10/5/2016

Study Tour Grant Report 2016

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Introduction

Japan Society of Civil Engineers (JSCE) was established as an incorporated association in 1914 entrusted with the mission to contribute to the advancement of scientific culture by promoting the field of civil engineering and the expansion of civil engineering activities. Since its establishment, JSCE has endeavored to achieve the above mission, through extensive activities including scientific exchange among members, researchers / promotion of science and technologies relating to the field of civil engineering, social involvement, etc. Over the years, the JSCE membership has increased significantly from the initial 443 members to approximately 39,000 members at present, and is currently engaged in various wide-ranged activities around the world. With the birth of the 21st century, JSCE has reconfirmed its goals to exert perpetual efforts.

a. to propose an idea for social infrastructure development in the future from civil engineers' perspective,

b. to acquire a steadfast relationship of mutual trust with the society,

c. to promote scientific and technological researches/studies with a high degree of transparency, and

d. to evaluate public works from a neutral standpoint, and to reach a social consensus on those proper standards.

The activities and implementing projects of the STG is supported by ISEF. The representatives and participants are selected and invited officially by the branches of JSCE. Moreover, the full expenditure of the study tour is invested by ISEF. During the study tour the participants visit project fields and research organizations. As well as they have great opportunities to meet professionals of construction branch and exchange experience with them. At the same time, the participants have chance to discuss about the projects which are being implemented by these experts.

This year STG continued five days and seven researcher-engineers took part in it. Here is the name list of the participants.

1. Habibie Razak from Indonesia
2. Purevdorj Sosorburam from Mongolia
3. Aung Myat Thu from Myanmar
4. Alben Bagabaldo from Philippines
5. Rattanaporn Kaewkluengklom from Thailand
6. Dogancan Telli from Turkey
7. Tran Dinh Tung from Vienam

SCHEDULE OF THE ACTIVITIES

Table 1. Schedule of STG 2016

	Date	Time	Events
1	9-4-Sun	—	Arrinving at Narita Airport
2	9-5-Mon	9:00-11:50	Public Works Research Institute, Tsukuba National Institute for Land and Infrastructure Management
		14:30-16:30	Tokyo-Gaikan Expressway: "TAJIRI-Area Project"
3	9-6-Tue	9:00-11:30	KAJIMA Technical Research Institute
		13:15-15:00	Disaster Prevention Center, Tokyo Metropolitan Assembly Hall , and Tokyo Olympic Facilities in Shinjuku
		15:30-17:00	"North Passage Renewal Project"
		18:20-18:52	Go to Sendai by Shinkansen "Hayabusa"
4	9-7-Wed	9:00-12:00	2016 JSCE Annual Meeting the 18th International Summer Symposium (Tohoku Univ. Kawauchi- kita Campus) Participate and deliver a presentation at The 18th International Summer Symposium (Venue: B Bldg. Room B200 & B201)
		12:15-13:15	Have a meeting with the members of International Scientific Exchange Fund (ISEF) Committee over lunch (Venue: Small Meeting Room 2, Conference Bldg. 1F, Sendai International Center)
		13:30-17:30	To visit Sendai Castle where it is nearby the conference venue.
		18:00-20:00	Attend IAC's Networking Reception (Venue: "Kitchen Terrace Couleur", Tohoku University Kawauchi-Kita Campus)
5	9-8-Thu	11:30	Arrive in Rikuzen-Takata City and visit the disater affected sites in which reconstruction works have been implemented
		11:30-13:00	Visit Shimizu Corp. JV in the Imaizumi and Takata areas
		13:00-14:00	Visit Kajima Corp. JV to see disaster restoration works in the coastal area
		14:00-18:00	Visit the disater-affected sites located between Rikuzen-Takata and Minami-Sanriku towns in which reconstruction works have been implemented See these areas from bus windows
		18:21-19:56	Return to Tokyo by Shinkansen "Hayabusa"
6	9-9-Fri	~ 12:00	Free Time
		13:40	Go to a Hato Bus stop. Go on a sight-seeing in Tokyo by Hato bus
		14:10-19:10	Go to Tokyo Skytree and the Asakusa area
7	9-10-Sat	PM	Leave for home

Study Tour Activities

Day 1.

The first activity was to visit Public Works Research Institute (PWRI) and National Institute for Land and Infrastructure Management (NILIM). We were welcomed by Dr. Wada and informed that the expenditure of the study tour grant is paid by NILIM and International Science Exchange Fund. Also, a short briefing about the study tour was given in the frame of this study tour.

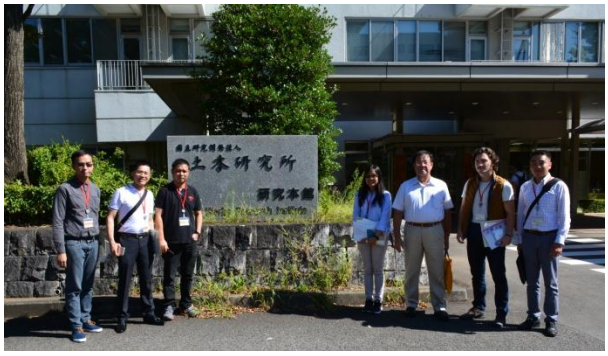

Fig. 1. Public Works Research Institute

Fig. 2. National Institute for Land and Infrastructure Management

At first, we were introduced road and transport construction. These included pavement test field, 223m radius loop (design speed 120km/h), ITS (Intelligent Transport System), active soft edge soundproof barrier, porous elastic pavement, traffic sign test, experimental facilities for lighting and impact test, 148m radius loop (design speed 100km/h), size test tunnel, weather environment test track and so on. All of them are experimental constructions which are used by various purposes.

The most interesting thing was we drove tour bus 80km/h. When we were driving on the roundabout, we didn't feel imbalanced situation and it was just like as if we were driving on the straight road.

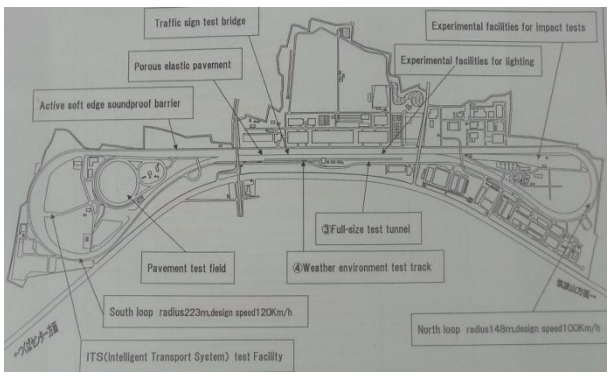

Fig. 3. General plan of the Track test facility

Fig. 4. At the North loop, radius 148m

The second place where we visited is PWRI. Dam Hydraulic Laboratory (L102m×B44m) and its Annex (L70m×B44m) are used for investigation of the hydraulic phenomena concerning dams' reservoirs and hydraulic facilities such as spillways, outlet works and intake systems. Also, laboratories are used for hydraulic design of facilities of governments' dams especially of Ministry of Land, Infrastructure and Transportation (MLIT) dams. Hydraulic design of almost all spillways and outlet works of MILIT dams are executed through model tests in these laboratories.

Fig. 5. Inside of the Dam Hydraulic Laboratory

Structural Engineering Laboratory is the next destination which were pointed in our itinerary. When we visited there, the experts were doing an experiment on bending elements of the bridge construction. The machine of the experiment is the second largest in the world. This 30MN (3000t) Large Structural Members Universal Testing Machine is used for compressive, tensile and bending test for full-scale or reduced-scale bridge members/components to evaluate the ultimate strength and the behavior to the failure. It was constructed in 1978 and the control unit was updated in 1991 and 2002 to improve the safety and the usability for operation.

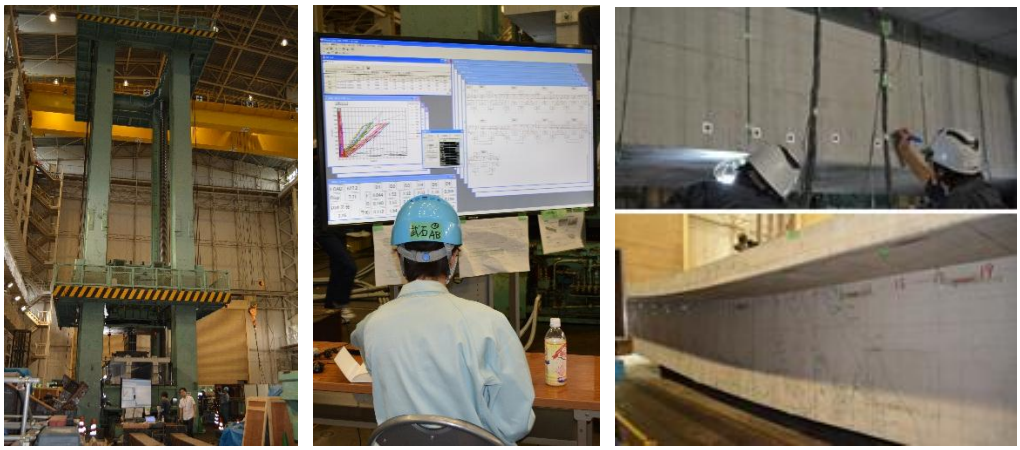

Fig. 6. Full size bending test of bridge member

Finally, we have seen the geotechnical dynamic centrifuge (Radius: 6.6m, Maximum acceleration: 150G, Maximum payload: 5t). It is ideal to perform prototype model tests in order to understand the complicated behavior of ground, earth structure and foundation. And also following studies can be performed by using tis centrifuge: soil liquefaction and ground flow, seismic behavior of earth structures, seismic behavior of underground structures, stability of retaining walls and reinforced earth structure, soil-pile interaction, effect of soil improvement techniques and tunnel excavation.

Fig. 7. Geotechnical, dynamic centrifuge

In the afternoon, we had a trip to Tokyo-Gaikan Expressway: “TAIJIRI-Area Project and took a look at the new technology of tunnel construction. Taijiri area construction site is the work to construct Keiyo-junction connecting Tokyo-Gaikan Expressway and Keiyo-Road way. Gaikan-Express way and Keiyo-JCT ramp are semi-basement the structure. The feature of this project is 70% of the heavy traffic on the inner circular Route is not Bound for the Tokyo city center and it is expected to be completed urgently in 2017. They are using three tunneling methods which are new the open-cut method, shield tunneling method, ant the harmonica+underpinning method and it was very impressive to me.

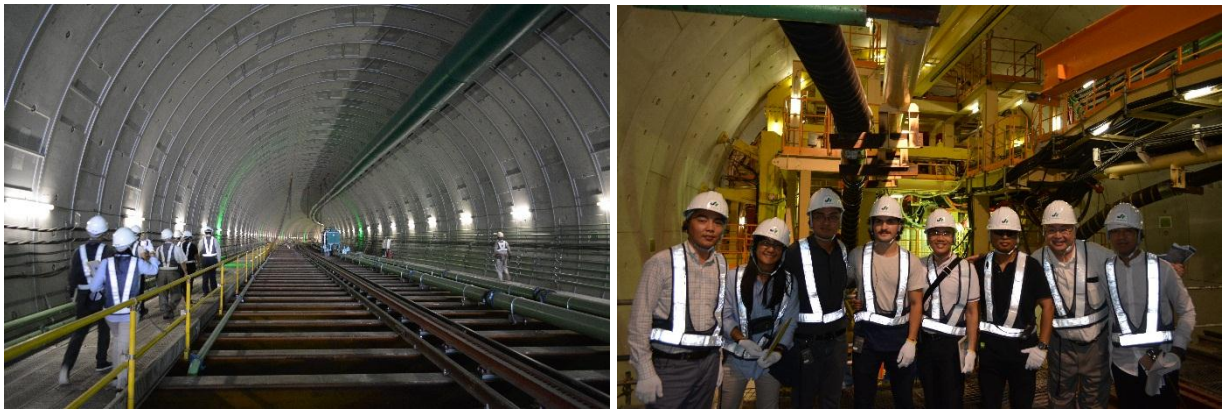

Fig. 8. Inside of the tunnel

Day 2.

The first activity of the second day was visiting in the Kajima Technical Research Institute (KATRI) and Nishichofu Complex. It also included the Large Scale Structural Testing Laboratory, base isolation building, Wind tunnel laboratory and 3D sound technology room.

Fig. 9. At the Nishichofu complex KaTRI

According to the schedule, we visited the Large Scale Structural Testing Laboratory. The size of the laboratory building is L60m×B34m and it has 2 reaction wall.The bigger reaction wall is 12м high and 16м wide. It ‘s three meter thick. After that, the wind tunnel laboratory was introduced to us.

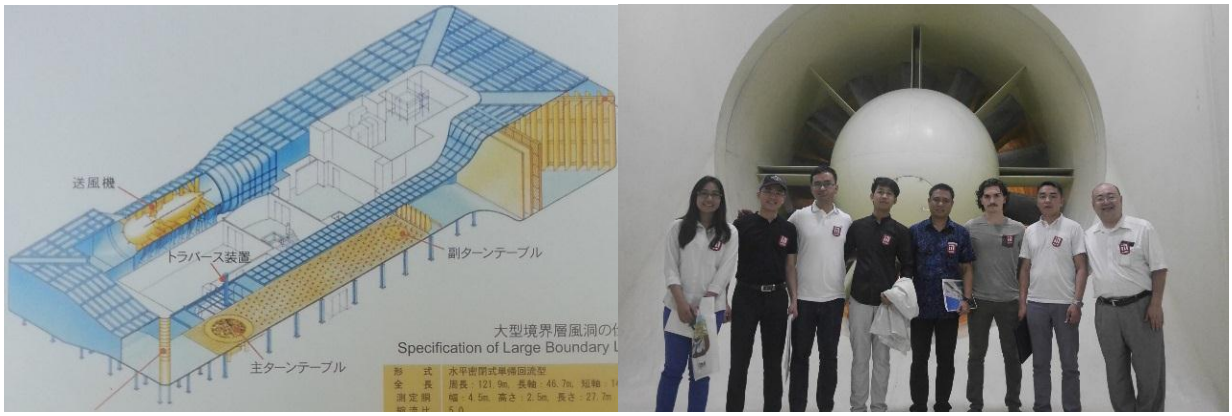

Fig. 10. Wind tunnel

Next to that, we went to the Tokyo Metropolitan Assembly Hall, which was built in 1991, and the Tokyo Olympic facilities in Shinjuku-ku Tokyo. Also, the structure of the city administration was introduced and the lecture was given about earthquake, typhoon, tsunami and other natural disasters as well as some effective monitoring was taught in order to prevent from possible disasters.

It was a nice opportunity to visit in the Vice president's room and Tokyo Metropolitan Assembly Hall. Several memorable photos of mine were taken in those places and it will be an unforgettable memory to me.

Fig. 11. At the Tokyo Metropolitan Assembly Hall and Tokyo Olympic facilities

Another important event of the day was seeing the JR Shinjuku Station Project. Approximately 1.8 million passengers pass through the Tokyo station. In order to widen the station's capacity, the extension building is being built in these days. Although the construction work is in progress, there isn't any change or modification with the schedule of the timetable.

Fig. 12. JR Tokyo Station Extension Project

Day 3.

On the third day, the representatives participated in the JSCE Annual Meeting 2016 - 18th International Summer Symposium which was taken place in Kawauchikita Campus, Tohoku University. We, participants presented our technical paper in front of the JSCE 18th International Summer Symposium. During the Symposium, about 3000 researcher-engineers and lecturers gather together and discusses about their experiences and research work. Symposium consisted of six different categories of sub meetings which are Structural Engineering, Hydraulic Engineering and Environment, Geotechnical Engineering, Planning and Design & Management, Materials and Construction Management.

In the afternoon, the STG participants had a trip around Aoba Castle which has more than 400 year old history. We have visited a Buddhist temple and seen statue of Lord Date Masamune.

Fig. 13. JR Tokyo Station Extension Project

In the evening, there was a guest reception of JSCE and various countries' civil engineering sectors delegates and members arrived and greeted cordially as well as the participants had friendly talks in the pleasant environment.

Fig. 14. JR Tokyo Station Extension Project

Day 4.

The main goal of this day's trip was to visit the Great East Japan Earthquake 2011 site in Rikuzen-Takata City, and to go to the disater affected sites in which reconstruction works have been implemented. On our way, we have seen the bridge construction which has 438 m length and 600 m distance shot with six pillars.

Furthermore, we have glanced at around Rikuzentakata Area reconstruction and the implementation of the project. In this area there was a terrific earthquake / 9.0 M / and everything was ruined completely and removed from the ground surface. During this disaster 1753 victims were killed and about 200 people disappeared. Also more than 3300 buildings were destroyed. Because of this disaster news, I was shocked. The reconstruction and new city building work has started in 2012 and it will be finished 2019 as it has very urgent plan.

Fig. 15. Reconstruction works have been implemented sites

Since it was a rainy day and the route of the day was quite long, we barely had chance to see more.

Day 5.

The final day of the trip was a free day for casual trip. We have started the day trip at 12 and took the Hato Bus and had a tour around the city center. So we visited in Azakusa area and Skytree Tower.

Azakusa is located in the Tokyo city center and it is one of the most important tour sites.

Tokyo Skytree tower is 634m high and the tallest free-standing broadcasting tower in the world.

Fig. 14. STG participants with Dr. Wada and Hashimoto san

Conclution

The five day trip gave me a lot of knowledge and enriched my experience. Especially, it was my first time to give presentation in foreign language, hence I was very nervous, although it was a great experience to me. Moreover, I have met many talented engineers and exchanged experience with them.

The main goal of the JSCE STG program is to learn Japanese civil engineering technology and projects. From my point of view, as I am one of the participants I conclude this purpose was fulfilled. STG offered opportunity to young engineers not only to participate in the trip, but also gave them great chance to get to know each other.

Also this study tour inspired me to study in Japan more enthusiastically and efficiently. I hope I will contribute to the development of Mongolia and young engineers' knowledge as much as I can in the future.

Acknowledgment

I appreciate to JSCE sincerely and this study tour helped me to widen my outlook and knowledge as well.

I would like to express my gratitude to the kindest and hardworking Mr. Hashimoto, Dr. Wada and Miss Yuki who have been helping and caring us during the tour.

At the same time, I want to express my special thanks to the president of Mongolian Civil Engineers' Committee Gunbold.B /Ph.D/, the vice president Ganzorig.E /Ph.D/, the director of Japanese Civil Engineering Committee in Mongolia Zorig.D and my teacher Khishgee.R /Ph.D/ who has supported and helped me a lot.