

Calculation of loading and design of foundation pads

Permanent load

roof

	layer	d [m]	ρ [kN/m ³]	G_{ki} [kg/m ²]
1	GRAVEL FRACTION	0,0650	1 650,0000	107,2500
2	HYDROINSULATION FOIL, PVC-P	0,0015	1 353,0000	2,0295
3	ESP 200S	0,0800	18,0000	1,4400
4	ESP 70S	0,3000	18,0000	5,4000
5	SLOPE LAYER ESP 100 S	0,0200	18,0000	0,3600
6	MODIFIED SBS ASPHALT	0,0040	1 400,0000	5,6000
7	R.C. SLAB	0,3000	2 500,0000	750,0000
8	LIME-GYPSUM PLASTER	0,0100	1 250,0000	12,5000
			Σ	884,5795
		$g_{k, ROOF}$	8,845795 [kN/m ²]	

Floor 1

	layer	d [m]	ρ [kg/m ³]	G_{ki} [kg/m ²]
1	FLOORING LAYER (ceramic tiles)	0,0100	2 000,0000	20,0000
2	SELF-LEVELING CEMENT LAYER	0,0500	2 000,0000	100,0000
3	IMPACT SOUND INSULATION	0,0500	200,0000	10,0000
4	R.C. SLAB	0,3000	2 500,0000	750,0000
5	LIME-GYPSUM PLASTER	0,0100	12 500,0000	125,0000
			S	1 005,0000
		$g_{k, SLAB 1}$	10,05 [kN/m ²]	

Floor 2

	layer	d [m]	ρ [kg/m ³]	G_{ki} [kg/m ²]
1	FLOORING LAYER (ceramic tiles)	0,0100	2 000,0000	20,0000
2	SELF-LEVELING CEMENT LAYER	0,0500	2 000,0000	100,0000
3	IMPACT SOUND INSULATION	0,0500	200,0000	10,0000
4	R.C. SLAB	0,3000	2 500,0000	750,0000
5	GLUE LAYER	0,0030	1 550,0000	4,6500
6	ESP 70	0,3000	18,0000	5,4000
7	SKIM LAYER	0,0020	1 550,0000	3,1000
8	SILICONE-SILICATE PLASTER	0,0020	1 800,0000	3,6000
			S	896,7500
		$g_{k, SLAB 2}$	8,9675 [kN/m ²]	

Floor basement

1

2	layer	d [m]	ρ [kg/m ³]	G_{ki} [kg/m ²]
3	WIRED REINFORCEMENT CONCRETE	0,0800	2 500,0000	200,0000
4	SEPARATION FOIL	0,0003	1 400,0000	0,4200
5	RECYCLED RUBBER	0,0200	1 200,0000	24,0000
6	SEPARATION FOIL	0,0003	1 400,0000	0,4200
7	R.C. SLAB	0,3000	2 500,0000	750,0000
			S	974,8400

 $g_{k,BAS}$ 9,7484 [kN/m²]

$$g_{k,TOT} = 47,661695 \text{ [kN/m}^2\text{]}$$

VARIABLE LOADSLAB

$$q_k = 2 \text{ [kN/m}^2\text{]} \dots \text{categor}$$

$$q_{partitions} = 1,5 \text{ [kN/m}^2\text{]}$$

ROOF

$$q_k = 1 \text{ [kN/m}^2\text{]}$$

BASEMENT

$$q_k = 2,5 \text{ [kN/m}^2\text{]}$$

$$q_{partitions} = 1,5 \text{ [kN/m}^2\text{]}$$

S

$$S q_k = 15,5 \text{ [kN/m}^2\text{]}$$

COMBINATION 6.10

$$1,35 \cdot g_{k,TOT} + 1,5 q_k = 87,59328825 \text{ [kN/m}^2\text{]}$$

SNOWLOAD

$$s = m_i \cdot C_e \cdot C_t \cdot s_k = 1,2 \text{ [kN/m}^2\text{]}$$

$$m_i = 0,8$$

$$C_e = 1$$

$$C_t = 1$$

$$s_k = 1,5 \text{ [kN/m}^2\text{]}$$

characteristic loaded area

19,28 m²

self weigth of comumn 0,3x0,3

$$F = (0,3 \cdot 0,3 \cdot 2,75) \cdot 25 \cdot 4 = 24,75 \text{ kN}$$

TOTAL LOAD ON COLUMN	1381,733242 kN
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TOTAL LOAD ON FOUNDATION PAD	1442,660742 kN
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zd= 110,5386594

Aeff= 3,730679754 1,931496765