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Banquet Speeches and Remarks

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BANQUET SPEECH
by:
Shamsher Prakash
Conference Director

John Park, Ladies and Gentlemen:

We have had marathon sessions for four days. This evening is to relax in leisure.

I think I should start first of all by thanking my wife, Sally, who whole heartedly cooperated with me in planning this conference and especially the social events. She even selected the menu for the meals! You know long hours are needed at critical stages for timely planning of the events.

We have very distinguished participants and guests from around the world on the head table this evening. We are eager to hear their anecdotes and remarks.

I will invite them now.

BANQUET REMARKS
by: Shiming Wu
Zhejiang University, Hangzhou P.R. China

I am very pleased for having the chance to give a speech at the banquete. We have a big team from Chinafrom Harbin, Dalian, Beijing, Luyang, Shanghai, Nanjing and Hangzhou, colleagues from Taiwan also joined us. We enjoyed the conference very much for exchanging ideas with our colleagues from all over the world. Although there does not exist an universal language for all of us, we do find the English language common. On the other hand, science and technology are universal, beyond the bound of the countries.

I finished my final education in the States. I was lucky, I had attended the 1981 conferece, 10 years ago, when I was a graduate student at University of Michigan. During the conference, I renewed old friendships and also made new friends.

I would like to say something about the booklet of this conference programme. On the first page of this booklet is a listing of the countries participating in this conference, totaling 36. It should add one more, that is "China". That's not because we sent a team with a great number of members, furthermore, we made a great contribution to the conference. We submitted more than 20 papers.

I would like to take this opportunity to introduce the research on Earthquake Engineering and Soil Dynamics in China. Many institutions in China have active work on this field, and have made great achievements in the past years. We already have had 3 nation-wide conferences on Earthquake Engineering and Soil Dynamics in China. The last one, the 3rd National Symposium on Earthquake Engineering and Soil Dynamcis of China was held in Shanghai, in May, 1990. More than 100 papers were presented in the proceedings.

China might still be a mystery for most of you. I hope you have a chance to visit China in the future. Chinese may be too difficult for you to learn, you may be interested in learning a few words. Let me teach you the first Chinese word "ganbai" (cheers), tonight.

Thank you.

BANQUET REMARKS
by:
Kenji Akino

Ladies and Gentlemen, it is my great pleasure for the honor of speaking on behalf of the other Japanese attendants.

As you know, all Japan islands are located on high seismic zone in the world. However, we are obliged to build Nuclear Power Plants on those islands provided that very severe seismic design provisions have to be made.

When I say "seismic design", it involves broad items, such as seismology, geology, seismic design of buildings and structures, soil-structure interaction, soil dynamics, tsunamis and so on.

I am a manager of NUPEC, Nuclear Power Engineering Center, which has performed many testings for the seismic design of Nuclear Power Plants, as the entrusted projects by MITI, Ministry of International Trade and Industry.

In this international conference, we presented 6 papers, from results of testing performed by NUPEC, and 5 related soil-structure interaction projects focussing embedment effect of the reactor building.

Among those, three are technical reports for field testing and two are for in-door testing. The remaining paper is a description for the large scale field testing of Quaternary rocks for siting of Nuclear Power Plant.

In Japan, the reactor building is required to be built on a rock foundation from the view point of the seismic design. However, in order to extend siting possibility, we have a project which is aimed to be able to build the reactor building on Quaternary stratum.

We provided video tape illustrating our testing, and Chairman Professor Prakash has kindly arranged one special room for video projection.

"Thank you very much Professor Prakash."

After the conference, a technical tour is planned to visit traces of New Madrid Earthquake. I have an interest in the tour and expect what view could be seen because a new project started last year in field survey of active faults which several hundred have proper names. NUPEC will continue investigation on peculiar faults among those faults.

Now, it seems to me that the conference is going to close with successful condition. Then I would like to say "Congratulations, Professor Prakash."

Thank you very much for your attention.

BANQUET SPEECH
by:

John Park, Interim Chancellor
University of Missouri-Rolla

On behalf of the University of Missouri-Rolla, I am very pleased to welcome you to the Second International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics.

I know that Dr. Shamsher Prakash is very pleased with the attendance. I would like to congratulate him and also Dr. Rick Stephenson and Dr. Rod Lentz who have assisted him in coordinating the conference.

I have reviewed the program and the conference proceedings of the recent research and developments in earthquake engineering and soil dynamics, and I want to congratulate you all on the quality of the work that is being undertaken.

Based on the material published in the conference proceedings, I am confident that this will be a very productive and stimulating meeting.

Since I have you here as an audience, I would like to spend just a few minutes telling you about the University of Missouri-Rolla.

The campus opened its doors in the Fall of 1871 as the University of Missouri School of Mines and Metallurgy. Since that time, it has developed into Missouri's Technological University.

UMR Alumni can be found in the executive offices of the world's largest corporations, and UMR plays a role in the development of many of those industries. One factor in UMR's ability to assist the state and nation in this manner is the quality of its students. UMR's students are among the brightest anywhere with an average ACT score of 26.3. They rank higher in their high school graduating classes, on the average, than students in any other public college or university in Missouri. Students with ACT scores 30 or higher can receive "Bright Flight" Scholarships from the State of Missouri, and UMR had the highest percentage enrollment of any college or university in the State -- public or private.

Employers rave about our students -- their knowledge and work skills are among the best anywhere. In spite of the relatively small size of UMR, about 450 companies come each year to recruit our graduating seniors.

UMR ranks thirteenth in the country in the number of undergraduate degrees granted in Engineering.

Our engineering and computer science programs are listed among the top undergraduate academic programs in the U.S., according to "Rugg's Recommendations on the Colleges."

The most recent Gourman Report, a publication that ranks departments at universities throughout the country according to quality, included six UMR departments' programs among the top fifteen in the nation.

The University of Missouri-Rolla has had a strong Civil Engineering Department for over 120 years. quite naturally, some of our first graduates were in Civil Engineering and prior to 1888, were simply designated as civil engineer.

Among its early graduates was Enoch R. Needles, Class of 1914, who was responsible for designing and supervising the construction of many of America's major bridges.

As an aside, I want to tell you about an interesting bit of campus history that occurred in 1914 when Needles was a member of the student body. It was the time of the Campus' famous football team. In 1914, the UMR Miners held their opponents scoreless while they scored 540 points. the Miners defeated the University of Missouri, Washington University, The University of Arkansas, and St. Louis University among others. UMR academic standards, then as now, however, were very rigorous and only five players from the famous 1914 football team returned the following. The Miner football players in recent decades have been true scholar athletes.

You would be interested to know that the University of Missouri-Rolla not only has the highest retention rate of any school in the state but its football team has a graduation rate which is slightly higher than the student body as a whole.

I know that many of you are well aware of the contributions of UMR faculty members in the area of geotechnical earthquake engineering and soil dynamics. You may not be as aware of some of the other internationally recognized research in the Civil Engineering Department. Dr. Minor and his colleagues are leaders in wind structure interactions especially as they relate to window class curtain wall systems. When you hear the tornados or hurricanes coming, he is the expert to call. While the expertise of Dr. Prakash and his colleagues is in foundations and soil dynamics, Dr. Franklin Cheng tours the world speaking on structural response to earthquakes. UMR's Civil Engineering Department cannot predict when the earthquakes or tornados will strike but they can tell you what the effects will be. These are but a few examples of the cutting edge research underway in the UMR Civil Engineering Department. Dr. Wei-Wen Yu is an internationally recognized leader in cold-formed steel structures. He heads the Center for Cold-Formed Steel Structures at UmR which is supported by the American Iron and Steel Institute. This center provides an integrated approach for handling research, teaching, and technical services on cold-formed steel structures. Similar internationally recognized research is taking place in other departments at UMR. The campus is recognized for such work as that in cloud and atmospheric physics, atomic and molecular physics, materials science and engineering, acoustics and noise control, pyrometallurgy, separation of enontinomers, vitrea solids, electronic materials, waste water treatment of industrial waste, waterjet technology, intelligent systems, computer integrated manufacturing, and paint chemistry.

I want to thank you for this opportunity to tell you a little about the University of Missouri-Rolla. I hope that your conference is productive and that you will leave having gained a new and valuable insight into geotechnical earthquake engineering and soil dynamics.

BANQUET REMARKS
by: J.H. Senne
"It's About Time"
Excerpts from a presentation given by J.H. Senne at the conference banquet on Thursday, March 15 1991

One of the important factors associated with earthquake prediction and engineering has been the use of precise time. Accurate time is critical in seismology for obtaining the location of epicenters, in recording the frequency of seismic waves and in designing structures with certain frequency responses. The access to accurate time is so commonplace today that it is taken for granted. For these reasons it was felt appropriate to discuss briefly the measurement of time. In other words, it's about time to talk about time.

Time has always been a necessary ingredient of civilization. Perhaps the oldest way to measure time has been by the sun. Early sundials were used by the Egyptians, Chinese and in India. Water clocks seemed to have been in use at the same time. The mechanical geared clock may have been invented by Archimedes in 250 BC. In any event the progress of timekeeping advanced slowly until after the discovery of the new world. If one looks at early maps of North and South America it is easy to see that latitudes were reasonably accurate but that the land masses were distorted in longitude. This was because the determination of longitude was dependent on time while latitude was simply a measurement of a star on the meridian. The fact that longitude could not be accurately determined led to many shipwrecks; and in 1707, when Sir Cloudsley Shovel wrecked a good portion of his fleet on the Scilly islands due to a longitude error, the British Government finally took notice and in 1714 offered a prize, equivalent today to one million dollars, for a timepiece that could be used aboard ship and would be accurate enough to determine longitude within 30 miles. In 1760 John Harrison produced a chronometer that could be used to determine longitude within 18 miles. Sea travel for economic reasons was probably the greatest single incentive toward the development of accurate timekeeping.

During this period, pendulum clocks were also being improved but of course could not be used aboard ship. In Great Britain and Europe the stars were used to obtained accurate sidereal time which was converted into solar time. Sidereal time, which runs about three minutes and 56 seconds faster than solar time, can be converted into the latter by taking into account both the earth's rotation and its revolution around the sun.

Prior to 1855 the longitude of Washington D.C. was established by transporting chronometers between Greenwich and Washington. Over 400 chronometer round trips were made. When the transatlantic cable was laid in 1866, time signals could be sent by telegraph, and it was determined that the longitude of Washington had been established to within 0.2 seconds of time which is equivalent to 235 feet on the earth's surface. Before the advent of radio the main ports had time balls located at some prominent point of visibility. Then at precisely 1:00 p.m. the ball would be dropped so that those aboard ship in the harbor could check their chronometers.

In 1884 the zero meridian and Greenwich mean time (GMT) was offically established with its origin at Greenwich, including the use of one hour time zones around the world. However some of these changes would not be adopted by some countries until years later.

By the late nineteenth century astronomical clocks using the free pendulum principle had become so accurate (one millisecond per day) that the rotation of the earth could not be used as a reliable clock. Due to tidal friction caused by the moon and the sun, the length of the day has been slowly increasing at a rate of about 0.0016 sec. per century. This plus other minor variations has caused a total time displacement since recorded history, as noted by early eclipses, of about two hours. In fact 600 million years ago, the earth rotated in 21 hours instead of the present 24. Since this meant that the second varied in length from day to day, astronomers used the second as determined by the revolution of the earth around the sun. The second was then defined as 1/31556925.9747 of the tropical year for January 0, 1900 at noon at Greenwich. Thus the second was frozen in length and the time using this second was called ephemeris time (ET). This was the time used to establish the speed of light and to calculate planetary and star positions. Although used from the early part of the twentieth century, ET was not used to show celestial positions in the American Ephemeris until 1960.

As the field of electronics grew in the thirties, the quartz crystal oscillator was developed which in turn led to the quartz crystal controlled clock. By 1948 this clock was accurate to within 1/10000 sec. per day, a tenfold increase in accuracy over the best free pendulum clock. However this was soon to be superceded by the cesium beam atomic clock in the fifties and resulted by 1967 in a new definition of the unit of time. The cesium beam clock was accurate to one second in 60,000 years and the ephemeris second was then defined as the resonate frequency of the cesium atom which is 9,192,631,770 Hz. In the next few years enough atomic clocks were in operation throughout the world to permit the adoption in 1972 of International Atomic Time (TAI). THis meant that the measurement of time was now independent of any celestial motions and was strictly related to the vibration of the atom. Some atomic clocks now have accuracies greater than one second in 200,000 years. With a constant second the variations of the earth's rotation were taken into account by inserting leap seconds into the coordinated universal time scale (UTC). In fact, the year 1972 was the longest calendar year in history, one leap day plus two leap seconds. Since then, leap seconds have been inserted about once a year but at times only once every two years. Like earthquakes, no one can predict with certainty when a leap second will need to be added. The worldwide decision for adding leap seconds is made by the International Bureau of Time (BIH) in Paris. UTC is never allowed to get out of step with ATI by more than 0.7 second. UTC is also the time for everyday use and is broadcast by The National Institute of Standards and Technology on radio station WWV at Fort Collins, CO on frequencies of 2.5, 10, 15 and 20 MHz. This is also the time at Greenwich with standard time differing only by exact hours for the zones. Because atomic time is measured in nanoseconds (billionth of a second), relativistic effects must be taken into account, resulting in a whole new group of time scales. The time on earth (ET) is now called terrestrial dynamic time (TDT), while time at the center of the solar system is known as barycentric dynamic time (TDB). Since 1902 the slowing of the earth's rotation has resulted in a time displacement of 57 seconds between TDT and UTC. Atomic time has permitted the development of the most accurate satellite navigational system to date. Each satellite forming the global positioning system (GPS) carries an atomic clock and when several are observed simultaneously, positions on earth can be determined in three dimensions within a few meters. Thus the system can be used by aircraft, ships and by surveyors.

It is interesting to note that before 1866, time standards were compared by transporting chronometers by ship. After 1866 this was done using telegraph and in the twentieth century by radio. By 1972 the uncertainties in relays and radio wave proprogation were no longer acceptable, so that atomic clocks (the airlines call them electronic clocks) must be flown to the various time centers for comparison. In the last 125 years we have come the full circle, but at more than a million times the previous accuracy.

BANQUET REMARKS
by:
Jeanne L. Senne

An international conference always brings together an unusual and most interesting blend of people. The wives who joined me for a series of tours in the St. Louis area were certainly that. Their diverse professions or specialties included a Yugoslavian translator for a chemical company, a young French couturiere, a tennis coach, a Japanese dermatologist, together with several very well-traveled ladies. Our surprise addition for the last tour day (very select shopping areas) was a delightful Chinese gentleman who wanted to buy some gifts for his family.

All seemed to enjoy the Arch Museum to learn about St. Louis' historical beginnings, the Art Museum's superb collections of fine and decorative arts, the Missouri Botanical Garden and Henry Shaw's home, and a chance to see the magnificent gold mosaics in the Saint Louis Cathedral.

CONCLUDING SESSION
by:
Shamsher Prakash

Several participants expressed satisfaction over the total planning and conduct of the sessions, including the hardbound proceedings which were distributed six weeks before the conference.

It was generally opionionated by those who had joined both the 1981 and 1991 conferences that the Third Soil Dynamics Conference be held at an interval of 4-5 years rather than 10 years between conferences.