



中國建築機電工程有限公司

CHINA STATE MECHANICAL & ELECTRICAL ENGINEERING LIMITED

North Lantau Hospital

Hong Kong Infection Control Centre

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5/3/2021





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C ONTENTS

- 0 1 **Project Overview**
- 0 2 **MiC and DfMA Adoption**
- 0 3 **MiC Production Process**
- 0 4 **Advantage and Challenge**





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01

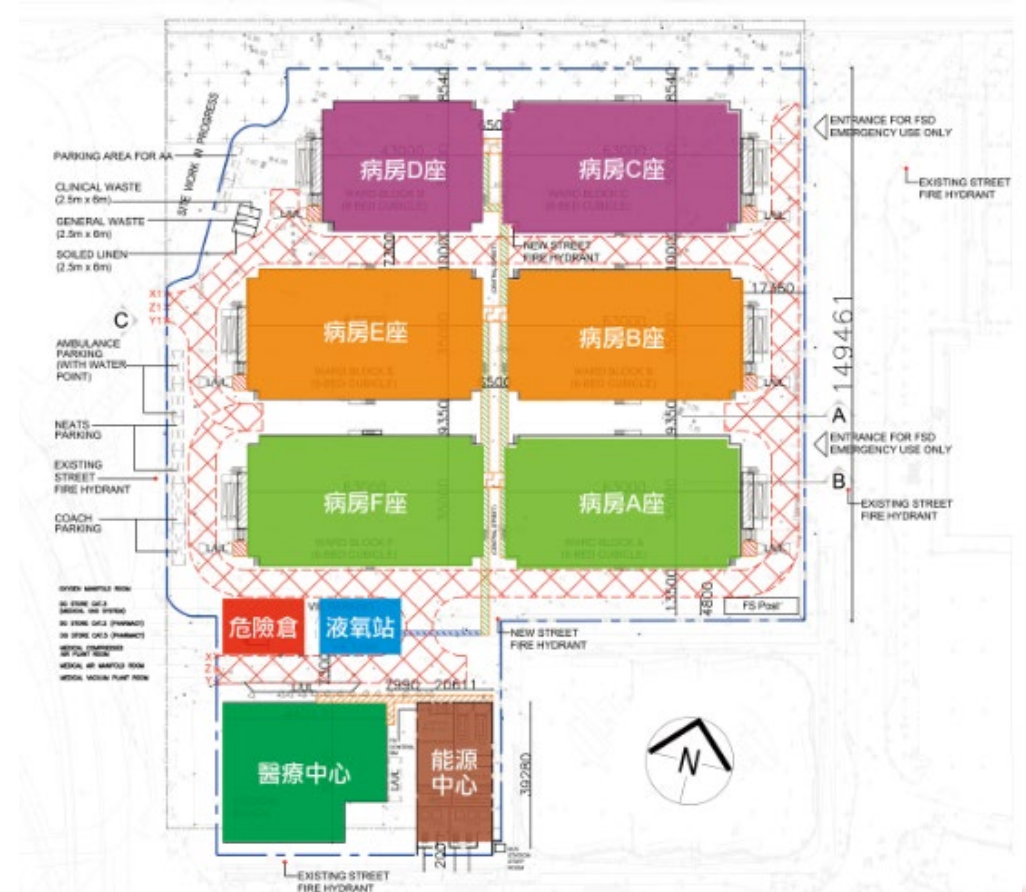
Project Overview





1.1 Project Particulars

Construction Site Area	29,534m ²
Total Floor Area	43,913m ²
No of Floor	2 Floors : GF and 1F
Main Buildings	6 nos of Ward Blocks; 1 no of Medical Block; 1 no of Energy Center
ISO Ward	136 rooms
No. of Bed	816 nos
Construction Period	4 months



Layout Plan



1.2 Major E&M System Description

MVAC Cooling Capacity	Direct Expansion AHU/PAU : 3,500Ton
Electrical Capacity	4x2,000kVA
Genset Capacity	2x2,000kVA (8hrs)
FS system	AFA and Improvised Sprinkler System
Plumbing system	Potable water, Laboratory water, Flushing Water, Cleansing water
Drainage system	Foul and Storm Water
ELV system	Security, PA, Intercom, BRI, Nurse and Emergency Call System
Medical Gas	Medical oxygen system with VIE Tank : 11,000L Medical compressed air, Medical vacuum system



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02

MiC and DfMA Adoption



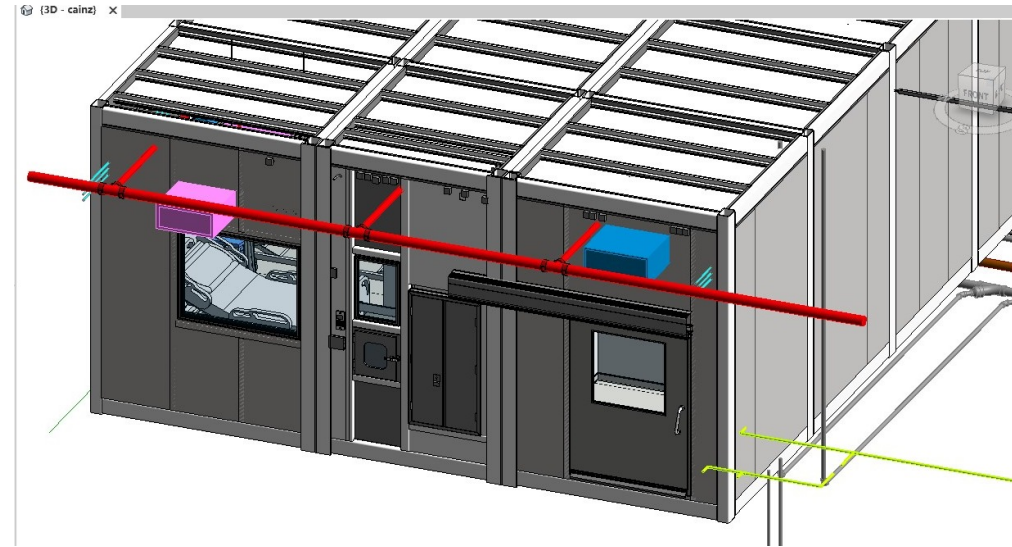
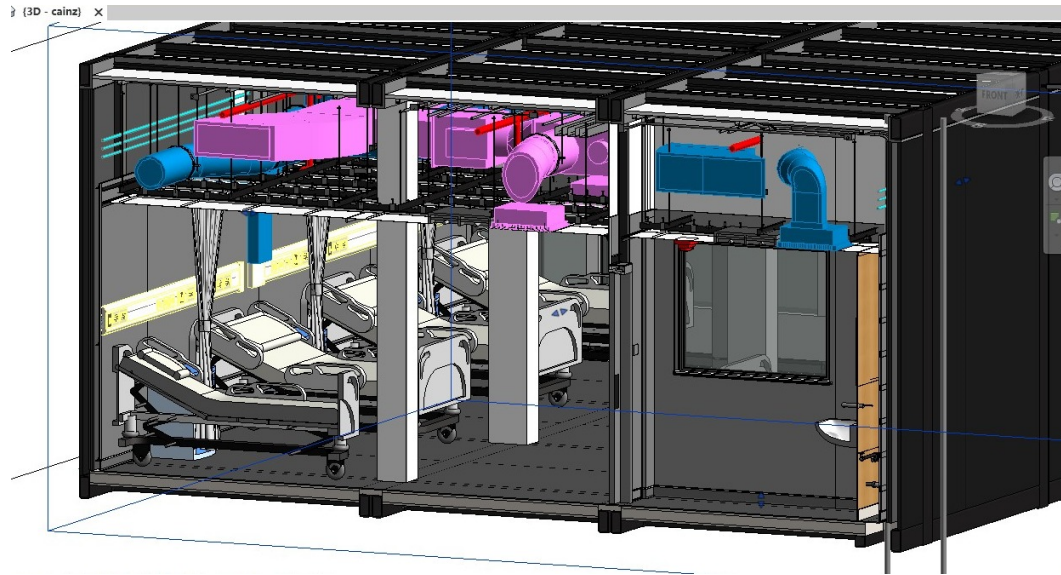


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2.1 MiC Units (524 nos) for Ward Area, TR room and Staircase



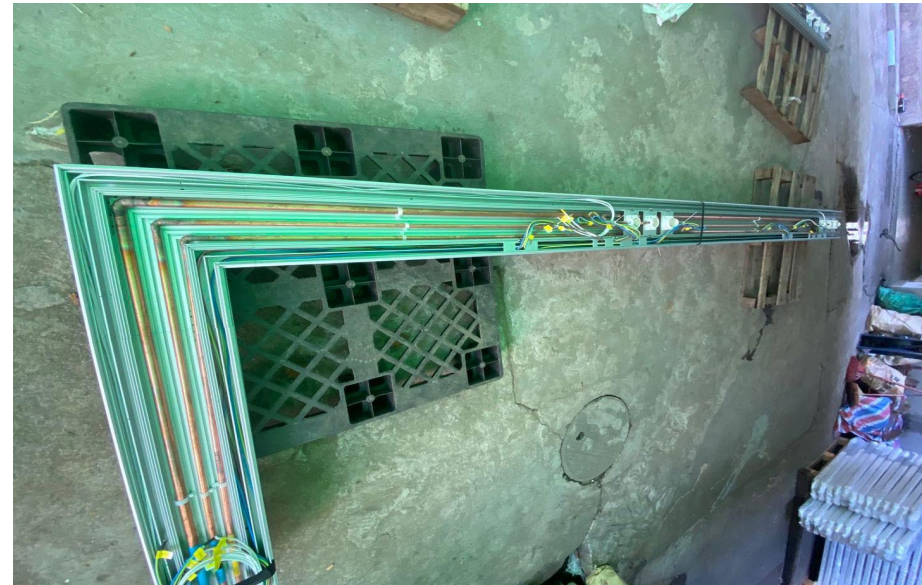
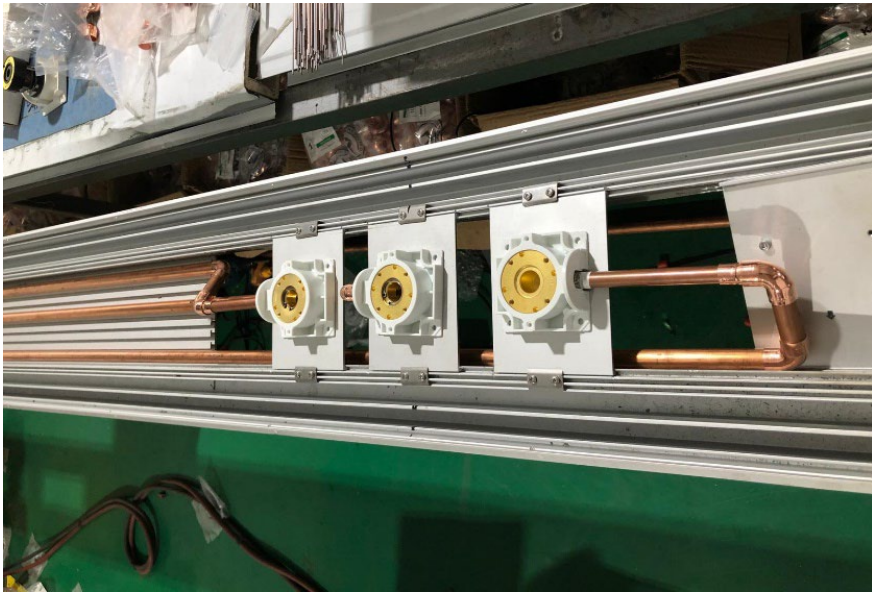


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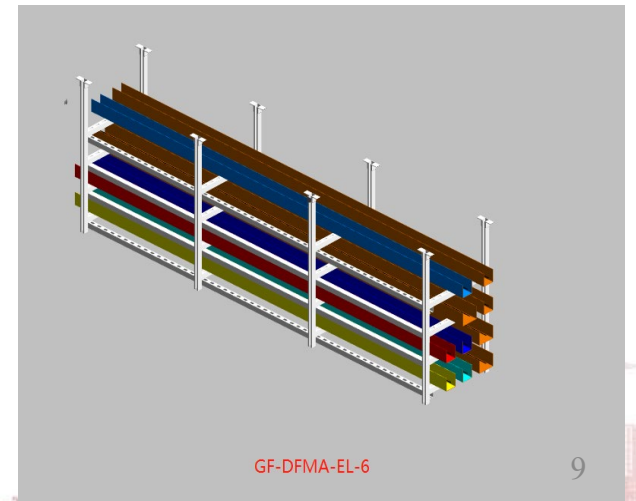
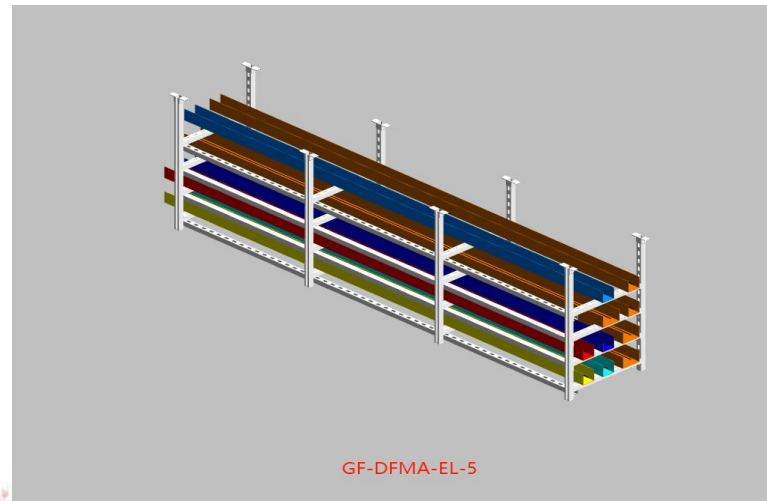
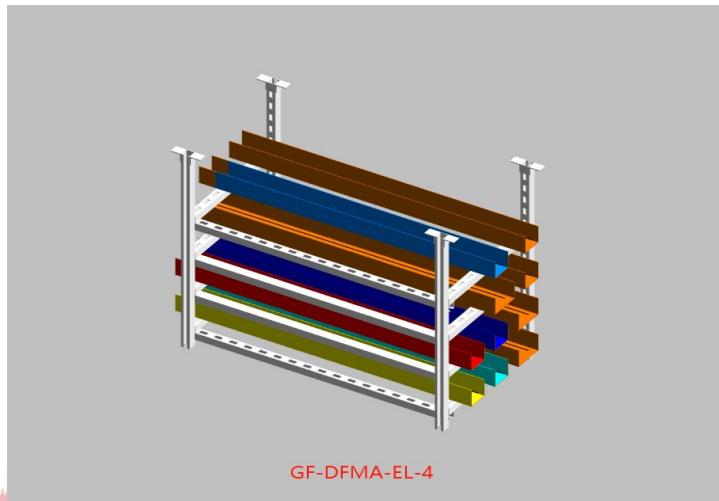
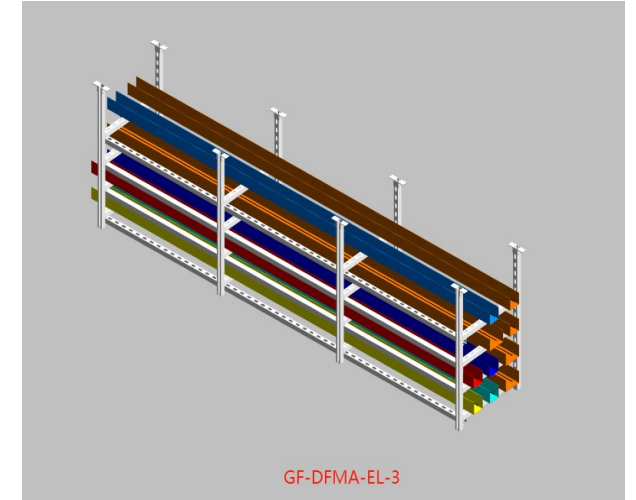
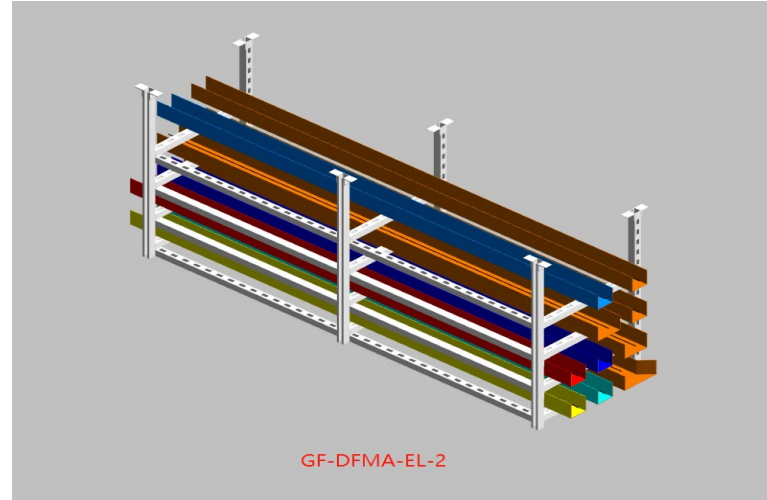
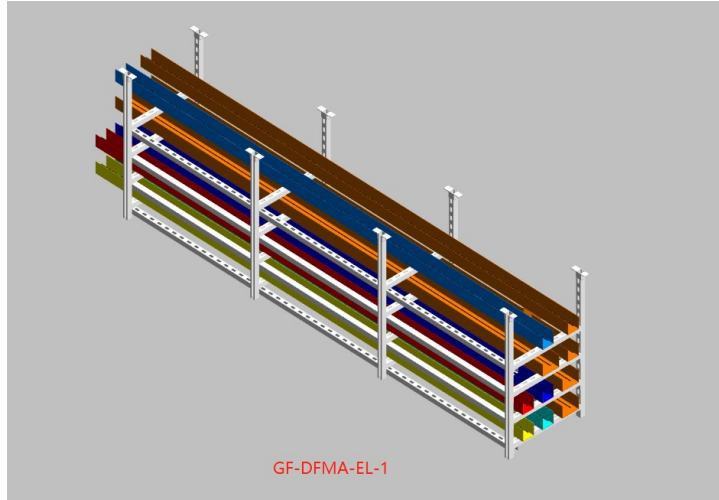


2.2 Prefabrication of bed head trunking (408 sets) c/w medical gas pipework and internal wiring



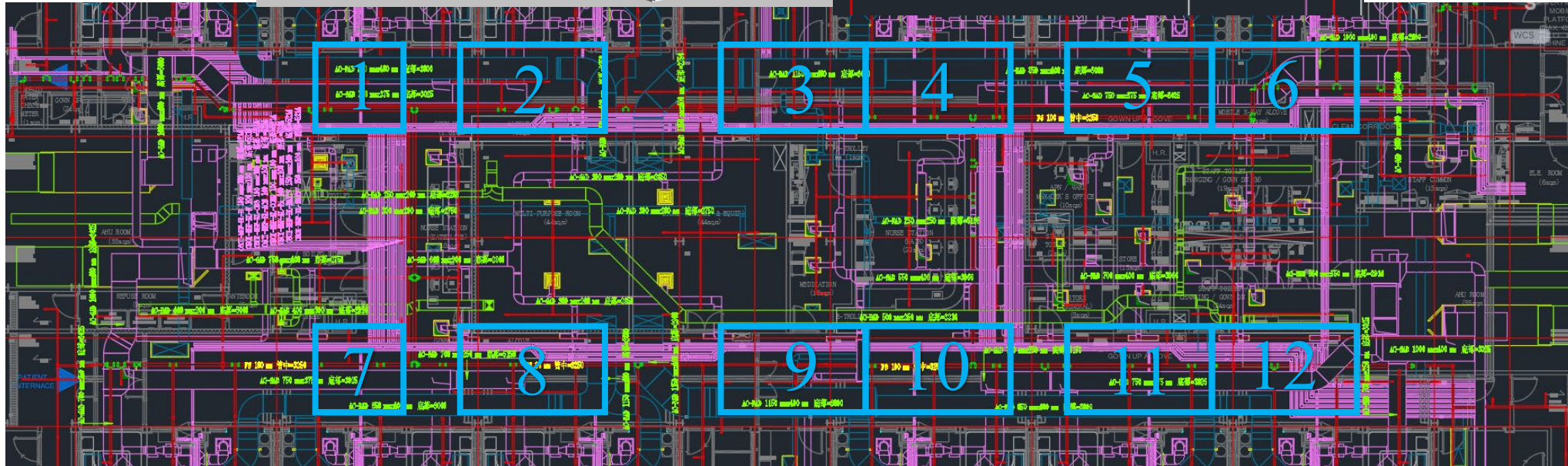
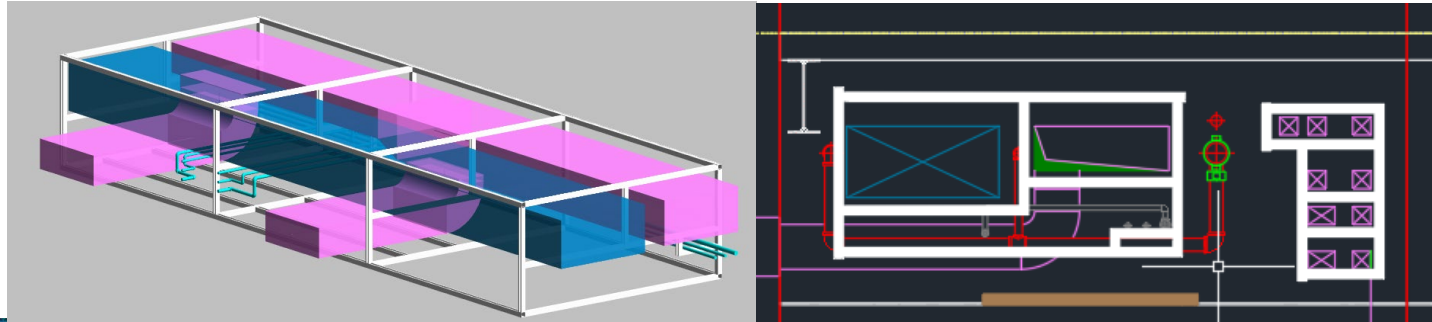


2.3 Prefabrication of cable containment (244 sets) in Central Corridors





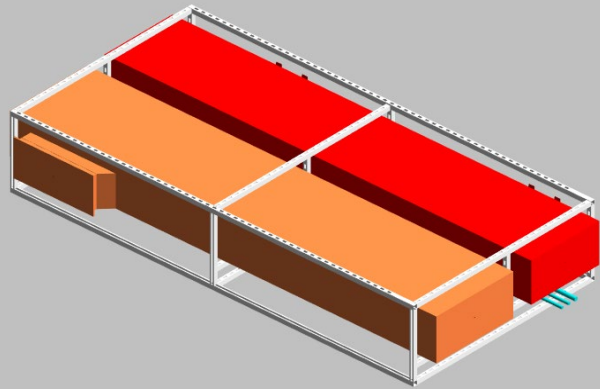
2.4 Prefabrication of Air duct and Medical Gas pipe (120 sets) in Central Corridors.



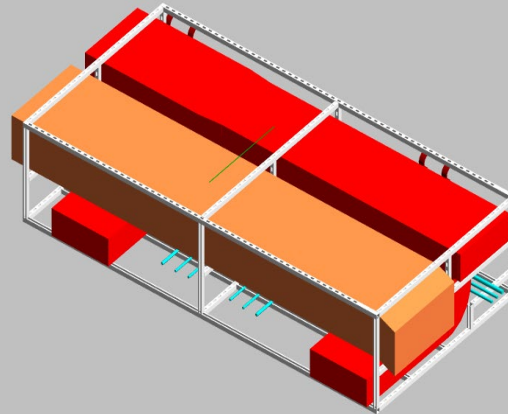


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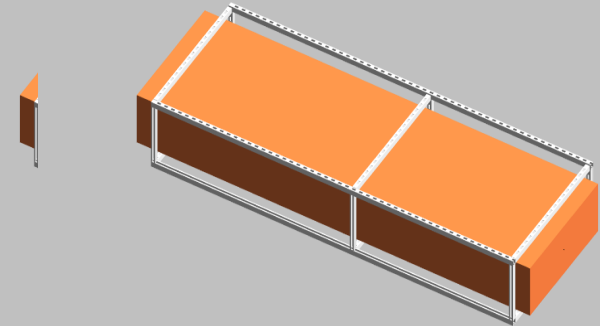
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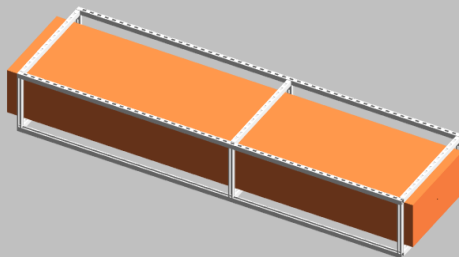
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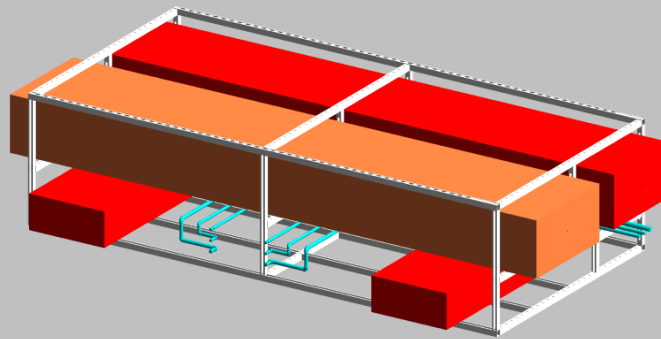
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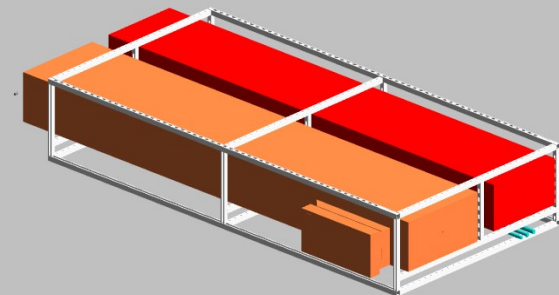
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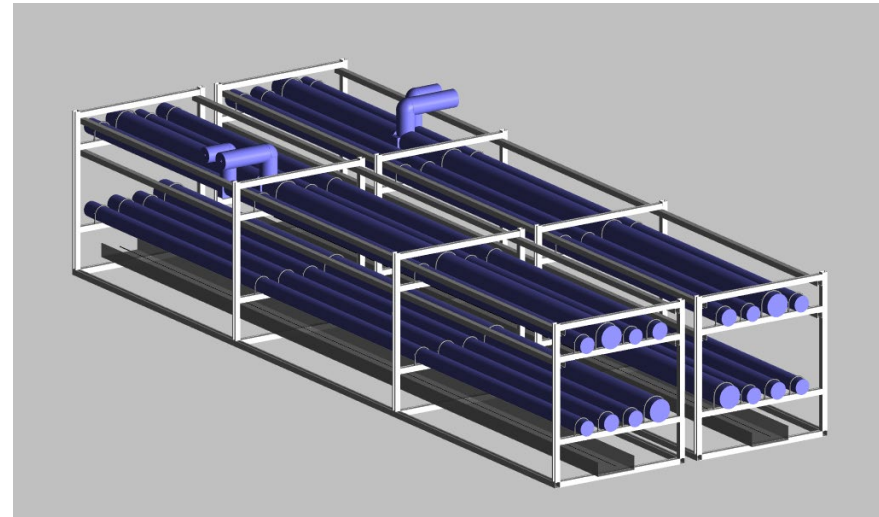
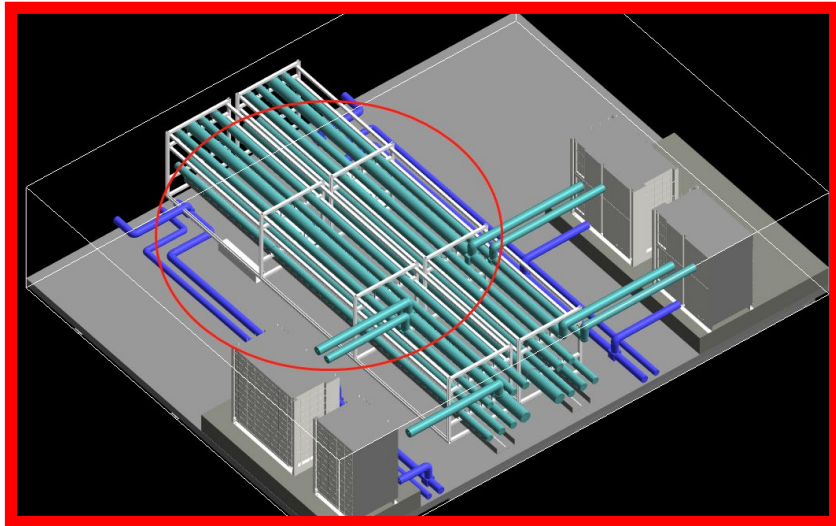
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 2.5 Prefabrication of refrigerant pipe and cable tray (24 sets) at RF



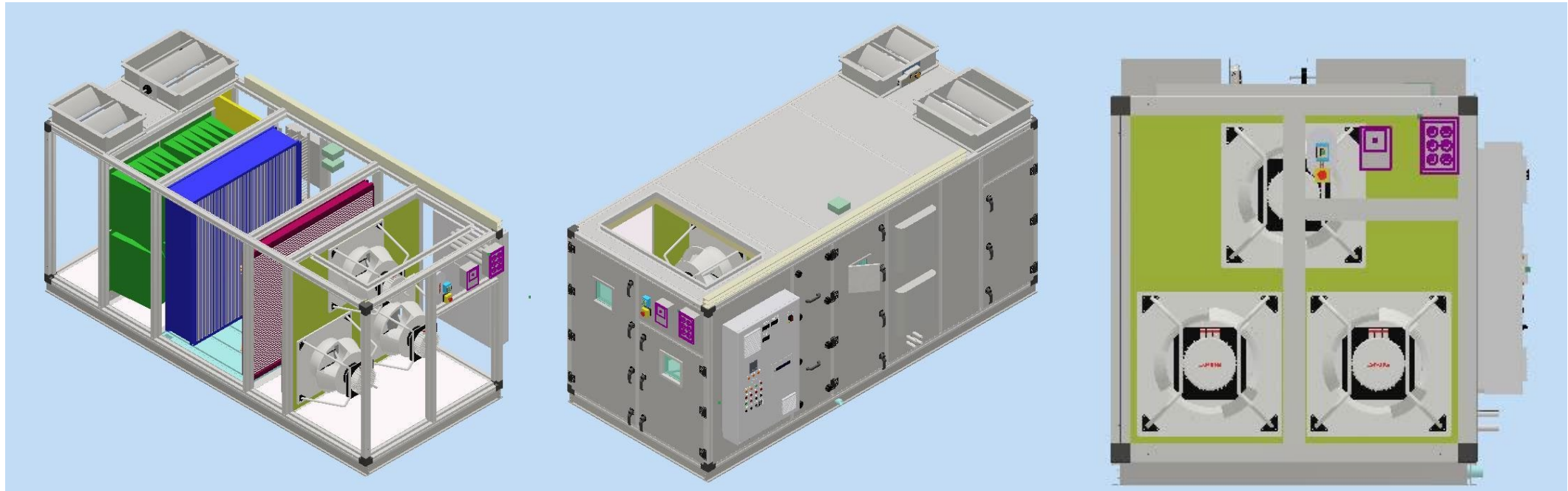


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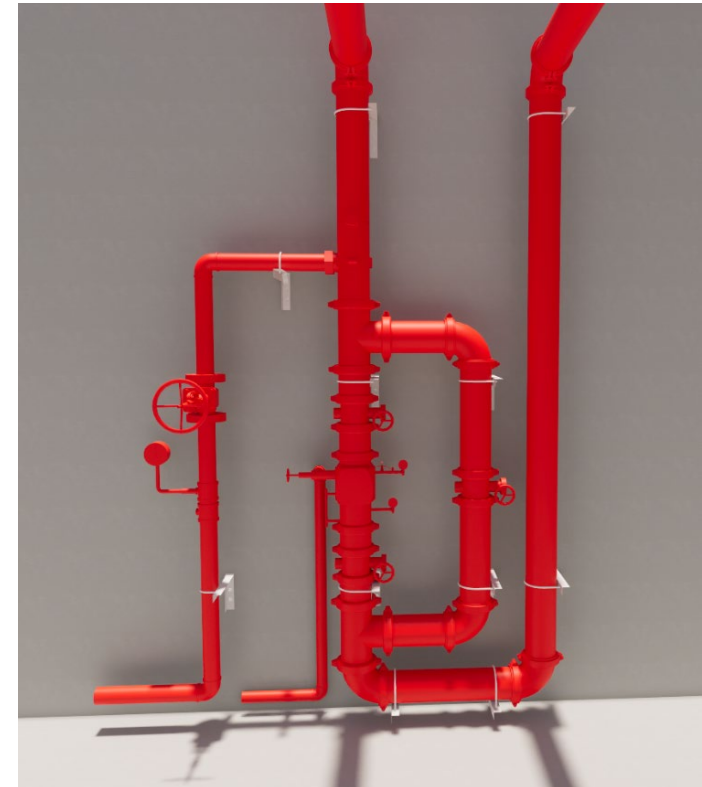
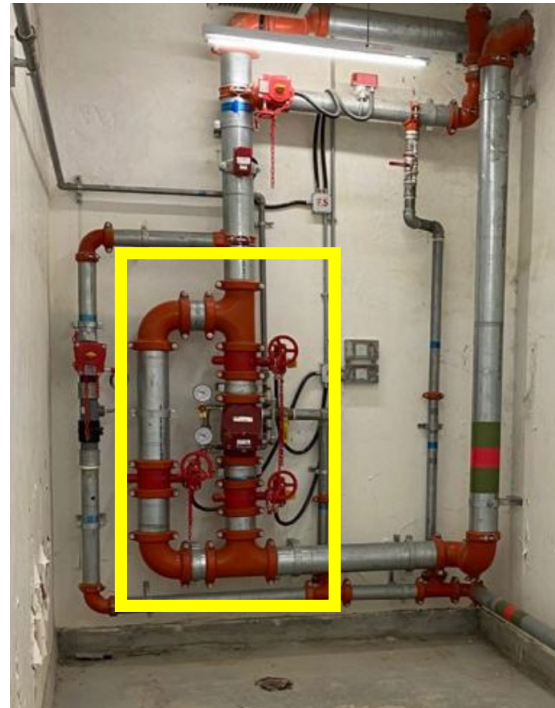
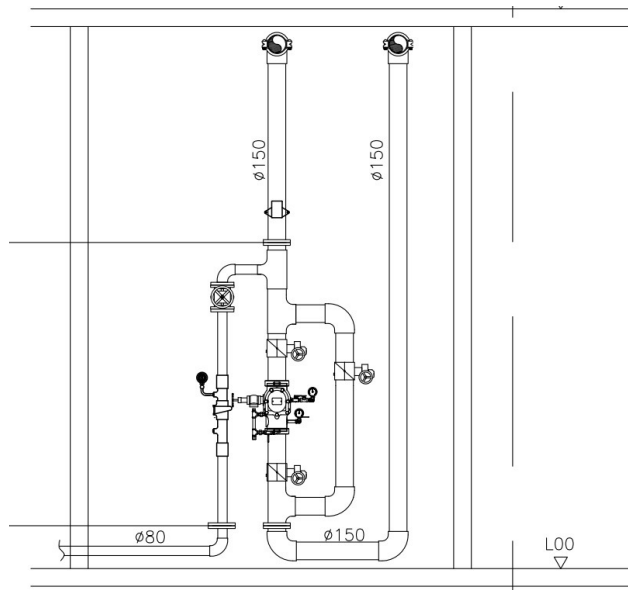


2.6 Integrated AHU / PAU (c/w UV lamp, bio-oxygen generator, associated sensors, non-return damper, motorized damper & LMCP)





2.7 Prefabrication of FS sprinkler valve set c/w F.S. sprinkler control valve, flow switch with accessories, and pressure relief valve





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03

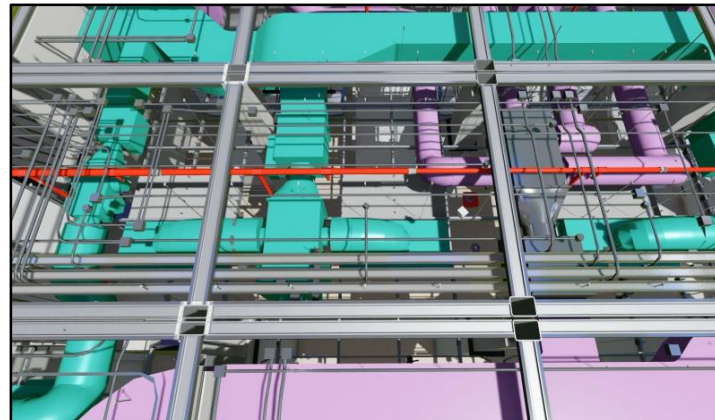
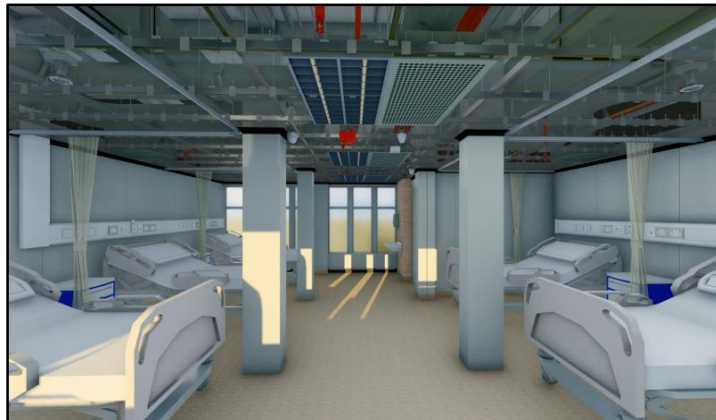
MiC Production Process





3.1 BIM 3D model production and coordination

- Solve the spacial and clash problem
- Sequence of Work
- Access for future maintenance
- Equipment and material information
- DfMA consideration
- Design of supporting frame and common bracket





3.2 MiC production plan

- MiC Units production
- Wall panels, Windows installation
- Builder's work, Wall and Floor openings
- Supporting framework
- E&M services installation above ceiling and wall
 - Air duct and CAV box
 - Cable containment and cable wiring
 - Sprinkler pipe
 - Water pipe, drainage and sanitary ware
 - Bedhead trunking and medical gas pipe
- Ceiling frame installation



3.3 Material Delivery and Storage

Material	Remarks
Conduit, trunking and cable	<ul style="list-style-type: none">• Prepare proper storage area• Ensure all materials and Equipments are delivered in good condition and inspected.
Sprinkler pipe and fittings	
Air duct, CAV box	
Bed head trunking and Medical gas pipe	
Water pipe and fittings	





3.4 Labour Resources

Trade	Day Time (Nos)	Night Time (Nos)	Total (Nos)	Standby (Nos)
EL	120	30	150	100
MVAC	35	10	45	30
FS	20	10	30	20
P&D	22	12	34	12
Medical Gas	10	10	20	5

- Forecast the labour force required
- Reserve additional labour force for peak time and acceleration



3.5 MiC Production Supervision and Quality Control

Inspection, Test Approval Plan (ITAP)

- Material inspection
- Installation inspection
- T&C inspection
- Air duct leakage test
- Sprinkler pipe leakage test
- Continuity test for cable wiring, etc

Statutory Requirement on MiC installation

- Sprinkler pipe installation
- Plumbing water pipe installation
- Submission of Supervision Plan to WSD
- Appoint registered RPW and LP to supervise the installation works



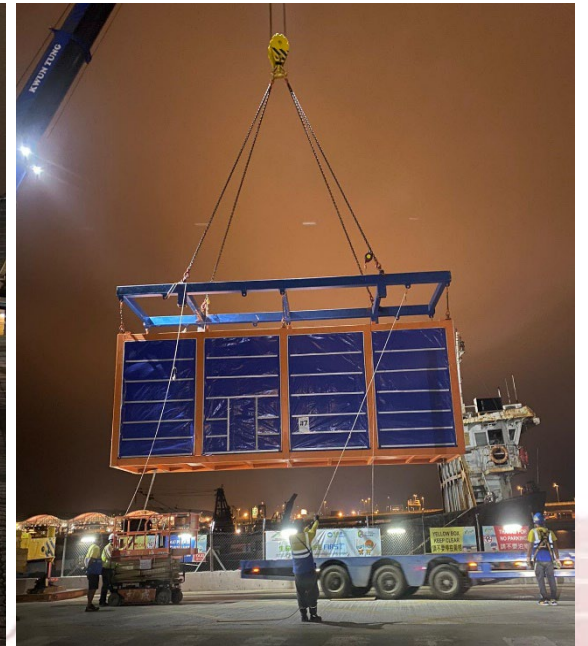
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3.6 MiC Logistic Plan

- Well plan the delivery route and programme
- Prepare the Method Statement and Risk Assessment
- Quantity of lifting equipment and labour required including Mobile Crane, Lorry Trunk, Rigger and Banksman, etc.





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04

Advantage and Challenge





4.1 Advantages of MiC and DfMA Installation

- Reduced on-site construction time
 - Major BS installation was completed inside MiC factory

- Reduced on-site labour force
 - Only service connection was required in MIC unit

- High productivity and efficiency of installation
 - The working environment inside MiC Factory was better and easier to control when comparing with construction site



4.1 Advantages of MiC and DfMA Installation

- Less waste generated on site
 - Less packing for material delivery.
 - Less surplus material caused during fabrication on site

- Increased reliability and quality
 - Installation inside MiC was typical.
 - Workmanship more easier to be under controlled

- Improved working environment and site safety
 - Better working environment inside MiC factory (less dust, better ventilation, lighting, etc)
 - Less working at height



4.2 Challenge of MiC and DfMA Installation

- Production Capacity of MiC units
 - To ensure the production capacity of the factory can cater the peak time of production
- Area for material temporary storage
 - When the material and equipment delivered to the MiC factory, material inspection was conducted before installation. Sufficient area for temporary storage was required
- Delivery of imported material / equipment
 - To ensure all materials to be delivered on time especially the imported material / equipment which may be long lead item



4.2 Challenge of MiC and DfMA Installation

- Supply of skillful PRC labour
 - The construction period of this project was very short (only 4 months), the supply of skillful labour was critical

- Unplanned design changes
 - Any design changes may affect the MiC production line and delayed the MiC delivery schedule

- Sufficient supervision and quality control for 24hrs production line
 - Night shift was planned for our MiC production, additional resources for coordination, supervision during night shift was required



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Thank you