

令和5年度 土木学会全国大会 第78回年次学術講演会

主催：公益社団法人 土木学会
会場：広島大学, 広島工業大学

Teshome Birhanu Winfred Mutungi Maxime Zabrodin

博士課程3年

博士課程2年

修士課程2年

2023年9月13日から14日にかけて、広島大学および広島工業大学で開催された令和5年度土木学会全国大会第78回年次学術講演会に参加した。各自表1に示すとおりに研究内容を発表するとともに、関連分野においてディスカッションを行った。以下に、発表時に頂いた質問と回答、およびディスカッションの内容を記載する。

表1 発表論文タイトル

Teshome Birhanu	[CS2-44] Shear stress characteristics of fine shredded paper investigated by direct shear box test
Winfred Mutungi	[CS2-07] Static and cyclic loading of a single pile supported by a thin bearing layer with dry sand
Maxime Zabrodin	[CS2-42] Packing effect of particles on mechanical behaviours under biaxial compression by DEM

Teshome (D3)

From: Dr Feyzullah Gulsen: TODA Corporation

Q1: Since the soil properties during treatment, the particle size of the FSP may have different influence on the physical properties of the soil, did you check the additive effect on the liquid limit and plastic limit?

A1: Yes, we conducted different physical properties of FSP treated soil to evaluate its effect with sandy and clay materials. In addition, we also investigate the effect of the combined FSP and other additives on the treated soil where the particle size of the additive has a clear effect on the limit and water absorption. For instance, the finer FSP particles increase the liquid limit and plastic limit of the soil due to high water absorption capacity resulted from higher surface area to volume ratio.

Q2: During utilization of this FSP additive on the field it might decompose, how did you manage this problem?

A2: Our research team has been conducting the decomposition properties of FSP by burning it to 5cm depth from natural ground at our open field laboratory. As it takes longer time to evaluate the decomposition property, the measurement is still taken at different times which is under progress.

CS2-06

September 14: 9.00 – 10:45

To Muhammad Firdaus Bin Abdul Rahim: Shimizu corporation

Analysis of deep excavation: a comparison between the hardening soil model and the Mohr coulomb soil model

Q: In your PLAXIS simulation you used a similar soil model for each case even if your project has different soil stratum, did you check your comparison by applying suitable soil model for each soil stratum that may affect the result?

A: Yes, the result may differ if I adopt a different soil model for each soil stratum. In our project we have three different soil profiles, mainly the upper two soil have only 0.9m and 1.7m which very small compared to the third layer (i,e 29.10m). Due to this reason I prefer to utilize a similar soil model for each case.

CS2-02

September 14: 9.00 – 10:45

To Quang Ho Nguyen: TAISEI CORPORATION

A Soil improvement CFA method and reinforced soil embankment GRS method executed on internal construction project.

Q: For problematic soil which you replaced with treated soil at the backfill of the retaining wall and abutment of the bridge, what type of treatment and proportion did you use?

A: Problematic soil at the project site first removed to a suitable depth. Then selected sandy material is mixed with cement additive at 3 % by dry mass which is used as backfill of abutment and retaining wall.

CS2-10

September 14: 5:10 – 12:30

To Chanoknunt SANGSOBHON: Tokyo city University

Displacement measurement in steel girder bridge using video camera.

Q: In your study you showed us the effective way of measuring the steel girder bridge displacement but how this technique can be utilized for bridge located in remote area for longer time since the camera needs to be charged and safe from local thief?

A: At this stage we are conspiring the bridges located in the town, but for the future we will find suitable method to mitigate this concern.

Impression

Participating in the conference gives a lot of opportunities to learn from other researcher presentation and finding. For me it was also a good opportunity to network with different professionals, get different insights and feedback on my presentation. I would like to thank our laboratory professors Hashimoto sensei and Kido sensei for giving me a chance to attend such a kind annual meeting.

WINFRED D2

Questions asked in my presentation.

Static and cyclic loading test on a single pile supported by a thin bearing layer with dry sand.

Q1. Was it possible to achieve sand 20% relative density?

A: Yes, with the dropping height being as low as 20cm.

Q2. What will be the next experiment?

A: To do the experiment with more bearing layer thickness.

Q3. Does the cohesion and friction angle of sand vary with relative density?

A: No

CS2-07

September 14: 10.30-10.40

Questions to presenters

To Amr Moussa- Yokohama national university

Development of new geopolymers mortar by using sewage ash.

Q. What was the optimum amount of sewage sludge ash used?

A. The optimum amount is 15% but can use 50% with silica fume.

CS2-36

September 15: 09.30-09.40

To Ziyi Jia- University of Fukui

Preliminary experiments on the effect of waste wool and fulvic acid on plant growth in Murun, Northern Mongolia.

Q. Was there any kind of treatment for the wool?

A. No treatment was done, it was just used raw from the sheep shearing.

CS2-37

September 15: 09.40-09.50

To Xin Zhou – Saitama university

Steady state chloride migration test for slab blended mortar with different slag ratio and fineness.

Q. What was the target strength of the specimen and were you able to achieve it?

A. In earlier stages, strength was low but at 91 days the designed strength was achieved.

CS2-40

September 15: 10.10-10.20

Impression

Attending this annual conference was good for me. I was able to listen and learn from presentations by various students, researchers and professionals in the diverse fields of civil engineering. I was also able to present my research activities and I got good comments which will help me improve on my work. Thank you to the lab for granting me this opportunity.

Maxime (M2)

Geotechnical Engineering session CS2-41 to CS2-47: CS-2 (広島工業大 五日市キャンパス三宅の森 Nexus21 702/広島大 東広島キャンパス工学部講義棟 B219)

Presentation CS2-42: Packing effect of particles on mechanical behaviours under biaxial compression by DEM

Duration: 10 min (7-min for presentation and 3-min for Q&A)

Questions received

Question from not registered.

Q: What is the effect of pore water pressure?

A: We didn't consider it for our current research due to time limitation.

Question from Bryan MUTUA: Kyoto University

Q: Why did you need to consider different confining pressures? Brian Mutua

A: It was found that the effect of the bag is higher when the soil is weaker or present lower confining pressures, although we do not show in this presentation, a case with 19kPa showed less oscillation in stress and the same stress was much higher than the case without the bag.

Question from Feyzullah GULSEN: Toda Corporation

Q: Did you conduct any kind of experiment to obtain the parameters?

A: They are based on experiments such as direct shear box test for friction and a calibration of the force-displacement curve. For the aluminum the density is known, and it was based on data from the validated model from Ali et. al.

September 15: 11:10 – 12:30

Questions made

To Hazel SUING: CTI Engineering Co., Ltd.

CS2-16: An Experimental Study on the Applicability of Outlet Controlled Siphon Spillway for Improvement of Dam Function

Q: Which criteria did you use to define the shape of the siphon?

A: It follows the shape of an existing dam, a hydraulic head was defined at the opening and at the outlet and a gate to adjust the opening was set but studies were carried out for openings of 50, 75 and 100% at no specific

criteria.

Urban Lifeline and Disaster Resilience session

September 14: 13:40 – 13:50

To Akira YAMADERA: Nippon Koei Co., Ltd.

CS2-22: Filling Management for Development of the Special Economic Zone in Bangladesh

Q: How did you select the CPT points and separation distance?

A: There was no pre-defined criteria for selecting the points, so it was at random based on experience with separation distances between 100-200 meters.

Construction, Planning and Management session

September 14: 15:10 – 15:20

To Kotaro MIZUTANI: Tokyo City University

CS2-26: Building a Model for Future Estimation of Vacant Houses Distribution Using Government Statistics

Q: Which criteria did you use to define the shape of the siphon?

A: It follows the shape of an existing dam, a hydraulic head was defined at the opening and at the outlet and a gate to adjust the opening was set but studies were carried out for openings of 50, 75 and 100% at no specific criteria.

Construction, Planning and Management session

September 14: 15:50 – 16:00

To Nurulnajwa KHAMIS: Construction IoT Research Laboratory

CS2-30: Utilization of free software QGIS in road maintenance

Q: Is the laser accuracy of 50mm enough to visualize cracks?

A: Not yet but the goal is to achieve that, for now it is expected that even though the accuracy is 50mm we can still detect unevenness on the asphalt road and that can serve as an indication to the technicians that cracks might be present.

AI, Data Science, DX session

September 14: 17:00 – 17:10

To Amr MOUSSA: Yokohama National University

CS2-36: Development of New Geopolymer Mortar by Using Sewage Ash

Q: Can we use the same process for any sewage waste sludge, or should we always conduct similar lab tests for different source sludge?

A: We have to conduct laboratory tests whenever we have sludge from different sources to identify its

properties.

Construction Material and Waste Session

September 15: 9:30 – 9:40

Impression

It was my 1st participation in such a conference, so I got to learn a lot about the requirements, steps to consider when attending a conference and the different roles of the people involved. Although time was very scarce, I received some questions which made me understand more about what type of aspects are critical to consider in my research. With this experience I can do better in future research and also in future similar events.

Being able to see others presentations content and presentation style also gave me more experience on aspects to avoid and to understand what is currently being researched in the different fields.

Lastly, I would like to leave a word of thanks to my professors who helped make this possible, my colleagues whom participated in the conference with me and also those who in one way or another made this a possibility.

