REVIEWER'S OPINION OF FINAL THESIS

I. IDENTIFICATION DATA

Thesis name:	Reliability Analysis of St. Barbara´s Church in Otovice
Author's name:	Chandrashekhar Mahato
Type of thesis :	master
Faculty/Institute:	Faculty of Civil Engineering (FCE)
Department:	Department of Mechanics
Thesis reviewer:	Radek Zigler
Reviewer's department:	Department of Building Structures

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	**extraordinarily challenging**

Evaluation of thesis difficulty of assignment.

The thesis assignment is focused on stability assessment of a small historic baroque church and evaluation of its structural safety using probabilistic method. This assignment can be evaluated as extraordinarily challenging, as it requires knowledge exceeding the SAHC course.

Satisfaction of assignment	**fulfilled**

Assess that handed thesis meets assignment. Present points of assignment that fell short or were extended. Try to assess importance, impact or cause of each shortcoming.

The submitted master thesis is done according to the assignment.

Method of conception	**correct**

Assess that student has chosen correct approach or solution methods.

The methods used by the author in his work are correct and in accordance with the usual practice for the historic structures' damage and residual safety assessment and in some areas even go even beyond this.

Technical level	**A - excellent.**

Assess level of thesis specialty, use of knowledge gained by study and by expert literature, use of sources and data gained by experience.

The technical level of the submitted bachelor thesis is very good. The proposed solutions demonstrate that the author can apply the knowledge gained by study and can even extend it further.

Formal and language level, scope of thesis	**B - very good.**

Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.

From formal point of view, the thesis level can be assessed as very good. Some minor mistakes and typing errors (Figures 6.11, 6.13, 6.14 description "Stess vs. Stress", figures numbering from Fig. 6.15 onwards), as well as some mistakes in terminology do not reduce the overall quality of presented thesis.

Selection of sources, citation correctness	**B - very good.**

Present your opinion to student's activity when obtaining and using study materials for thesis creation. Characterize selection of sources. Assess that student used all relevant sources. Verify that all used elements are correctly distinguished from own results and thoughts. Assess that citation ethics has not been breached and that all bibliographic citations are complete and in accordance with citation convention and standards.

Selection of cited sources seems to be adequate and is mainly focused on probabilistic assessment of structures. Some further sources could have been explored, namely the ones focusing on problematics of testing the material properties of masonry structures. Also, the basic code for evaluation of existing structures (ISO 13822:2010) could have proven valuable (there are already thoughts on reliability assessment of existing structures etc.).
The citation ethics has not been breached and all the sources are sufficiently cited.

Additional commentary and evaluation
Present your opinion to achieved primary goals of thesis, e.g. level of theoretical results, level and functionality of technical or software conception, publication performance, experimental dexterity etc.
N/A

III. OVERALL EVALUATION, QUESTIONS FOR DEFENSE, CLASSIFICATION SUGGESTION

Summarize thesis aspects that swayed your final evaluation. Please present apt questions which student should answer during defense.

Overall, the presented thesis is well written and structured and is in accordance with the assignment.

For the theses defense discussion, I suggest these questions/topics:

1. The variability of material properties in historic structures is considerable. Therefore, adapting material properties from one structure to another, although from the same period and in the same region can lead to very different results and in the end could provide false results. This should be always considered very carefully (experience shows that material properties can differ within the same structure, even within the same structural element /wall/ by more than 100%). How would the author take this extraordinary variability into account when using the deterministic approach as in chapter 5?

2. The assumed differential settlement of 100 mm seems rather big in the real structure. Were there any signs of such settlements and corresponding structural damage observed? Explain why was this value chosen for the purpose of the deterministic analysis?

3. The probabilistic assessment is extremely interesting and it seems to be the approach for structural assessment we can expect in near future. However, it is still quite dependent of input parameters (the PDF of material properties, loads etc.). The author used randomized material properties based on the parameters obtained from previous works (Tab. 2). The presented coefficients of variation (0.1-0.2) seem to be rather optimistic (one would expect greater scattering of results). Can the author explain, how would change in these values influence the resulting PDFs of material properties and what possible impact it could have on the final reliability of the structure (if any)?

I evaluate handed thesis with classification grade **A - excellent.**

Date: **15.7.2019**   Signature: