

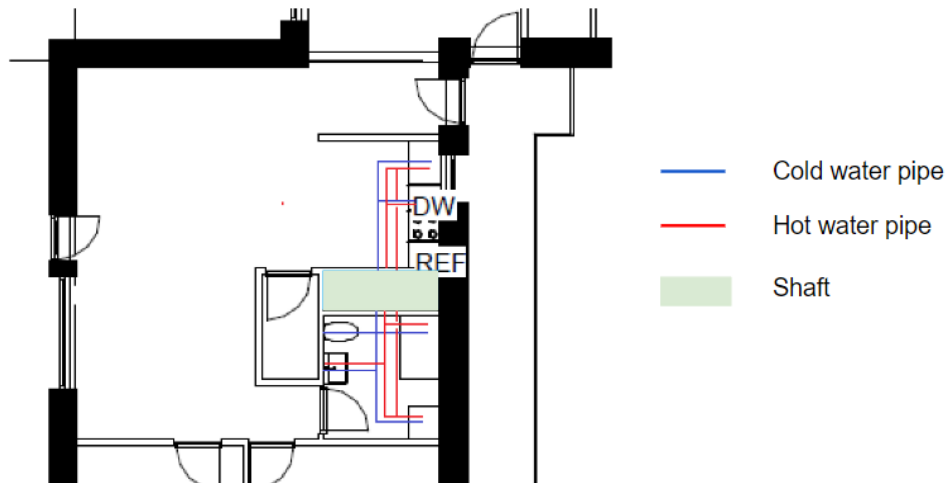
Building Services documentation

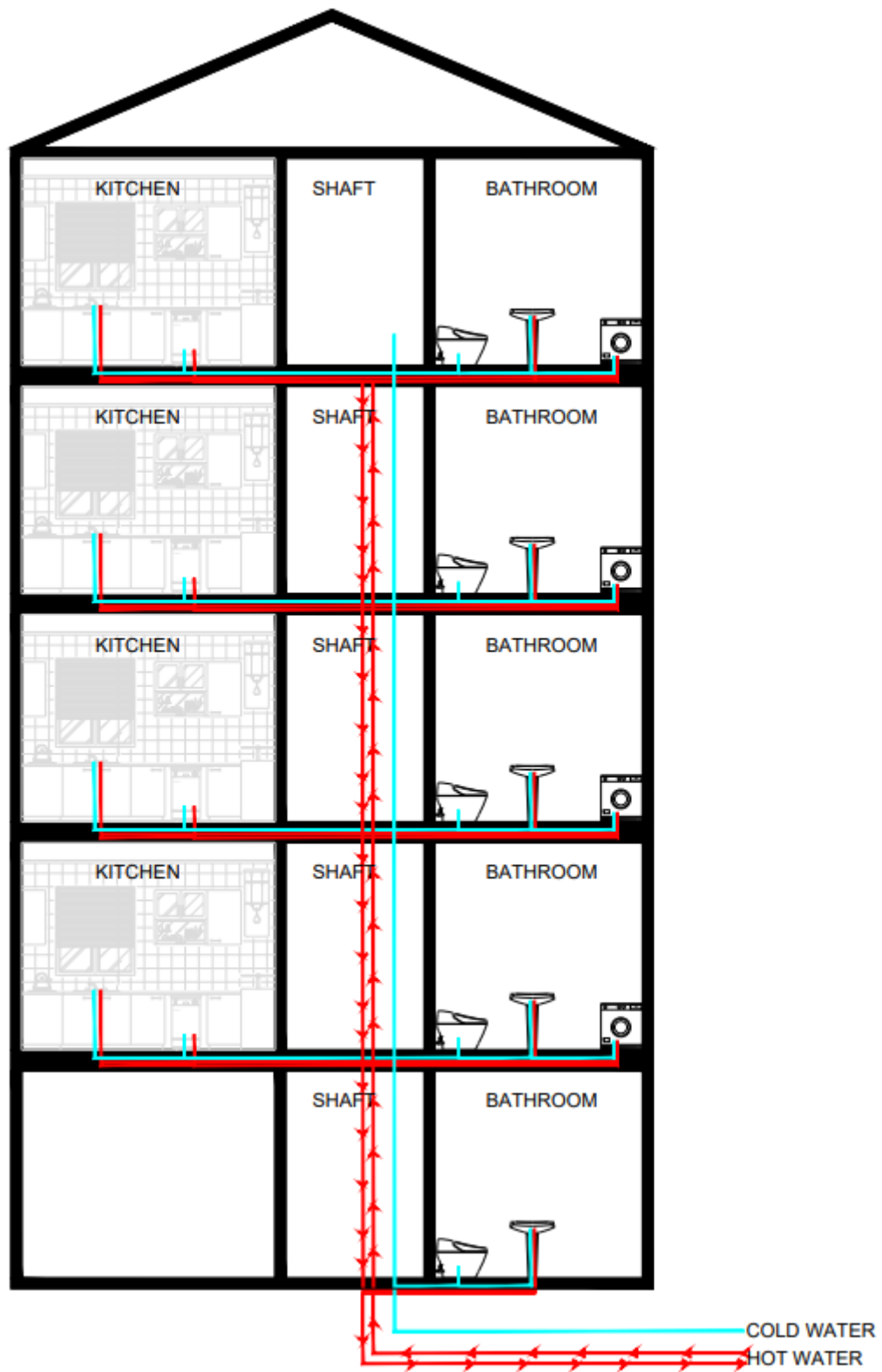
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Water plan

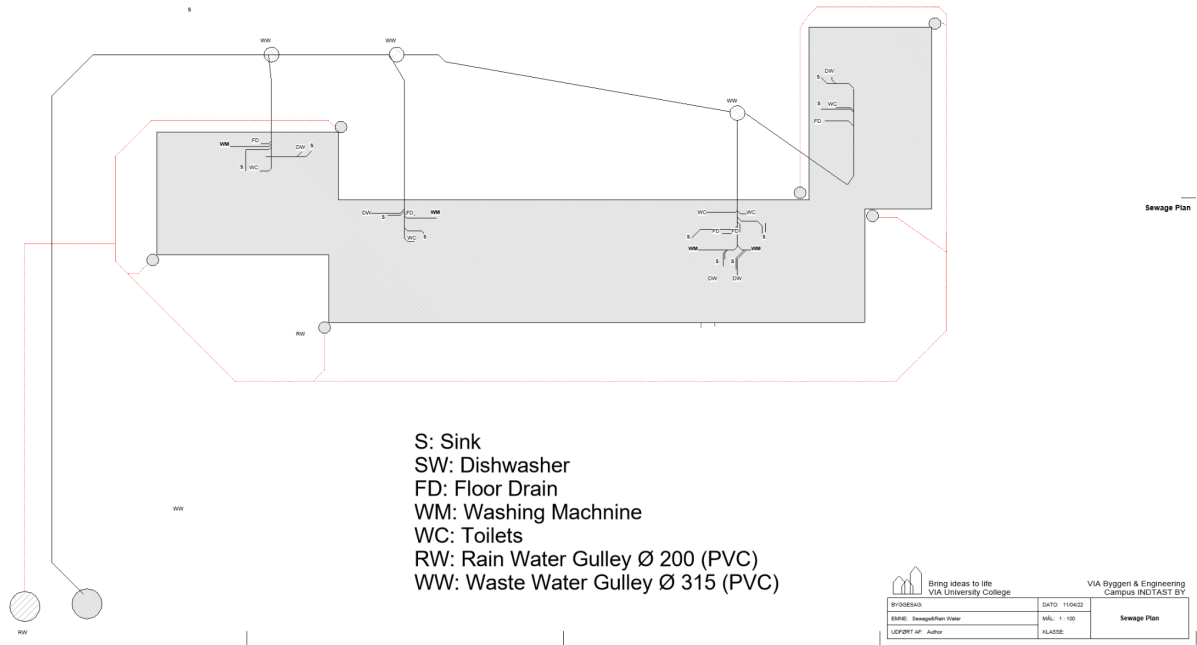
This top view plan has been done for one residential dwelling. The system is the same in all the dwellings.





Section of a dwelling

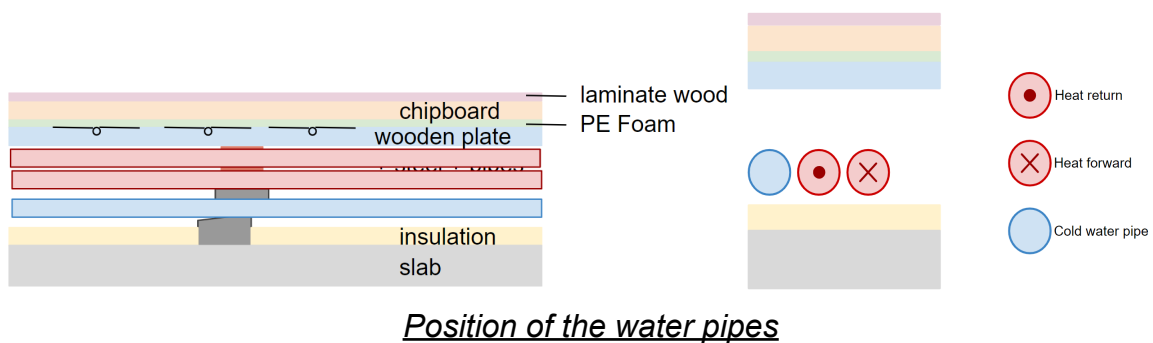
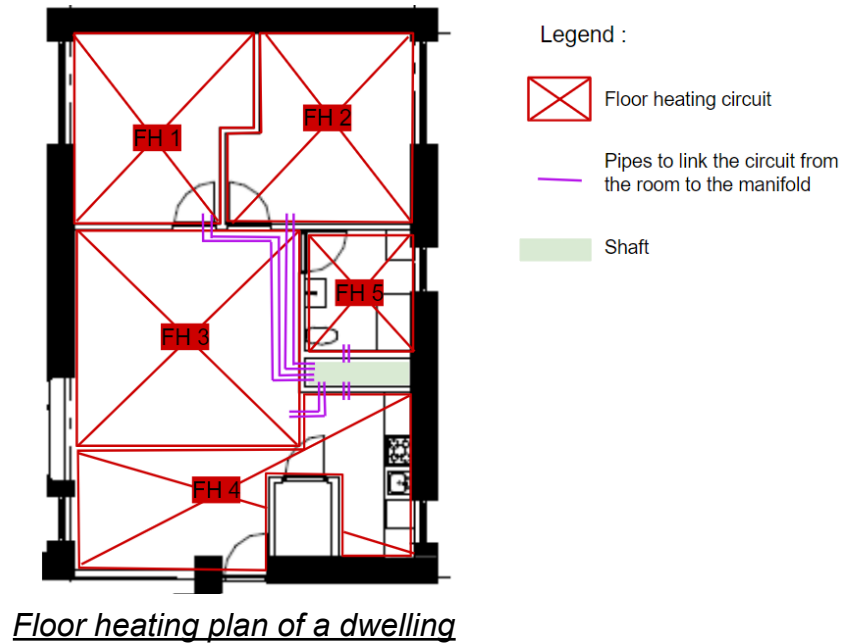
Sewage plan



Main city gully depth is -3.3m

Heating plan

A floor heating has be installed in all dwellings of the building. Each room has its own circuit, the living room/kitchen area need two different circuits due to its size.



Cold and hot water pipes are placed in the floor partition in between insulation and floor boards.

Note : in the staircase and the basement, radiators are used. Far into the drawing specification phase we noticed an extra shaft was needed in order to supply the radiator pipes onto the entrance unit.

Ventilation plans and suspended ceiling plans

A common ventilation system has been chosen. One ventilation unit will be in the attic and one will be placed in the basement.

Calculation of pipe's size in the shaft for a dwelling :


Section	Air volume demand [l/s]	Air volume demand [m3/s]	Air volume demand [m3/h]	Type	Chosen air velocity [m/s]	Duct cross sect. area [m²]	Duct diameter [m] (theoretical)	Duct diameter [mm]
A	25	0,025	90	connection	2,5	0,01	0,11	125
B	15	0,015	54	connection	2,5	0,01	0,09	100
C	40	0,04	144	branch	3	0,01	0,13	160
D	15	0,015	54	connection	2,5	0,01	0,09	100
E	55	0,055	198	main	3,5	0,02	0,14	160
F	15	0,015	54	branch	3	0,01	0,08	100
G	40	0,04	144	branch	3	0,01	0,13	160
H	55	0,055	198	main	3,5	0,02	0,14	160

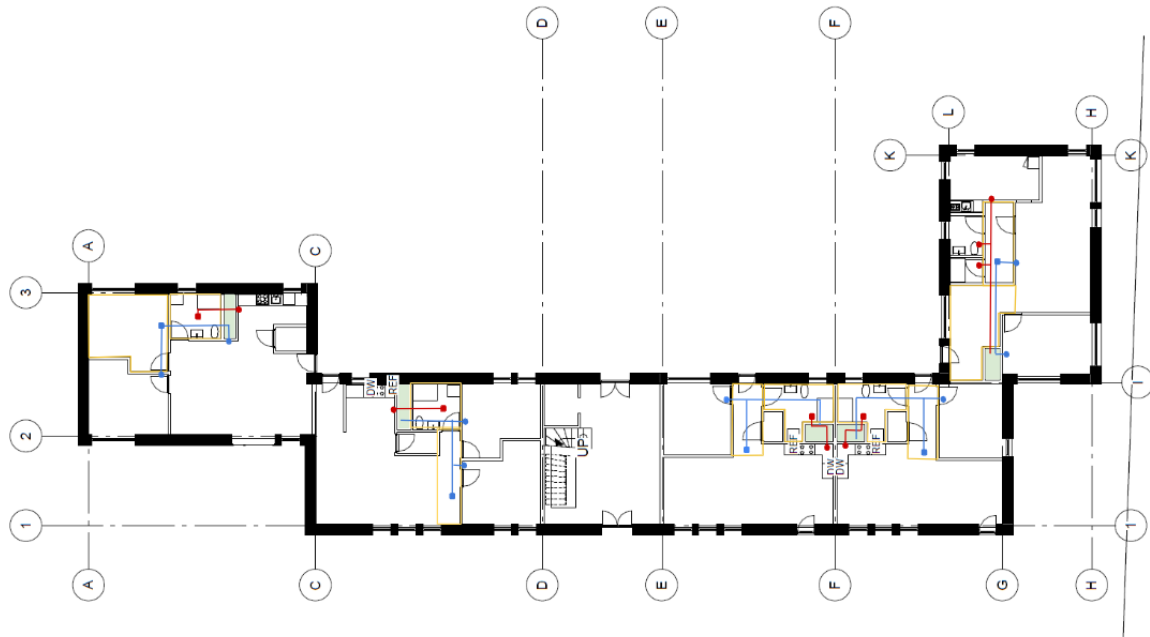
Note :

The calculation is the same for the basement but different air volume demand should be consider (storage, laundry room, ...).

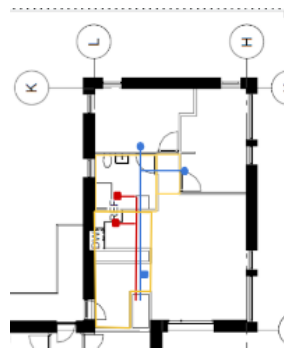
Calculation of the unit system :

Because the total air flow requirement was 800m3/h, the model chosen for the heat exchange unit on the roof was:

	H	VEX330H-1	70	900
	H	VEX330H-2	100	1555
	H	VEX340H	400	2450
	H	VEX350H	700	3820
	H	VEX360H	1100	5360
	H	VEX370	1440	8910



Ventilation plan of the groundfloor



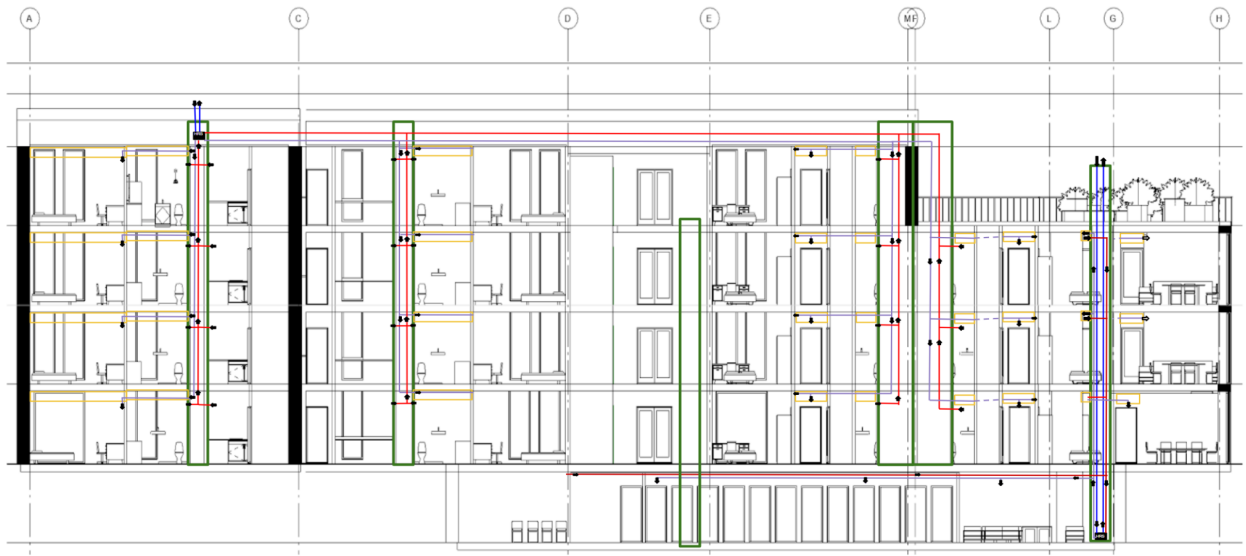
Ventilation plan of the dwellings above the office

Legend :

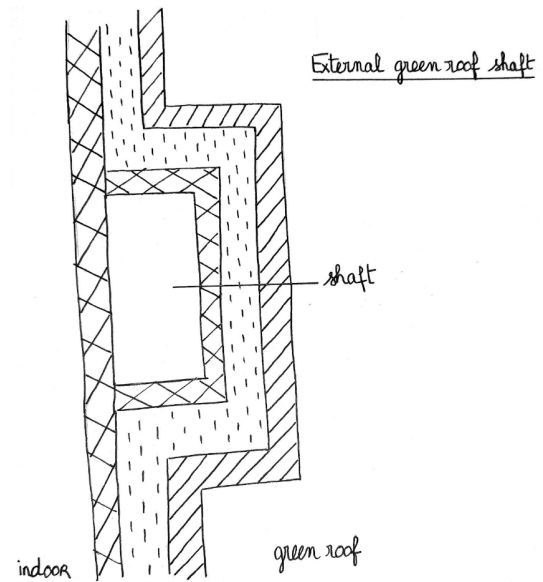
- Inlet - ceiling
- Inlet - wall
- Exhaust - ceiling
- Exhaust - wall
- Suspended ceiling
- Shaft

Ventilation plan shown in a longitudinal section.

The chosen ventilation system was a mechanical, balanced system with heat recovery, where there is a unique heat recovery unit machine placed on the roof. The highlighted green lines represent the shaft pathways, the red lines represent extracted air from the residential units and the blue lines represent cold air inlet and outlet:

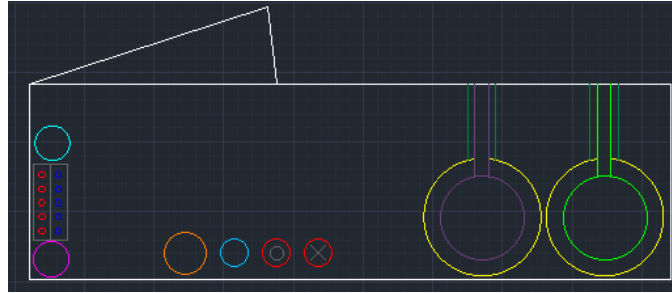


Decision made afterwards regarding
changing the path of shaft to go
through the green roof :



Shaft arrangement





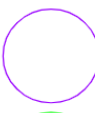

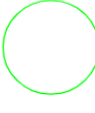





- The main pipe going through different fire section/units needs to be fireproof
- Whenever there is +5°C temperature difference, the pipes need to be heat insulated
- Gypsum around technical room on the inside
- The pipe that leaves the shaft and goes onto the roof needs heat insulation
- Fire demand (DS428) for pipe in the shaft



Shaft arrangement

Note : the water pipes are spaced 50mm apart.

Legend :

 manifold - cold water - Ø125mm	 Hot water return - Ø20mm
 manifold - hot water - Ø125mm	 Hot water forward - Ø20mm
 Ventilation outlet - Ø300mm	 Sewage - Ø150mm
 Ventilation inlet - Ø300mm	 Hot water - Circulation IN - Ø100mm
	 Hot water - Circulation OUT - Ø100mm
	 Cold water - Ø100mm
	 Fire insulation
	 Sound insulation