

## I. IDENTIFICATION DATA

<b>Thesis name:</b>	<b>Evaluation of Ancient Bricklayer's Skills Using Numerical Estimations of the Masonry Strength of the Walls of Churches from the Broumov Group</b>
<b>Author's name:</b>	<b>Shantanu Kulkani</b>
<b>Type of thesis:</b>	master
<b>Faculty/Institute:</b>	Faculty of Civil Engineering (FCE)
<b>Department:</b>	of Mechanics
<b>Thesis supervisor:</b>	Pavel Kuklik
<b>Supervisor's department:</b>	Department of Mechanics

## II. EVALUATION OF INDIVIDUAL CRITERIA

<b>Assignment</b>	<b>extraordinarily challenging</b>
<i>Evaluation of thesis difficulty of assignment.</i>	
<p>The study was started off by virtual preliminary inspection of the Churches from the Broumov Group, due to Covid-19. The inspection was analyzed to mine the interesting findings and finally, it was completed by historical survey. In the same way was going geotechnical background studies concerning the stone mines and the quality of local stone. The main part is focused on the numerical analysis using ATENA 2D finite element (FEM) software. The study was focused on creations of FEM numerical models of the wall samples for calculation of strength in compression, tension, and shear.</p>	

<b>Satisfaction of assignment</b>	<b>fulfilled</b>
<i>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.</i>	
<p>In general, I can state that Mr. Shantanu Kulkani in his thesis work successfully and in excellent level coped with all tasks assigned to him.</p>	

<b>Activity and independence when creating final thesis</b>	<b>A - excellent.</b>
<i>Assess that student had positive approach, time limits were met, conception was regularly consulted and was well prepared for consultations. Assess student's ability to work independently.</i>	
<p>I have been in contact with Mr. Shantanu Kulkani since April 2020, it was the date when he started his thesis work on "Evaluation of Ancient Bricklayer's Skills Using Numerical Estimations of the Masonry Strength of the Walls of Churches from the Broumov Group". Mr. Shantanu Kulkani has proven very good ability to collect, analyze and classify a large amount of diverse information although it was in difficult situation due to pandemics of Covid-19. He carried out the master thesis without significant intervention from me. For me it was the fruitful cooperation on partial solving of the Czech culture heritage preservation and saving.</p>	

<b>Technical level</b>	<b>B - very good.</b>
<i>Assess level of thesis specialty, use of knowledge gained by study and by expert literature, use of sources and data gained by experience.</i>	
<p>I appreciate the technical level because of it need to use advanced numerical codes solving nonlinear problems and to fulfill the task it was necessary to carried out huge amount of numerical calculations as well.</p>	

<b>Formal and language level, scope of thesis</b>	<b>A - excellent.</b>
<i>Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.</i>	
<p>I rate the graphics and language level excellent. I have no objections.</p>	

<b>Selection of sources, citation correctness</b>	<b>A - excellent.</b>
<i>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.</i>	

In my opinion, the citation is done in good faith and corresponds to the knowledge and possibilities of the student.

### **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.*

The master thesis solves tasks which are not only very interesting for civil engineering structures now, but in future the answers on them will be mandatory for all ancient structures.

### **III. OVERALL EVALUATION, QUESTIONS FOR DEFENSE, CLASSIFICATION SUGGESTION**

*Summarize thesis aspects that swayed your final evaluation.*

I can state that Mr. Shantanu Kulkani in his thesis work successfully coped with all tasks assigned to him. I regard Mr. Shantanu Kulkani as a diligent and hardworking young professional who is capable to solve advanced tasks related to analysis of monuments and historical constructions. Therefore, I recommend his admission to the state exam and to process the defending act of his thesis.

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

Date: **21.7.2020**

Signature: