Reviewer's form for thesis evaluation

1. Identification of the student

Student:	Ing. Juan Sebastian Montenegro Eduarte
Thesis:	Design of prequalified European beam-to-column connections for moment resistant frames with component based finite element method
Institution:	Czech Technical University in Prague
Academic year:	2017/2018

2. Identification of the reviewer

Name:	Ing. Jan Pošta, Ph.D.
Institution:	University Centre for Energy Efficient Buildings
Position:	Researcher

3. Fulfillment of thesis goals

excellent ☐ above aver. ☐ average ☒ below aver. ☐ weak ☐

Comments: Some objectives summarized in chapter 4 were not done. For example: "Validation of numerical models by comparing outputs of numerical models to experimental results from Equaljoints project" or "Investigate CBFEM accuracy of results in order to propose further developments to a state-of-art designing tool". When I skip the state of art the whole work consists of six similar models in IDEA statica.

4. Academic/scientific/technical quality

excellent ☐ above aver. ☐ average ☐ below aver. ☒ weak ☐

Comments: The master thesis is below average quality. IDEA StatiCa is really user friendly software where mentioned joints can be done very quickly. Results in summary tables (for example page 47) are non-comparable. The different connection typology (Haunched, Extended stiffened and extended unstiffened) have moreover different cross sections, end plate thickness, bolt rows, bolt size etc. After that the difference between these three typologies is undetectable.

Result describes that decisive factor for endplate unstiffened joints is "doubler" plate on column web. But this finding came from initial connection geometry in parametric study chosen by student. See chapter 7. For other geometry can be decisive different factor.

5. Formal arrangement of the thesis and level of language

excellent ☐ above aver. ☐ average ☐ below aver. ☒ weak ☐

Comments: In this work are many mistakes in tables, picture descriptions, table descriptions, graph presentations etc. For example page 34 - Figure 20 versus text; all graphs from parametric study have same name - Stiffness diagram; all pictures from IDEA showing stress and strain are without result scale; Figure 45 is without any description; page 49 - failure modes described in chap.4 (but chap.4 is Objectives); page 39 and 55 - same model ES3-TS-F-M but different bolt size; Figure 44 - description is wrong; page 42 - table 4 instead 5 in text, UBC is Uniform building code and not Unified; references - wrong numbers of codes; table 4 - different letters on right and left side of table; table 12 - column is from S460, beam not (acc. text); table 12 - steel S460/description S450; etc.

The drawings on pages 36, 37, 39 and 41 are wrong and do not have technical quality.

6. Further comments

1) Please, explain sentence from page 14: "However, moment frames typically impose smaller forces on foundations than do other structural systems, resulting in somewhat more economical foundation systems."

2) Where is validation between numerical models and experimental results?

3) What is result of the comparison on page 48?

4) Rotation capacity is much lover from CBFEM than from the test. Reason is explained as "limit strain encoded in the software". Explain closer.

5) How is defined in IDEA StatiCa state of failure? What is the physical joint resistance calculated by IDEA? Static scheme in IDEA models is missing.

6) Table 9. Haunched joint - decisive component - Endplate in bending. It means that in FIN EC is different result than by IDEA and Equaljoint test where decisive component is beam flange?

7) What is result of the table 9? Is verification sufficient (row 4: 1389kNm x 1920kNm)? Were IDEA models modified after results from FIN EC?

8) Student wrote on page 65: "It has not impact to change the steel grade of the endplate whereas it is noticeable the improvement when a higher steel grade is employed for the web panel."
This finding comes from result when column is from superior steel same as the endplate. What will be the result if the column remains from superior steel but the endplate will be from S355 steel?

9) I would skip the quotes from pages 4 and 67.

7. Grade: D (satisfactory)

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

Place Prague, 21 Jan 2018

The Reviewer

Ing. Jan Pošta, Ph.D.