

## I. IDENTIFICATION DATA

<b>Thesis title:</b>	<b>Application of Fe-SMA for emergency strengthening of historical steel bridges</b>
<b>Author's name:</b>	<b>Erik Terner</b>
<b>Type of thesis :</b>	master
<b>Faculty/Institute:</b>	Faculty of Civil Engineering (FCE)
<b>Department:</b>	K134 – Department of steel and timber structures
<b>Thesis reviewer:</b>	Ing. Filip Kutina
<b>Reviewer's department:</b>	None (SUDOP PRAHA a.s.)

## II. EVALUATION OF INDIVIDUAL CRITERIA

<b>Assignment</b>	<b>extraordinarily challenging</b>
<i>How demanding was the assigned project?</i>	
Considering the need to account all the uncertainties in one numerical model, such as outdated corroded wrought iron rivetted sample, new alloy of an uneven stiffness parameters and quite difficult geometry of the test sample, I evaluate the project as highly challenging.	

<b>Fulfilment of assignment</b>	<b>fulfilled with minor objections</b>
<i>How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.</i>	
The thesis fulfills the task assigned – verification of strengthening a steel structure by SMA - through a demanding numerical modelling. Due to an unfortunate coincidence – a Covid 19 pandemic – it was not possible to compare the numerical results with an experiment, which can not be considered as author's deficiency.	

<b>Methodology</b>	<b>correct</b>
<i>Comment on the correctness of the approach and/or the solution methods.</i>	
Methodology of the research is well described, means of assessment in ULS and fatigue are properly explained.	

<b>Technical level</b>	<b>A - excellent.</b>
<i>Is the thesis technically sound? How well did the student employ expertise in the field of his/her field of study? Does the student explain clearly what he/she has done?</i>	
Nothing to reproach. It is obvious the author understands his expertise. He is able to explain all details of his work.	

<b>Formal and language level, scope of thesis</b>	<b>B - very good.</b>
<i>Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?</i>	
Organizing, presentation and language on a high level. Exceptionally missing links to Figures.	

<b>Selection of sources, citation correctness</b>	<b>A - excellent.</b>
<i>Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?</i>	
Exemplary work with sources and linking to them in the script.	

<b>Additional commentary and evaluation (optional)</b>
<i>Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.</i>
The thesis is not characterized by an extensive quantity, it is distinguished by a very good quality instead. The topic is up-to-date and this thesis can solve as a good source for ongoing researchers.



### III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE

*Summarize your opinion on the thesis and explain your final grading. Pose questions that should be answered during the presentation and defense of the student's work.*

Questions:

Is SMA a good solution for repairing structures subjected to significant fatigue load? Is it better than CFRP for this purpose?

Based on prior SMA research and experiments, can you estimate the result of experimental verification of the Vyšehrad Railway Bridge sample? What part of the sample do you expect to fail?

The grade that I award for the thesis is **A - excellent**.

Date: **29.1.2021**

Signature: