THE CHARTERED INSTITUTION OF
WATER AND ENVIRONMENTAL MANAGEMENT HONG KONG
P.O. Box 4258, General Post Office, Hong Kong

CIWEM Chartered Institution of Water and Environmental Management
Hong Kong Branch

CIWEM HK TECHNICAL SEMINAR

Sediment Transport: Wastewater Engineering Applications

by Ir Professor CHAN Pak Keung, Adjunct Professor of HKU, Honorary Fellow, IAHR-HK, Former Professor of Practice (Infrastructure), PolyU, Former AD of DSD

20 December 2025 | 10:00 am to 12:00 noon | Business Environmental Council Auditorium
Language: Cantonese with English terminology | CPD: 2 hours

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ABSTRACT

Introduction

Sediment Transport refers to the erosion of sediments in the upland areas of Watersheds as well as the beds of upland rivers, transport of the sediments as bed loads and suspended loads in rivers, and the deposition of the sediments in the lowland reaches of rivers as well as its estuaries and the coastal seas.
Sediment Transport has long been applied in river and coastal engineering.
Over the last half a century, Sediment Transport has also found useful applications in Wastewater Engineering.

Theme 1

In the past, the Self-Cleansing Velocities Design of Sanitary Sewers have adopted empirical velocities developed by various countries, which differ considerably.
The first part of the Seminar introduces the use of Ackers and White Sediment Transport Theory (1971 and updated 1990) for the Self-cleansing design of Sanitary Sewers in Hong Kong. The theory has been proven in the hydraulic design of the Sewage Conveyance Tunnels of the Harbour Area Treatment Scheme (HATS). Since then, further research by Richard MAY and others in HR Wallingford was reported in CIRIA Report published in 1996 and entitled “Design of Sewers to control Sediment Problems”.
Meanwhile, ASCE/WEF Manual of Practice on “Gravity Sewers: Design & Construction”, 2nd Edition, published in 2007 has also advocated a migration to a tractive force approach to self-cleansing design, dependent on the appropriate choice sediment size and minimum flows.

Theme 2

In Wastewater Treatment Plants, the physical solids-liquid separation in many operation has been based on the Gravity Settling Theory of Sediment Transport, which forms the second part of this Seminar.
Specifically,
(1) Grit Removal Devices are based on Type 1(Discrete) Settling.
(2) Total Suspended Solids Removal in Primary Clarifiers and Upper Portion of Secondary Clarifiers is based on Type II (Flocculent Settling). So is the chemical flocs in Clarifiers.
(3) Secondary Clarifiers in association with the Bioreactors are based on Type III (Hindered or Zone) Settling.
(4) Bottom of Secondary Clarifiers is based on Type IV (Compression) Settling. So are Sludge Thickeners.
The Seminar concludes with various methods of enhancing the solids removal efficiency of Clarifiers.

SPEAKER : **Ir Professor CHAN Pak Keung**

Ir Professor CHAN Pak Keung obtained a BSc(Eng) in Civil Engineering from HKU in 1977. He became a qualified civil engineer in 1980 after receiving three years professional training in the Public Works Department. In 1980-87, he worked as an engineer on the design of the preliminary treatment and disposal facilities on Hong Kong Island with his capacity strengthened by a Government sponsored part-time MSc (Civil Engineering) Programme in HKU in 1982-85, especially its environmental engineering subjects.

In 1987-88, Ir Professor CHAN was sent by Government on an 11-month full time post-graduate International Course in Hydraulic Engineering at IHE Delft The Netherlands | Institute for Water Education, to prepare him to address Hong Kong's worsening flooding problem in 1980's. Upon his return to Hong Kong in end 1988, he was deployed as a senior engineer initially on the design of Shenzhen River Regulation and then in conducting strategic and master planning studies to address the land drainage and flood control problems in Hong Kong.

In 1998, Ir Professor CHAN rose to Chief Engineer (Drainage Projects) overseeing the design and construction of the River Training and Village Flood Pumping Schemes (Polders) in Yuen Long by in-house staff. In 2000, he was moved to Chief Engineer (Sewerage Projects) to lead the design and construction by in-house staff of the extension & upgrade of treatment works at Shatin, Tai Po, Shek Wu Hui, Sai Kung, Pillar Point & Cheung Chau as well as the gravity sewers, rising mains and pumping stations in Yuen Long and North District. In 2007, he was moved to Chief Engineer (Land Drainage) to oversee the investigation & planning of flood management facilities by commissioning consultancies.

From 2010 to 2014, Ir Professor CHAN was Assistant Director of Drainage Services, overseeing the Operation & Maintenance Branch initially and later the Sewage Services Branch. In 2014, he was awarded an Honorary Fellow by the Hong Kong Chapter of the International Association for Hydro-Environment Engineering & Research (IAHR-HK) to recognize his contributions in supporting the applications of hydraulic research in Hong Kong's environmental & hydraulic engineering projects.

After his retirement in end 2014 from civil service, Ir Professor CHAN has been active in water education, contributing to civil & environmental engineering undergraduates & postgraduates programmes at HKU & PolyU. From 2015 to 2018, he was Professor of Practice (Infrastructure), PolyU and has been Adjunct Professor of HKU since 2015. He has also taught practising engineers & environmental scientists CPD Courses organised by HKPC, Advanced Technovation, LNS and RED.

Details

Date & Time	:	20 December 2025, 10:00 am to 12:00 noon
Format	:	Physical technical seminar
Venue	:	Auditorium, G/F, 77 Tat Chee Avenue, Kowloon Tong, Hong Kong
Fee:	:	Free of charge
Language	:	Cantonese with English terminology

Registration & Enquiries

Please complete the on-line registration form on or before **13 December 2025**

Successful applicants will be notified individually by email. Only registration forms with all fields duly completed will be processed. For enquiries, please contact CIWEM Secretariat by email: info@ciwem.hk.

on-line registration form: https://forms.gle/rukvnms931zg41CKA

Notes

1. This event is co-organised by Chartered Institution of Water Environmental Management Hong Kong ("CIWEM HK") and CIWEM HK Limited.
2. Registration is accepted on a first-come-first-served basis, and preference will be given to CIWEM members. This seminar is limited to 100 participants.
3. Successful applicants will be informed by email. Those who fail to show up will need to cover the financial implication and will not be entertained in two subsequent CIWEM HK events.
4. Attendance certificate (2 CPD hours) will be awarded after the event by email.
5. Adverse weather arrangement: this event will be cancelled if a typhoon signal No. 8 or above, or the black rainstorm warning is issued within 2 hours before the event. CIWEM HK will notify the participants of the subsequent arrangements accordingly by email.
6. The organising parties accept no liability for any eventuality that may occur to affect travel itineraries before, after or during the event, or for any incident or accident, should any occur.

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