

### Load intensities

1) Determine the (surface) unit weight of the structures!

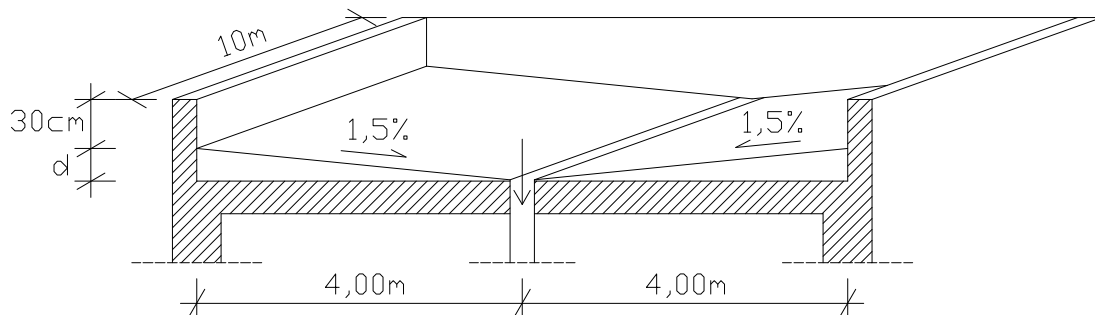
- |    |                      |                                   |
|----|----------------------|-----------------------------------|
| a) | 2 cm tiles           | $\rho_t = 1800 \text{ kg/m}^3$    |
|    | 5cm concrete bolster | $\rho_c = 2000 \text{ kg/m}^3$    |
|    | 2 cm rockwool        | $\rho_{RW} = 50 \text{ kg/m}^3$   |
|    | 20 cm RC slab        | $\rho_{RC} = 2400 \text{ kg/m}^3$ |
|    | 1 cm plaster         | $\rho_p = 1500 \text{ kg/m}^3$    |

- |    |                    |                                   |
|----|--------------------|-----------------------------------|
| b) | 10 cm clay         | $\gamma_{cl} = 16 \text{ kN/m}^3$ |
|    | 2 cm pine planking | $\gamma_p = 6,5 \text{ kN/m}^3$   |
|    | 20 cm pine beams   | $\gamma_p = 6,5 \text{ kN/m}^3$   |
|    | 2 cm pine planking | $\gamma_p = 6,5 \text{ kN/m}^3$   |
|    | 2 cm plaster       | $\gamma_{pl} = 15 \text{ kN/m}^3$ |

2) Service loads: How much is the load on the slab?

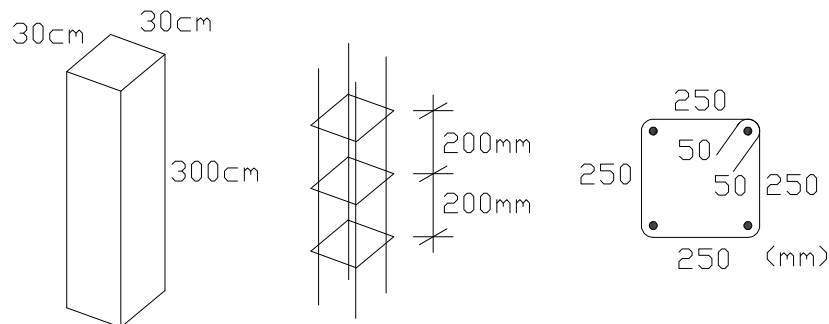
- a) Weight of crowd: 1 person  $\approx$  80 kg; 40cm  $\times$  40cm for a person.  
 b) Parking lot: 1 car  $\approx$  1,5 tons; 2,5m  $\times$  5,0m for a car.

3) Flat roof



- a) The slope of the flat roof is 1,5 %. How much is this in degrees and in radians?  
 b)  $d=?$   
 c) If the drain gets plugged, how much water ( $V=?$ ,  $G=?$ ) can stay?  $\gamma_{water} = 9,8 \text{ kN/m}^3$   
 d) How much is the load intensity of this water?

4) Reinforcement of RC column: longitudinal bar: 4 $\phi$ 20; link:  $\phi$ 8/200.



- a) Determine the total weight in kN!  $\gamma_{steel} = 77 \text{ kN/m}^3$ ,  $\gamma_{concrete} = 22,1 \text{ kN/m}^3$   
 b) Determine the unit weight in kN/m!