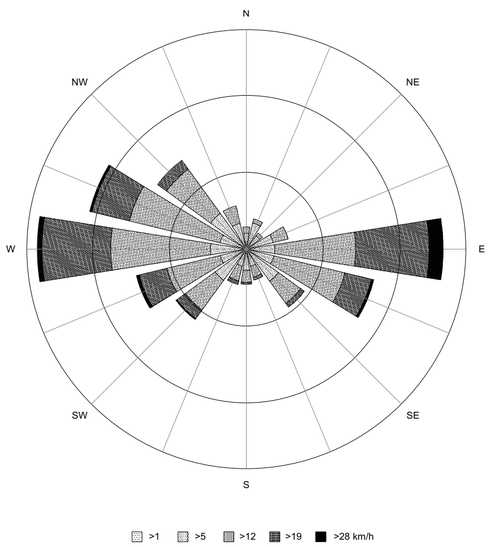


Culculation of required mass amount to cool down the space to 20 °C:

Weather indication average between June and September in Naters:

Rel. Humidity = 38.16 %

Abs. *Humidity* = 10.5 g/kg

Vap Pressure = 1.68289 kPa

Air Volume = 0.87352 m^3/kg

Enthalpy = 578.23151 kJ/Kg

Dew Point = 14.79 °C

$T_{Dry\,bulb}$ = 30.2 °C

$T_{Wet\,bulb}$ = 20.05 °C

Water evaporation amount ratio:

$F_{Air\,Humidity}$ = 1 g/cm^3

p_{Water} = 1 g/cm^3

$R = 8.13\ N \cdot m \cdot kmol^{-1} \cdot K^{-1}$

$$H_{Enthalpy} = \frac{50.09\text{-}0.9298 \cdot (T/1000) - 65.19 \cdot (T\text{-}1000)^2}{18.02} = 44.22\ kJ/mol$$

$$S = \frac{p \cdot R \cdot T}{18.02} \cdot \log\left(\frac{100}{F}\right) = 127.40\ J/m^3$$

$$W = \frac{S \cdot V}{H\,10^6} = 0.003\ m^3$$

Volume of mass requiered:

$H_{Difference} = H_{Abs.} - H_{WB}$ = 4.2 g/kg

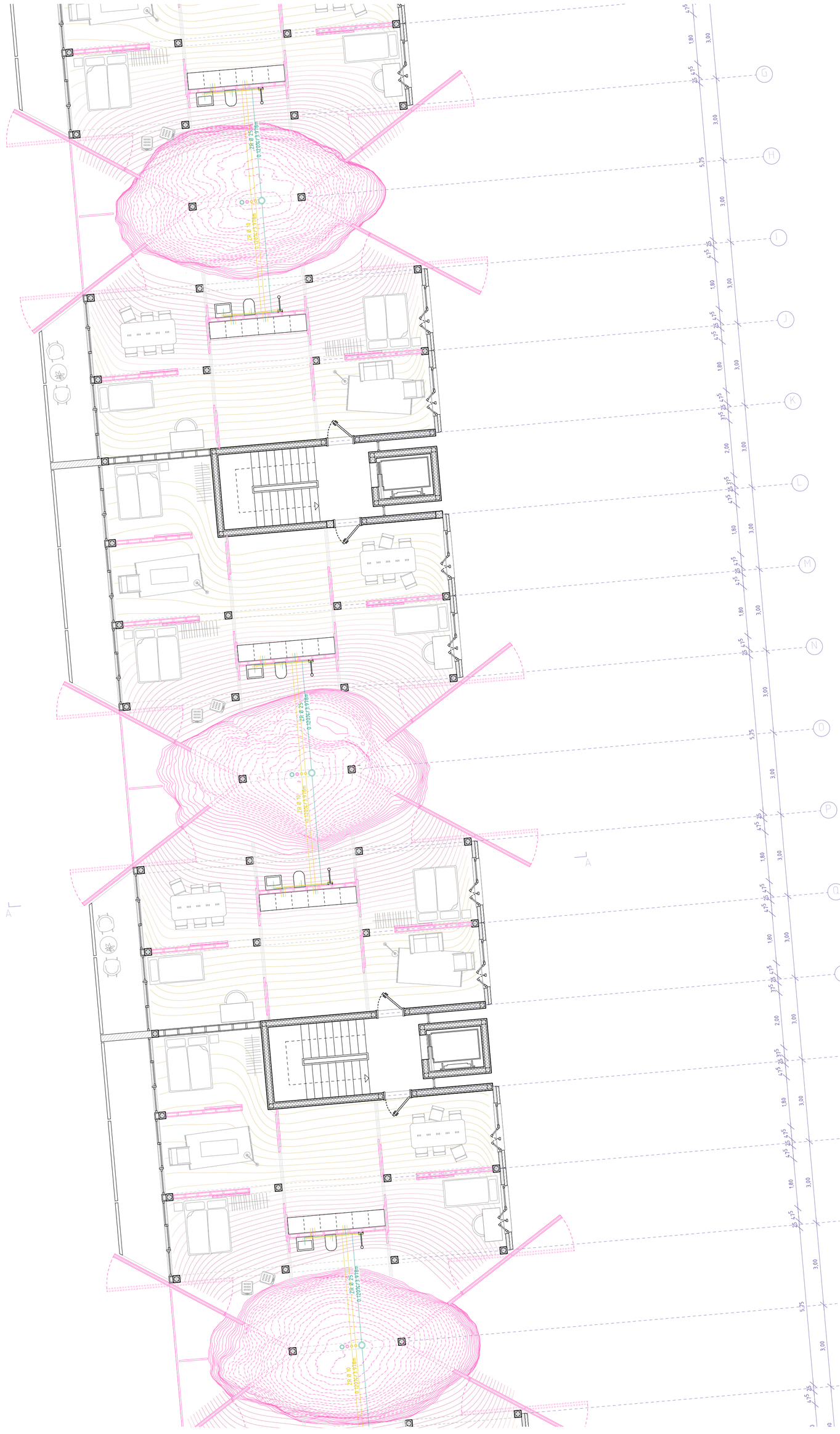
$M_{Air} = V_{Air} \cdot 1.29$ = 362.01 kg

$V_{Evap.\,Water} = H_{Difference} \cdot M_{Air}$ = 1520.44 g = 1.52 kg

$$V_{Water} = \frac{V_{Evap.\,Water}}{W} = 506.67\ m^3$$

$V_{Alluvium} = 0.06 \cdot 2 \cdot V_{Water}$ = 60.8 m^3

=> To cool down a 100 m^2 space from 30 °C to 20 °C
60.8 m^3 of Alluvial earth are requiered



Grundriss Regelgeschoss