CTU
CZECH TECHNICAL UNIVERSITY IN PRAGUE

THESIS REVIEWER'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**Škoda Car Showroom**
Author's name:	**Oguz Demirbas**
Type of thesis :	master
Faculty/Institute:	Faculty of Civil Engineering (FCE)
Department:	Department of Steel and Timber Structures
Thesis reviewer:	Ing. Jiří Chlouba, Ph.D.
Reviewer's department:	-

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment — **ordinarily challenging**

How demanding was the assigned project?

I consider the assigned project to be a regular type of a master thesis where the student can prove the ability to work out a full project from the first sketch to final design with structural calculation and drawings. There is no need for a scientific approach which would become a bigger challenge for the student.

Fulfillment of assignment — **fulfilled with minor objections**

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 main task of the thesis is the structural solution of the main hall as well as of a mezzanine which is used for administrative purposes. Another main task is the connection design of both the main structure and the built-in administrative part, including stiffness assessment of some of the connections. Both of these goals were achieved. The objection is related to uneconomic design of the structure, more about that in the last chapter.

Methodology — **correct**

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

The student used a correct workflow, the use of calculation software is appropriate and convenient.

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 student proved to be able to perform structural calculations by hand and also by the use of different specialized design programs.

Formal and language level, scope of thesis — **B - very 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 thesis is well structured and the text arrangement allows good legibility. Also graphical illustration is sufficient and appropriate. Some more effort could be made to proofreading, there is also some inaccuracy in terminology. But overall quality of the written part of the work meets the requirements for a master thesis.

Selection of sources, citation correctness — **C - 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?

The sources selected for the work are adequate. There is a reference list at the beginning of the thesis, although there could be more reference notes in the text. Some parts are without reference at all, e.g. results of the base plate calculation (more about that in the last chapter). The original work of the student is distinguished.

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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.

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

As stated in the previous parts of this review, the work as a whole is well arranged and the work procedure is easy to follow. However, from the designing point of view the structure is very uneconomic. The structural elements are designed based on a mixture of internal forces which might be far from reality, taking into account axial forces from one load case and combining it with the strong axis bending moment from another load case and the weak axis bending moment from yet another load case. This cannot occur in reality and therefore it makes no sense to design a structure on these effects.

There are also some minor remarks I want to point out:

- at some places of the text the nomenclature is not consistent (switching Na and Nc on page 12)
- confusion of SLS and ULS on page 10
- inaccuracy in critical length of beam on page 23 (derived from real length, not from column spacing)
- infinite (extremely high) stiffness is considered for rigid connections, not hinged (page 42)
- missing reference on page 42 where some data are presented with unknown origin
- I suggest to use "end plate" (or "header plate") instead of "front plate"
- the third bolt row should have the same resistance as the first, not as the second (page 48)
- unclear shear lug length (page 53)
- missing all details for the B4a column base calculation, page 55 (should it be in the Appendix?)
- in the drawings, the profiles in section should be with full hatching for better orientation

Questions for the presentation:

- Why are the columns B4a and B5 designed as HEB260? Is there a constructional reason? The utilization is very low, 35% and 15% respectively.
- Why is the C1 connection moment resistance so much higher in the IDEA Statica results than in the hand calculation? (172 kNm vs. 81 kNm)
- Why the B4a column base plate has no shear lug when the shear force is the same as in case of A2/A3 column base plate where the shear lug is designed?
- Does the bracing beam (for both horizontal and vertical bracing) have sufficient restraint in the middle of its span? (calculation of Lcr.y)

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

Date: **1.2.2022** Signature: