
工程和物業管理
安全研討會 2026
Safety Forum for Works and Property Management Services
0 incident 零事故
設計為本 • 科技賦能 • 共築安全新時代
Design-Driven • Tech-Empowered • Building a New Era of Safety Together
HKFEMC
VTC
香港房屋委員會
Hong Kong Housing Authority

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A member of the Bouygues Construction group

Trunk Road T2 and Infrastructure Works for Developments at the Former South Apron

Best Practices for MiMEP

18 August 2026

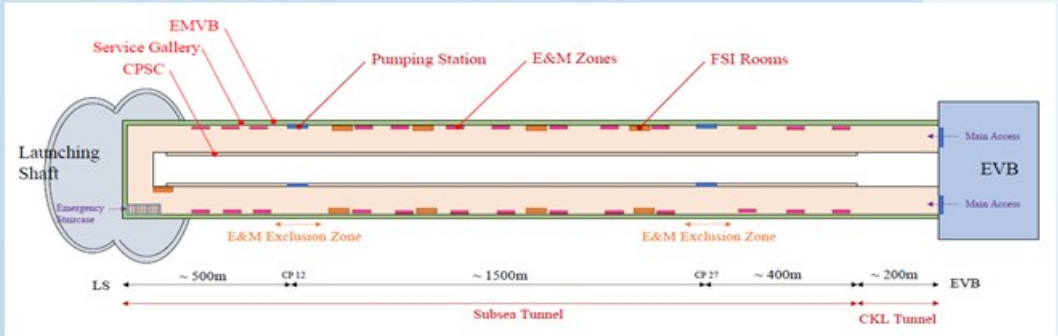
BUILDING FOR LIFE

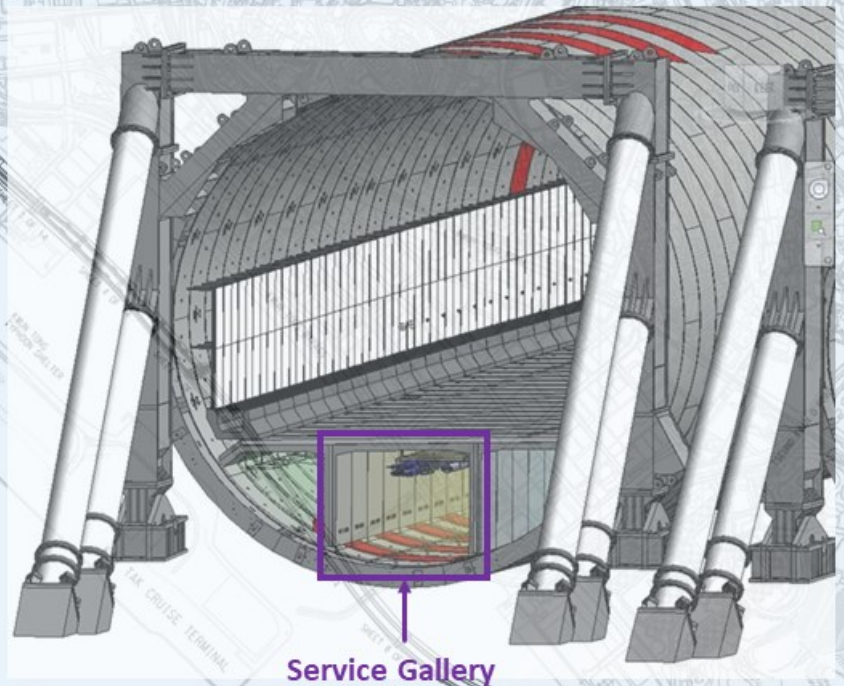
Trunk Road T2 and Cha Kwo Ling Tunnel

Background

- 2 ways tunnels including West and East Bound
- Overall 3.4 km in length with 2.6 km sub-sea tunnel
- 26 types of Wall and Ceiling MiMEP Module in *Service Gallery
- Consist of **866** nos. of Ceiling Mounted Modules & **887** nos. of Wall Mounted Modules

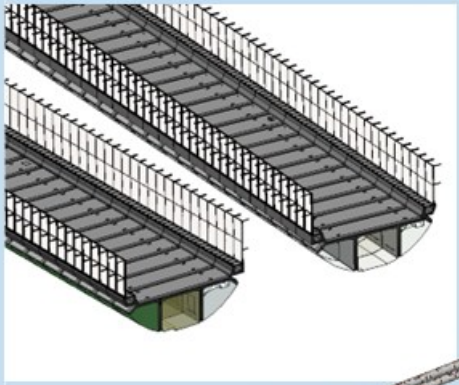
* All E&M services will be put inside **Service Gallery** instead of tunnel cross passage



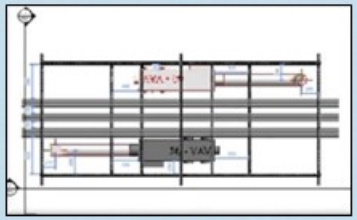


Design for Safety - MiMEP

- **Why** MiMEP?
  - Safety Lifting Procedure
  - Time Save Lifting Works
  - Minimizes Manpower for Lifting Process
- **How** to begin?
  - Starting from Design using BIM and 3D Scanner
- **Why** standardized & modularized?
  - Easy Installation & Logistic



On-site Installation



Design of Modules

Digital Simulation

Off-site Prefabrication

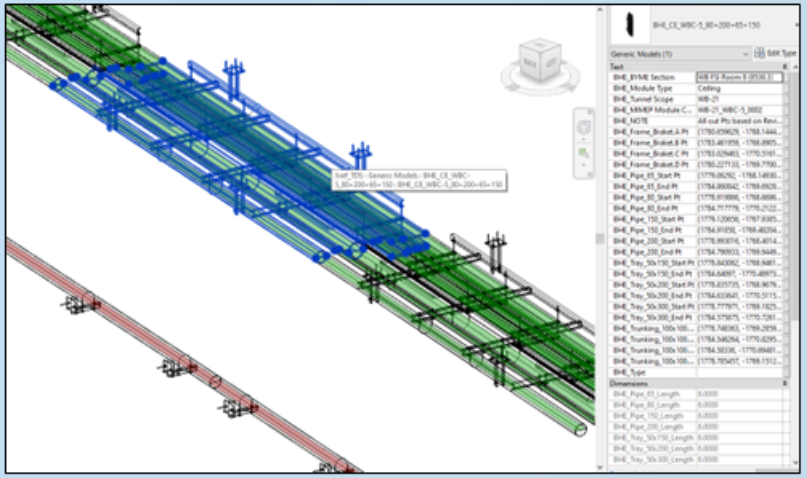
Delivery On-site

On-site Installation

- Best Practices for Multi-Trade Integrated Mechanical, Electrical & Plumbing (MiMEP) Lifting Operations

Design for Safety - MiMEP

Objective	Advantage
Standardization of the modules	**Easy** Transportation
Minimize type of modules for easy installation	**Simplify** Lifting Tools
Using **software** to identify which type of module to suit the location of installation	**Preventing wrong** module type installation to wasting of lifting time for up and down
Using **software** to identify the exact location of anchor point	**Minimize the tolerance** for the anchor points for easy bracket installation
Programme of works in advance	**Time saving** to start prefab works in parallel
Consideration of aging & shortage of skilled workers	**Reduce manpower** for risk management



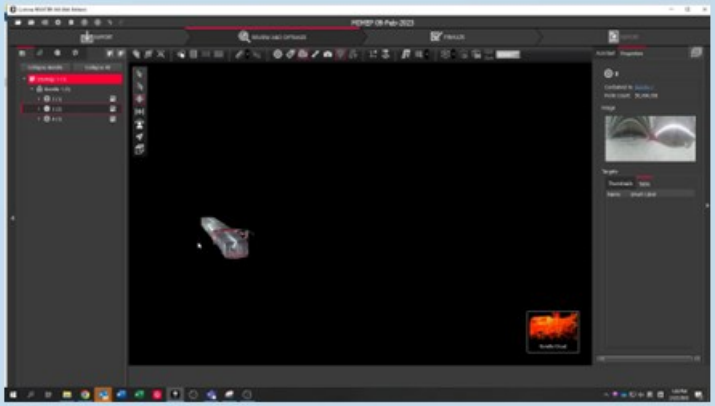
- Best Practices for Multi-Trade Integrated Mechanical, Electrical & Plumbing (MiMEP) Lifting Operations

Design for Safety – 3D Scanning

QUALITY

3D Laser Scanner for Site Survey

- Actual dimensions of structure (**More Accurate**)
- Consideration of project **risks** / **Feasibility** during the **BIM** design / **Planning** process / **Logistic Plan**
- Apply **Method Statement** & **Resources Plan** / **Risk Assessment**
- Design for safety at DESIGN stage
  - Reduce of **risks** (Work At Height, etc.)
  - Control of **uncertainties** & installation **significantly**

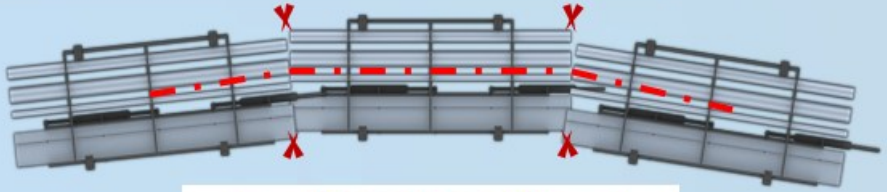


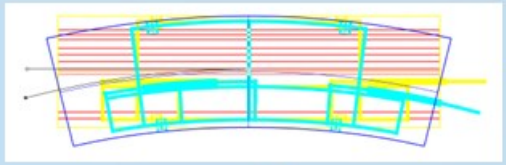
- Best Practices for Multi-Trade Integrated Mechanical, Electrical & Plumbing (MiMEP) Lifting Operations

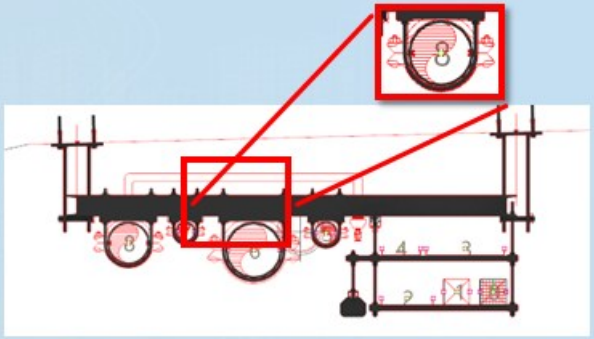
Design for Safety – Computation Engineering

When the tunnel starts stretching in **different directions and orientations**, we can envision a bending effect that occurs on every module; forcing pipes within it (if kept to equal length, which is desirable) to have different starting points.

In order to fully accomplish MiMEP, we need to make sure that all the elements are placed in the correct place, and as they would need to be in reality.

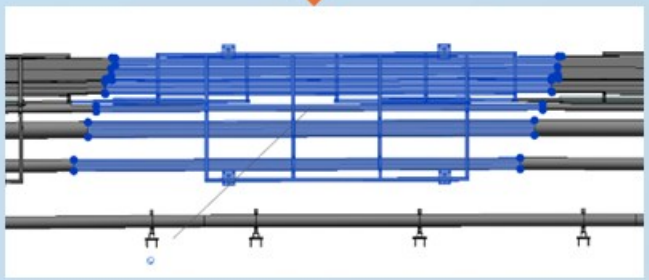






Services connection point

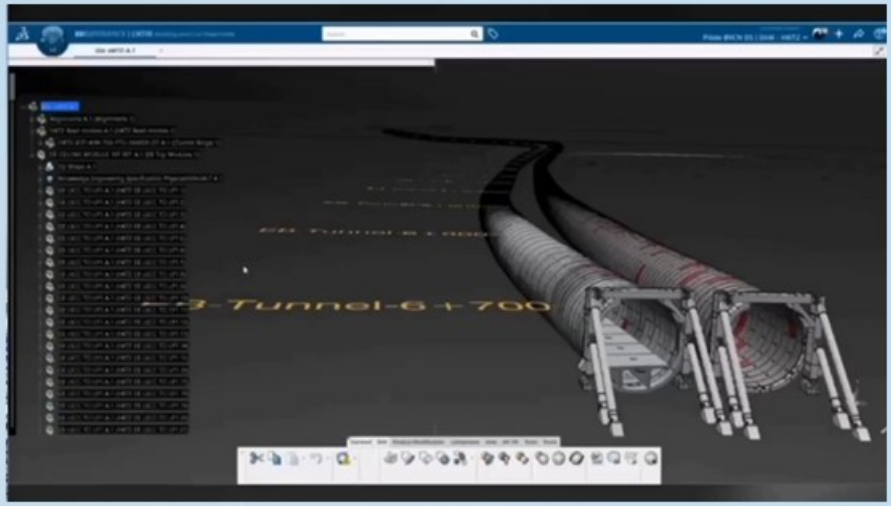
Final Setting Out

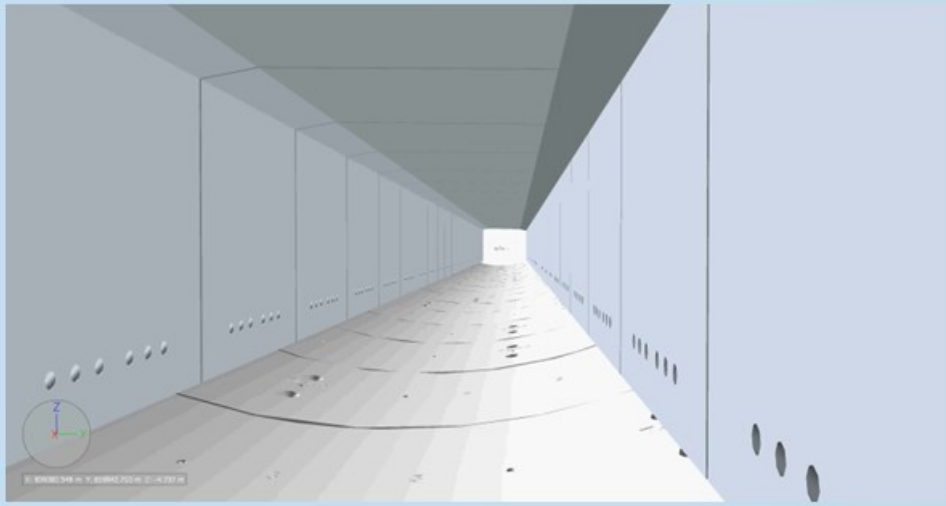


Connection point at curved area

- Best Practices for Multi-Trade Integrated Mechanical, Electrical & Plumbing (MiMEP) Lifting Operations

Design for Safety – Computation Engineering





- Best Practices for Multi-Trade Integrated Mechanical, Electrical & Plumbing (MiMEP) Lifting Operations

Assembly of Modules

- **Materials from manufacturers to Prefabrication Workshop**
  - Sprinkler **pipes** & foam **pipes**
  - Electrical cable **containments** and **trunking**
  - Fire Services **pipe**, storm water & wastewater **pipe**
  - **Frame** materials
- **Assembly a 6-meter-long modules with frame**
  - **Ceiling**-mounted & **Wall**-mounted
- **Assembly Modules by Lifting team & general workers**
- **Well-planned storage area for smooth logistic**
  - Materials from Factory
  - Modules to be installed

PRODUCTIVITY

- Best Practices for Multi-Trade Integrated Mechanical, Electrical & Plumbing (MiMEP) Lifting Operations

Pre-installation

Drilling Robot (Drillcorpio)

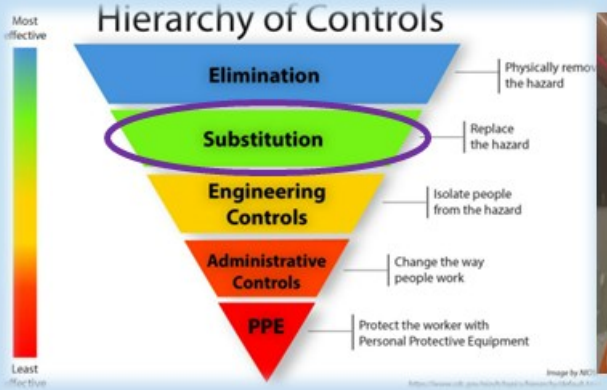
SAFETY

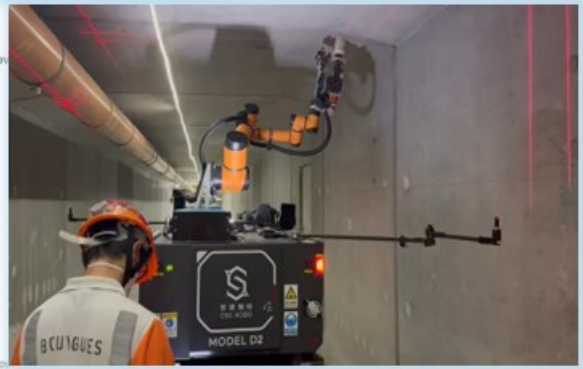
Advantages:

- **Substitution** approach
- **Zero Risk** of working at height, manual handling & falling objects.

Function:

- Input BIM information in advance
- On-site scanning with laser system automatically
- Self tune of location with coordinator
- Pre-drilling & installing up to 18,424 bolts on ceiling / walls
- Vacuum system during drilling





- Best Practices for Multi-Trade Integrated Mechanical, Electrical & Plumbing (MiMEP) Lifting Operations

Transportation On-site

Assembly and Lifting operation by **Lifting Team**

- Rigger – A12
- Signaler – A12S
- Lifting Safety Supervisor – LSSZ
- Crane Operator

- Best Practices for Multi-Trade Integrated Mechanical, Electrical & Plumbing (MiMEP) Lifting Operations

Horizontal Transportation

Talent made frame for MiMEP modules

Maintain proper access / egress & guardrail for rigging activity

Rigging activity on proper platform

Horizontal Transportation by Lifting Robot

Hands-off remote control

- Best Practices for Multi-Trade Integrated Mechanical, Electrical & Plumbing (MiMEP) Lifting Operations

Vertical Transportation

Materials arrived at Workshop

Assembly at Workshop

Materials leaving from Workshop

Hoisting beam at Tunnel

Tunnel to SG

- Best Practices for Multi-Trade Integrated Mechanical, Electrical & Plumbing (MiMEP) Lifting Operations

Permit To Lift System

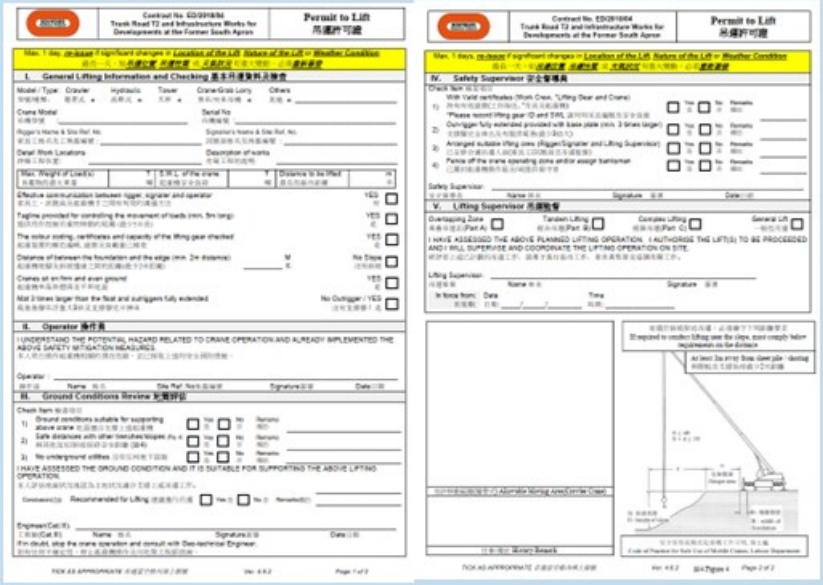
Pre-lifting Action

- Establish **Method Statement / Risk Assessment**
- **Nomination** of Lifting Team members, such as, Rigger, Signaller, Operator, Engineer, Safety Supervisor, Lifting Supervisor
- **Plan** all lifting operations before commencement
- Determine working locations, access, routing, scale & duration of operation

Action for Lifting

- **T**ask **L**aunching **M**eeting with all lifting members
- Pre-lifting safety **briefing / Refreshment**
- **LALG** on-site checking
- Safety control measurement, e.g., lifting **3 3 3**, **fence** off

* Any uncertainty / uncomfortable / unconfident / variable
STOP the Work, ask for Assistant


Permit to Lift 吊運許可證

I. General Lifting Information and Checking 基本吊運資料及檢查

II. Operator 操作員

III. Ground Conditions Review 地面評估

IV. Safety Supervisor 安全督導員

V. Lifting Supervisor 吊運監督

- Best Practices for Multi-Trade Integrated Mechanical, Electrical & Plumbing (MiMEP) Lifting Operations

Permit To Lift System

Man
- Rigger & Signaler
- Crane Operator
- Engineer
- Safety Supervisor
- Lifting Supervisor

Environment
- Ground condition review

Machine
- LALG R.P.E. Certificates
- Plant Register
- Plant Team Inspection

Method
- Lifting Management Plan
- Typical Rigging Method
- Exhaustive On-site Checking

Materials
- LALG Colour Tag
- On-site Check

- Best Practices for Multi-Trade Integrated Mechanical, Electrical & Plumbing (MiMEP) Lifting Operations

On-Site Transportation & Installation

Horizontal transportation to location

Comparison of Traditional Method VS MiMEP

	Traditional	MiMEP
Installation man hours along SG	93,600 hrs	10,000 hrs
Workers required	15 workers	6 workers
Duration of on-site installation	45 mins	15 mins
Likelihood of risk	High (relatively)	Low (relatively)
Severity of risk	High (relatively)	Low (relatively)

Modules installation at ceiling

Lift up modules

- Best Practices for Multi-Trade Integrated Mechanical, Electrical & Plumbing (MiMEP) Lifting Operations

Traditional E&M Installation VS MiMEP

Traditional

- High frequency of working at height
- Multi-trades of workers at the installation area
- More materials wastage and cause to housekeeping concerned

MiMEP

- Pre-fabrication
  > 6M Pre-fabricated Module at workshop
  > Include Cable containment, lighting & Water pipe
- Delivery
  > Transportation with **Lifting Permit**
- Installation
  > On-site installation in flow
  > Joint connections

- Best Practices for Multi-Trade Integrated Mechanical, Electrical & Plumbing (MiMEP) Lifting Operations

Advantages of MiMEP

PRODUCTIVITY

- ✓ Site works on site is reduced to the strict minimum.
- ✓ No more multiple trade presence in congested areas.
- ✓ Less welding on site.

QUALITY

- ✓ Avoidance of inter trade clash in services location.
- ✓ More precise welding & fixing done in factory.

OPERATION & MAINTENANCE

- ✓ Material inspection can be done off site, saving productivity.
- ✓ Effective for Inspection & Testing.

SAFETY

- ✓ Less hot works (welding) on site.
- ✓ Less work in congested area.
- ✓ Safer Works with less Manual Handling.

- Best Practices for Multi-Trade Integrated Mechanical, Electrical & Plumbing (MiMEP) Lifting Operations

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