

I. IDENTIFICATION DATA

Thesis title:	Analysis of two computer programs for a pile wall design in Prague
Author's name:	Wenhao Zhu
Type of thesis :	master
Faculty/Institute:	Faculty of Civil Engineering (FCE)
Department:	Department of Geotechnics
Thesis reviewer:	Ing. Jaroslav Beňo, Ph.D.
Reviewer's department:	Metrostav a.s.

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	ordinarily challenging
<i>How demanding was the assigned project?</i>	
I consider the assignment of the diploma thesis to be moderately demanding. Comparison of analytical and numerical solutions of sheet pile structures is nowadays becoming common in practical design of geotechnical structures. The design of pile wall was made only in one cross section.	

Fulfilment of assignment	fulfilled with minor objections
<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 assigned task, which was given by supervisor of the diploma thesis, was fulfilled. The analysis of pile wall was done in two different programs based on two different methods, but only for one cross section. At the end of the diploma thesis, the outputs from both computer programs are clearly compared. At the end of the work I miss the synthesis of results from both software and a more detailed description of which internal forces were used for dimensioning the piles. I also miss suggestions, which program is better for this type of geotechnical design.	

Methodology	correct
<i>Comment on the correctness of the approach and/or the solution methods.</i>	
The student has demonstrated that he is able to use basic methods and procedures of scientific work and is well versed in modeling geotechnical problems using various computer programs. The results of the work are evaluated objectively and clearly. The student chose the most loaded place for the design of the pile wall structure, i.e. the place with the highest load by the high surrounding building. I miss the design of a typical cross section without loading the surrounding building, where you can achieve cost saving due to lower load and comparison of this two cross sections.	

Technical level	A - excellent.
<i>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?</i>	
I assume that most of the knowledge gained during the study was used for writing the diploma thesis. From a professional point of view, the final work is prepared at a good level. I appreciate the approach to calibration of numerical models (elastic modulus, overconsolidation, Poisson's ratio), which is always necessary for this geotechnical problem.	

Formal and language level, scope of thesis	B - very good.
<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 formal level of diploma thesis is good. The diploma thesis is well graphically processed; pictures, tables and graphs are sufficiently illustrative. The text of the thesis is concise, clear and understandable. There are not many grammatical errors in the text. In diploma thesis I miss the list and explanation of abbreviations used, which are sometimes confused.	

Selection of sources, citation correctness	A - excellent.
<i>Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the</i>	

student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?

The technical literature used has been chosen appropriately and is cited to a sufficient extent. I did not find any cases of violation of citation ethics.

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.

I missed more detailed drawings in the diploma thesis.

The distance between primary and secondary piles is too low. The common distance between secant piles is 850 mm for piles with diameter 1000mm, therefore fewer piles are needed.

I consider the application of terrain loading to the model to be too conservative.

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

The student submitted a diploma thesis dealing with the comparison of two computational procedures of a secant pile wall on a project in Prague. The assignment of the work was fulfilled with minor objections. There were no errors or shortcomings. I evaluated the submitted diploma thesis positively. The student has demonstrated sufficient knowledge and skills to obtain the Ing. degree, so I recommend a positive acceptance of the diploma thesis.

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

Questions:

- 1. What should be done with the surrounding building to avoid possible problems during construction?**
- 2. What are the types of ground anchors? Could a different type of anchor be used in your project? What was the difference between force in anchors from analytical and numerical solution and which were used for design?**
- 3. For which calculation method would you decide in practice and why?**
- 4. The approach for application of load from surrounding building is too conservative. What are other possibilities of application of this load?**

Date: **26.1.2021**

Signature:

