

Study Tour Grant 2019 Report
Supported by International Scientific Exchange
Fund-ISEF
(Japan Society of Civil Engineers -JSCE)

By

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Myanmar Earthquake Committee

Yangon, Myanmar

Recommended by Federation of Myanmar Engineering
Societies

About JSCE

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:

- 1) To propose an idea for social infrastructure development in the future from civil engineers' perspective,
- 2) To acquire a steadfast relationship of mutual trust with the society,
- 3) To promote scientific and technological researches/studies with a high degree of transparency, and
- 4) To evaluate public works from a neutral standpoint, and to reach a social consensus on those proper standards.

Furthermore, JSCE will implement such new indispensable programs as Civil Engineers' Qualification System, Continuing Professional Development, etc., for the benefit of creating an environment where civil engineers can widely take on an active role in the international community, and where civil engineering technologies may contribute to the amenity of the people both in and outside of Japan.

ABOUT STUDY TOUR GRANT

JSCE Study Tour Grant (STG), supported by International Scientific Exchange Fund (ISEF), is a unique program for young civil engineers to learn Japanese civil engineering technology and projects. The STG program invites the civil engineering students who are nominated by the AOC societies to Japan to stay for about one week. During their stay,

those students visit project sites and research institutes, meet leading civil engineering professionals and academics, and share their projects with other students. At the end of the program they are requested to submit a report on their experience gained in Japan to JSCE and also to the AOC to which they were affiliated. This program gives a chance not only to see technological innovations, but also to experience them in the environment that they are achieved. Study Tour Grant (STG) was established in 1992 to utilize JSCE supported International Scientific Exchange Fund more effectively and more appropriately. It was created as a program for supporting scientific study tours which make it a principle to exchange science and technologies and cultivate a deep international fellowship. At the time of establishment, the purpose of STG was to make Japanese civil engineering technologies and projects widely known among the engineers inside and outside Japan. Therefore, at the end of the program, the invitees to the STG program were expected to deliver the results of their experience gained in Japan to JSCE and also to the official bodies or academic journals back home. Based on over 20 years of experience from its launch, the STG program shall focus not only on the spread of Japanese civil engineering information but also on the development of engineers who play a role of liaison between their home countries and Japan.

Myanmar Engineering Society (MES), which is the AOC society of JSCE, called for application to apply for JSCE STG 2018 through various channels in February 2018. Luckily, I found the announcement on notice board of MES at front entrance. I thought that it would be the great opportunity for me to learn civil engineering technologies in Japan. For me, visiting to Japan and engineering technology is my biggest dream. There were total of (30) applicants to MES. After the deadline of application has passed. MES announced to present our research works to select the three nomination among us. After our presentation at Federation of MES in March 2019, I was informed that I was chosen as one of the nominee by Saya U Myint Soe. After that, final result came out at June and Saya U Myint Soe called me that I was selected as a participant in JSCE-STG program. At that moment, my mind is filled with excitements and I shared my happiness with my seniors and my parents. After that, I followed the kind instruction from Yuki San and tried my best to get the visa to Japan.

According to the information from Yuki San, I observed that there are total of (7) recipients from seven different countries listed down in the following table. I was also informed that my presentation paper will be presented in 21st International Symposium which will be held in Kagawa University and before that my paper and presentation will be supervised by Satoshi Machida Sansei. For me it is such a great thing that we got our own supervisor to shape our research paper better.

Participants of 2019 JSCE- Study Tour Grants

Sr	Name	Affiliation	Country
1	Mr. Nguyen Bao Lam	VFCEA , Road and Bridge Dept., Faculty of Civil Engineering, University of Transport and Communications	Vietnam
2	Mr. Munkhsaikhan Battumur	MACE , School of Construction and Architecture, Mongolian University of Science and Technology	Mongolia
3	Mr. Wai Yar Aung	MES , Technical Research Engineer, Myanmar Earthquake Committee	Myanmar
4	Ms. Gül Pinar Avci	JSCE – Turkey , Civil Engineering Dept., Istanbul Technical University	Turkey
5	Mr. Mark Allen T. Zapanta	PICE , Aboitizland Inc. Civil Engineering Major in Structural Engineering, Tarlac State University	Philippines
6	Mr. Washirawat Praphatsorn	JSCE – Thailand , Dept. of Civil Engineering, faculty of Engineering, Kasetsart University	Thailand
7	Mr. Omar Faruqe Hamim	IEB , Master Student Civil and Structural Engineering, Bangladesh University of Engineering and Technology, Lecturere, Dept. of Civil Engineering, BUET	Bangladesh

Study Tour Activities

Day	DATE	TIME	EVENT	ATTENDED BY:
Day (1)	September 01, Sunday	-	Arrive at Narita	Ms. Suzuki (Tour Conductor)
			Check-in at Ninshitetsu Inn, Shinjuku	
Day (2)	September 02, Monday	7:30 ~	Check-out, go to KAJIMA Technical Research	Ms. Suzuki (TC), Mr. Yamamura (JSCE)
		9:00 – 11:30	STG Orientation session with the ISEF Committee at KAJIMA Technical Research Institute	Mr. Yoshizawa (KAJIMA), Ms. Suzuki (TC), Mr. Yamamura (JSCE)
		11:30 – 13:00	Lunch Break	
		13:00 ~	Go to Tokyo International Airport (Haneda Airport))	Ms. Suzuki (TC), Mr. Yamamura (JSCE)
		14:30 – 16:30	Visit Tunnel Construction Site at Haneda Airport)	Mr. Araki (Shimizu), Ms. Suzuki (TC), Mr. Yamamura & Ms. Wang & Mr. Zuo (JSCE)
		18:00 – 19:15	Flight to Kagawa Prefecture	
Day (3)	September 03, Tuesday	7:50 ~	Go to Kagawa University	Ms. Suzuki (TC), Mr. Yamamura & Ms. Wang & Mr. Zuo (JSCE)
		8:40 – 11:55	Participate in the 21st International Summer Symposium, JSCE Annual Meeting at Kagawa University	
		11:55 – 13:05	Lunch Break, then go to Takamatsu Port, Takamatsu, Kagawa	Dr. Dang (JSCE), Ms. Suzuki (TC), Ms. Wang , & Mr. Zuo (JSCE)
		13:05 – 13:40	Go to Ieura Port, Teshima Island	
14:00 – 17:00	Visit the Illegal Dumping Site of Industrial, Waste, Teshima Island			

		17:20 -17:55	Go back to Takamatsu Port from Ieura Port	
		18:40 – 19:30	Join the IAC Networking Reception at Kagawa University	
Day (3)	September 03, Tuesday	7:30 ~	Check out, go to	Ms. Suzuki (TC), Mr. Yamamura & Ms. Wang & Mr. Zuo (JSCE)
		9:00 – 9:40	Visit Kabagawa Dam Construction Site, Takamatsu, Kagawa	
		10:40 – 11:10	Visit Sanuki Mannou Park, Nakatado, Kagawa	
		11:20 – 12:00	Lunch Break	
		14:00 ~	Passed-by the Kurushima Kaikyo, Bridge	
		16:30 ~	Arrived at Kure Morisawa Hotel, Kure, Hiroshima	
Day (3)	September 03, Tuesday	9:00 ~	Check-out, leave from Kure Morisawa Hotel, Kure, Hiroshima	Mr. Kanda (Kure National College of Technology: KNCT), Dr. Tanikawa (KNCT), Mr. Shimooka (KNCT), Ms. Suzuki (TC), Mr. Yamamura & Ms. Wang & Mr. Zuo (JSCE)
		9:20 - 9:40	Visit Disaster Waste Disposal Sites (Aga, Kure)	
		10:05 - 10:25	Visit the Area Affected by Sediment-Related Disaster (Tenno, Kure)	
		10:35 - 10:55	Visit the Damaged Areas on National Highway (Mizujiri, Sakacho)	
		11:05 - 11:25	Visit Temporal Housing (Sakacho)	
		11:45 - 12:45	Lunch Break	
		13:00 - 14:00	Visit Hiroshima Peace Memorial Park, Hiroshima	Mr. Shimooka (KNCT), Ms. Suzuki (TC), Mr. Arai (JSCE)

		14:40 - 5:10	Visit Disaster Affected Area on Misawa River (Asami Kita-ku, Hiroshima)	
			Visit the Torigoe Bridge and Water and Sewerage Pipes (Asami Kita-ku, Hiroshima)	
		15:40 ~	Go to Kobe by Sanyo Shinkansen from JR Hiroshima Station	
Day (4)	September 06, Friday	9:30 - 12:00	Visit Disaster Reduction	Ms. Suzuki (TC), Mr. Arai (JSCE)
		12:00 - 13:00	Lunch Break	
		13:00 -13:50	Go to Maiko Station from JR Sannomiya Station	
		14:00 -15:00	Visit Akashi Kaikyo Bridge	
		15:00 ~	Sightseeing	
Day (5)	September 07, Saturday		Check-out, go to Kansai International Airport, Osaka	

Day (01) September 01, Saturday – Arrival to Narita International Airport from Yangon International Airport

On August 31,2019 – Saturday Evening, my journey to participate in JSCE study tour grant program was started. Firstly, I departed from Yangon International Airport and arrived to Bangkok Suvarnabumi Airport as transit. I was excited that it was first time of using transit service and I also a little nervous whether I would miss the flight in Bangkok as it was my first time to Bangkok. But It is very fortunate that I got a email from Mr. Washirawat Praphatsorn that he asked me that about meeting with him and flight together with him to Japan Narita Airport. My stresses are relieved as soon as I got his email and I immediately sent him that I was very happy to meet with him. It was almost 10:00 PM when I arrived to Bangkok Airport and We left to Narita airport at 11:50 PM.

When We arrived to Narita airport, the breath of Sunday morning was said greeting to us.



After collecting my luggage and passing through immigration and customs check on that airport.

The first experience I got it from Narita Airport is that there are a lot of old people in their sixty to seventy are working as facilitators actively and happily to the visitors to Japan. In our country, many people over sixty are not working and living with their pension. As side effect, they felt lonely and depressed. I was wondered that how much I would be happy if I were working as social workers even though I am over sixty.

I soon as I passed from custom check, Tobu Top Tours were waiting for us. She facilitated us how to ride airport limousine for Shinjuku. When we arrived Shinjuku, Ms.Suzuki welcomed us with warm smile. She accompanied to Nishitetsu Inn in Nishi-Shinjuku – ku Tokyo, and spent first night of JSCE study tour program at that inn.

Day (2) – STG, September 02, Sunday – STG Orientation, Kajima Technical Research Institute, Haneda INT’L Airport Subway Tunnel Construction Site Visit

I woke up with excitement in the morning of Japan and had my breakfast. While I was having my breakfast, I was wondering How could I utilize most of my efforts to get many knowledges in STG program. Moreover, all of the STG participants are civil engineers and same age groups, therefore I am so delighted to meet with them. When I arrived to lobby in nearly 7:30, I met with all other participants for the first time. After greeting each other,



Ms.Suzuki gave as brief explanation about STG program and explained about the itinerary of the day. With the leading of Ms. Suzuki and Mr.Yamamura from JSCE, we left to Kajima Technical Research Institute (KATRI) which is located in Tokyo.

Ax soon as we arrived to KATRI, Ms.Umehara and Mr.Yoshizawa hospitably welcomed the group and took us to the Kajima main building. After that, deputy director give a speech about how the Katri collaborated in government’s R&D works,mission and vision of KATRI and future trends of civil engineering in Japan. After his presentation, Mr.Yoshizawa and Ms.Umehara showed around the compound and we visited some laboratories.

Shaking Table Laboratroy

First of all visited to Shaking Table laboratory, it is the new high-performance 3-D shaking table system provides the Japan's best performance in reproducing the large earthquake motions observed in Japan in recent years. The system also possesses the capability of producing the world's largest amplitude of displacement in long-period motion.

Mr. Yoshizawa explained that the key design of the system is the double-deck shaking tables configuration; the larger, main table is to reproduce usual earthquake ground motion and the smaller, upper table, which is detachable, is to reproduce large amplitude displacements of a super high-rise building caused by long-period ground motion



Wind Tunnel Laboratory

The next was visiting to wind tunnel laboratory. In that lab, we observed that there are three types of wind tunnels namely **(1) Large boundary layer wind tunnel** for the modelling of vast area required for test of large-area regional development, **(2) Multipurpose**



Boundary-Layer Wind Tunnel which can be used for investigation on the wind effect that acts upon ordinary buildings and **(3) Visualization Wind tunnel** to clarify the complicated nature of flow around the structures.

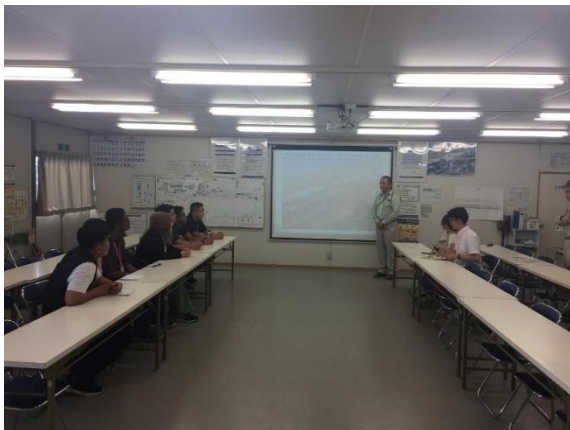
Large-Size Structural Testing

This testing laboratory, which is used to examine the strength and quake-resisting behavior to be applied in civil engineering and various other construction works. This facility provides the basic information, to be applied in civil engineering and other construction works, such as nuclear power plants, large-span bridges, marine structures, highrise buildings, etc; and to clarify quake-resisting behavior, obtainable only through experimentation. The results are invaluable if designs with high reliability are to be achieved and if new technologies are to be developed.

Concrete Laboratory Exhibits

The Concrete Laboratory conducts research in many areas related to concrete materials, such as fly ash, slag cement, and alternative cementitious materials with little or no hydraulic cement. The laboratory collaborates with academia, other government agencies, and industry, leveraging expertise in conducting research to address issues of national significance. The Concrete Laboratory is inspected by the Cement and Concrete Reference Laboratory (CCRL) and accredited by the American Association of State Highway and Transportation Officials (AASHTO) Materials Reference Laboratory.

After the tour in KATRI, we had our delicious lunch at Katri. I was almost satisfied myself for visiting the Katri because there are a lot of testing machines and equipment that I have ever seen on internet. I was even thinking that it would be very great if I was working as a scientist in KATRI. After the lunch, we headed to the Haneda international airport subway tunnel construction site. By JSCE STG charter bus.



The project manager gave a presentation about the site and explained that one of the purposes of constructing this tunnel was intended for easy travelling of people in 2020 summer Olympics. This tunnel will connect between Haneda and central Tokyo. After the presentation, we site visited to construction site to see how things works.

After the site visit, we back to the inn and finished the second day of JSCE STG program.

Day 03- ISEF 21st International Summer Symposium, Tehsima Island, IAC Networking Reception

I woke up with my excitement because I had to give a presentation as JSCE participant of my research. I was very nervous that it was my first time giving technical presentation in oversea. My research topic is about earthquake risk assessment of my hometown and Japan is also master in earthquake related topic. Therefore, I was shaking with excitement and I haven't tasted well of my breakfast. In 7:00 Am, Ms.Suzuki and Mr.Yamamura picked us up and we travelled to Kagawa University to participate in ISEC 21st International Summer Symposium.

The main objectives of the Symposium are to provide a platform for young engineers to examine technological advances and issues, to share their ideas and research projects, and to encourage them to find research partners and teams across languages and distance. It is an excellent opportunity for young civil engineers to discuss their research projects, to acquire new perspectives and to network with their peers.



After giving the presentation, all of my stress relieved the world has become a pleasant place. Most of the researchers are interested in my topic that asked me a lot of questions and it was my pleasure to take part in this conversation.

After participating in summer symposium, we had our lunch in school campus, after that we went to Teshima Island accompanied by Dr. Dang, professor of Saitama University with his two students. We travelled with ferry roundabout a hour to Iura Port. I had a chance to talk with Dr. Dang and he knew a lot about our construction industry of Myanmar. It was very knowledgeable for me that I got news ideas of our construction industry from another perspective of oversea professor.

Teshima island was also known as biggest illegal dumping site of Japan. As soon as we arrived to Iura Port, local guide welcomed us and told about the history. He explained that Teshima was the site of one of Japan's worst cases of illegal dumping of industrial waste. Seven years after a settlement was reached between residents and Kagawa prefectural authorities, about one-third of the waste has been removed. He also said that most of the waste were from Automobile and now it was relieved that those used car sold to other foreign countries.



After that we want back to Kagawa University to join The IAC Networking Reception. As a platform for professors, students and young engineers to communicate with each other. We enjoyed the food, made new friends, and discussed about research with other researches during the reception. After that, we went back to hotel, and finished our second day.

Day 04- Kabagawa Dam Site Visit, Sanuki Mannou Park, Kurushima Kaikyo Bridge

First of all we visited to Kabagawa Dam site. It is located in Kagawa prefecture. The dam is designed by Nippon Koei Co. Ltd and constructed by Taisei Corporation. The main purpose is to control the flood and supply water to Kagawa Prefecture. It was started in 2014 and planning to finish in September 2020.

After that, we headed to Sanuki Mannou National Government Park, which was an astonishing and beautiful park in Nagawa. For lunch, we had Udon traditional way. Everyone was enjoying themselves very much. After that, we headed for Hiroshima and took some pictures at Kurushima Kaikyo Bridge and Finished our fourth day of JSCE STG Program.





Day 05- Disaster Waste Disposal Sites, Sediment-related disaster, Damaged areas on National Highway, Temporal Housing, Hiroshima Peace Memorial Park, Misawa River, Torigoe Bridge Visits

After having my breakfast, we checked out from Moriasawa Hotel and travelled to



Aga,Kure to visit the disaster waste disposal sites. Dr.Tanikawa accompanied with us for this visit.

After that, We visited the Junior High School, which a large amount of earth and sand flowed into the school through the steep mountain nearby. There is also risk of the falling rocks. After the disaster, they made three emergency treatment, which are waterway construction, rockfall buffer measures and rockfall prevention measures. Besides, there are planned dam in that region (Sabo Dam).

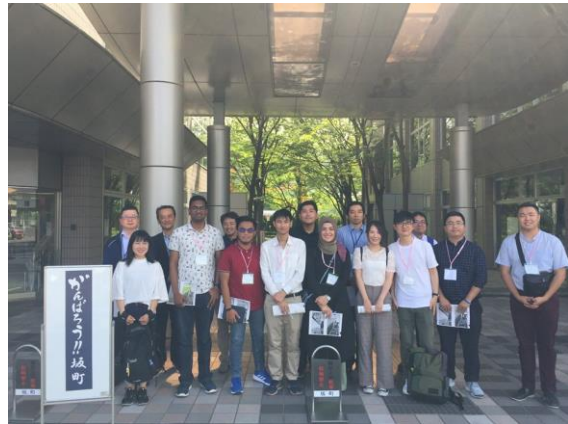


After that we visited to damage areas on National Highway 31 which is located in Mizujiri, Sakacho. Because of the heavy rain, route 31 and JR express Kure Line was damaged by a landslide from the back slope. The huge amount of soil has covered the road. For the

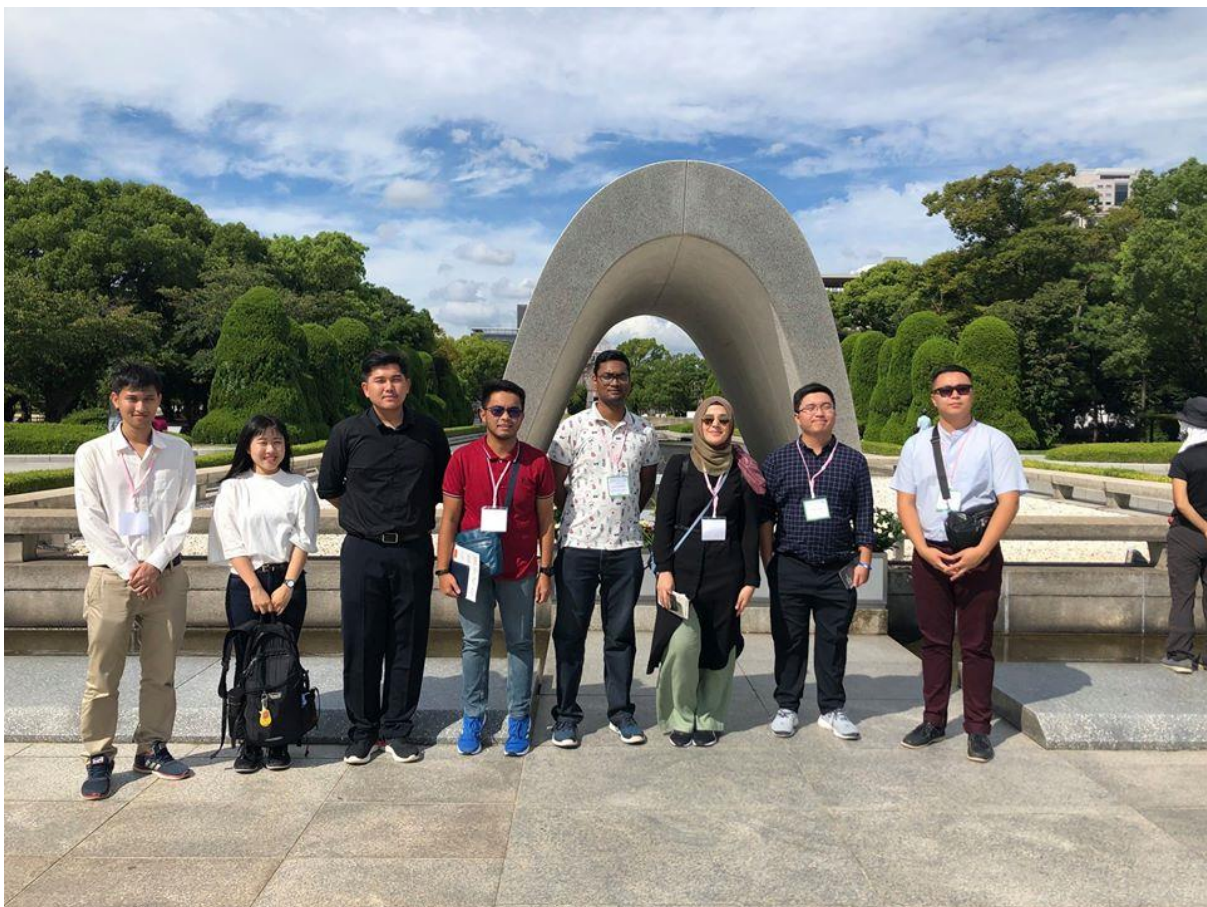


restoration, the slope was stabilized by slope cutting and compaction. Land of highway 31 provided as working place and temporary sediment storage during the sediment removal process and detour road was used as approach road. Road construction was finished in 2 months ahead of schedule and JR Kure line resumed operation on September 2019.

After that, we visited to Saka-cho Government Office. Because of the accident, 80 persons died and other people have to evacuate. Therefore, Sakacho government build fabricated temporary house to provide the shelter for disaster victim. As Myanmar is also disaster prone country, I learned about the disaster management system and disaster recovery system.



After having lunch break, we visited Hiroshima memorial park.



After we visited to Hiroshima memorial park, we visited to disaster affected area on Misawa River. The river got damaged because of heavy rainfall from the previous site we earlier visited, the right-bank stretch of Misasagawa River was even devastated by heavy



rain last July 07, 2019 and will be fully restored by the end of December this year.

Before leaving Misagawa river, we also toured the rehabilitation of dropped Torigoe Bridge and wrecked water pipe system. Torigoe Bridge fell due to the increase in river water.



After the long journey of fifth day, we had our great dinner that was funded by JSCE program. Mr.Arai from JSCE invited us to good restaurant in Kobe. We talked about our future plan each other and friendship between us has promoted. We had good atmosphere and I truly believed that we had a great night.



Day 06 – Disaster Reduction and Human Renovation Institution Visit, Akashi Kaikyo Bridge

Our study tour has arrived to last day. We visited to Disaster Reduction and Human Renovation Institute in Kobe. Disaster Reduction and Human Renovation Institute presented about what happened in the Great Hanshin-Awaji Earthquake and vital disaster-prevention lessons to pass on to future generations.

When we arrived the head administrator gave brief introduction, gave a presentation how Kobe earthquake destroyed to the building and livelihood. He mentioned about that difference between old and new building code and explained broadly about why the buildings are destroyed by Kobe earthquake.



The institution has 4 sections:

1. Relive the Earthquake
2. Exhibits of Earthquake memories
3. Disaster management & mitigation activities
4. Water & disaster mitigation learning

After that the guide nearly in his ninety took us to Theater showing the tremendous destructive power of earthquake. After that he took around the institute. It was very impressive to hear the real experience about Kobe earthquake. Furthermore, the institution was crowded by primary school children, they always noting what they learnt

about the disaster. I found one interesting thing that the all of the children are carrying checklist note that is given from the school and taking notes while they are listening.



After our lunch break, we went to Maiko Station from JR Sannomiya Station and we visited Akashi Kaikyo Bridge. The Akashi Kaikyō Bridge (明石海峡大橋 Akashi Kaikyō Ōhashi) is a suspension

bridge, which links the city of Kobe on the Japanese mainland of Honshu to Iwaya on Awaji Island. It crosses the busy Akashi Strait (Akashi Kaikyō in Japanese) as part of the Honshu–Shikoku Highway. It was completed in 1998, and has the longest central span of any suspension bridge in the world, at 1,991 metres (6,532 ft; 1.237 mi). It is one of the key links of the Honshū–Shikoku Bridge Project, which created three routes across the Inland Sea.



Day 07 – Back to the Unit from Kansai Airport

At 9:00 AM, Ms. Suzuki accompanied from Hotel to airport limousine terminal which will lead us to Kansai Airport. After travelling to Bangkok as transit from Kansai Airport, I had to take another plane to arrive to Myanmar. Then I safely arrived to Yangon and I saw the smiles of my family members who are waiting for me at waiting lounge. I realize that I could never forget the hospitality of Japanese people, warm atmosphere of dinner night and priceless civil engineering knowledge that I learned from Japan as soon as my lovingly mother hugged me and asked about how's my travel in Japan at Yangon International Airport.

Conclusion

- Learned a lot about advanced civil engineering technology in Japan
- Tasted the culture of Japan
- Met with profound professors and researchers in Kagawa University
- Learned about advanced Earthquake related techniques in Kajima Research Center
- Learned about Disaster Recovery and Disaster rehabilitation in Museum.

Speech of Gratitude

This study tour grant wouldn't be possible without all the people behind who helped me, encouraged me and believed with me from the very start. I would like to express my gratitude towards these people who greatly did a big part to make this experience a successful one.

I would like to thank **Japan Society of Civil Engineers**, who started this program and invited our country to participate. I would like to thank **Ms. Yukiko Shibuya (Yuki San)** from International Activities Center of JSCE who supports me a lot while preparing research paper and final report.

I would like to thank **Dr.Satoshi Machida (Machida Sensei), Pacific Consultants Co.Ltd** who review my paper and give a lot of idea as supervisor.

I would like to thank **Saya U Nyunt Maung San, President of Myanmar Earthquake Committee** for giving me a permission to participate in this program with Office Mission.

I would like to thank **Saya U Saw Htwe Zaw, Vice President of Myanmar Earthquake Committee** who gave me this information and support me while I preparing research paper.

I would like to thank **Saya U Myint Soe, Chief Executive Officer of Federation of Myanmar Engineering Society** for his trust and kind recommendation.

I would like to thank **Fed.MES Board Committee of Selection**, for selecting me one of the nominees to participate in this program.

I would like to thank **My colleagues from Myanmar Earthquake Committee**, who was doing my job while I was in this program.

I would like to thank all of the persons who keep in trust in me and encourage me.