

Summary Report of Presidential Meeting
The 2nd CECAR
Tuesday, 17 April, 2001

The 2nd Civil Engineering Conference in the Asian Region has provided us a unique opportunity for Presidents of all the Asian Civil Engineering Coordinating Council members to meet and share civil engineering technologies and construction management processes that will advance our civil engineering practices. Yesterday all the Presidents and the members of the ACECC Executive Committee exchanged our views and opinions about various issues of infrastructures and about our profession, including global issues of environment and sustainable development, the rapidly emerging discipline of information technologies, and their implications to civil engineering practice, the unique characteristics of population growth in the Asian region and its great impact on the need for more cost effective infrastructure development, and the role of ACECC and future collaboration among the ACECC members. Here are some of the key points summarizing the Presidential Meeting.

We all recognized unique features in the Asian region, characterized by tremendous population growth with 60% of the world's population. Population growth poses potential challenges for infrastructure development. In some areas there are desperate needs for life supporting infrastructures such as water supply and energy facilities, transportation and housing. Population growth also leads to intense population concentration, creating many big cities throughout the Asian region, which suffer from typical urban problems such as demands for housing; energy; environmental services such as waste disposal, clean air and water; improved transportation systems to reduce heavy traffic congestion; improved design and construction practices to better resist the effects of natural disasters, such as earthquake, flooding, tsunami, typhoon, landslide and volcanic activities. It is our responsibility to offer data, information, and processes that can serve as the technical basis to help solve these challenges.

Through improved technologies expanding population has greater opportunities to achieve prosperity in the future, but only if well planned infrastructures with stable investment, effective management and careful maintenance are provided. Thus we, all the Presidents, shared the view that the profession and the discipline of civil engineering must play a key role in determining whether Asia continues to suffer from the potential problems or Asia enjoys prosperity in the 21st century. The Presidents also agreed that infrastructural issues are global in nature. One geographic region is no longer independent of another.

We also recognized that many of the world's largest infrastructures have been constructed in Asia. The tallest building, the largest shopping mall, the longest

suspension bridge, the largest offshore reclamation, the largest Airport, the longest tunnel, the largest diameter shield tunnel, the fastest railway are all in Asia. Asia is a show case of high technologies in construction industry. These high technologies can only be available when secure funding and stable investment is provided. One of the biggest obstacles for infrastructure development in Asia and the world is securing sufficient funding. Thus we recognized that public and private sector partnership is of importance to encourage investment for infrastructure development in the Asian and world regions.

ACECC's objectives are to

- promote and advance the science and practice of civil engineering and related professions for sustainable development in the Asian region,
- encourage communication between persons in charge of scientific and technical responsibility for any field of civil engineering,
- improve, extend and enhance such activities as infrastructure construction and management, preservation of the precious environment and natural disaster prevention,
- foster exchange of ideas among the member societies/institutions.

We confirmed that ACECC is an ideal vehicle to provide the data, information and processes that will improve civil engineering design, construction and management processes. We must make full use of the ACECC's potential.

We agreed that the creation of ACECC has been effective in networking on an individual engineer basis in this region and also in exchanging information of new technologies. We considered that further expansion of ACECC membership will be beneficial in fostering mutual trust and collaboration by sharing limited resources to solve common challenges. We considered that a possible future role of ACECC is to work closely together with multi-lateral organizations such as the Ministers' Forum on Infrastructure Development in the Asian-Pacific Region, and the Infrastructural Dialogue under APEC framework.

We agreed that ACECC should address its role in promoting sustainable development practice in civil engineering by securing as a leader in education and establishing its own policy framework for sustainable consumption.

We are all concerned about the future of the construction industry and our profession. The civil engineering profession, which we are proud of, is the profession of the creation of environment, the creation of culture, the creation of beauty, and the creation of a better quality of life for people at present and in the future. Human beings have a right to enjoy a better quality of life and civil engineering profession can provide it. We

must make a great effort to disseminate clear messages to the next generation about the opportunities and challenges facing the civil engineering profession.

Finally, the Presidents agreed that the enthusiasm generated during the meeting must not be lost. We agreed to create an operational plan to identify specific problems that need to be addressed, and approaches to develop solutions. The draft plan will be created by a subcommittee working under the direction of ACECC Secretary General. It will be circulated to all the Presidents for their comments by 30 June, 2001. A proposed Action Plan will be drafted for discussion at the fifth Executive Committee Meeting of ACECC in October, 2001.

2nd CECAR has been just a beginning toward our goal, but we are convinced that we have made an excellent start.



2nd CECAR Presidential Meeting
April 17, 2001. 18:00-21:00
Sky Parlor Mercury, Metropolitan Hotel, Tokyo

RECORD

Program

1. Greetings from JSCE President
2. Introduction of participants
(intermission Dinner)
3. Presentation
“Unique characteristics of infrastructure development in the Asian region” by Dr. Fuminao Okumura and Dr. Hiroshi Okada.
4. Views from each President and Chair of ACECC
 - (1) Present and future issues of infrastructures in the Asian region
 - (2) Present and future role of ACECC as NGO
 - (3) Partnership between NGO and public, private sectors
 - (4) Messages to the next generation, how attractive and challenging the civil engineering profession is
5. Discussions towards the summary report

List of Attendees

American Society of Civil Engineers

1. Mr. Robert W. Bein, ASCE President
2. Mr. James E. Davis, ASCE Executive Director
3. Dr. Alfred Ang, International Director, ASCE
4. Mr. Noel Raufaste, Managing Director, Technical and International Activities, ASCE

Chinese Institute of Civil and Hydraulic Engineering

1. Dr. John Chien-Chung Li, President, CICHE
2. Dr. Jenn-Chuan Chern Ph. D., Executive Director, CICHE
3. Mr. Wan-Ning Liu, Chairman, International Activities Committee, CICHE
4. Mr. C. Y. Chu, Secretary General, CICHE

Korean Society of Civil Engineers

1. Dr. Kwang-Il Kim, KSCE President

2. Dr.Chun-Su Chon, Vice President, KSCE
3. Dr. Sung-Wan Hong, Director, KSCE

Philippines Institute of Civil Engineers

1. Mr. Efren H. Sison, President, PICE
2. Mr. Bashir D. Rasuman, Past President and Chair of the International Affairs Committee(IAC), PICE
3. Mr. Peter N. Aventajado, Treasurer, PICE
4. Ms. Nannette C. Villanueva, National Administrative Officer, PICE

Vietnam Construction Association

1. Dr. Nguyen Truong Tien, Member of the Executive Board, VCA

The Institution of Engineers, Australia

1. Mr. Andrew McIntyre, Out-going Chairman of the Civil College of the IEAust
2. Mr. Paul Mitchell, In-coming Chairman of the Civil College of the IEAust

Japan Society of Civil Engineers

1. Mr. Michio Suzuki, President
2. Dr. Hiroshi Okada, ACECC President
3. Mr. Asao Yamakawa
4. Mr. Takeo Nakamura
5. Dr. Fuminao Okumura, LOC Secretary for General Affairs

ACECC

1. Dr. Osamu Kusakabe, ACECC Secretary General
2. Ms. Emiko Serino

1. Greetings from JSCE President

2. Introduction of participants

Every attendee made a brief self-introduction while dinner was served.

3. Presentation (Attachment 1)

“Unique characteristics of infrastructure development in the Asian region” by Dr. Okumura

First, Dr. Okumura showed the “population clock” on the screen which indicated the number of 6,146,117,660. That was the world population at that time.

There are two mega-trends in the Asian Region; (1) Population growth and (2) Urbanization. Both trends are causing the environmental problems, disasters, transportation problems and life supporting infrastructures such as housing, water supply, waste and so on. First let's focus on the population. First we have to recognize the unique features of infrastructures in the Asian region, which is a tremendous population growth with 60% of the world's population. Just for seven years from 1990 to 1997, 354 million people increased, about 3 times as large as the Japanese population. The countries which have the largest population in the world are China with 1221.5 million people and India with 935.7 million people whereas as to the increment ratio, the Philippines has the largest number with 2.1million increment per year, the second is India with 1.9 million people per year, the third is China with 1.1 million people per year. The population in the Asian region will grow to 4.8 billion in 2025, which is 1.4 bigger than that of 1995. Also, the population density in Asia is very high. In 1995, the population density in this region was 109 people/km², which is 2.6 times bigger than the world average.

Urbanization in the Asian region is also growing. Urban population in this region increases from 35% in 1995 to 52% in 2025. Big cities with more than 1 million people were 28 in 1950, then 136 in 1995 and will grow to 243 in 2015. "Figure 1-3-13, Projection of population in the five regions" on P. 4 shows that the population in Asia is remarkably high compared with the other regions. Population growth and economic growth cause greater energy consumption, CO₂ emission and SO₂ emission. "Figure 1-3-14 Projection of GNP in the five regions" on P.5 shows that the growth of GNP in Asia will also sharply increase, which will result in more emission of CO₂ and SO₂. Also, deforestation is going on. According to the "Figure 1-3-15 Projection of Energy Consumption in the Five Regions", although Europe-Former USSR indicates the highest energy consumption but it is sharply increasing in Asia-Pacific. "Figure 1-3-16 Projection of SO₂ Emission" shows that SO₂ emission in the Asia-Pacific is the highest and still growing very rapidly. "Figure 1-3-17 Projection of CO₂ emission" shows the CO₂ emission in Asia-Pacific has been increasing very sharply and now it is the highest.

Next, let's focus on the natural disasters. What kind of natural disasters are likely to occur in the Asian region? The figures which indicate possible damages by earthquakes, tsunamis, typhoons, volcano eruptions and so on are shown. In the "Table 1 Natural Disasters and their sizes in the Asian Region", XL means big disasters with over 10,000 victims and L with that over 1,000 victims, and M means 100. It shows that Philippines, Indonesia and India are extremely vulnerable to natural disasters. Next, Japan, China and Bangladesh come. These countries have over 100 million population except the Philippines with about 30 million. Next tables on page 10-11 show that the ratios of disasters which took place in Asia and the number of dead victims, which indicates, in 1990's, they are 93.9% in Earthquakes/Tsunamis, 96.8% in Flood and 99.6% in Typhoon, and the number of sufferers indicates they are 75.3% in Earthquakes/Tsunamis, 99.5% in Flood and 98.8% in Typhoon, and losses are very high in

Asia. Therefore, we should consider disaster prevention very seriously.

Now let's look at transportation. During the last few decades, the status of transportation in the Asian region has been changing remarkably, however, there are still regions where transportation is undeveloped. In Japan, lengths of road are over one million km and road length per km² reaches 3.04. The same data in Korea, the Philippines and the U.S. are 85,000 km and 0.85, 161,000 km and 0.54, 6.3 million km and 0.64, respectively. The trend of bridge construction in Japan, Germany and the U.S. are shown in the chart on page 13. Obviously, the peak of the bridge construction in Japan was 1970's. Next, road length/1000 people of Asian countries are shown in the charts on page 14, and as for the road density(km/km²), Japan shows 3, which is by far the highest and Bangladesh comes next. And the chart shows the number of vehicles/1000 people was shown. Compared with 550 vehicles per 1000 people, Malaysia and Thailand shows the next highest, over 140 vehicles/1000 people, while the rest, Philippines, Indonesia, Vietnam, Cambodia and Bangladesh are under 40/1000. As for the paved road ratio, Thailand is the highest and Japan and Malaysia come next. But as for the traffic injury /1000 people, Japan shows by far the highest figure compared with other countries, but as for the traffic death, Malaysia and Thailand have the highest figures.

In talking about the future infrastructure in Asia, we have to think about the highly densified cities which are consequently facing the problems of air pollution and natural disasters. Also we have to utilize the land and space utilizing our network for airport, highways and railway constructions. He showed the photos of a sky-scraper building in Kuala Lumpur, Malaysia, which is the tallest building in the world of 451.9 meters high,, although it is said that there is another one in Shanghai, China. Next the photos of the Akashi Kaikyo Bridge, the longest suspension bridge in the world, which has the main span of 1,991 meters. And the Seikan Tunnel, which is the longest tunnel in the world, 553.885 kilometers long. And the Tokyo Bay Aqua-line, the largest sea tunnel in the world. From these facts, let me say about the major problems we face are: 1, Environment preservation, 2, Natural Disaster, 3, Urban and inter-city transportation, 4, Life Supporting Facilities and 5, Funding with limited resources. And the more strategic problems are; 1, How to distribute the limited financial resources, 2, Who to make a decision, short range or long range, optimum distribution, optimum investment, multiple choices, 3, Sustainable development, Sustainable infrastructure and 4, Longer service life of structure. And now is the time that there is a flow of fund and civil engineers into the Asian Market, and he believes that the role of ACECC is quite significant and we need to build a multi-lateral structure rather than a bi-lateral structure.

In conclusion, population growth certainly poses potential problems for infrastructure development. In some rural areas, there still exist desperately needs for life supporting infrastructures such as water supply facilities and housing. Most Asian big cities suffer from

typical urban problems such as the problem of housing, the problem of waste disposal, the problem of pollution and the problem of heavy traffic congestion. However, we must be aware that such population may possibly lead to potential prosperity in the future in the region, when well planned infrastructures with stable investment and effective management is provided. Thus we share the view that the profession and the discipline of civil engineering play the key role in determining whether the Asian region continues to suffer from the potential problems or the Asian region enjoys prosperity in the 21st century.

He thanked the audience for listening.

Dr. Hiroshi Okada made the next presentation.

Dr. Okada briefly reported the necessity of Urban Mass Transit System in Asia. (Handout p. 17~) Topics are; 1. Many large cities without guided mass transit system(GMTS) in the Asian region. 2. Distinguished features of GMTS, 3. A broad variety of characteristics of each system, 4. Necessity of huge amount of investment to introduce GMTS in the urban area.

In the chart on p.18, the blue column gives the number of large cities whose population is one million or more and the red column gives those with GMTS, in each region of the world; Asia, Europe, South America, North & Central America, Africa and Oceania. From this chart, it is clear that in the Asian region there are many large cities without even an inch of GMTS, resulting in heavy traffic congestion on the road which is causing social problems such as loss of life, loss of time, a lot of energy consumption and emission of harmful substance as Dr. Okumura presented. GMTS has manifested distinguished features as the means of urban transport: 1. High degree of safety, 2. High transport capacity, 3. High speed, 4. High on-time performance, 5. Less energy consumption, 6. Less air pollution and 7. Efficient land use. As the safety of GMTS (rail) is truly remarkable, it is not necessary to add even a few words on this chart comparing rail, buses and private cars. The next chart shows energy consumption by a private car, a bus and rail which means GMTS. As for energy consumption, that for GMTS is about one-fifths of a private car and 58% of a bus. In the next chart (p.20), the left row gives the amount of CO_x in terms of ton/100mill.passenger-km, and the middle row gives that of NO_x and the right row gives that of SO_x. Please note the figures for CO_x is divided by 100 to display in the same graph. The front line is for rail, the middle for a bus and the back line for a private car. Again it is very clear that GMTS is remarkably environmentally friendly, and this character is very important for sustainable development of the urban area. There are many kinds of GMTS utilized in the urban area. Each system has its own characteristics in terms of transport capacity, maximum speed, land use and so on. Therefore, to select the most appropriate system in accordance with the needs of the target area is crucially important and a thorough study on the needs not only at present but also in the remote future is required. The next slides (p.21) show the various types of GMTS in the urban area in Japan: (1) Elevated Urban Rail (2) Full Subway (3) Mini-Subway with Linear

Motor (4) Medium Speed MAGLEV, (5) Mono-Rail (Straddled) (6) Mono-Rail (Suspended) (7) So-called Downtown People Mover and (8) Light Rail. The maximum speed of each system varies from 130 km/hour to 50 km/hour and the maximum transport capacity at peak time varies from 100,000 to a few thousand per hour. As a conclusion, since a heart of a downtown of a big city is highly developed, a huge amount of investment is required to introduce GMTS in the highly developed urban area. Moreover, the fare of GMTS should be limited within moderate range as a means of public transport which ordinary commuters including students use almost every day. Therefore, the introduction of GMTS should be subsidized at least partly and it has a rational taking the above mentioned distinguished features of the system and the consequent benefit for the society into account. As a matter of course, it is inevitable to execute elaborate economic and financial assessment of the project and I believe that it's a paramount duty of civil engineers.

Dr Okada thanked the audience for listening.

Dr. Kusakabe asked for any comments and Mr. Davis made some comments as follows: At the end of the first presentation, Dr. Okumura talked about the limited financial resources and in Asia, if you look at Asia from America, we saw the development of Chek Lap Kok Airport in Hong Kong which has a railroad system and new tower and suspension bridges and cable bridges which is a twenty plus billion US dollar project. ASCE President Mr. Bein and I visited three gorgeous dams in China another twenty plus billion dollar project. We went to Shanghai the week before and they have more skyscrapers than all the major cities in the U.S. added together and they did it in the last ten years. So he said you have limited resources but I doubt it. The other comment is on the last presentation, I worked for the urban transport administration in the President Carter's administration in Washington and my responsibility was to fund rail mass transit system. The problem is as you pointed out that it should be subsidized and it is not like other infrastructure. It's tough to find an investor for the urban transit system. You can find investors for inter-city transit, you'll find investors for toll roads but you cannot find investors for urban system which raised a problem but now you must do that in order to preserve the environment in Asia.

Dr. Okumura responded - We face the problem of difficulty of investment and the official investment is reliable but compared with America, we have a limited resource.

Dr. Kusakabe commented - Asia is quite diverse. There is a country like Singapore which is a very wealthy country but many countries are not affluent enough on average. We have limited resources but in some respect you are correct.

Dr. Okada's comment - I envy the U.S.A. as far as the GMTS is concerned because they have gotten sufficient subsidies from the federal government and the state government using tax on gasoline, fossil fuel. On the contrary, in Japan, until very recently the investment for GMTS was very less subsidized. Moreover, in L.A. California, benefit assessment system is

developed to capture a windfall benefit of landowners and I think it a very good system to construct GMTS.

Mr. McIntyre made some comments - I'd like to make two comments from the Australian perspective.

- Population density.

The density of the population of Asian countries is far greater than that of Australia. Australia's whole population, over an area about the same size as the United States, is about the same as that of Seoul. Therefore the kilometer length of road per person and therefore the cost per person is much higher in Australia.

That's the advantage Asian cities often have. Particularly in mass transit systems, the fact that there is a lot more people in a small area, you don't need as great a kilometrage per person to service them. Australia is just too spread out to get the same efficiencies.

- Community/Environmental Costs or Benefits

Another thing that is very interesting and significant is the assessment of costs/benefits in community/environmental terms of a mass transit system. In Australia there is more and more recognition of the need to consider society/community/environmental costs or benefits whilst doing cost benefit analyses. These costs or benefits weren't included much in the past as they are difficult to assess. Now in assessing new transit ventures some of the benefits that could be categorised as a community or environmental benefit are huge compared to the actual construction cost. This is giving a push away from the private type transit system to a public or a mass transit system and that was shown on that slide there, so it's a good slide. That's something evident around the world - whether it's Australia, Asia, Europe or wherever.

Dr. Okada – I think the executing the cost benefit analysis is one of the very important duties of civil engineers and we have to reflect the result of the analysis to decision making.

Dr. Ang – This is more of a question just follow Mr. Davis' comment. In Shanghai we visited last week and when I looked out of the window on the first morning, I thought I was in Tokyo. The amazing thing is when I visited Shanghai in 1993 they had only one airport and it was a dirty city. But now, they have two modern airports, modern buildings. Where did the money come from? Who is providing the money for that kind of investment? That's my question.

Dr. Li - There are two financial resources, a governmental fund and a fund from a private

sector. For the Shanghai case, I think most of the buildings were built by the government owned companies. That money is somehow coming from them because in the whole nation of China everything is owned by the government. China is spending really a lot of money on Shanghai because Shanghai is kind of their showcase. Of course you can find some other big cities in China but Shanghai is an exceptional case. But I heard that part of the buildings are still empty.

Hereupon Dr. Kusakabe asked each President to make a presentation. Before that, Dr. Okumura called for the attendees' attention to the population clock once again. About 6,000 increased in 30 minutes.

4. Speech by Mr. Sison, PICE President

Infrastructure is the basic lifeline of goods and services essential to the productive processes and the delivery of production output to the market and consumption centers.

The sky-rocketing growth of the population poses potential problems to the infrastructure development of a country. The diminishing living space brought about by the population growth has created a serious threat in terms of social services and peace and order conditions.

In the Philippines, the related problems of right of way and squatter relocation have become more formidable due to the exorbitant acquisition cost. Added to this is the congestion that prevents us from expanding the road network horizontally. The landowners have become doubly resistant to give up portions of their properties for road right of way development. This leaves us no alternative but to expand vertically, hence the concepts and plans for skyways. However, the cost of these elevated roadways are very expensive resulting to about 30 time more expenditure compared to on ground level roads and are therefore not cost efficient.

Environmental protection and acceptability also pose a growing challenge to infrastructure projects. The call for the balanced use of resources under sustainable development will require radical changes in the practice of the civil engineering profession. Engineering now requires an ecological appreciation and responsiveness to environmental conservation. Projects could no longer be designed nor constructed without the environmental impact assessment. The protection of the environment should be able to limit the sources of natural construction materials and requires us to look for adequate substitutes.

In the development of infrastructures, there is also that problem of funding. Government alone cannot finance all the infrastructure. The private sector must provide assistance and get involved in this development program. There is a need to have government and private

partnership. Likewise, there is a need for a more defined policy to encourage private investment in this direction.

These are the radical parameters within which we, civil engineers should carry out our work. Today, a new role for civil engineers is evolving. Where traditionally, our role was confined to the application of technical knowledge and skills in the successful fruition of project, we are now confronted with a broader range of issues to deal with. We now have to face the challenge of integrating the socio economic and environmental issues with the technical aspects of the construction project.

In view of these increasing demands, civil engineers should now have the ability to communicate in order to manifest the need for infrastructure projects that are socially and environmentally acceptable. He should be able to convince the property owners and the public that it is very necessary that there should be provision of amenities that will enhance the quality of life for the project's future users, the need for rights of way, the need to relocate squatters. In short the civil engineers need to be the arbiters in an ever changing, ever developing environment. (For your information, you cannot just send out all these squatters in the Philippines. There is a process, there is a law, you cannot just kick them out so you need to follow the process and before kicking them out you need to provide housing facilities in order for them to be relocated, and this housing facility should follow a certain guideline that are set in the regulation.)

My message to the future civil engineers - The civil engineering profession is indeed a very attractive and challenging profession. The importance of infrastructure development cannot be over-emphasized since the backbone of the national development and progress depends on the quality and intent of its infrastructure program. Civil engineers play a key role in infrastructure development because they are at the forefront of planning, designing and constructing infrastructure that in turn contribute to the betterment of our society and provide a better quality of life.

Therefore the civil engineer must always be ready, should always be abreast with the latest state-of-the-art technologies in the field of civil engineering and must be prepared to face the challenges of progress.

The civil engineers need to be creative, innovative, perceptive, people-oriented, pro-active and more importantly, open to change. The civil engineer will need these skills and traits to be effective and to be able to rise to the challenge of providing the community with functional, safe, people-friendly and environmentally-balanced and cost-efficient structures.

5. Comments by Mr. Paul Mitchell, Chairman of the Civil College of IEAust

The Civil College of the Institution of Engineers Australia is very supportive of the aims and objectives of ACECC and appreciates the invitations that have been extended to us to attend with observer status.

The Civil College has noted that the topics under consideration at this Presidential Meeting are most relevant to Australian engineers and wishes to make a contribution to the resolution of problems arising in the provision of sustainable infrastructure in the Asian Region.

Australian engineers have experienced significant change in the way infrastructure has been delivered within Australia and they have witnessed first hand the wide acceptance of government/private enterprise partnerships in various forms. These include Build-Own-Operate-Transfer (BOOT) Schemes and the tendering out of infrastructure maintenance operations that were previously the responsibility of various levels of government.

It is our wish that the Civil College, through its membership of ACECC, promotes interaction between civil engineers throughout the Asian economies. The Civil College has responsibility for several National Technical Committees which could respond to enquiries from other ACECC Members. These include Construction, Transport, Coastal and Ocean Engineering, and Water Engineering. There are also specialist groups reporting to the College on Public Works Engineering (Infrastructure), Geomechanics and Tunneling. All these groups stand willing to share experiences with their counterparts throughout Asia.

In addition to the sharing of expertise, to solve problems in infrastructure, the Civil College also represents “young engineers”, “women in engineering” and “engineering associates” within its membership. They are assisted under programs for special interest groups. This means we support the view that “messages conveyed to the next generation” are very important and the Institution of Engineers Australia is already working actively to promote the concept of engineering as an attractive and challenging profession to a wide range of students.

As a participant in the wider community of civil engineers in Asia the Civil College recognizes the potential for ACECC to have an important role in fostering the exchange of ideas between the neighboring Asian economies. We look forward to fostering the growth of ACECC for the ultimate benefit of our respective communities and the profession.

6. Comments by Mr. Suzuki, JSCE President (Attachment 2)

In relation to the role of ACECC as a non-government organization, I'd like to introduce you some examples of international activities of governmental organization in the field of infrastructure development. I have distributed you the copy of the website of the Hong Kong Special Administrative Region, China about the Ministers' Forum on Infrastructure Development in the Asia-Pacific Region. The first forum was held in September 1995 in Osaka, Japan, and the second, in June 1997 in Santiago, Chile, and the third in May 1999 in Hong Kong. There are twelve member countries areas including Australia, Japan, The Republic of Korea, the Philippines, the United States of America, and The Social Republic of Vietnam. As you may see, the main issue they are currently discussing are;

- (1) Infrastructure Development for Wide Area Transportation
- (2) Mutual Co-operation on Infrastructure Development including the Use of Information Technology
- (3) Housing, Urban and Rural Development
- (4) Securing Financial Resources for Infrastructure Development
- (5) Environment and Disaster Prevention

All these issues are closely related to or almost identical to the main theme of the 2ndCECAR, which we are discussing right now. I think it is a clear indication that the members of ACECC as an NGO are sharing the same duty with those of the government and I believe that it is of vital importance to establish a good partnership between governmental organizations and ACECC and to work closely together to effectively find a solution to a problem. Thank you.

7. Presentation by Dr. Chun-Su Chon, KSCE Vice President, on the "Asian Highway"

There is an international highway scheme from the northern part of Asia to Europe. For this scheme, the United Nation's Economic and Social Commission for Asia and the Pacific (ESCAP) began the Asian Highway Scheme in 1959 and through up to 1980's most of the southern routes were developed. Russia, China, Bangladesh, Myanmar, and other countries joined the ESCAP scheme the northern part of the Asian Highway started to be developed. And now there are twenty-five countries which are developing 19,000 kilometer high ways along north and south route. From 1995 ESCAP is combining Trans Asian Railway system with the Asian Highway Project. This was developed into what is called the ALTID Project: Asian Land Transportation Infrastructure Development Project. In 1995 ESCAP, coordinated with the Japanese government and prepared the data base standard format. After that the ESCAP asked the Korean government for help and from 1998 the Korean government provides fund to ESCAP studies, which is called KECF, Korean ESCAP Coordinating Fund. Now they are studying the rest of the program. In June 2000, there was a meeting between North and South Korea Summit and they had a talk to connect the North & South railway and highway system. The Korean Railway is developing its system in

X-shape and the North Korean system is being developed in H-shape. and mainly the North Korean railway is connected to China. This railroad is from China through Manchuria and can be connected to the Trans Siberian Railways (TCR). Presently, a portion of KyungEui Line is being connected from Moon-San to Kaesong. From September 2000, the South Korean government and the North Korea tried to connect this area (Dr. Chon pointed to the area in the map). It will require 130 million dollars for one year, but the completion will be a little bit delayed because of delayed signing of the agreement for elimination or removal of the mines in the 4 kilometer demilitarized zone. Of course, the Chinese government wants to connect this KyungEui line to the Chinese railway system to the Chinese central part and through Mongolian railway to be connected to Trans Siberian Railway System. The Russian government wants to connect Kyungw on Line and meanwhile course they can use this line through Pyongyang across the peninsula and then connect to TSR, but this line will be connected very soon. So the Russian government tries to connect this area which will take 1 billion dollars for a year or so. The Trans Siberian Railway, Trans Chinese Railway, Trans China and Mongolian Railway met at TSR through Trans Manchurian Railway. Very important thing is that from Pusan to reach Moskow through Europe, it takes about one month by ship and now it can be reduced to two weeks. One TEU transported by ship costs about \$1200 and now you can save \$300 by moving it through TSR. Therefore, you will have a definite economic advantage. And the Russian government wants to make use of this opportunity. The problem is, even though the North Korean people rely on the railway system, which is about 5300 kilometers long, the system is very old so that it takes time and money to improve it. And if the improvement is done by Russia within two years then the Japanese can increase the volume of the total freight by 9% through Trans Siberia. We have competition with Hong Kong. Now Hong Kong is connected to China, the roadway from Shanghai to Frankfurt is now completed. So the land transportation of materials become competitive.

There is one very big international project being planned on from the early part of 1980's to connect Korea and Japan by undersea tunnel, which is about 250 kilometers long which will take about 15-20 years to construct and the cost estimate is about 25 billion dollars. Now their geological study is already finished roughly. It might take from Fukuoka to Pusan 16 hours by a passenger ferryboat, and 2.5 hour by a jet foil vessel, but once the undersea tunnel is completed, it will take 5 hours by vehicle and 3 hours by train, so it will definitely benefit the both countries. We have study groups in both countries, and the tunnel is planned to start from Karatsu to Iki Island to Tsushima Island to Pusan or Koje Island. There are three routes which is about 100-150 meters deep and the total length is about 250 kms on average, and many different types of structure is being considered and studied by the groups in the two countries. This is the largest mega project now being under study between Korea and Japan, which will give a great influence on most of the Asian countries after all. Thank you very much.

8. Comments by Dr. Li, CICHE President

The government money is distributed by the government agencies which set priorities. Private money will go into places which has the highest potential return so I think each country in this region is actually in competition situation. For example, Australia may compete with the Philippines, Vietnam, Taiwan etc. I have noticed that the Philippines and Australia had very successful private investment projects in the past. Taiwan has passed a new law to encourage private investment in infrastructure and also promoted hard on BOT projects in the past few years.

Where will the international money go really depends on the competition between nations in the region. What are the competitions? Like I have just mentioned that the potential return of the investment is the most important consideration in the competition. Effectiveness and efficiency of the government is another point of consideration in the competition. The system transparency is also very important in the competition. Although the money is limited at any time but whichever government provides the best environment for investment will get the money.

Taiwan has two major projects currently. One is the High Speed Rail, and the Japanese, the European as well as the American firms have been retained in providing the equipments and construction. The other project is the Rapid Transit System in Kaohsiung, a southern city in Taiwan. Both of the projects are financed by private fund and have been tendered already and both will proceed in the near future. I've just heard Dr. Chon's presentation regarding the Trans Asia Railway/Highway Systems and I've found that Taiwan is somewhat isolated from the main course and is not involved at all. However, there are people on both sides of the Taiwan Strait thinking about the connection of Taiwan and Mainland China by a tunnel. Water supply from Mainland to some offshore islets through conduits are also considered. However, before the political situation becomes clearer in the future, no matter how much the engineers are thinking, they just won't be able to do it. The reality is that politically difficulty at this moment is immense at this moment, not to say the difficulty on the technical aspects. As far as the NGO's part, I will pass on to Dr. Chern to say something.

Comment by Dr. Chern

The infrastructure development for a connection between Taiwan and the Mainland China, is ongoing. The Taiwan government will spend money to build a bridge connecting islands Kinmen and Small Kinmen, which is a two-kilometer bridge which will start to be built from this fiscal year. It's some kind of a sign of good will extended from the Taiwan side. We are expecting Mainland China to build another bridge from Shaman to Small Kinmen. So in this way, it's the beginning of the connection between the territory of Taiwan and Mainland China.

We have already had two workshops as to how to build the cross straight tunnel between the two sides as well.

Regarding the future role of the ACECC as an NGO, I think NGOs are very important trends to future roles in terms of the collaboration and participation from the experience of Chi-Chi Earthquake, we are living in the same environment of natural disaster. Many engineers from Japan and the Philippines and other countries came to Taiwan to assist us. The experience of the Kobe Earthquake especially on regulations, emergency assessment, and the accommodations of refugees are quite helpful. When we sent our delegate team to South America and Asia, we share the knowledge about how to deal with the natural disaster. This kind of interactivities will become more and more strong in the future and as civil engineers our goal is to improve the quality of life and also assign us a frontier to protect the environment for sustainable development. That's the mission of the civil engineers. I suggest that we should keep this spirit especially in the civil engineering society so that we can keep the ACECC organizations in an NGO form since we serve our people to protect our nation and eventually the world through globalization, and it means that there will be no boundaries between a nation and a nation by the future developments of transportations, and the assistance especially needed from developed countries to underdeveloped countries in the future.

9. Comments by Mr. Bein, ASCE President (Attachment 3)

It has been informative to me to have learned from you that so many of our civil engineering problems are the same. I was looking at the title of our Presidents' discussion, "Unique Characteristics of Infrastructure Development in the Asian Region". I think we should change the title to "Unique Characteristics of Infrastructure Development in the World" because I believe that the similarity exists everywhere. I have identified some issues that could serve as the basis for the future of this ACECC organization.

1. Technology Characterization. We need to prioritize the technology needs of our civil engineering societies and achieve funding to work on the issues.
2. The environment. How do we make a unified civil engineering statement to the world that puts the topic environmental sustainability in the forefront?
3. Professional Expertise. I think it's very important that we address this topic as professional engineers.
4. Research. I believe we should share our research results much more closely with our world civil engineering societies and maybe provide and combine funding from ACECC Member Societies to perform specific research projects that will benefit us all.
5. Public Support. How do we increase the public's awareness and appreciation of the civil engineering profession's contribution to society? How important it is to provide the funds necessary to keep our infrastructure in good working condition because infrastructure is

an economic investment for the public.

6. Political Boundaries. I believe our job here is to erase political boundaries when it comes to infrastructure in serving the public health, safety, and welfare.

We talked about the future role of ACECC as an NGO. I don't think serving as an NGO is important. What we need to do instead, is to understand the issues that face us all and work to solve them. What is our message to the next generation? What is the message we want to leave? First of all, I think the message is the same today, in its basic contents, as it will be in the future. We need to combine the best of the past with our future. We need to build on our traditional strengths and introduce new technologies, knowledge, and skills into our core competencies. We must embrace informational technology because the future of our profession depends on how we adapt to using these emerging and critical technologies. Those who don't use the technologies will lose their competitive edge to those who have included it in their portfolio of practices. We must have innovative project delivery systems, which mean we must be able to put our projects together quickly and efficiently and cost-effectively. One of the most important tasks we can do as a Coordinating Council is to announce to our memberships an agreed upon definition of sustainable development. We need to tell them how they can improve their businesses by following good sustainable development principles. We need to define how sustainable development impacts civil engineering projects in a developing country versus an established country.

The future demand of a civil engineer is to become a sustainable development engineer. One of the most important things that we are going to demonstrate to our customers is the importance of using life cycle designs. Designing not just for today but designing for life cycle on that product that lasts through its intended life. That is something all of us here need to consider; how best should we be using economic methods and software as decisionmaking tools to help us choose cost-effective levels of investment in civil engineering related technologies.

Workplace productivity. How does it relate to all of us? For instance, water buffaloes are still used in China to plow versus in our country we can't find a buffalo any more. It may not be the most appropriate use of technology for China to use tractors in light of their vast resources of human labor. We need to study how best to utilize our available human resources. For example, in the U.S. we are employing fewer workers in our industry and in our profession because we are increasing the use of robots, monitors, cameras, and sensors that perform work that people used to do.

In conclusion, it becomes apparent to me that one geographic region is no longer independent of another. What does the future look like for the civil engineer? John F. Kennedy said "change is the law of life; those who look only to the past and the present will miss the future".

We must not miss the future. Henry Ford said “getting together is a start. Working together is progress. Staying together is a success.” Our job here is to make sure that we stay together. The issues that we have addressed today will not be solved by us tonight but we can announce these issues to our membership, create task committees to study them, and through our group develop solutions. Another statement that I will close with is from one of our athletes. He said: “Take what you have, start where you are, and give what you can give.” I would like paraphrase it: “Start where we are, take what we have, and do the best that we can do”. Performing an action is much better than just talking about it. Thank you very much.

10. Speech by Dr. Tien, VCA

Dear Friend and Colleagues.

It is my great pleasure to be here on behalf of Vietnam Construction Association for second CECAR. It is very interesting to learn from our colleagues and to exchange with other Societies of Civil Engineers. We are all trying to define and to agree on what our challenge is, what our role is and what we can do together for a better quality of life.

I think that we, Asian Civil Engineers, are facing with great challenges :

1. The population of Asian Countries is increasing dramatically. More than 60% of the population of the world belongs to this region. This mean’s that civil engineers in Asia need to build houses and infrastructures more than our colleagues in other regions.
2. More than 70% of natural disasters happen in this region every year. This means that we need to build infrastructures, houses, bridges, road, airports, tunnels, railway... in more complicated condition and environment in comparison with our colleagues from other regions such as Europe and America.
3. Many countries in Asia are poor, under development with limited resources, backward technologies, searching for technology, budget and expertise for their development.
4. Knowledge, expertise and exchange of knowledge play important roles for our future. Then the role and paper of ACECC become very important for our common interest : for better quality of life.

However we all believe in our future, we are proud of what all we have done and we are doing. The Asian Civil Engineers also have a lot of opportunities and advantages :

1. High demand and priority for house and infrastructures development. This will promote the development of our Civil Engineering.
2. The policy to concern with natural disaster, environmental impact, land reclamation is needed. How we can survive with earthquake, typhoon, flooding... for suitable development need to be included in all plans and programs by the government. Civil engineers need to give good answers.
3. We have the chance to work together. With open policy, we all are friends... the world has become small today. The long distance and the time can be solved today by IT. Today we

have easy access to many kind of information. Indeed information is power, knowledge and expertise are also power and budget. The real problem is how we can make a better contribution for a better quality of life and we need to use the keyword of success : COOPERATION.

4. The developed countries all over the world are very supportive and have already made a lot of contribution to poor countries by ODA, JBIC, WB, ADB and non government organization. The routine was already established. How our Civil /engineers can have direct communication, common effort... for a better quality of life need to be defined.

What we have already done :

1. The establishment of ACECC is excellent. I appreciate the effort and the role of our colleagues from Japan, USA and Philippine. And now we have great interest and contribution from Korea, Taiwan, Australia... ACECC need to play an important role for our cooperation.
2. CECAR and TC are very good activities for our objectives and our cooperation.
3. New friends and old friends are in good position and all we have opportunities to establish a good cooperation.
4. We have knowledgeable expertise and we all wish to make a good contribution to our societies. ACECC is a non government organization. How can we have influence on the decision of our government. How can we convince authorities and people to follow our innovative ideas... We need more cooperation and exchange view.
5. We build up a lot of infrastructures, houses, roads, airports, factories, harbors... for our development. We use our soil and water, we use natural resources, we introduce new materials and technology. However we pay little attention to our natural resources and our environment. We need to protect our land and save our water. We need to respect our mother, the LAND and we also need to respect our father, the WATER. We need to stop the pollution of the air because the air is our brother.

What is the situation and demand for the development of Civil Engineering in Vietnam today.

1. We need urgently the development of Civil Engineering for :
 - Construction of high rise building for urban development.
 - Construction of the road system, tunnel, ports, airports...
 - Protection of river banks, seabank.
 - Design and construction of houses and infrastructure in earthquake.
 - Drain and supply of water.
 - Design and Construction of factories, earth dams.
 - Land reclamation in soft soil condition.
 - Maintenance of Diques system.
 - Cleaning and/or protection of contaminated soil. Waster disposal.

2. We receive the help and support from many countries. Vietnam today has become a test fields of many kind of technology and material. We need to study indentation, modification and adaptation of a new technology to our conditions for a suitable development and to obtain economical solutions.
3. We accept the building codes and standards from many countries for practice : ASTM, BS, DIN, DTU, and standards from Japan, Australian, Korean, China, Russian...
4. We need to be integrated and practice CE in processional way. Education and Training program, Laboratories, joint research projects, technology Transfer... should be established with the help and support of other Societies.

Based on the above evaluation and observation, may I propose to ACECC the following:

1. We need to increase our activities of cooperation between societies, the role of ACECC should be more active in the near future. We need to have a new ideas, proposal and operation plan.
2. We need to work together for a more detailed program of action in the next 3 years and establish :
 - TC for Asian Building Codes.
 - TC for Education and Training Program
 - Joint Research Projects.
 - Joint Training Program.
3. Promote the bilateral cooperation between Societies.
4. Joint cooperation for proposal program and projects to government of Asian Countries.
5. Establishment a good organization of ACECC (permanent office, facilities...) and other measures in order to have more members.

Conclusions :

We are facing with great challenge. We need to work together for the future of the Asian Countries. We should avail of our resources, capability, intelligence, expertise, friendship and good willing to make our contribution to a better quality of life.

The important and key issue for our development depends on :

- How we can make a good combination of our resources (knowledge, power, budget)
- How we understand our natural resources land, water, air and others.
- How we can survive natural disasters.
- How we can collect and obtain reliable information, exchange experiences and build up the friendship of our civil engineers for future development.

May be the 5 keywords are :

- COMBINATION
- COOPERATION
- RESPECT

- FRIENDSHIP
- INTELLIGENCE

Thank you very much for your attention.

We appreciate all kind of help and support and we are looking forward to a better quality of life which will be built up from our knowledge and friendship.

(Note : The above is my modified speech at Presidential Meeting April 17, 2001, Tokyo, Second CECAR According to the request of ACECC, I rewrite my speech. Any comment and suggestion are most welcome. **Prof. Dr. Nguyen Truong Tien**, *Executive Member of VCA.*)

Dr. Kusakabe said the LOC asked us to make a short summary report based on this discussion.. I will prepare the draft summary report picking some of your phrases. I prepared two-page report just for your information I'd like to propose I'm Out-going Secretary General and Dr. Chon is In-coming Secretary General and also I'd like to ask Mr. Raufaste to help us to finalize the document. Then if any society would like to make a comment by the Student Essay time, which is lunch time tomorrow then we three of us work together, and Mr. Suzuki will make a presentation of the summary report at the closing ceremony. Please give us any comment by the lunch time tomorrow.

Mr. Raufaste asked a general question. This evening we discussed many very important issues. Each President raised many specific and many general issues. This party may not be the same composition next year. What's our process? Where are we going from here? We raised many issues and there were a lot of intellectual exercises. Many hours were spent for preparation for your presentations. What are we going to do after this conference? What is expected two months from now? Are we going to create a team? I ask for your advice and perhaps to KSCE to create a step and report it back to the next meeting to continue our process to create a step as a teamwork as a family of our seven countries hopefully 10 to 12. Where are we going? Shall we make an assignment to each of us? That's my proposal.

Lastly, Dr. Kim, New ACECC Chair, made a short comment that he would do his best for the ACECC members based on the discussions of that evening.