



## **Seminar on Instrumentation and Monitoring of Ground Deformation and Continuous Monitoring by Global Navigation Satellite System**

(Jointly organized by AGS (HK), Building Division and Civil Division of the HKIE)

**Date :** 20 January 2024, Saturday

**Time :** 9:15am – 12:00nn

**Venue :** Sophie Chan Room in HKIE Headquarters at 9/F, Island Beverley, No.1 Great George Street, Causeway Bay, Hong Kong

### **Programme Highlights**

#### **Part 1 : Instrumentation and Monitoring of Ground Deformation System (By Ir Raymond SM Chan)**

Ir Raymond Chan will introduce the different geotechnical instruments used in ground deformation that includes:

- Ground vibration monitoring.
- Ground Movement Instruments likes building, ground, utility and seabed settlement markers, tilt meter, extensometer, inclinometer, sondex system and shape array etc.
- Frequency of monitoring for each of the instruments, the allowable control limit – 3A System in Alert, Alarm and Action levels, and progressing 5 alert level system will be implemented in nearest future.
- The past failures of sites due to improper implementation of monitoring of instrumentation system.

#### **Part 2 : GNSS and Application in Utility Settlement Monitoring (by Dr Owen WT YANG)**

Dr. Owen Yang will introduce the use of Global Navigation Satellite System (GNSS) in utility monitoring, with the case of GNSS settlement check points in water pipes. He will present :

- Automatic monitoring of deformation by GNSS
- The error source of GNSS and elimination method in the utility monitoring.
- Monitoring of pipe settlement by GNSS
- A study case of GNSS in pipe settlement monitoring

### **Language**

The talk will be presented in Chinese with presentation aids in English

## Biographies of the Speakers

**Ir Raymond SM  
CHAN**

(MHKIE, RPE, MASCE,  
MICOB, FGS)



Raymond is now the Project Manager of Tysan Foundation Manager. Previously, he was the Technical Consultant and Project Manager of Bachy Soletanche Group Ltd. He gained more than forty years of experience in his working career that covered contract tendering, project management, site supervision and technical proposal for projects. As he closely liaised with the Development and Research Department of Soletanche Group in France, he took leading the regional office in Hong Kong to control quality of bentonite slurry and tremie concrete used and operation for concreting and slurry, and technical development and operational method for sonic drilling in Hong Kong. He had worked in geotechnical projects in Hong Kong, Southeast Asia and China in ground investigation, directional drilling, instrumentation, piled foundation, ground anchoring, slope greening, site formation and ground improvement includes jet grouting, soil and rock grouting, vibro-floatation, stone column, soil lime stabilization and deep cement mixing. He is currently the Executive Council member and the Leader of the GI and Instrumentation Group of AGS(GHK).

**Dr. Owen WT  
YANG**

(PhD, BSc)



Owen is an expert in Global Navigation Satellite System (GNSS) technology. He has more than ten years of research experience at Hong Kong Polytechnic University, where he focused on studying mathematical models for GNSS data processing. During his tenure, Owen also developed a GNSS-based monitoring platform and designed GNSS hardware, resulting in the creation of a fully automated real-time monitoring solution.

This solution has been successfully applied in numerous significant monitoring projects, including the subsidence monitoring of the third runway reclamation project at Hong Kong Airport, the monitoring of land reclamation in Tung Chung New Town, and the dynamic and static load monitoring of the Second Penang Bridge in Malaysia. Overall, Owen's expertise has been instrumental in over 100 projects across Hong Kong, mainland China, Taiwan, and South Korea, where his GNSS-based monitoring solution has been extensively utilized.