THESIS REVIEWER'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**Dynamic Experiments using Universal Split Hopkinson Bar.**
Author's name:	**Lukas Kocian.**
Type of thesis :	bachelor
Faculty/Institute:	Faculty of Transportation Sciences (FTS)
Department:	Department of Mechanics and Materials
Thesis reviewer:	Thomas Schubert
Reviewer's department:	Institute of Concrete Structures, Technische Universität Dresden.

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment **challenging**

How demanding was the assigned project?

Setup and testing a partly self-designed experimental testing device is a challenging task, although support was provided from the team that worked on the main project.

Fulfilment of assignment **fulfilled**

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.

The overall goal of the task to deliver a functionable, reliable and self-checked / validated Split-Hopkinson-Bar (SHB) is fulfilled.

Methodology **correct**

Comment on the correctness of the approach and/or the solution methods.

The way the design was delivered was well through trough. The test setup to validate the SHB was well selected and carried out. The information about the collection of the measurement data and the transformation of the data to usable and visible engineering information is too short and needs improvement.

Technical level **B - very good.**

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?

The thesis shows in very good detail the procedures that have to be applied in developing a testing machine. The technical setup and construction are well explained. The collection and work with the measured data is quite short. More explanation how the writer has achieved the graphics printed would be advisable.

Formal and language level, scope of thesis **C - good.**

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?

The written work is well structured. Notations are clear and abbreviations are explained. The overall length is good but sometimes some words or numbers are missing, like it was planned to write them later. The language is readable but needs to be improved in order to clarify the important part (validation) of the work.

Selection of sources, citation correctness **B - very good.**

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 literature was correctly cited. The literature review on SHB testing is sufficient. Although the waves traveling through the beams and specimen could have been explained with more figures and formulas.

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. Pose questions that should be answered during the presentation and defense of the student's work.

The thesis is a good work that explains the methodology, basic principles and results of the validation process of the development of a Split-Hopkinson-Bar (SHB). The history and theory of the SHB is well explained and considered in each step towards the final SHB device. The first test results for validation are discussed in a well-understandable way. However, in the section written towards the end of the work the writing gets a bit short of details.
The developed SHB and measuring devices are very reliable, although the information on data collection and description of evaluation needs to be improved. The newly developed SHB provides a very useful tool for the evaluation of material and determination engineering values.

Some Questions:

What materials can be tested in the new SHB?

What size should a specimen have in order to be tested in the SHB?

Could the optical gate be exchanged with a fine laser sensor to achieve more precision?

The force calibrations need to be reviewed in detail, since there is a time dependent deformation. How can one improve the force calibration?

Static and dynamic test of a material were performed. Could you evaluate an increase factor comparing the tests performed?

The grade that I award for the thesis is **B - very good.**

Date: **26.8.2024** Signature: