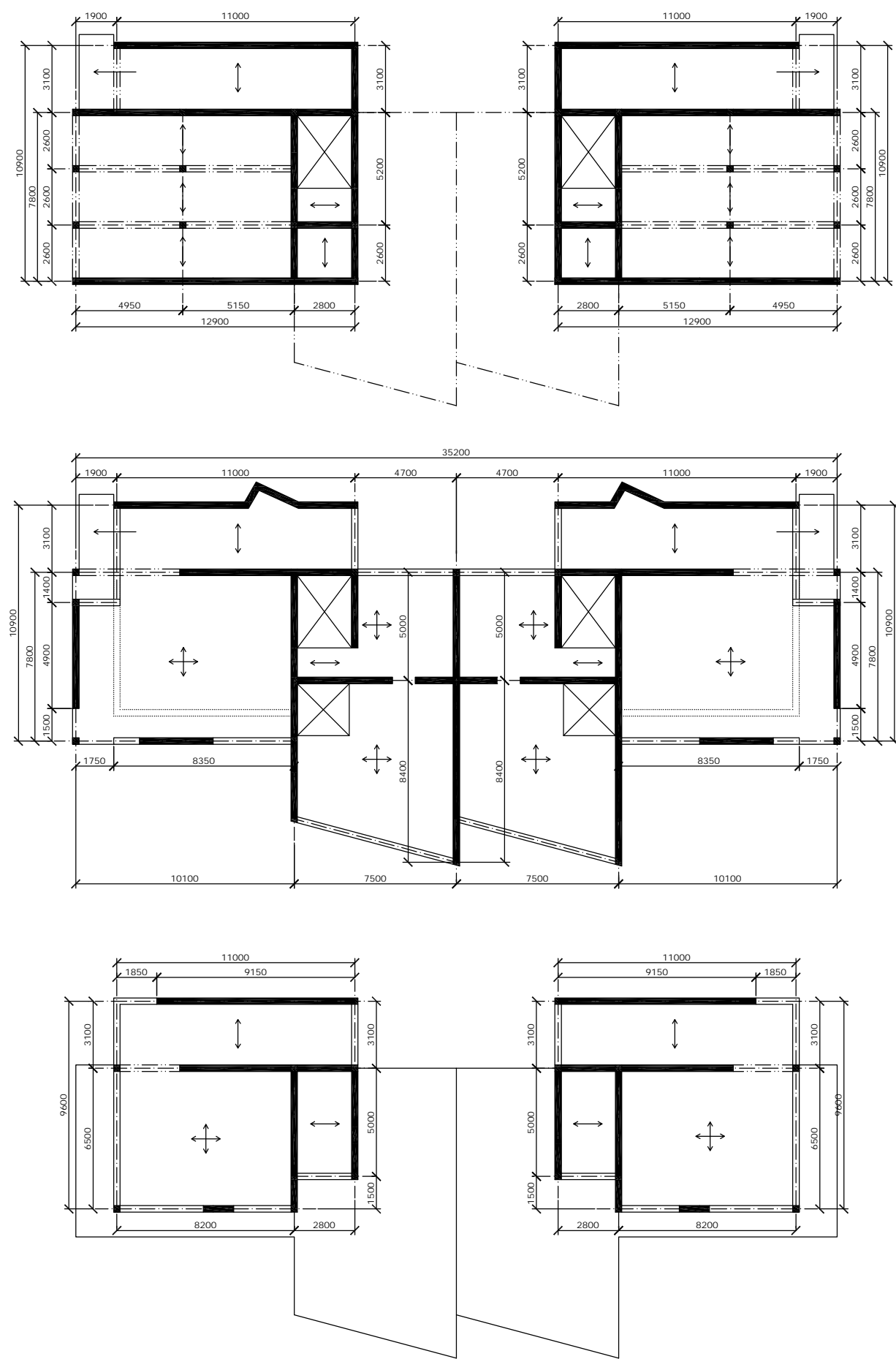


ALTERNATIVE I - WALL SYSTEM



BASEMENT - PARKING

1st FLOOR - DWELLING UNITS
2nd FLOOR - DWELLING UNITS

3rd FLOOR - DWELLING UNITS
- TERRACE

Structural solution

System consists predominantly of walls, with several individual columns.
Both one-way and two-way slabs are used.

Material solution

Load-bearing walls – Reinforced concrete th. 200 mm
Columns – Reinforced concrete 200x200 mm
Partitions – Autoclaved aerated concrete blocks
Slabs – Reinforced concrete waffle slabs with inserts from recycled plastic (Transform Lázně Bohdaneč company)
Basement – Reinforced concrete solid slabs

Building envelope

Reinforced concrete walls th. 200 mm ($\lambda = 1,4 \text{ Wm}^{-1}\text{K}^{-1}$)
Expanded polystyrene th. 150 mm ($\lambda = 0,038 \text{ Wm}^{-1}\text{K}^{-1}$)

$$R = \sum \frac{d}{\lambda} = \frac{0,2}{1,4} + \frac{0,15}{0,038} = 4,09 \text{ m}^2\text{KW}^{-1}$$

$$U = \frac{1}{R_i + R + R_e} = \frac{1}{0,13 + 4,09 + 0,04} = 0,235 \text{ Wm}^{-2}\text{K}^{-1}$$

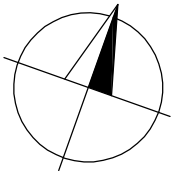
U-value meets the requirements for recommended value according to ČSN 730540-2 (0,25 $\text{Wm}^{-2}\text{K}^{-1}$)

Brief evaluation of the alternative

The advantage of this alternative is the same technology used for vertical and horizontal load bearing structures. Heavy reinforced concrete walls can be utilized for acoustic division of dwelling units and staircases. Because of poor thermal insulation properties of reinforced concrete, external insulation is necessary. The main disadvantage is increased labour consumption of waffle slabs.

LEGEND

- LOAD BEARING WALL
- == NON LOAD BEARING EXTERNAL WALL
- === BEAM
- FOUNDATION OUTLINE
- SLAB EDGE, BUILDING OUTLINE
- LOAD BEARING STRUCTURE OF ABOVELAYING FLOOR



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