



SCDF
The Life Saving Force
... for a safer Singapore

CODE OF PRACTICE FOR FIRE PRECAUTIONS IN RAPID TRANSIT SYSTEM

The SCDF Review Committee of the Code of Practice for Fire Precautions Rapid Transit Systems (CPFPRTS) has recently completed the review of this Code and is pleased to announce the release of its 2022 edition.

The review of this Code with the intent to improve the clarity of requirements and to keep up-to-date with new building products, materials and construction methods was led by SCDF and comprised representatives from the building industry, statutory board and professional bodies.

Jointly organised by SCDF and IES, the speakers will address the updates of the amendments in this code of practice.



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THE DETAILS



12 APRIL 2023, WEDNESDAY



2.00PM TO 6.00PM



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CHANGES TO CHAPTER 1, CHAPTER 4 & APPENDIXES 1 & 2

Chapter 1 begins with establishing the scope and application of the code. The chapter will also covers the relevant abbreviations and definitions.

Chapter 4 covers the requirements for site planning around stations and external firefighting provisions to enable effective firefighting operations such as fire engine access road/accessway and fire hydrants.

Appendixes 1 and 2 are the Fire Safety Report and Fire Safety Instruction Manual respectively. They are included in this latest CPFPRTS edition. These appendixes outline the content of the Fire Safety Report and Fire Safety Instruction Manual.

MAJ MUHAMMAD IZWAN is a Senior Consultant with 10 years of experience in the Fire Safety Department (FSD) of the Singapore Civil Defence Force. He provides consultations and guidance to Qualified Persons (QPs) on prescriptive fire safety requirements.

He is also the Secretariat for the review committee of the Code of Practice for Fire Precautions in Rapid Transit Systems (CPFPRTS).

COMMON AUDIT CHECK FINDINGS

Plans of fire safety works that are certified by Qualified Persons and submitted to SCDF for approval may be subject to audit checks.

The speaker will be sharing common findings from SCDF's audits on plans submitted for Rapid Transit Systems developments, and good practices observed. This sharing aims to reduce the number of non-compliances and help Qualified Persons be more efficient during the audit process after submitting plans to SCDF.

CPT LIM HOONG TA obtained his B.Eng (Aerospace) and PhD from NTU in 2012 and 2017, respectively. Since 2020, he has been a Consultant in Residential & Commercial Design Branch and his role includes auditing plans, processing of waivers and conducting site inspections.

He is also involved in the Automated Model Checker project.

CHANGES TO CHAPTER 2 & CHAPTER 3

The presentation will outline the changes made to the Code of Practice for Fire Precautions in Rapid Transit Systems (CPFPRTS) Chapters 2 and 3, between the 2017 edition and 2022 edition.

- Chapter 2, Station Means of Escape covers exit requirements for stations.

- Chapter 3, Station Structural Fire Precautions covers compartmentation and fire resistance requirements for structures and fittings within stations.

MR GLEN COPSEY joined the Land Transport Authority in 1997 and has been involved in the implementation of rail projects from North East Line through to the Cross Island Line, focusing on the technical aspects of station architecture design.

Glen oversees the technical team within 5Architecture Division, which specialises in passenger and operator interface components such as the platform screen doors, passenger service counters, accessibility provisions, as well as technical aspects of the station performance such as pedestrian flow, fire safety, acoustics and security.

Glen has been supporting the CPFPRTS Review Committee since 2014. He is also a member of Singapore Standard Working Committee for such as SS332, SS485, SS637 and SS654.

CHANGES TO CHAPTER 6 & CHAPTER 7

In this presentation, the speaker will outline the key changes made to the Code of Practice for Fire Precautions in Rapid Transit Systems (CPFPRTS) Chapters 6 and 7, between the 2017 edition and 2022 edition.

- Chapter 6, Firefighting Systems

- Chapter 7, Mechanical Ventilation & Smoke Control Systems

ER. (DR) ERIC CHEONG MUN KIT has been with the Land Transport Authority of Singapore (LTA) since 2001. Currently holding the appointment of a Deputy Chief Specialist (Tunnel Ventilation and Fire Engineering) in LTA.

He is a Professional Engineer (Mechanical), a registered Fire Safety Engineer, Chartered Engineer (Fire) UK and Chartered Engineer (railway) in Singapore. Some of the projects Mun Kit involved in are the KPE road Tunnel, Downtown Line Rail Tunnel, North South Rail extension (NSLe) Rail Tunnel, Thomson Line Rail Tunnel, North South Corridor (NSC) road Tunnel etc. He is also involved in conducting a series of large fire tests for road tunnels under the Singapore Fire Test Programme (SFTP). Mun Kit service to professional organizations includes serving as members in NFPA 502, Code of Practice for Fire Precautions in Rapid Transit System and Code of Practice for Fire Precautions in Road Tunnel.

CHANGES TO CHAPTER 5, CHAPTER 8 & CHAPTER 9

This presentation covers the updates in CPFPRTS chapter 5, chapter 8 and 9. Section 9.7 address the current gap in fire safety requirements for SPPG substation or consumer transformer room integrated within the building and located in basement.

The section is similar to the Fire Code 11th batch amendment issued on 1 Sep 2022.

ER. SIMON LEE is currently the Director of Bescon Consulting Engineers and a member of SCDF Fire Standing Committee, SCDF review committee for FPRTS and Fire Code workgroup for underground substation. He has degree in Electrical Engineering and Master of Science, and EMA Licensed 22kV switching engineer with 28 years experience as M&E consultant.

He is also a IES Council member, IES M&E TC Chairman, QEC chairman and Asean Federation of Engineering Organisation Honorary member.

A SIMULATION STUDY ON PASSENGER ESCAPE IN TRANSIT RAIL TUNNELS

In an emergency situation in transit tunnel such as a fire on the train, the strategy is to avoid detrainment in tunnel whenever possible. The train will continue to the next station where detrainment can be most expeditiously executed. Nevertheless, alternative evacuation strategy should be considered if the train stalls in tunnel and detrainment in tunnel is the only available option.

When fire breaks out inside a tunnel, poison gas and heat accumulate within the long and narrow space in a short period of time, posing a threat to life quickly if there is no counter measure. Hence passenger safety in case of emergency becomes one of the major concerns for the designers, mass transit company as well as the authorities. Over past decades, tunnel ventilation and smoke control has been investigated and proved effective for eliminating back-layering and protecting personnel evacuation.

In case of detrainment in the tunnel, passengers can use the trackway and elevated walkway to move towards the exits. To avoid passengers walking too long in a tunnel with prolonged exposure to life safety risk, cross-passages are provided to link the adjacent tunnels. In other words, passengers can escape to the adjacent tunnel, which would be clear of smoke, by passing through the cross-passages.

The U.S. National Fire Protection Association's Standard 130, "Fixed Guideway Transit and Passenger Rail Systems," requires that tunnel-to-tunnel cross-passages shall be spaced a maximum of 244 meters apart which is adopted in our current CPFPRTS as 250m. On the other hand, the European Standard TIS has extended this spacing to be 500m.

In this study, a simulation model was adopted to investigate the rail tunnel evacuation issues and to predict the evacuation times for passengers downstream of the fire site to reach a point of safety. The study mainly focused on identifying and examining the influence of various factors such as different train stopping locations relative to the cross passages, walkway and cross passage width, cross passage spacing, population mix of rail passengers with a range of demographics and walking speeds on evacuation time and the queuing patterns of pedestrians in rail tunnel. The simulation results can provide insights to designers, mass transit company and the authorities on the countermeasures needed against emergent evacuation in rail tunnel.

ER. VINCENT TONG has a Bachelor of Science degree in Mechanical Engineering (First Class Honours) from the University of Hong Kong, a Master of Science in Building Science from the National University of Singapore and a Master of Fire Safety Engineering from the University of Western Sydney. He is currently Managing Director responsible for the Mechanical & Electrical Engineering team of Surbana Jurong's infrastructure business.

With 39 years of experience as an engineering professional, Er. Tong has been involved in many prestigious and mega projects in Singapore, Southeast Asia, the Middle East and China such as Changi Airport Terminals 1 and 5; Singapore North-South Expressway; Singapore Mass Rapid Transit from Woodlands to Johor; Circle Line/Thomson Line/Tuas Extension/Cross Island Line MRT; Jakarta, HCM and Klang Valley MRT; Dubai Mall in the United Arab Emirates, etc.

Er. Tong has been appointed by several government agencies and professional institutions to share his insights and experience in advancing the development of the building and fire engineering industry. He currently serves as a member of the Code of Practice for Fire Precautions in Rapid Transit Systems Review Committee and a past member of the Fire Safety Appeal Advisory Panel of the Singapore Civil Defence Force. He is a past Board member of the Professional Engineers Board and Board of Architects. Er. Tong also served as a member of the Building and Construction Authority (BCA)'s Green Mark Advisory Committee and he was on the BCA Academy Advisory Panel. He was a past President of ASHRAE Singapore Chapter; a council member of the Association of Consulting Engineers Singapore; and a member of the Mechanical and Engineering Review Panel for the National Art Gallery Singapore.

In 2017, Er. Tong was awarded the inaugural Fire Safety Design Excellence Award for an individual QP by the Singapore Civil Defense Force to recognize his contributions in ingenious design solutions in overcoming project challenges to achieve high standard in fire safety design and regulatory compliance.