

# CPD Series: Permanent Way - Design Principles

Course Code: SC 25-019

Lecture: 9 September - 11 November 2025

(Every Tuesdays 7:00pm - 10:00pm, except 7 October public holiday)

## Objectives and Learning Outcomes

This course is designed to provide participants with a comprehensive understanding of the fundamental principles of permanent way (track) design. Participants will explore key concepts related to permanent way design, enabling them to apply this knowledge in real-world scenarios.

On completion of the course, students are expected to be able to:

1. demonstrate understanding of design principles and concepts for permanent way.
2. describe the standards for permanent way design.
3. design basic permanent way in compliance with safety and service performance requirements.

## Who Should Attend

Those who are interested in Permanent Way (track)

## Pre-requisites

Participants with basic knowledge / practical experience in Permanent Way or related disciplines\*

## Language

Cantonese with English terminologies (with presentation slides in English)

## Venue

MTR Academy - Hung Hom Centre, Kowloon, Hong Kong

## Mode of Learning

Classroom lecture and discussion

## Course Structure

This course consists of 9 lectures.

It covers the following topics:

1. Fundamentals of Permanent Way Design
2. Basic Trackworks Design
3. Special Trackworks and Interface Design



# Course Details

Topic No.	Topics / Activities	Learning Contents
1	Fundamentals of Permanent Way Design	<ul style="list-style-type: none"> <li>Different Types of trackforms: Ballasted track / Non-ballasted track / At-grade / Tunnel / Elevated</li> <li>Permanent Way design parameters and design principles for safety and reliability</li> </ul>
2	Basic Trackworks Design	<ul style="list-style-type: none"> <li>Permanent Way Static Mechanics: Vertical load / Lateral load / Longitudinal load / Impact load / Exceptional load</li> <li>Horizontal Alignment: Curve / Transition / Cant / Cant deficiency / Cant gradient / Rate of change of cant deficiency / Maximum permissible speed</li> <li>Vertical Alignment: Gradient / Transition / Permissible speed / Cross-section</li> </ul>
3	Special Trackworks and Interface Design	<ul style="list-style-type: none"> <li>Design principle of special trackworks: Turnout geometry / Tangent &amp; Centre-line measure / Theoretical intersection &amp; Real point / Switch toe / Crossing nose / Turnout speed / Rail Expansion Joint/Fishplate Joint / Continuous Welded Rail / Buffer Stop</li> <li>Wheel-Rail interaction</li> </ul>

# Schedule

Lesson	Time & Date	Mode of Learning
1	9 Sep 2025 (Tuesday) 7:00pm – 10:00pm	Lecture
2	16 Sep 2025 (Tuesday) 7:00pm – 10:00pm	Lecture
3	23 Sep 2025 (Tuesday) 7:00pm – 10:00pm	Lecture
4	30 Sep 2025 (Tuesday) 7:00pm – 10:00pm	Lecture
5	14 Oct 2025 (Tuesday) 7:00pm – 10:00pm	Lecture
6	21 Oct 2025 (Tuesday) 7:00pm – 10:00pm	Lecture
7	28 Oct 2025 ((Tuesday) 7:00pm – 10:00pm	Lecture
8	4 Nov 2025 (Tuesday) 7:00pm – 10:00pm	Lecture
9	11 Nov 2025 (Tuesday) 7:00pm – 10:00pm	Lecture

# Speaker



Dr. MT Wong

**Dr. Wong Man Tat** is the former Manager (Special Duty) at MTR Corporation Ltd. responsible for training the new Permanent Way (Pway) Managers and Engineers in PWay design, construction and maintenance technology. Dr. Wong has over 40 years of experience in PWay design, maintenance and asset management. He is a member of the China Hong Kong Railway Institution. He has published some articles in trade and professional journals. His research area is focused on the damage detection of the railway ballast.

## Certificate of Attendance

Each participant will receive a certificate of attendance showing upon successful completion of this programme if he/she fulfills the 70% attendance requirement.

Programme Fee	Early Bird Fee	Discount Scheme
<b>\$4,100</b>	<b>\$3,690</b> (Paid registration on or before 26 August 2025) <small>^Rounded up fee</small>	<b>15% off for</b> <ul style="list-style-type: none"><li>– members of supporting professional bodies^</li><li>– full time staff of MTR and its subsidiary companies^</li><li>– full-time students ( Senior Secondary or above)</li></ul> ^ Latest details, please refer to our webpage

## Application Methods

### Online

Applicants can enrol and online payment by credit card at <https://www.mtracademy.com>

### Enquiry in Person

Address: MTR Hung Hom Building, 1/F., 8 Cheong Wan Road, Hung Hom, Kowloon

Opening hours: Monday - Friday 9am– 8pm; Saturday: 9am – 12:30pm

Closed on Sundays and Public Holidays

## Closing Date for Registration

Please note that due to limitations of venue capacity and relevant logistics, all registrations must be made at least 2 working days prior to the delivery date of individual modules. No walk-in registration will be entertained.

\*MTR Academy reserves the right to turn away successfully enrolled individuals who do not meet prerequisite.