



# CZECH TECHNICAL UNIVERSITY IN PRAGUE

## Faculty of Civil Engineering

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### Department of Concrete and Masonry Structures

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### BACHELOR THESIS EVALUATION

Name of the student: Sabina Adámková  
Title of the bachelor thesis: Social Welfare Centre  
Supervisor of the bachelor thesis: Ing. Iva Broukalová, Ph.D.  
Reviewer of the bachelor thesis: Ing. Petr Bílý, Ph.D.

#### 1. Contents of the bachelor thesis and accomplishment of objectives

The thesis is rather simple. It concerns structural design of social welfare centre on the level of “Structural design project 2 (SDP2)” subject. However, the objectives of the thesis were accomplished successfully.

#### 2. Technical standard and elaboration

Technical standard of the thesis and the quality of elaboration are acceptable. The reviewer noticed the following inaccuracies or errors:

1. Part 1, page 5: Construction technology should be described for the given structure, not just in general.
2. Part 2, page 6: The force considered for punching shear check should include the self-weight of partitions as well.
3. Part 2, pages 11-12: Minimum eccentricity of  $0.05t$  should always be considered in the design of a masonry wall.
4. Part 2, page 15: Vertical load-bearing structures above the analysed slab should be modelled as well (not just those under the slab).
5. Part 2, page 18: Basic moments were used for the design of reinforcement instead of design moments.
6. Part 2, page 18 and Part 4, excel spreadsheets: It seems to me that the peak values of bending moments were considered for the design of bending reinforcement which is too conservative in most cases.
7. Part 4, excel spreadsheets and Part 3, reinforcement drawings: There are 4 different types of reinforcement bars and 10 different values of spacing used in a rather simple slab. A simplification would be suitable.
8. Part 4, bending moment schemes: It is not clear where exactly in the structure are the analysed strips located.
9. Part 3, staircase geometry, section S2-S2': Hatch types should be explained (it seems like the wall around the staircase is made solely of insulation).

10. Part 4, structural drawings: Height of openings is not specified, some dimensions are missing, ground elevations of landings are missing.
11. Part 4, slab reinforcement drawings: Some of the bars are too long (up to 25 meters). It is not always clear from the drawings which reinforcement is used in which area. Secondary reinforcement is missing in some areas of the slab (reinforcement around the openings, upper reinforcement in midspan).

### **3. Language level and comprehensibility**

The language level is very good, the thesis is clear and understandable. There are just several minor problems:

1. The annotation and contents of the thesis are missing.
2. There are typing errors throughout the text, the student should have proofread the thesis more carefully before submission.
3. Overall simplified structural scheme of the structure is missing which makes the orientation in the thesis a bit more difficult.

### **4. Graphical layout**

Graphical layout is very good. Formatting is standard, graphical quality of the drawings is very good.

### **5. Literature resources**

The literature resources were briefly summarized in section 1.2 Basis of realization. The information about the authors, publishers, years of publication etc. is missing. The resources are not referenced in the text.

### **Comments, suggestions, remarks that shall be explained and commented during the defence of the thesis**

Recommended questions for the defence of the thesis:

1. Why do you always have to consider the minimum eccentricity of  $0.05t$  when you design a masonry wall?
2. How did you model the connection between the reinforced concrete slab and masonry wall in the numerical model? Explain your choice.
3. What is the difference between basic and design moments in the software that you used for the design of reinforced concrete slab? Why do you have to consider design (not basic) moments for the design of reinforcement?
4. Part 2, page 19, figure 10: What type of displacements is depicted? Are these displacements applicable to the check of serviceability limit state of the structure? Please explain.
5. How can you reduce the bending moments for the design of reinforcement of the slab? When can you reduce the values and when you can't?
6. Are the peak values of bending moments that you received from the software realistic? Why? How can you reduce them?

7. Explain the principles of sound insulation of the staircase.
8. Explain the effects of compressed reinforcement in a reinforced concrete slab.

Although the thesis is rather simple and could be improved in many aspects, it is acceptable. Therefore my evaluation is:

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Reviewer: Ing. Petr Bílý, Ph.D.  
Date: 21<sup>st</sup> January 2018

**D (satisfactory)**  
Evaluation  
(A-excellent, B, C, D, E, F-failed)