CZECH TECHNICAL UNIVERSITY IN PRAGUE

FACULTY OF CIVIL ENGINEERING

DEPARTMENT OF GEOTECHNICS

TECHNICAL REPORT

FOUNDATION PART

Created by

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Name of project	Residential building in Prague
Investor:	CTU
Created by :	Ahmed Alkhateeb
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Contents

1. General information

Residential building outside of Prague is designed. The building is located on the corner of Bovarikova and Novakova Streets. Investor is CTU. The residential building is design economically and utilizing modern ways of design and construction. The project emphasize in good quality. The project utilized orthogonal architecture to blend in with the surrounding of nice and efficient buildings. Czech and euro codes were used during design.

2. Basic information

The residential building has 1 underground floor and 4 upper ground floors. The Length is 28.58 m. Width is 19.6 m. Height above the ground is 16.48 m. Height under the ground is 3m. Total height is 19.48 m. The underground floor is equipped with a technical room and ten parking spaces. 13 more parking spaces are located outside the building. Drive in to the building is from Bovarikova street. Drive in is than separated into a way to outside parking spaces and to the way to the underground floor. Entrance to the underground floor is via ramp with slope of 14%.

2.1. Software

- AutoCAD 2015
- MS Office

3. Structural system

The structural system of underground floor is a one-way slab with girders in one direction. Girders are supported by reinforced concrete columns. Column dimension is 300x550mm.Underground perimeter reinforced concrete wall is 300 mm thick. Floor structure is created by a one way slab by thickness of 180 mm. Communication areas around stairs well and elevator is created by reinforced concrete wall of thickness 300 mm. There are light shafts located in the underground walls. The shafts are thermally separated with use of isobeams.

Structural system of the upper floors is one way reinforced concrete slab sitting on load bearing masonry walls. Perimeter load bearing masonry wall is 440 mm thick, inner load bearing masonry wall is 300 mm thick. Load bearing walls around communication area are from reinforced concrete and are 300 mm thick. Elevator shaft walls is created by reinforced concrete walls of thickness of 200 mm and are separated from the load bearing structure of the building due to acoustic reasons.

4. Materials

Concrete :

Reinforced concrete ramp

C25/30 - XC3, XD2, XA1 - dmax=22mm - Cl<2% - S4

Reinforced concrete foundations

C25/30 - XC3, XD2, XA1 - dmax=22mm - Cl<2% - S4

5. Surveying

Several sonds have to be made during design phase or during first part of construction to confirm expected soil properties which are well known in this area and were used for the design.

6. Foundation

6.1. Characteristic of soil

Sand S4 –angle of internal friction = 32deg

Gamma is = 18KN/m3

Tabled load bearing capacity = 275kpa

6.2. Foundation pad

The building foundation is created by foundation pad below every column and foundation strip below load bearing walls (perimeter wall, walls of communication area). Elevator shaft is placed to the level below other foundation, therefore creates a recess.

Foundation pad footing: 2.1x2.1x1.3m

Foundation strip footing: 1x1x0.850m

6.3. Waterproofing

Waterproofing of the structure below ground is done by asphalt sheets. System is known as grey bath, where all the underground structure is covered by asphalt sheets. For asphalt sheets to be placed, it is sometimes necessary to build additional structure (wall), the asphalt sheets are put on to, and before the load bearing structure is build. This is the case for example for elevator reinforced concrete recess.

7. List of attachments

1. Structural calculation
2. Foundation drawing