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Raised Access Floor Module Innovation

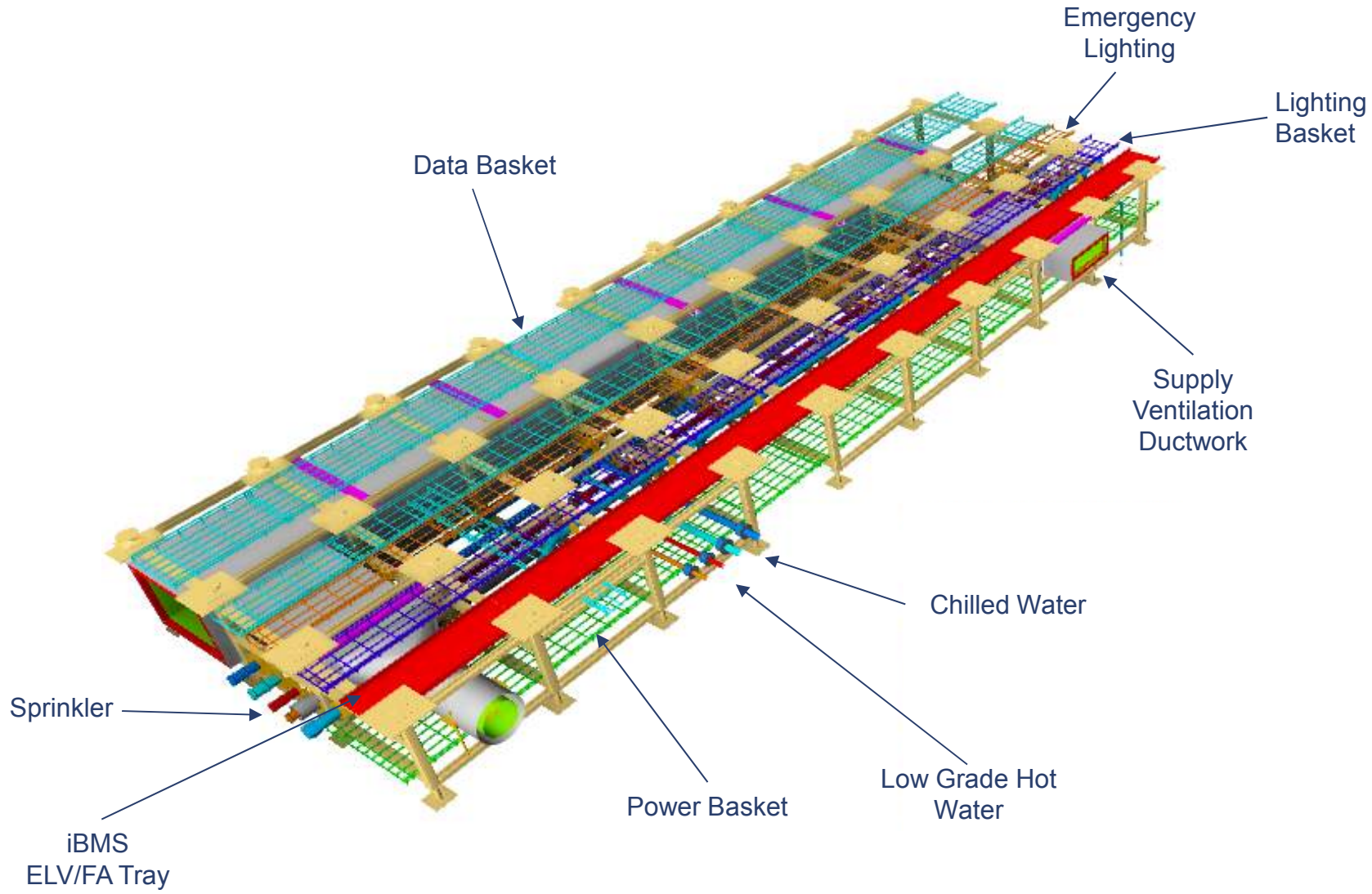
Offsite fabrication of building services has been utilized across the construction industry for several decades. As Building Information Modelling (BIM) has grown in maturity and wide spread use, buildings have become more complex and space allocation for building services has been pushed to the limits to drive down overall building volume. This increased efficiency has created significant challenges in construction and several benefits. The challenges include the complexity of the design and construction to accommodate building services in a reduced space. The benefits include the reduction in costs due to fewer materials being required and the subsequent environmental impact of reduced materials. Reduced energy costs driven by a smaller volume building without compromising the buildings functional requirements. To provide the benefits and address the significant design and construction challenge, Skanska has implemented an innovative approach to the building services off site fabrication.

The AstraZeneca New Cambridge Site project has extraordinarily high aspirations for architectural statement, interior finishes as well as high performance from the building services with a BREEAM Excellent target. To provide an integrated approach to achieve the architectural needs, building services performance and optimization of the building volume, the project has extended the building services module construction approach to include the raised access floor area of the building. The raised access floor covers 12,800 square metres of the project. The pedestals for the raised accessed floor have been fabricated off site with the supports engineered to be utilized as the primary building services supports. This has allowed for an increase in overall space efficiency to meet the building requirements. Additional benefits of this approach include:

Efficiency of deliveries to site. The modules where stacked 6-10 per lorry and 390 modules will be delivered to site in approximately 55 lorry loads. This is in contrast the hundreds of lorry deliveries that would have been required across 10 subcontractors who have scope on the modules.

The work in the fabrication shop was done at benchtop height, in a clean well ventilated assembly area with simple logistics providing significant improvement of the work environment for the operatives to complete their work.

The shift of this traditional site work to the factory environment has resulted in an estimated 120,000 operative hours being removed from the project site. This reduction in site labour translates to fewer operatives working on site and a reduction of the overall impact to the site logistics, local neighbours and local traffic.


Emergency Lighting
Lighting Basket
Data Basket
Supply Ventilation Ductwork
Chilled Water
Sprinkler
Low Grade Hot Water
Power Basket
iBMS ELV/FA Tray

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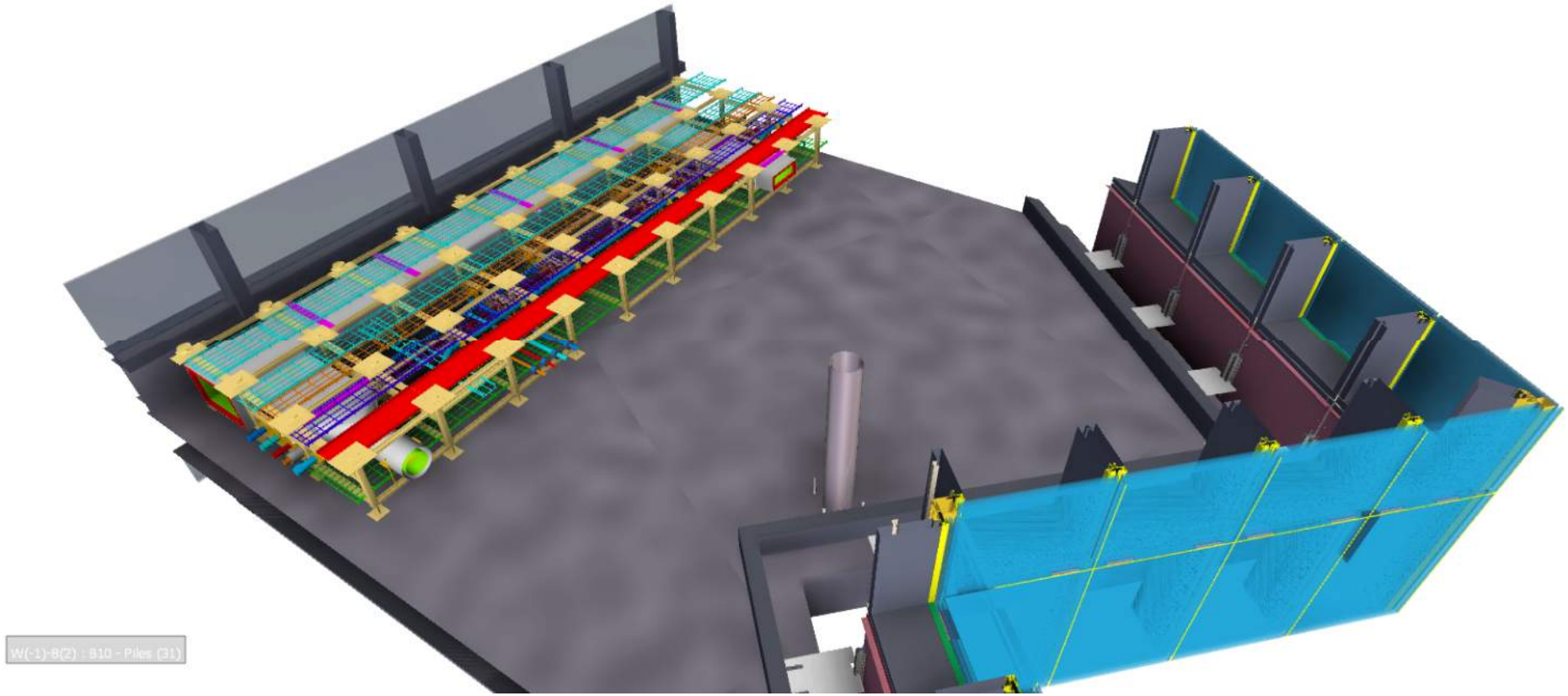
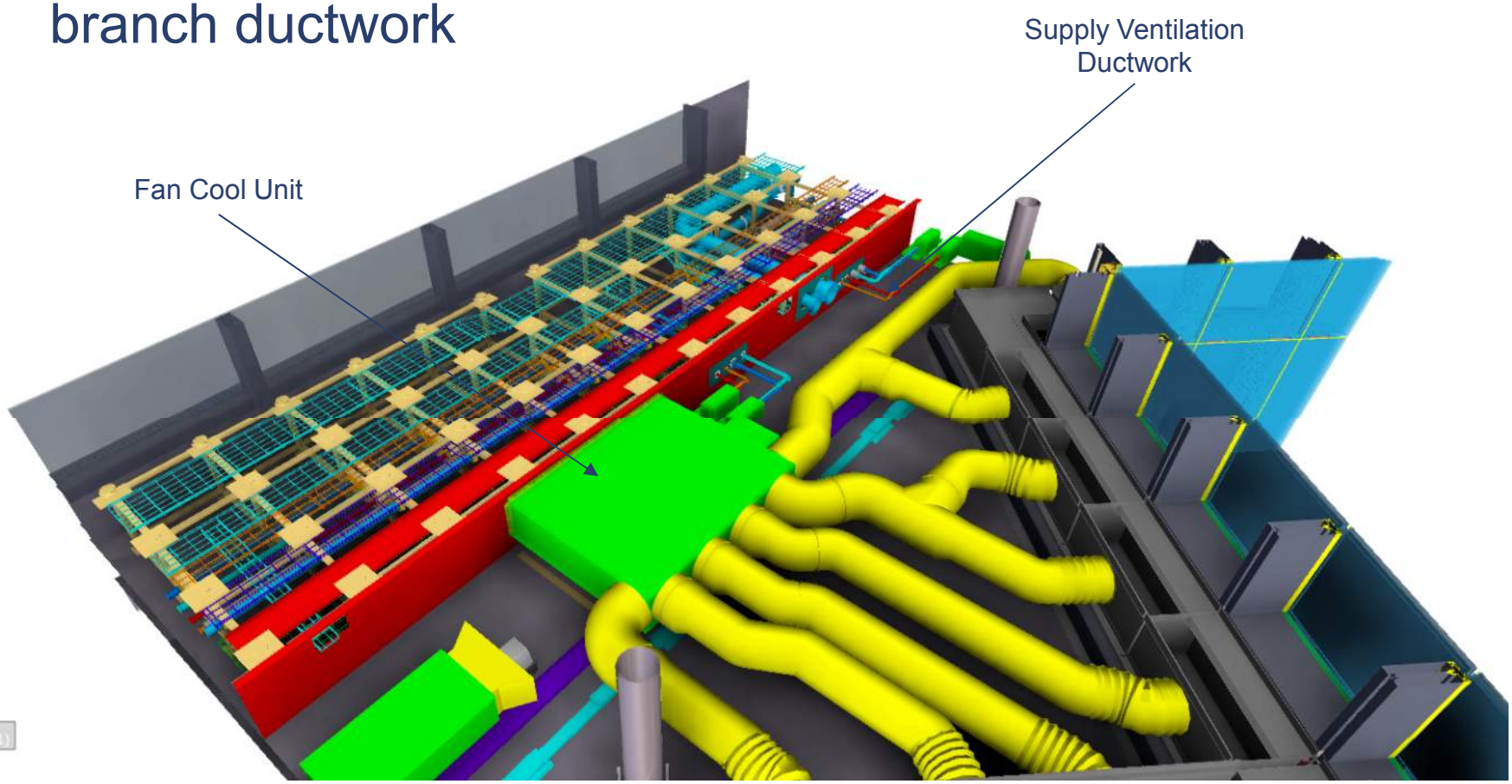
Raised access floor BIM model



Raised access floor BIM model with fan coil unit and branch ductwork



Level 1 Modules in Installed on Site

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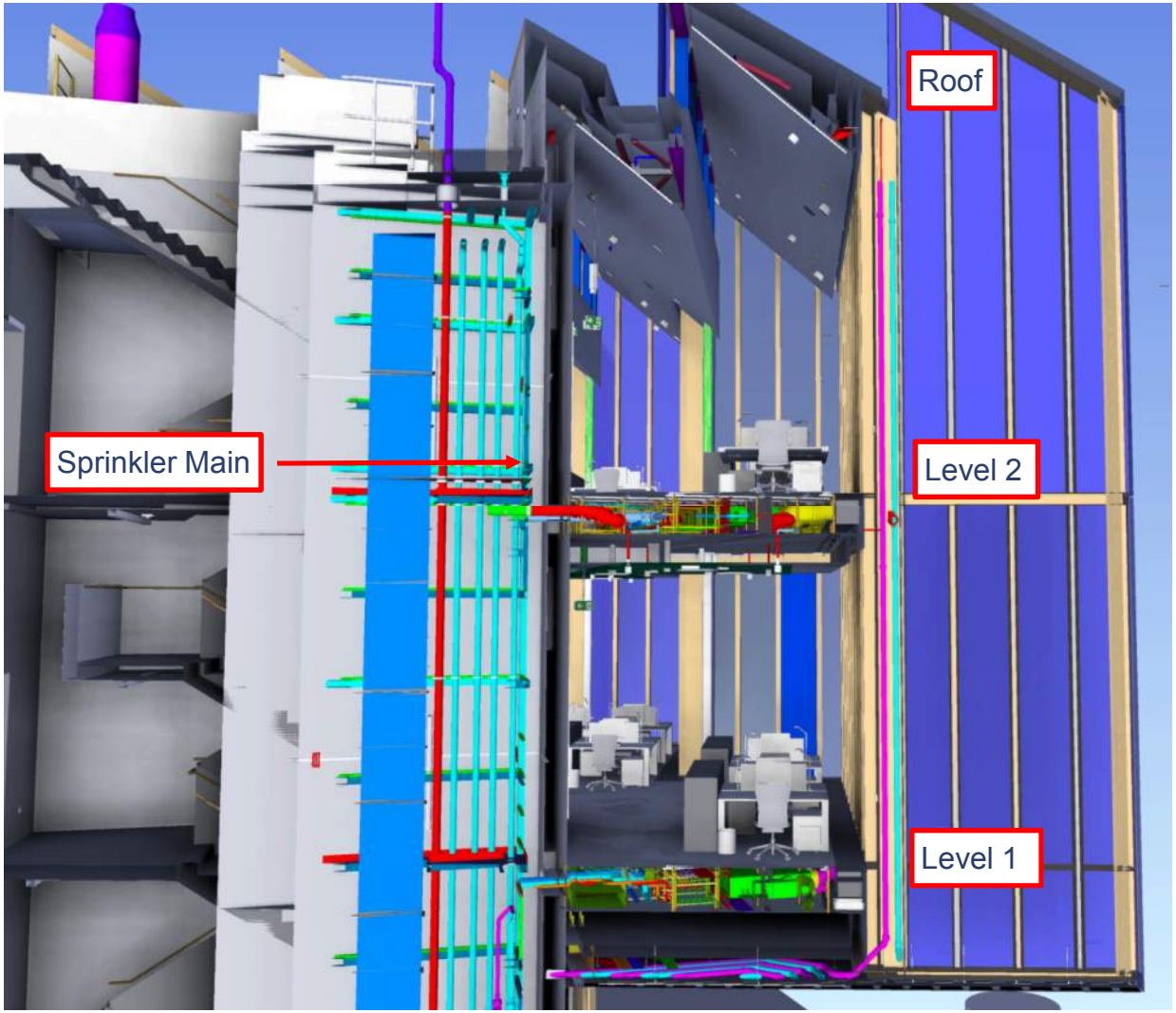
Section through raised access showing services passing through the module to 3 elevations



Roof:
Sprinkler
Blind Control
Lighting
Vesda System
Emergency Lighting
PA System
Fire Alarm
Wifi

Level 2:
Power
Data
HVAC Supply
HVAC Extract
Heating & Hot Water
Chilled Water
Leak Detection
IBMS
Emergency Lighting
Fan Coils
Fire Alarm
Sprinkler
PA System
Wifi
Fire Alarm

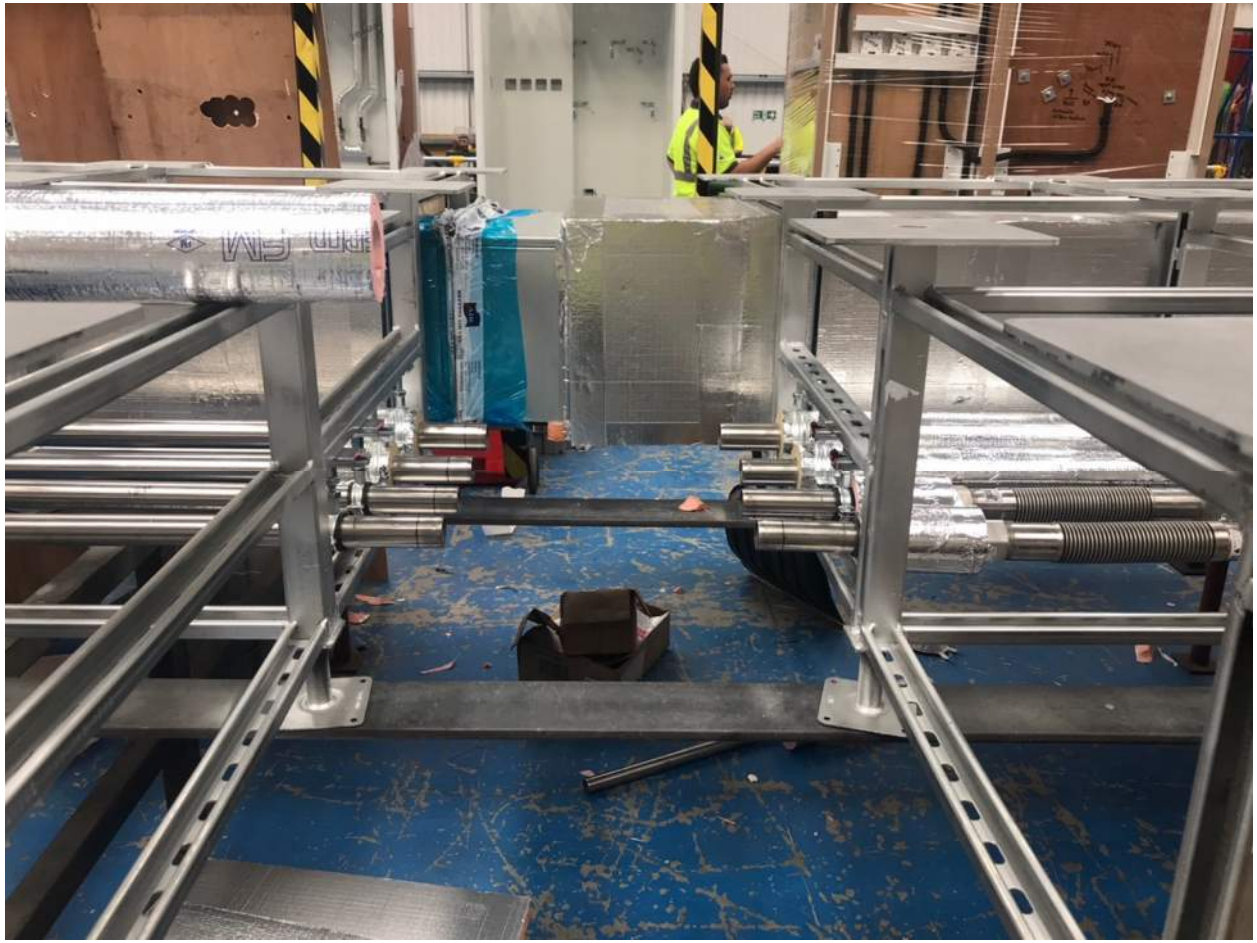
Level 1:
Wifi
Sprinkler
Lighting
Emergency Lighting
PA System
Daylight Sensor
Occupancy Sensor
Exit Signage
Fire Alarm

Assembly and Fabrication Shop

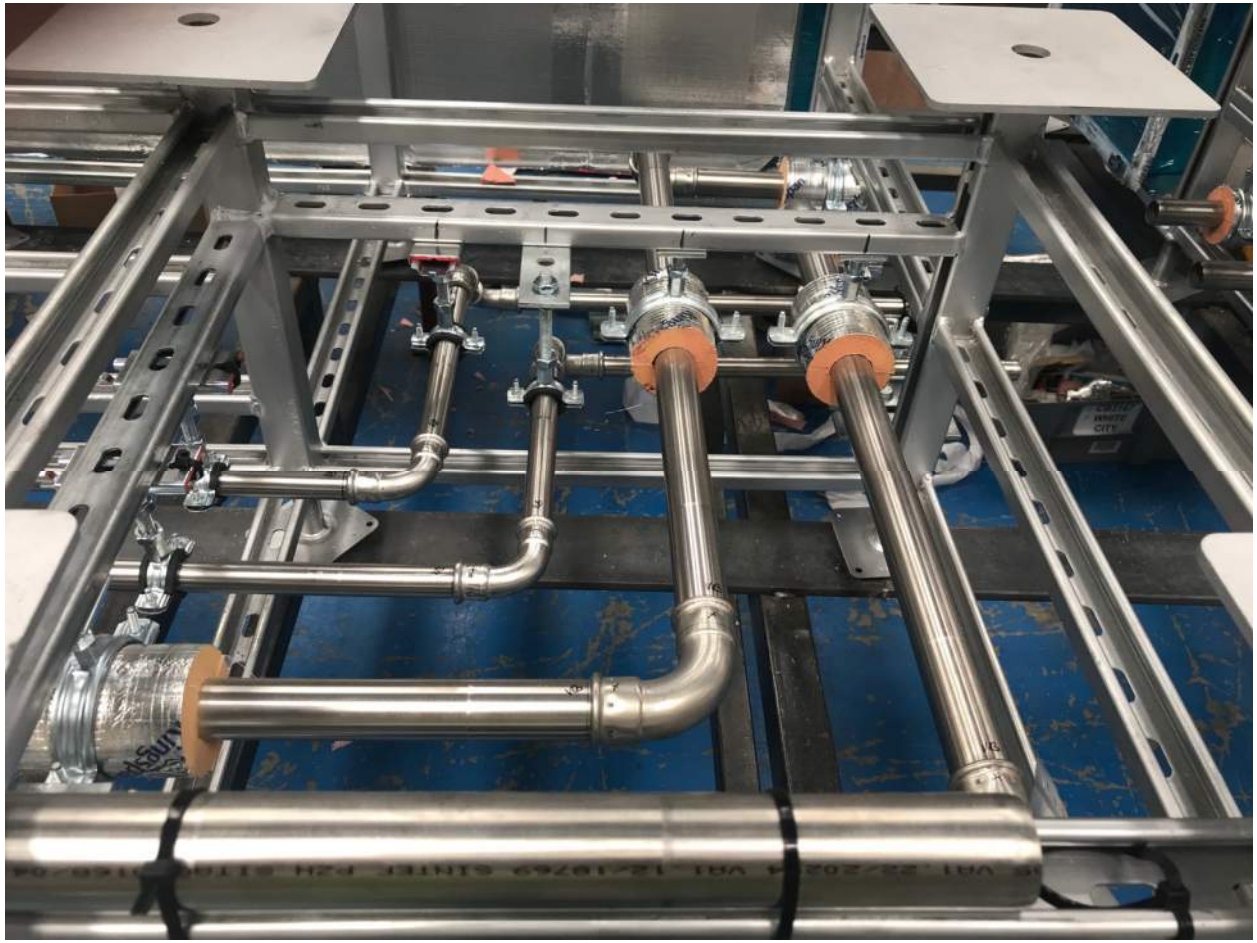
Unistrut Frame Assembly and Bracketry

Work at Benchtop Height and Duct Work Installed

Module to Module Alignment



Piping Installed Ready for Insulation



6 Modules ready for delivery