

I. IDENTIFICATION DATA

Thesis title:	Experimental and numerical analysis of cocciopesto mortar under mixed mode of fracture
Author's name:	Maurício Sampaio Bonatte
Type of thesis :	master
Faculty/Institute:	Faculty of Civil Engineering (FCE)
Department:	Department of Mechanics / ITAM CAS
Thesis reviewer:	Dr. Michal Hlobil
Reviewer's department:	Department of Materials Research, ITAM CAS

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	extraordinarily challenging
<i>How demanding was the assigned project?</i>	
The thesis topic combined both experimental and numerical mechanics, resting on the fundamentals of fracture mechanics, as well as extensive bitmap image processing necessary during Digital Image Correlation analysis. As such, the demand on the student knowledge and skills surpassed ordinary requirements, rendering the thesis topic extraordinarily challenging.	

Fulfilment of assignment	fulfilled
<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 final thesis covered all assigned topics thoroughly. Starting from a comprehensive state-of-the-art, the student then elaborated a compact theoretical summary of fracture mechanics theory, and used the knowledge to evaluate both the experimental and numerical analyses. In the last part of the thesis, the student managed to perform a comprehensive sensitivity analysis covering a wide range of variation in material properties and the model geometry, and summarized these results in a clear and convincing way.	

Activity and independence when creating final thesis	A - excellent.
<i>Assess whether the student had a positive approach, whether the time limits were met, whether the conception was regularly consulted and whether the student was well prepared for the consultations. Assess the student's ability to work independently.</i>	
The student was very highly motivated to work on the thesis subject. He managed to learn how to use OOFEM with minimal guidance from my side, and performed an extensive amount of numerical simulations. In a similar fashion, he tackled the software for DIC. He analyzed all the obtained results independently, and presented them in a concise fashion during online-only consultations.	

Technical level	A - excellent.
<i>Is the thesis technically sound? How well did the student employ expertise in his/her field of study? Does the student explain clearly what he/she has done?</i>	
The student very efficiently used all his previous knowledge on numerical simulations, collected during writing his bachelor thesis in Brazil, and effectively widened his scope to include OOFEM as well as DICe. The core of the thesis, i.e. the experimental and numerical parts, are concisely formulated and the student proved his ability to transfer the knowledge read in scientific articles to support his observations.	

Formal level and language level, scope of thesis	A - excellent.
<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>	
The thesis is well-written, using technically sound narrative, the topics covered are explained with sufficient detail, covering the necessary but not disturbing the reader's flow. The organization of the text follows the style of modern journal papers, i.e. all parts are described with analytical precision and the thesis ends with a comprehensive conclusion.	

Selection of sources, citation correctness**A - excellent.**

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?

All cited papers are relevantly included in corresponding sections. The student builds on work published relatively recently, but does not forget to cite relevant papers from the past.

Additional commentary and evaluation (optional)

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.

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.

The thesis is well written, organized and concise, the topic is elaborated with deep knowledge and presented in a convincing fashion. Mauricio fulfilled all my expectations during writing of this thesis; he worked independently to a large degree, actively sought ways to tackle the encountered obstacles and proved profound knowledge on the subject. As such, I award him the highest grade.

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

Date: **24.7.2020**

Signature: