THESIS SUPERVISOR FORM

1. Identification of the student:

Student:	Maïa Laffineur
Thesis:	Optimization of the Computational Model for the Restoration of the Intrados of the Charles Bridge (Prague)
1st Institution:	UNIPD Padova
2nd Institution:	Czech Technical University in Prague, Czech Republic
Academic year:	2016/2017

2. Identification of the supervisor:

Name:	Petr Havlásek
Institution:	Faculty of Civil Engineering, Czech Technical University in Prague
Position:	Research Assistant

3. General comments

The first goal the student had to accomplish was to develop a computational model capable of accurately capturing the process of stone replacement in the intrados of the arch of the Charles Bridge in Prague. Then, employing this computational model, the second goal was to recommend the order in which the stone units should be replaced and to propose a set of general rules which should be respected not only during modeling but also at the construction site.

Successful accomplishment of these goals could not have been achieved if the student had not been able to effectively combine several softwares and packages: newly developed semi-automatic scripts in Matlab and Python languages for creating the masonry mesostructure and a part of the input file, meshing tool T3D for creating the unstructured FE mesh, open-source FE solver OOFEM, and finally, several post-processing tools. Most of these programs the student did not know and had to learn using them in a very limited time.

It can be objected that the numerical analysis was performed only under the assumptions of linear elasticity which is not fully representative in the case of invasion into already deteriorated masonry structure. However, it must be born in mind that the primary objective was the modeling of the replacement procedure using construction stages and that the drawn conclusions hold also for the model capturing material nonlinearities. Transforming the linear model into a nonlinear is not straightforward and would have required much more time then was provided.

Besides the ability to learn fast and work independently, I also appreciate the diligence and the enthusiasm to work which the student has demonstrated at the regular weekly meetings. I hope that the FE modeling techniques and software packages with which the student became acquainted will be useful in their subsequent Ph.D. studies.

Finally, I must acknowledge that the thesis was typeset in Latex and I fully recommend the thesis for the defense.

4. Grade: A

Use the following scale

A (excellent)	B (very good)	C (good)	D (satisfactory)	E (sufficient)	F (fail)

Faculty of Civil Engineering, Czech Technical University in Prague

July 10th, 2017

The Supervisor,

Petr Havlásek