THE INSTITUTION OF ENGINEERS - SINGAPORE -

URBAN REDEVELOPMENT AUTHORITY

To make Singapore a great city to live, work and play

ENHANCING INFRASTRUCTURE PLANNING AND IMPLEMENTATION COORDINATION IN SINGAPORE

With the increasing demand for infrastructure to support new developments and the intensification of existing developments, subterranean space for infrastructure and utilities are becoming increasingly congested and cluttered. Working closely with various agencies from the Infrastructure & Environment sector, the Infrastructure Planning Authority Group (IPAG) of URA has developed a new Major Infrastructure (Network) Workflow to enhance the coordination of major infrastructure projects, optimise subterranean space, and synergise implementation. This requires collaborative effort amongst all relevant agencies and their industry partners to conduct upfront coordination of infrastructure and utilities planning, and develop various optimisation schemes.

This seminar will introduce the new approval workflow to the industry and share ideas on optimisation strategies that could optimise the subterranean space and implementation for utilities laying. In addition, distinguished speakers from government agencies and consultant firms will be invited to present case studies and project experiences on various utilities optimisation strategies, in both local and overseas context.

This is a good opportunity for agency project owners and developers, engineers, project managers, consultants, civil works and specialist contractors to understand the importance of coordinated infrastructure and utilities planning, and the new infrastructure planning

Our speakers

DR GOH KOK HUN
Group Director
Infrastructure Planning Group
Urban Redevelopment Authority

MR VIJAY DAS
Director
Infrastructure Planning Group
Urban Redevelopment Authority

DR KELVIN GOH
Director
Land Transport Authority

MR CHEN QINGWEI
Senior Planner
Infrastructure Authority Group
Urban Redevelopment Authority

MR LOH WEE LOON
Technical Director
AECOM Singapore

MR K. KANDASWAMY
Portfolio Manager
Jacobs Singapore

MR LEE HUNG-YEN
Manager
Moh and Associates, Inc

MR PETER STONES
Associate
Arup Singapore

29 August 2023, Tuesday

9am to 5.30pm

Sheraton Tower Singapore
39 Scotts Road
Ballroom 1 & 2
Level 2

$194.40 (IES Members) / $216 (CIJC Members)
$270 (Non-Members)
(Fees Inclusive of 8%GST)

2 SILA CPD (Approved and Confirmed)
STUs (Structural) / PDUs for PEs and CEngs
(All To Be Confirmed)

REGISTER NOW!

Organised by Civil & Structural Engineering Technical Committee

SYNOPSIS AND SPEAKERS PROFILE

A NEW WORKFLOW TO ENHANCE INFRASTRUCTURE AND UTILITY PLANNING IN SINGAPORE

With the rapid growth and development of cities, it has become increasingly imperative to optimize the utilization of subterranean space for efficient and sustainable urban infrastructure. This topic focuses on a new workflow for enhancing infrastructure and utility planning in Singapore.

This presentation aims to provide an overview of the current challenges faced in infrastructure and utility planning, emphasizing the need for an enhanced and holistic approach. URA will introduce a new workflow that leverages novel technically feasible solutions and coordinated implementation strategies to optimize subterranean space effectively.

By embracing this new workflow, we hope to overcome constraints from the existing conventional laying practice, minimise abortive work processes, and maximize the utilisation of underground spaces in Singapore. We will showcase how this new workflow can lead to positive outcomes and greater efficiency through a series of case study examples and good practices both locally and abroad.

This topic will allow participants to understand the numerous benefits of the new workflow and gain valuable insights on how infrastructure and utilities could be optimised.

DR GOH KOK HUN is currently the group director for the Infrastructure Planning Authority group in the Urban Redevelopment Authority of Singapore. He has more than 20 years of engineering experience and has been involved in the design aspects of several transport infrastructure projects in Singapore, including the Fort Canning and the Woodsville road tunnels and more recently the North-South Corridor road and Cross Island Line rail projects. He specializes in geotechnical engineering with a doctoral study on the “Response of ground and buildings to deep excavations and tunnelling” and he has also conducted specific studies in other aspects of geotechnical engineering design. He is registered as a professional engineer in civil engineering as well as a specialist professional engineer in geotechnical engineering in Singapore, and also a chartered professional engineer.

CONCEPTS OF UTILITIES OPTIMISATION OPTIONS FOR SPACE AND IMPLEMENTATION

This presentation aims to explore innovative approaches and share best practices that can maximize the use of limited space while enhancing the efficiency and functionality of infrastructure in Singapore’s urban landscape.

We’ll highlight the exciting possibilities of optimised utility designs, showing how they could potentially maximise the available space in Singapore’s increasingly land-scarce environment while remaining flexible for future needs. Additionally, we’ll delve into the growing opportunities on coordinating the implementation of infrastructures and utilities upfront, reducing the impact and disruptions to our surroundings.

We look forward to bringing the industry onboard as we embark on practical technically feasible optimisation solutions that have the potential to transform our urban landscape, creating more sustainable environments that thrive within the constraints of limited space.

MR VIJAY DAS is currently a director at the Infrastructure Planning Authority group in the Urban Redevelopment Authority of Singapore. He has more than 20 years of engineering experience and has been involved in operations and maintenance of several water related infrastructure in Singapore. He is part of the team that has worked extensively on the development of the new IPAG workflow, including underground space optimisations for some of the pilot projects at Changi East Northern Corridor and HDB Tengah Town.

INFRASTRUCTURE AND UTILITIES PLANNING IN CHANGI NORTHERN ROAD CORRIDOR – LTA’S EXPERIENCE

The speaker will share LTA’s experience in applying IPA’s new workflow as part of developing the road infrastructure design in Changi Northern Road Corridor, which is a key project to serve the developmental needs in Changi East. The presentation will cover challenges in utility coordination along with optimisation strategies adopted to overcome site constraints. Other considerations relating to the design development of the road infrastructure and mitigation of programme risk will also be shared.

DR KELVIN GOH is a Director in the Land Transport Authority and has more than 20 years of experience in Highway Engineering and Road Design. He was involved in the structural design of road and rail infrastructure, projects relating to Intelligent Transport System as well as road asset regulation and licensing. Kelvin is currently leading a team of 8 Digital Engineers / Managers to drive the adoption of BIM and a common data environment to enhance work productivity in new projects. He is also leading a team of more than 40 Engineers in the conceptual, preliminary and detailed design of road schemes for various road development and re-purposing projects. He is also an Associate Faculty with SIT University to deliver lectures and conducts tutorial classes on Highway and Traffic Engineering.

WATER PIPELINE STACKINGS (3 NOS.) UNDER CROSSING CANAL / CULVERT

Water pipeline conveyance planning along a congested service corridor are critical challenges faced in Singapore. This presentation aims to explore the concept of water pipeline stacking and discuss the challenges faced through a case study where it ties in with LTA’s upcoming proposed infrastructure.

MR LOH WEE LOON is the Technical Director from the Water & Urban Development Department, AECOM Singapore. He graduated with honours in environmental engineering degree and has 13 years of experience in the planning, design, site supervision and project management for civil infrastructure projects in Singapore.
His project experience encompasses the design of water transmission/distribution pipelines, cost estimation, tender documentation and project management of construction contracts.
He is currently involved in several Sewer and Water pipeline projects, mainly sewers in Mandai Areas, proposed twin potable water & raw water pipelines and Watermains replacement works.

UTILITIES PLANNING AND OPTIMISATION IN A GREENFIELD SETTING (HDB TENGAH NEW TOWN)

This presentation seeks to highlight the fruitful partnership between URA(IPAG) and HDB in the development of infrastructure and utilities for Tengah New Town (Phase 4). The sharing will delve into the practical application of the new infrastructure and utilities workflow, the challenges encountered during the project, as well as how both agencies were able to collaborate closely with the infrastructure/utility agencies and service providers to surmount these hurdles. This collaboration led to the development of new typologies for infrastructure and utilities laying through a technically feasible approach, which opens up numerous possibilities for future projects.

CHEN QINGWEI is a senior planner at the Infrastructure Planning Authority group in the Urban Redevelopment Authority of Singapore, with over 16 years of experience in infrastructure and utilities planning and design both locally and overseas. He is a Chartered Engineer and has been involved in several mega infrastructure projects, including Changi T5 and CRL rail, with a focus on infrastructure and utilities planning and design. He is also part of the team that has extensively worked on the development of the new IPAG workflow, including underground space optimisations for HDB Tengah Town.

CHALLENGES IN UNDERGROUND SPACE UTILIZATION AND POSSIBLE SOLUTIONS

The presentation will cover below the elements of underground works related to space optimization and implementation of optimized solutions.

- Challenges in understanding the presence and location of existing services – geo-mapping of services
- How to work around existing services and saving space for future services – understanding well of set-back distances and negotiating with various asset owners and agencies
- Dovetailing with other construction work for future services to leverage the advantages of one-time construction
- Evaluating and deciding on the appropriate construction methods – Trenchless or open-cut and appropriate costs/ benefits.

MR KARTHIK KANDASWAMY has more than 30 years of engineering experience out of which he spent 20 years in delivering a wide range of projects locally and overseas in the arena of major water, sewerage and drainage projects. His experience includes from feasibility planning to prelim design, followed by detailed design and construction of infrastructure works in these areas. He is highly acquainted with the requirements of various local authorities and utility agencies. By leveraging his long-standing and hands-on experience in working with various agencies, he can plan and implement underground projects effectively using the underground spaces.

UNDERGROUND SPACE GOVERNANCE-CASE STUDIES OF COMMON UTILITY DUCT PROJECTS IN TAIWAN

This presentation will showcase project examples carried out in Taiwan that has incorporated novel technical optimisation solutions into their infrastructure and utilities planning. One project example will cover on the implementation of the Common Service Duct (CSD) project in Beitun District, Taichung City, as part of the Taichung urban land consolidation project's Phase XIV. With a vast development area spanning 403.39 hectares, the project is divided into nine construction areas. The CSD seamlessly integrates public pipelines for electricity, telecommunications, broadband, and tap water. It stands as Taiwan's most extensive CSD system in one single project, stretching 61km, alongside a 53km Utility Specific Duct (USD) system.

The sharing will also cover a major development project in New Taipei City spanning a significant land area of 122.11 hectares. The existing land use predominantly serves industrial purposes. The project aims to transform the entire area into a well-balanced mix of residential zones, industrial areas, and scenic green spaces. To streamline infrastructure, the project incorporates electric power, telecommunications, and broadband services into a comprehensive CSD system. Considering the limited road width within the planning area, the USD is ingeniously designed beneath the sidewalks. The collective length of the CSD and USD system throughout the entire area extends approximately 111.1km.

MR LEE HUNG-YEN received his Master Degree from the Chung Yuan Christian University of Taiwan, is the Manager of the Urban Development Department of Moh and Associates, Inc. Mr. Lee is highly experienced the fields of urban planning, land and industrial park development, various underground pipeline and Common Services Duct engineering design.

Mr. Lee participated urban development projects that utilised the common services duct, including the Taoyuan Aerotropolis Zone Expropriation design, Land acquisition and development project for the agricultural area on the south and north side of Luzhou, Turnkey project on urban land consolidation of Caota area part in 1st, 3th, 6th, Guanyin District, Design and technical supervision service for urban land consolidation of District 2 of Xin Tai Wen Zi Zun area, Design and supervision technical services for Zone-Expropriation develop construction in North Side of Xinzhuang Knowledge and Industrial Park, construction supervision of the National Biotechnology Research Park at Taichung, project management of Shuei-Nan economic & trade park, Planning and design of Highway No. 2-1 in Fongyuan City, Preliminary and detailed design of Common Utility Duct along Taipei MRT Xinyi Line.

INFRASTRUCTURE PLANNING AND CORRIDOR OPTIMIZATION IN MASTERPLANS, CASE STUDIES FROM THE REGION

The speaker will be sharing a selected range of infrastructure planning projects undertaken by Arup within the region, from the local Jurong Lake District to the recent HKUST (Hong Kong University of Science and Technology) Nansha Campus in China and more. The service corridor optimisation exercises and typologies developed for these projects will be shared as case studies, including CSD/CSTs at different scales among other co-location and planning concepts. Through this session, we hope to elaborate on a few lessons learnt on how service corridor planning can be adapted flexibly and guided by various project contexts, priorities, and planning philosophies. We also hope to provoke further thoughts and discussions among the wider audience on the possible optimisation measures and further improvements to the futures works in Singapore.

MR PETER STONES is an experienced design project leader with a strong ability to manage complex projects and build excellent relationships with stakeholders. With expertise in resilience, infrastructure, and master planning, he has successfully delivered innovative solutions internationally. His work spans various areas, including climate change resilience, flood risk assessment, infrastructure design, and project management. Peter's coordinated approach, technical rigor, and commitment to innovation ensure the successful delivery of projects to the satisfaction of all stakeholders.

For more information, please contact Miss Shelly Ng at shelly.ng@iesnet.org.sg or call 6461 1222