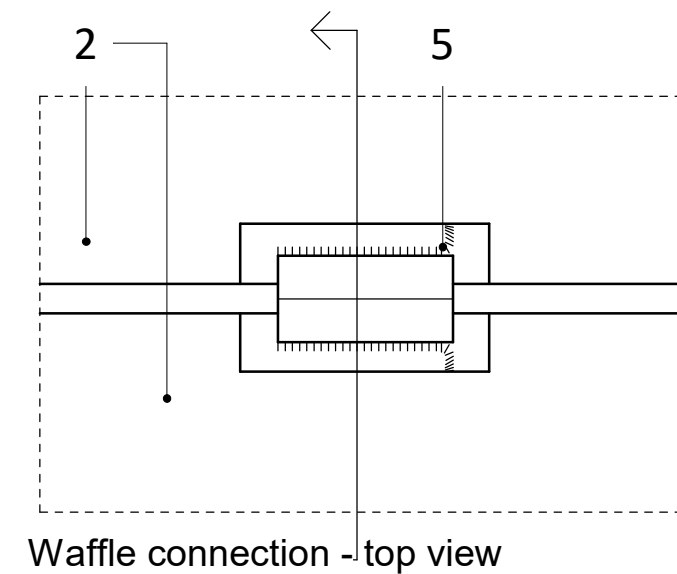


PROJECT: Multi-purpose hall at Bygholm Lake, Horsens	DATE: 10/27/18	K01_TXX_H5_E2_N14
SUBJECT: Wooden part - skylight in green roof - right part	SCALE: As indicated	
DRAWN BY: Carina Pronsaia (Group 5)	CLASS: AH31-A18	



1. Prefabricated SPÆNCOM sandwich element ($U = 0,15 \text{ W/m}^2\text{K}$)
 - w: 490 mm (170/250/70); l: 2400 mm; h: 7400 mm
 - fire classification: REI120 A2-s1,d0
 - tolerance: 12 mm
 - 2 x 125 mm pressure-resistant polystyrene insulation first 600 mm
 - 250 x 600 x 1200 mm mineral wool batts above 600 mm
2. SPÆNCOM VBS 240 waffle plate ($U = 0,16 \text{ W/m}^2\text{K}$)
 - module width: 2400 mm
 - module length: 2400 mm
 - fire classification: BD60 with 2 layers of mineral wool on top
 - tolerance: 2 mm
3. UNP steel string fixed along the whole facade
4. HILTI HUS mechanical anchor H14x80 mm
 - placed each 1 m
 - fixed whilst mounting waffle plates
 - minimum distance from inner leaf edge should be defined in production phase
5. Welding on site between two waffle plates

6. 230 mm x 2000 mm x 210 mm ROCKWOOL Lamel mineral wool batt
 - $\lambda = 0,033 \text{ W/mK}$
7. 600 x 2000 x 20 mm mineral wool with 50 mm overlap on TTS
8. 50 x 2 m x 0,2 mm DAFA EcoFoil PE-damp proof membrane
9. 1200 x 2400 x 190 mm Jackson Super EPS 90 polystyrene insulation
 - $\lambda = 0,033 \text{ W/m}^2\text{K}$
10. Toprock Topplade hard mineral wool insulation
 - $\lambda = 0,038 \text{ W/m}^2\text{K}$
11. Jackson Super EPS 90 polystyrene as corner insulation
 - $\lambda = 0,033 \text{ W/m}^2\text{K}$
12. 2 x 2 mm roofing bitumen felt
13. 900 x 900 x 25 mm acoustic boards fixed with precasted fixing
 - fire classification B-s1,d0



GREENLINE ARCHITECTS
Chr M Østergaards Vej 4, 8700 Horsens



PROJECT: Multi-purpose hall at Bygholm Lake, Horsens	DATE: 10/30/18	K01_TXX_H5_E3_N02
SUBJECT: Concrete hall - facade, waffle	SCALE: As indicated	
DRAWN BY: Carina Pronsaia (Group 5)	CLASS: AH31-A18	