



REVIEW OF BACHELOR THESIS

Name and surname of student: **Ildar Sharipov**

Title of bachelor thesis:

Dry stack masonry: history, principles and contemporary applications

Supervisor of bachelor thesis: **Ing. Petr Bílý, Ph.D.**

Reviewer of bachelor thesis: **doc. Ing. Iva Broukalová, Ph.D.**

1. Content and fulfilment of the assignment:

The task of the thesis was to collect information on historical development, principles of construction and design of dry stack masonry structures and give examples of dry stack systems. The student had to design a dry stack masonry structure.

In principle, the assignment was fulfilled.

2. Professional level:

The thesis is written in a rather journalistic style not technical paper. The first part with the historical survey is quite interesting and quite well written. Then the style changes as if the student had lack of time or lack of individual concern.

Chapter 3.3 *Basic types of dry stack masonry* comprises absolutely pointless classification of the concerned masonry.

Title of the chapter 3.4 *Fast implementation of dry stack construction* sounds as advertising slogan and does not cover the content of the chapter.

Chapter 5 *Contemporary examples of dry stack masonry in Czechia* presents Livetherm blocks as an example. As far as I know, the Livetherm is made with thin-layer mortar, therefore it is not a dry stack masonry. The other example – KB block is made in both variants – as a thin-layer masonry or dry stack masonry, but the figure 36 shows masonry with shell-bedded mortar.

The structural design of the building does not provide substantial information about the building – number of floors, architectural layout, section etc. The structural calculations are uncontrollable. There are missing input data and load calculation. The drawing is of poor quality and without basic titles and description it is useless.

3. Language and comprehensibility:

The language level is quite good. In some cases, wording is a bit complicated, what reduces clarity; e.g. on the page 31, the sentence implies that the masonry is provided without bond, what is certainly not true.

The student is probably not perfectly acquainted with technical terminology (e.g. load-bearing capacity usually relates to structure or structural member; use of the expression with block / masonry unit is confusing).

There are some typing errors.

4. Graphic layout, drawings:

Graphic layout and formatting of the text are satisfactory. In some figures, the letters are too small, and the text is not legible.

Comments, objections, topics for discussion at the defence, etc.:

My principle objection is that the structural calculations are based on wrong determination of the compressive strength of dry stack masonry. The student calculated the characteristic strength of masonry using formulas from Eurocode 1996 for thin-layer masonry. But Eurocode does not cover dry stack masonry and these formulas cannot be applied! The real compressive strength of the STAVSI masonry (available on the web of the producer) is almost three times lower than the student assumed.

The list of contemporary dry stack system should be complemented with more detailed data on properties of the systems (materials, work size / coordinating size of the blocks, compressive strength etc.).

Questions that can be answered and discussed at the defence of the thesis:

- How do the dry stack systems bridge the window / door openings? What lintels are used?
- How is the overall stiffness of buildings provided? Is there any kind of ring beam (wall beam)?
- Compare properties of contemporary dry stacked systems.

Grade

D (sufficient)

Prague on June 11, 2019

Reviewer