

THESIS SUPERVISOR FORM



1. Identification of the student:

Student:	Jonathan Knudtsen
Thesis:	Comparison of modelling approaches to analysis of masonry arch bridges
1 st Institution:	University of Padova, Italy
2 nd Institution:	Czech Technical University in Prague, Czech Republic
Academic year:	2016/2017

2. Identification of the supervisor:

Name:	prof. Ing. Petr Kabele, Ph.D.
Institution:	Czech Technical University in Prague, Czech Republic
Position:	Professor

3. General comments

The main objective of Mr. Jonathan Knudtsen's Master's thesis was to apply and critically compare different approaches to modelling and analysis of masonry arch bridges. The calculations were to be performed for a particular historic structure – the Pawling Avenue Bridge in Troy, NY, USA. As a second objective, the bridge was to be re-rated, based on results obtained with modern numerical methods. The topic was proposed jointly with Mr. David Biggs P.E., S.E., a SAHC lecturer and consulting engineer, who performed evaluation of the bridge and designed its restoration in 1986.

To cope with the assigned tasks, the student had to deepen his practical competences both in traditional limit analysis and modern numerical methods. The work involved advanced use of three different specialized softwares: the LimitState:RING and general purpose finite element packages ADINA and Atena. As the thesis project included a case study of a particular historic bridge, the student had to scrutinize relevant existing documentation, reports, and previous calculations. The presented analyses involved constructing the geometrical model, determining the loads according to current codes, selecting appropriate material models and estimating the effective masonry properties. Engineering interpretation of the results of numerical calculations, including identifying the structural failure mechanism and load carrying capacity of the bridge, was also an important aspect of the thesis. Based on his hand-on experience, the student compared various aspects of the applied modeling approaches. Thus, it is evident that the student has fulfilled all assigned objectives.

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Throughout the thesis work Mr. Knudtsen has demonstrated a great level of diligence, independence, and scientific and engineering thinking, which materialized in an original study that meets the high standards of SAHC Master's thesis.

By completing the presented thesis work, Mr. Jonathan Knudtsen has proven his competence to solve advanced tasks related to analysis of monuments and historical constructions. Therefore, I recommend his admission to the state exam and defense act of his thesis. I recommend grading his thesis by 100 points out of 100, i.e. A (excellent) on the CTU scale and A on the ECTS scale.

4. Grade: __A (excellent)__

Use the following scale

A (excellent)	B (very good)	C (good)	D (satisfactory)	E (sufficient)	F (fail)
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CTU in Prague, Czech Republic

July 17, 2017

The Supervisor,

(Petr Kabele)