Case Studies

Case Study 1

This case study covers the different stages involved in carrying out to develop the digital model of a residential building in London. In this case study, you will learn about the workflow of Building Information Modelling of a real world project - the Luxury Residential Apartment project. The digital model of this project was developed by The BIM Engineers. These luxury apartments, shown in Figure CS-1, are spread over a span of 9000 square meter and are located in London.

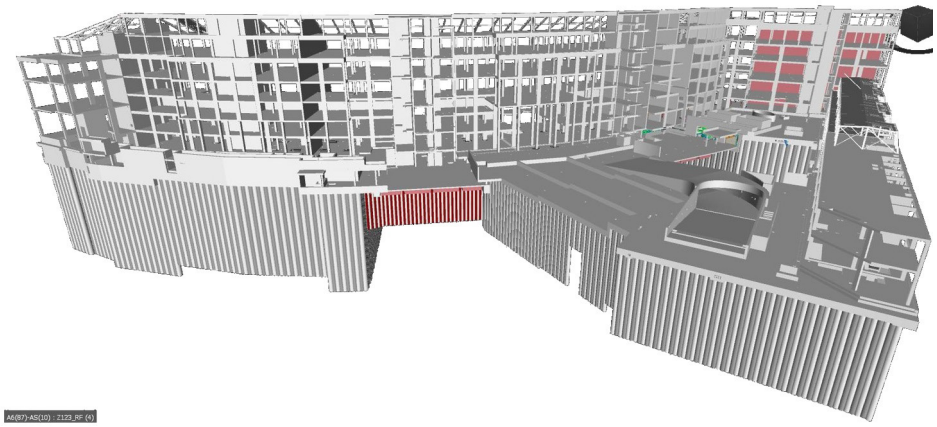


Figure CS-1 *The overall view of the luxury residential apartments*



Note

The content and the images in the case studies are copyright property of The BIM Engineers.

The building information model was developed by The BIM Engineers. The scope of this project includes developing Revit Model (Architecture, Structure, and MEP), detecting clashes within the components, coordination of different disciplines, and generating the construction documentation of the project.

First of all, the structure of the basement level was modeled in Revit. The structure consist of various foundation structures and elements to support the building. Figure CS-2 shows the generated structural model of the building.

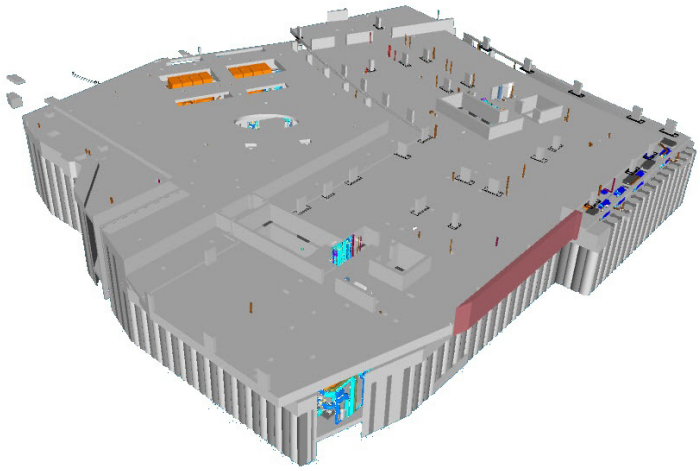


Figure CS-2 *The structural model of the Luxury Resident Apartments at basement level*

After the creation of architectural and structural models, the MEP model of the project was created. The MEP model consists of various elements such as pipes, ducts, fixtures, equipments, and more. Figure CS-3 shows the complete MEP model of the project created in Revit.

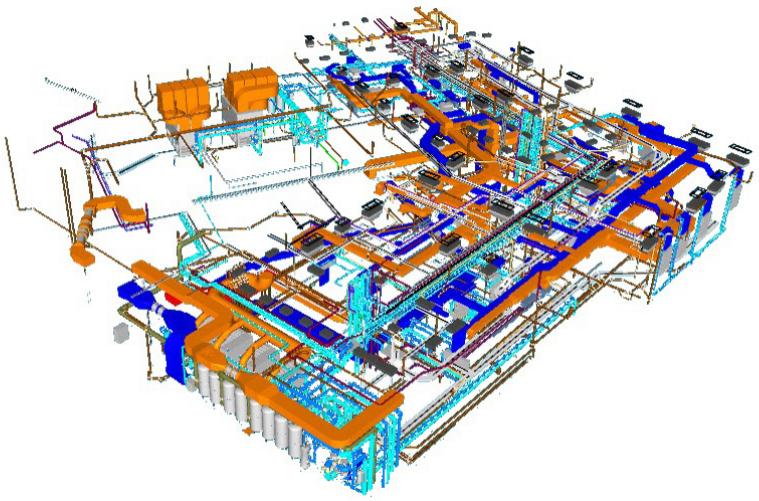


Figure CS-3 *The MEP model of the luxury resident apartment*

During the modeling process various models were generated. Figure CS-4 to Figure CS-10 display various models that were generated for mechanical system.

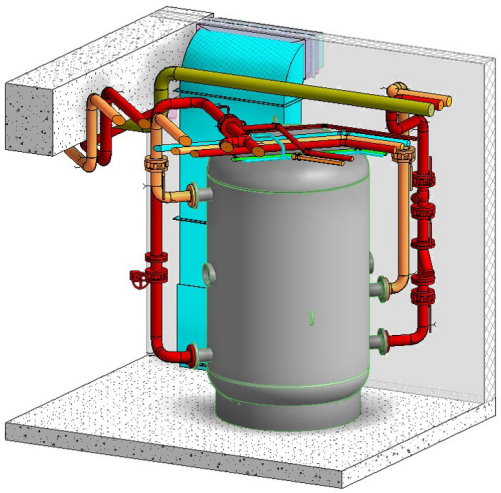


Figure CS-4 *The buffer vessel provision*

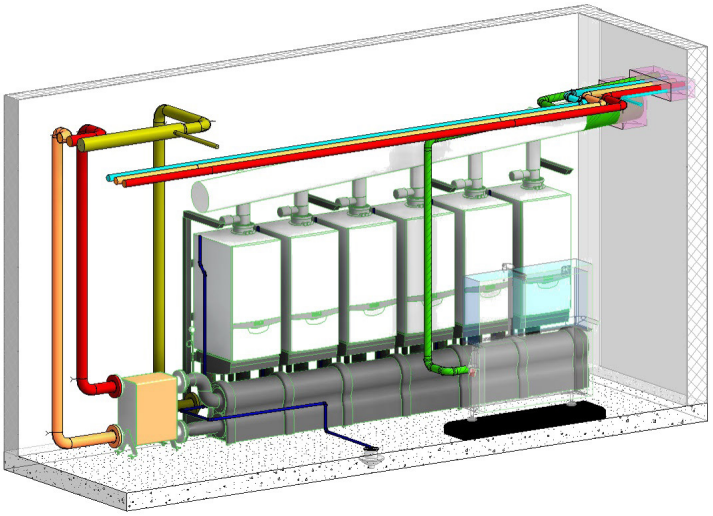


Figure CS-5 *The boiler vessel provisions*

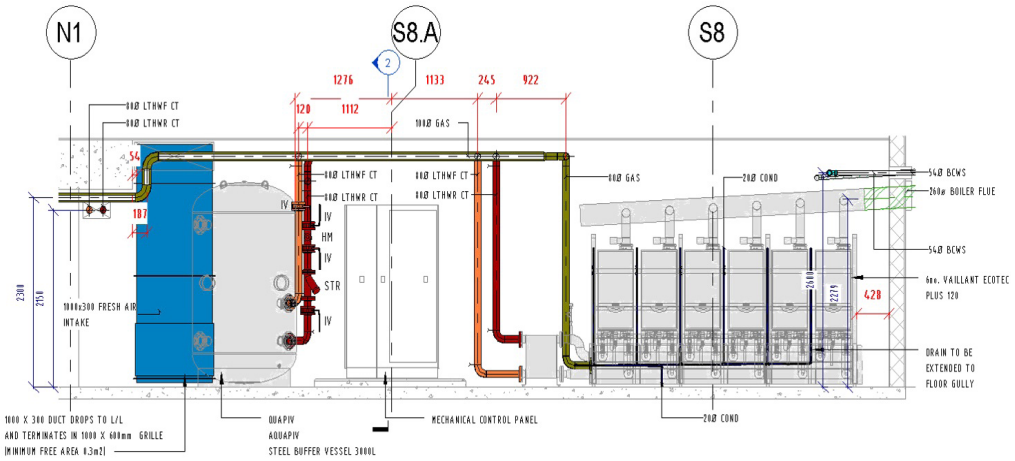


Figure CS-6 *The section details for the boiler and buffer vessel provisions*

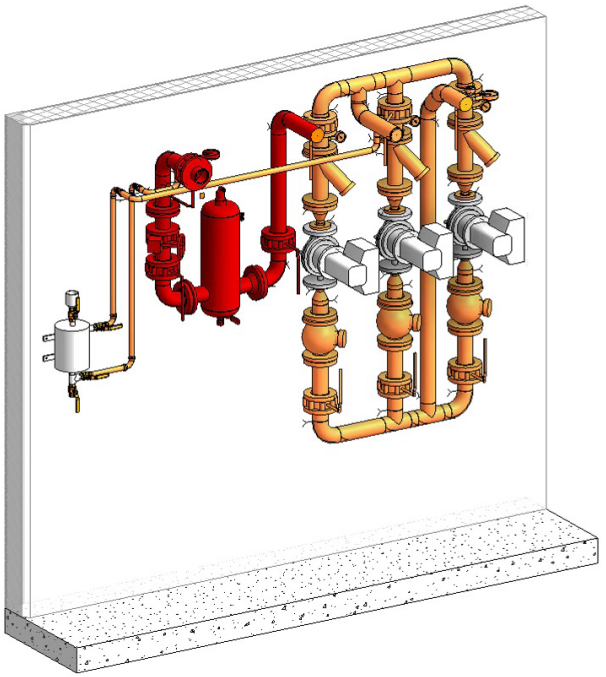


Figure CS-7 *The LTHW pump provisions*

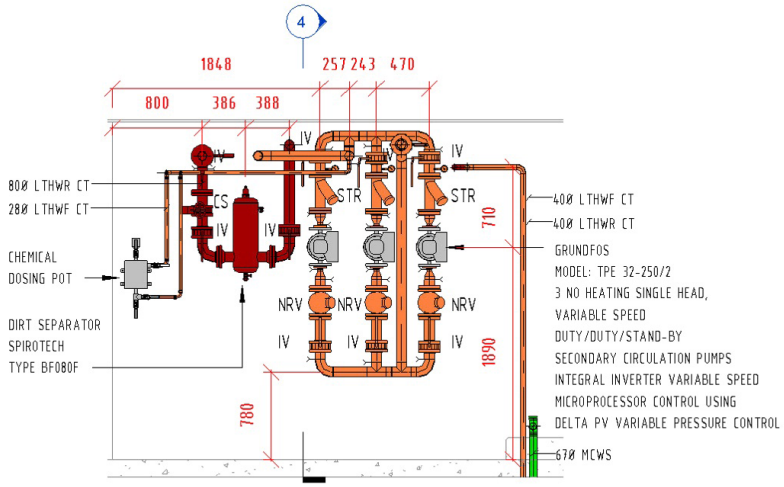


Figure CS-8 *The section details of the LTHW pump*

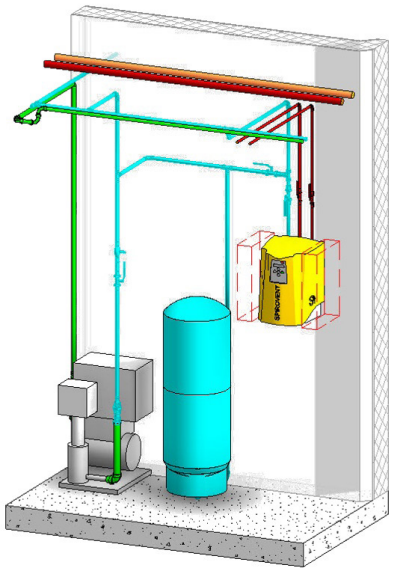


Figure CS-9 *The LTHW pump provisions*

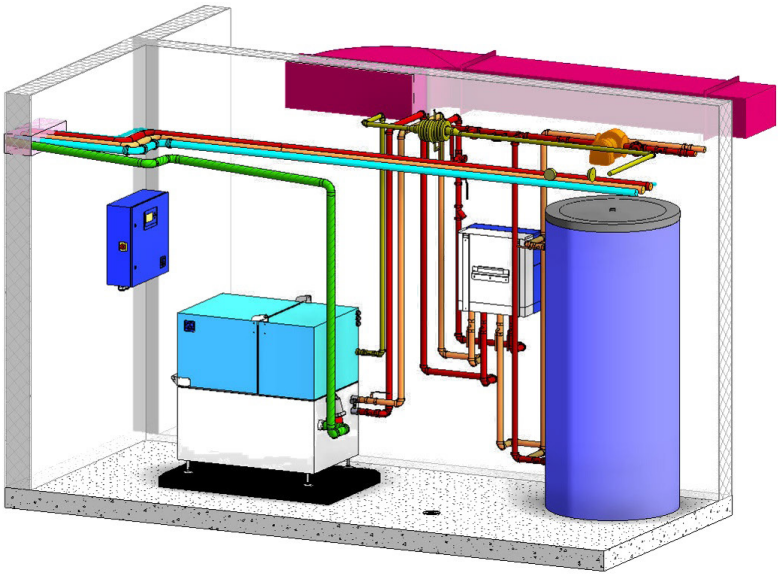


Figure CS-10 *The CHP provisions*

After creating the MEP model, clash detection was performed using Autodesk Navisworks. To perform the clash detection in Navisworks, the MEP model was appended to the Navisworks interface. The clash detection was performed to check the interference betweeen various model elements in the project that were moved during the review process. Figures CS-11 and CS-12 show the clashes between different model elements.

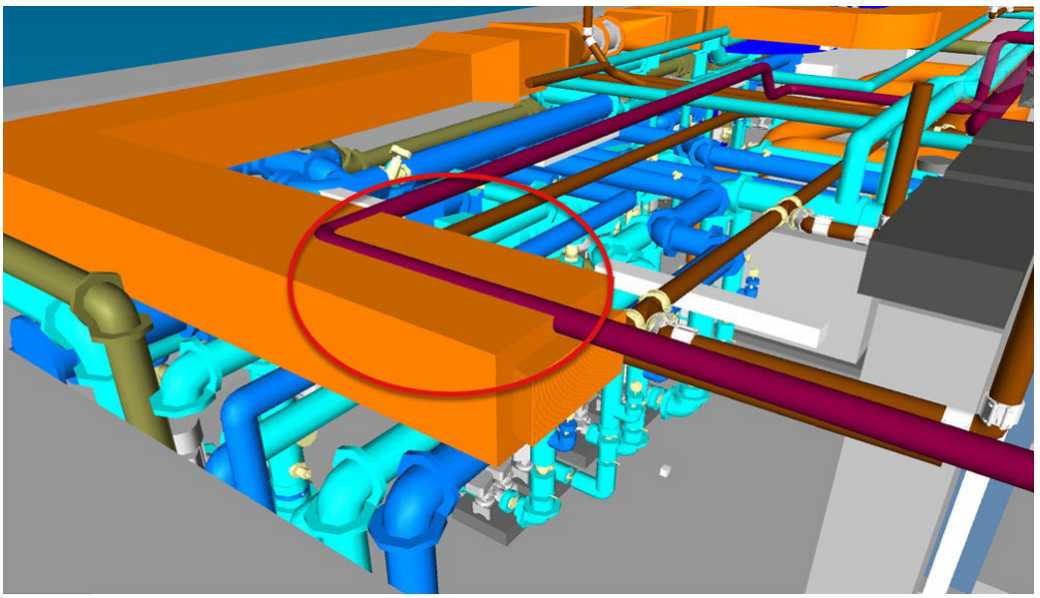


Figure CS-11 *Clash between fire pipes and ducts*

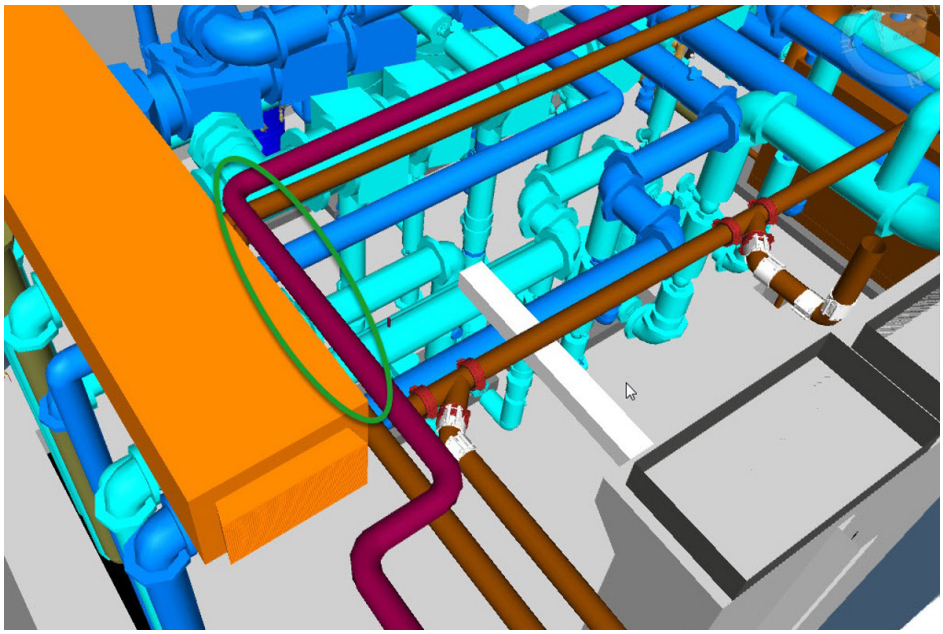


Figure CS-12 *The fire pipe rerouted to resolve the clash*

After the clashes were identified in the model, all interference leading to clashes were removed to make it free of any overlap or error. Further, the model was reviewed and navigated for the coordination and presentation purpose. Figure CS-13 to Figure CS-17 display various views of the project for model display.

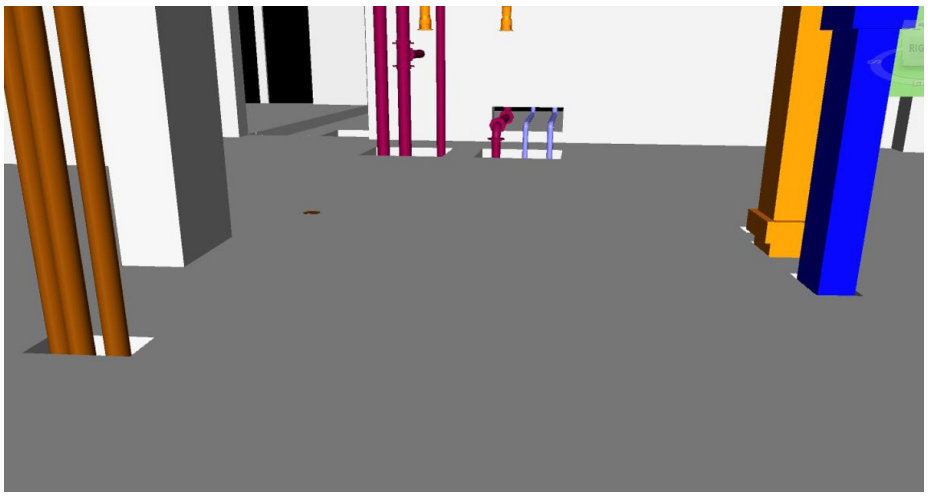


Figure CS-13 *Structural floor and wall openings for MEP services*

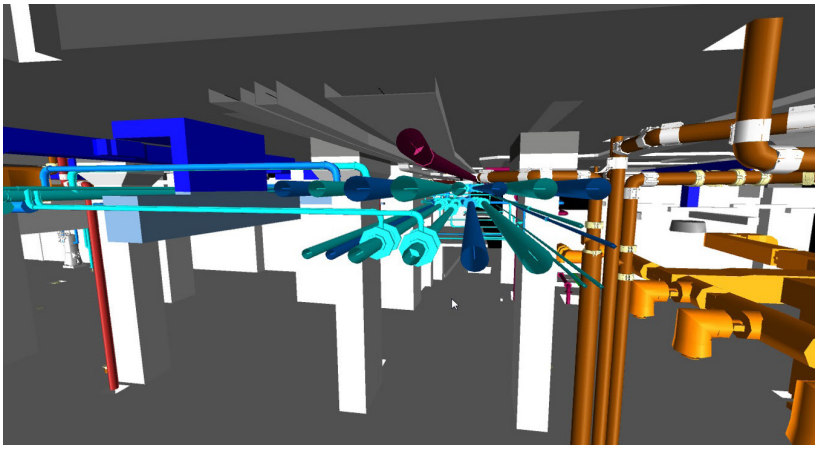


Figure CS-14 *MEP coordination - pipes and tray arrangement*

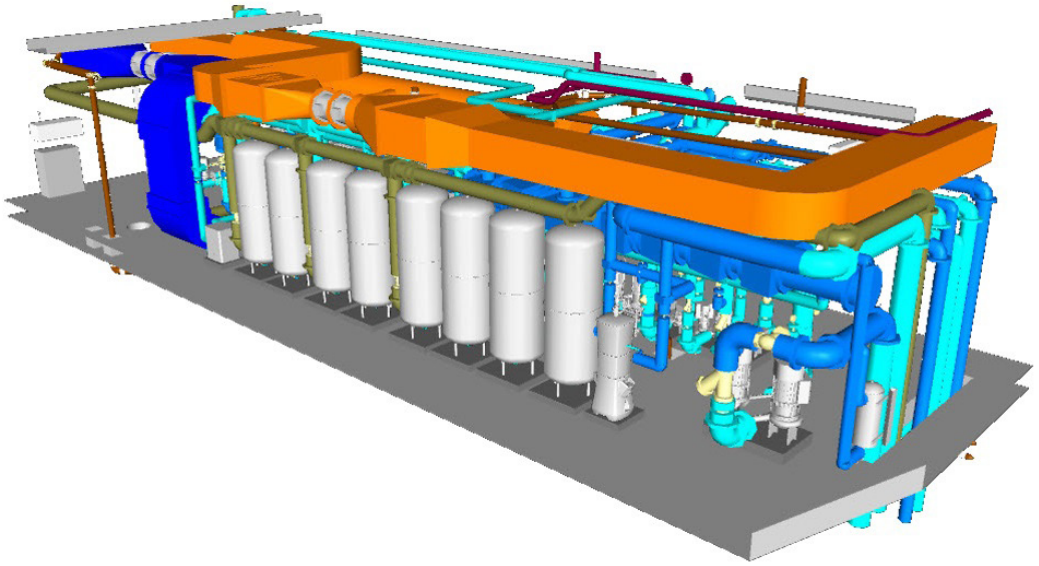


Figure CS-15 *The boiler plant room*

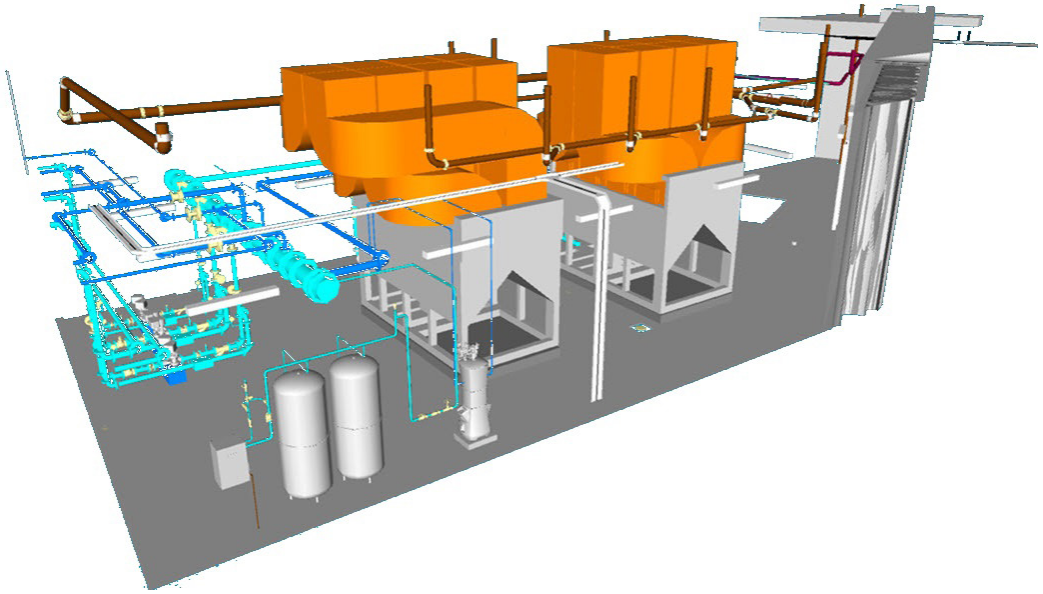


Figure CS-16 *The chiller plant room*

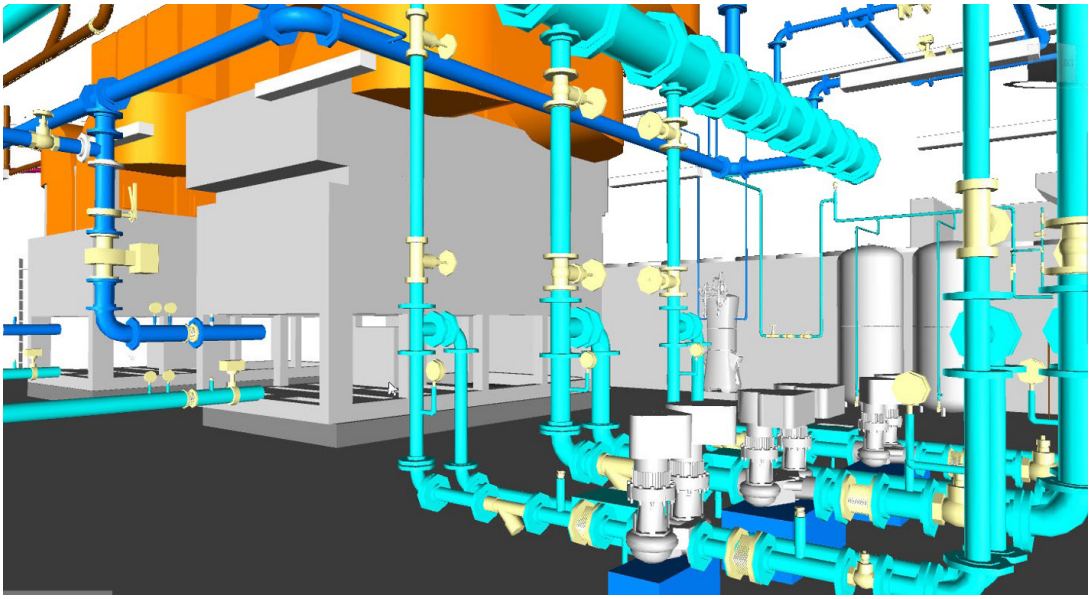


Figure CS-17 *Chiller plant room – equipment, accessories, and pipe connections*

After the coordination process, the construction documentation was created. During this, the sheets were created for the final submission to the site. This was done using the Revit software. Figure CS-18 and Figure CS-19 show the sheets published for the project.

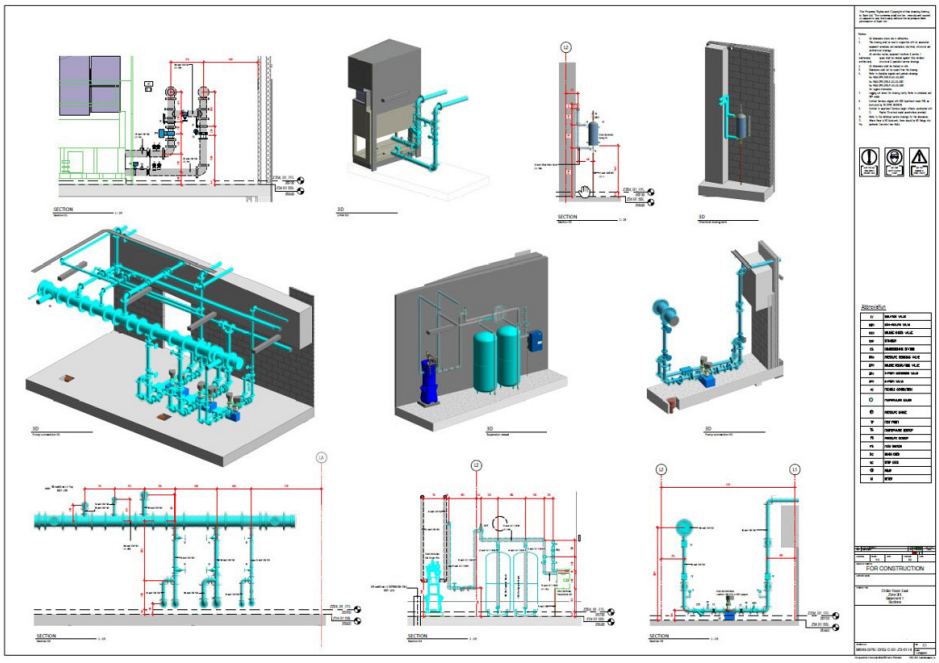


Figure CS-18 *Chiller plant room - Sheet drawing presentation of detailed sections and 3D views*

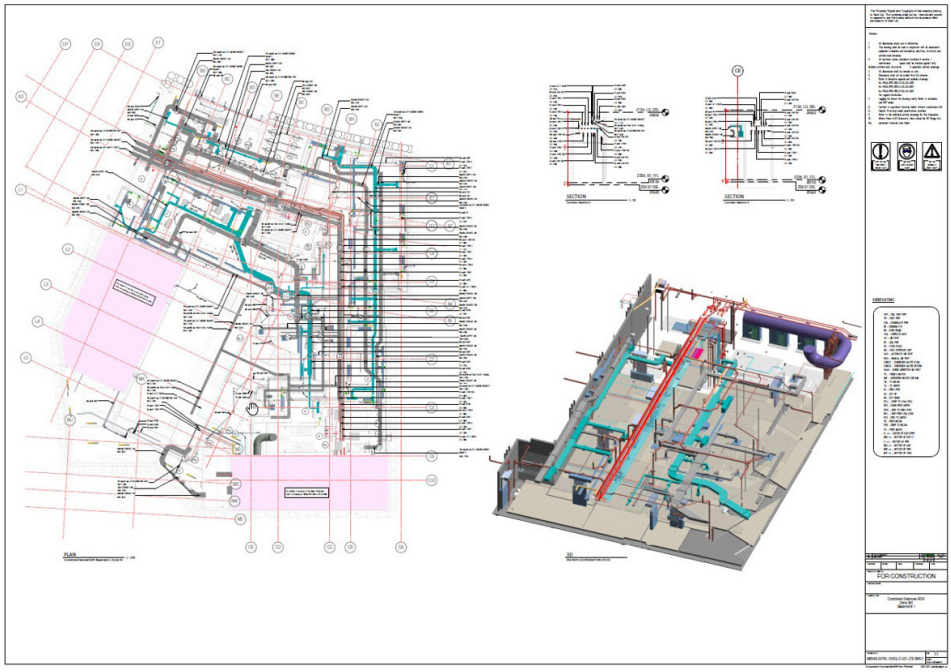


Figure CS-19 *Combined services drawing presentation*

Case Study 2

This case study covers different stages carried to develop the digital model of a mass rapid station in Kuala Lumpur. The digital model of the Mass Rapid Transit project is developed in Revit and Navisworks. The project involved modeling and documentation in Revit, Clash detection and Coordination in Navisworks. The digital model was completed in 6 months. Figure CS-20 to Figure CS-29 show the progress of the project.

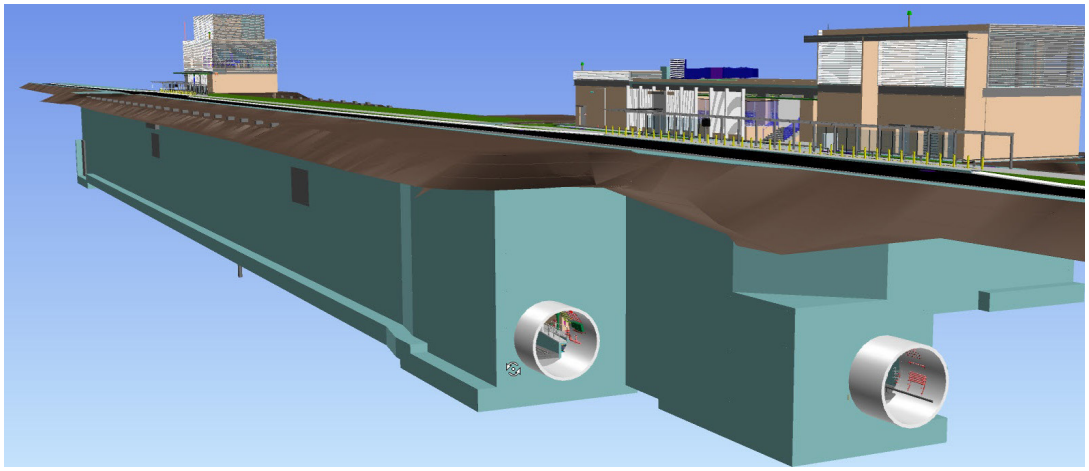


Figure CS-20 *Overall Station view– Architecture, Structure, and MEP*

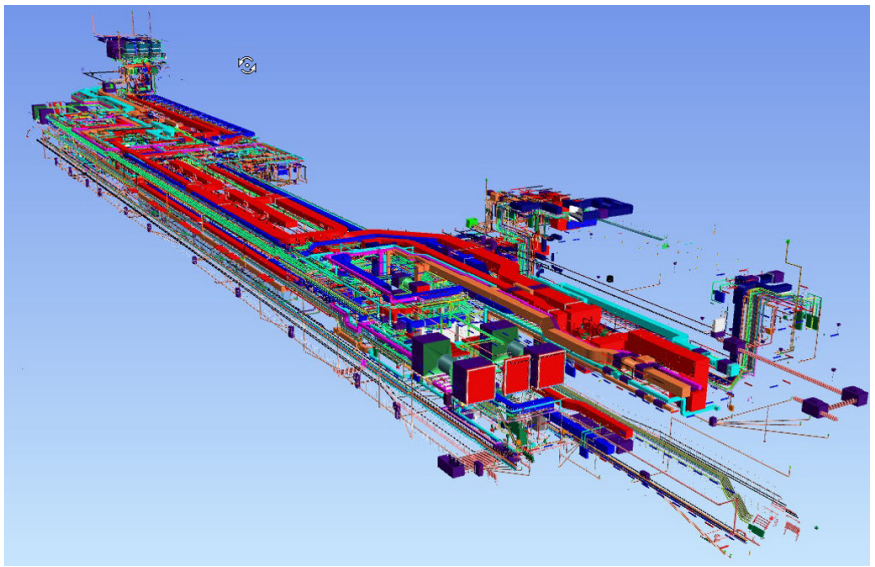


Figure CS-21 *Overall Station - MEP view*

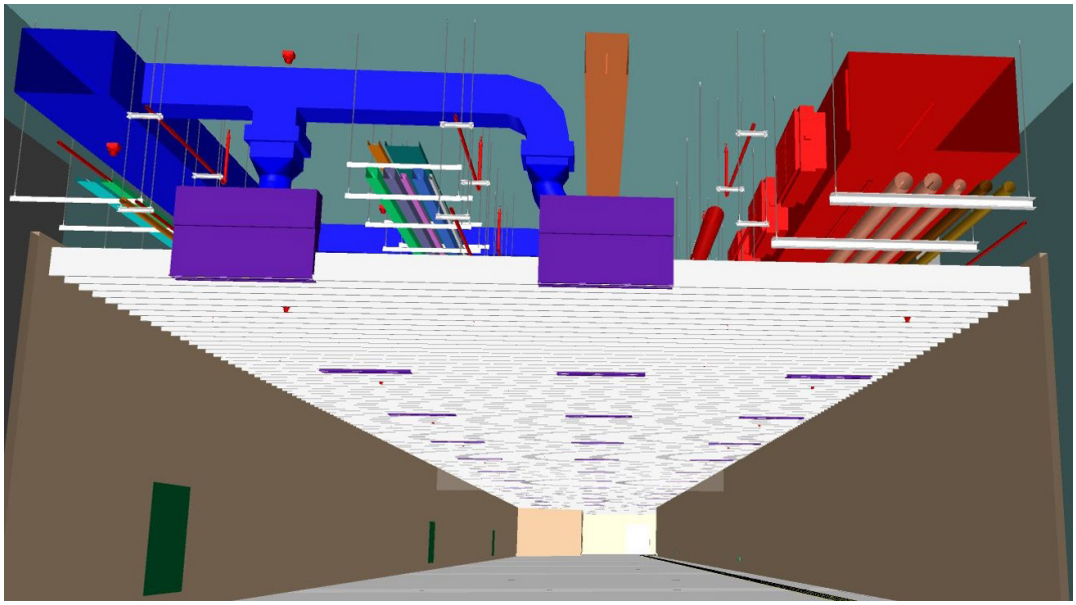


Figure CS-22 *The supply and return air ducts with dampers and diffusers*

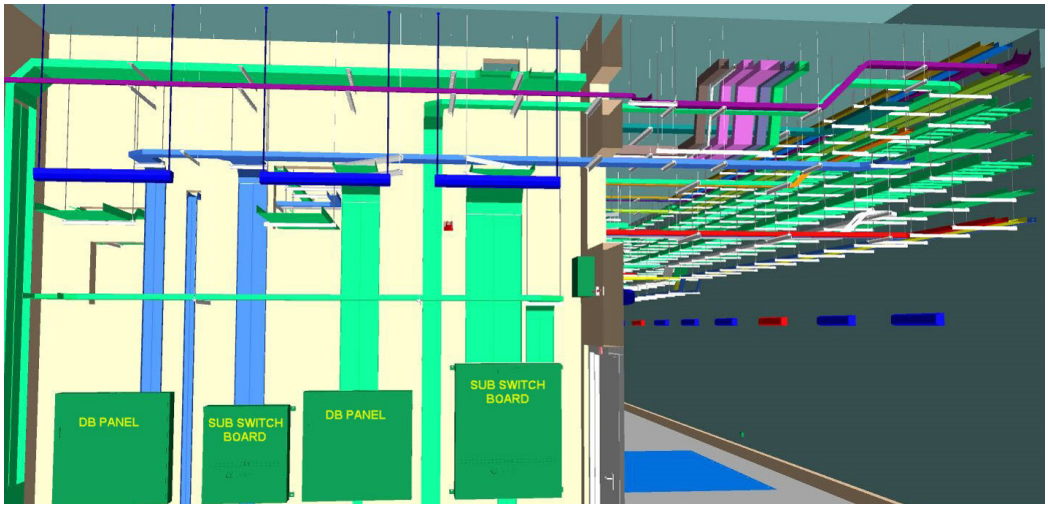


Figure CS-23 *Electrical services – cable trays, lighting fixtures, and panels*

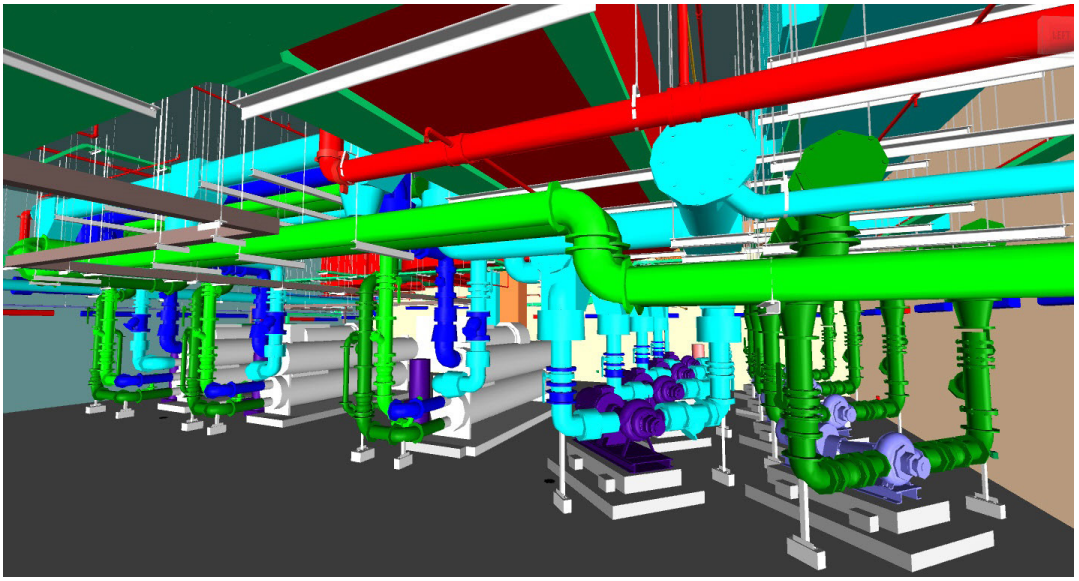


Figure CS-24 *Chiller plant room*

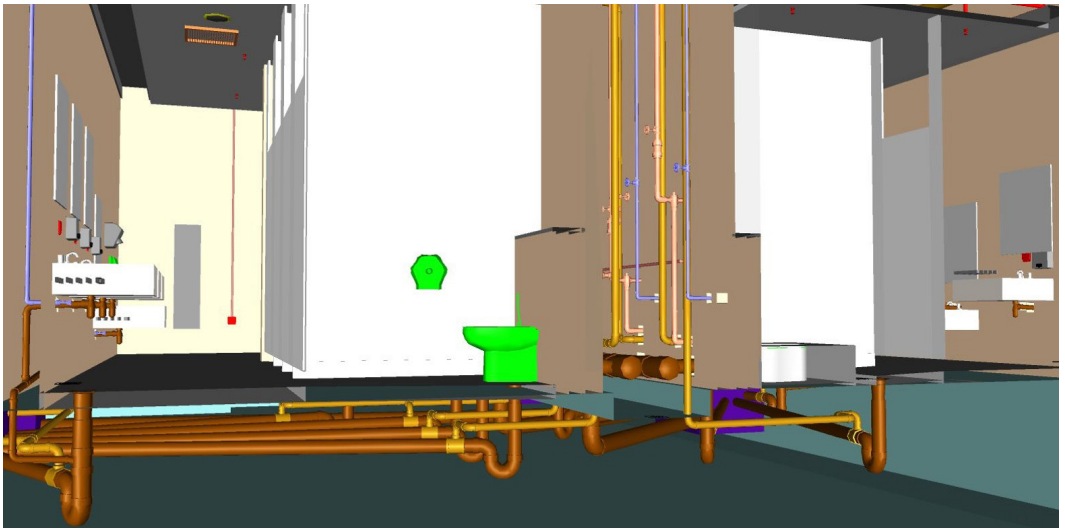


Figure CS-25 *Sanitary system*

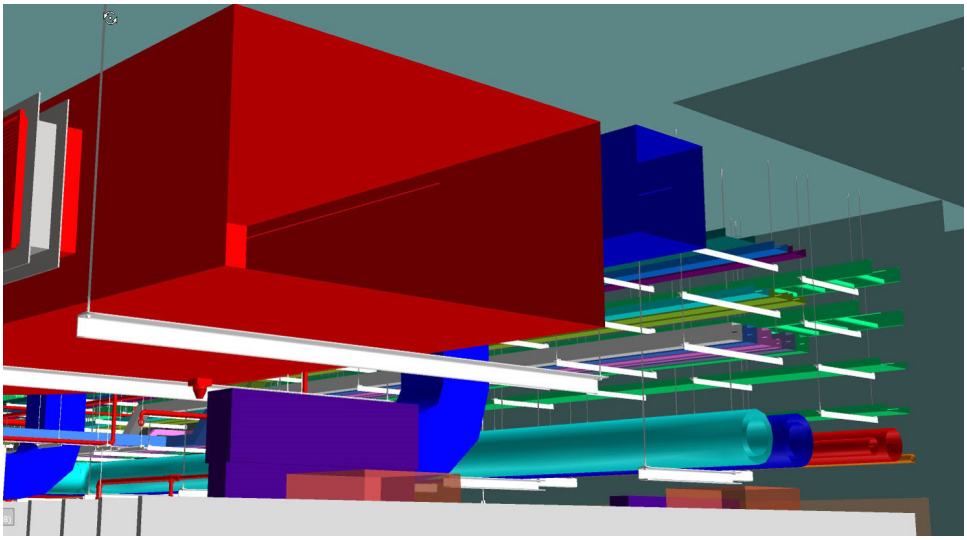


Figure CS-26 *Hanger support*

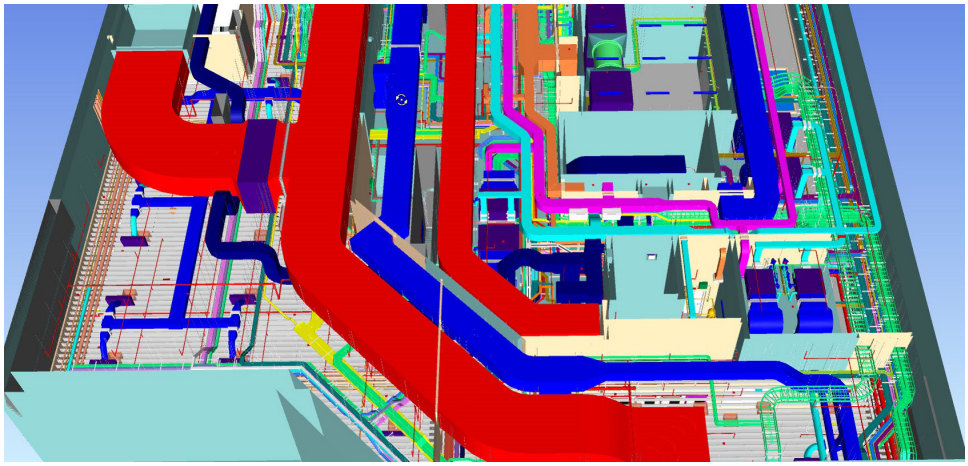


Figure CS-27 *Coordinated MEP services with hanger support*

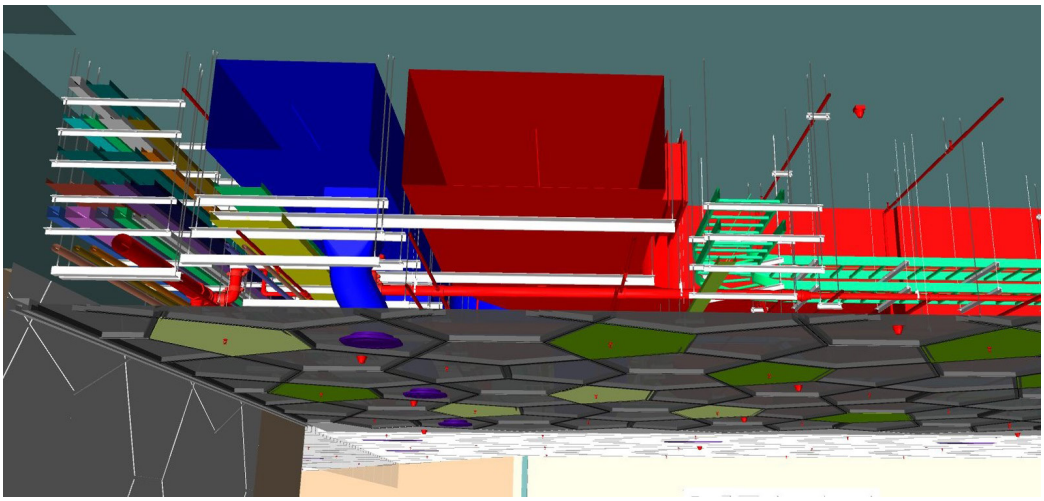


Figure CS-28 *Coordinated MEP services*

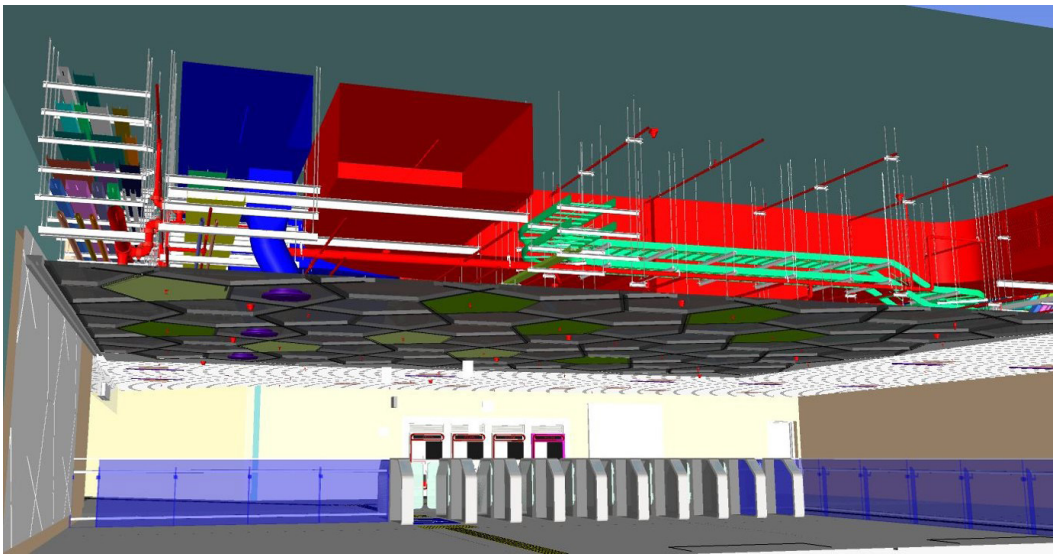


Figure CS-29 *Coordinated MEP Services with hanger support*

Case Study 3

This case study covers the different stages carried to develop the digital model of a multi-speciality hospital The digital model of the hospital project is developed in Revit and Navisworks. The project involved modeling and documentation in Revit, clash detection and coordination in Navisworks. The digital model was completed in 6 months. Figure CS-30 to Figure CS-35 show the progress of the project.

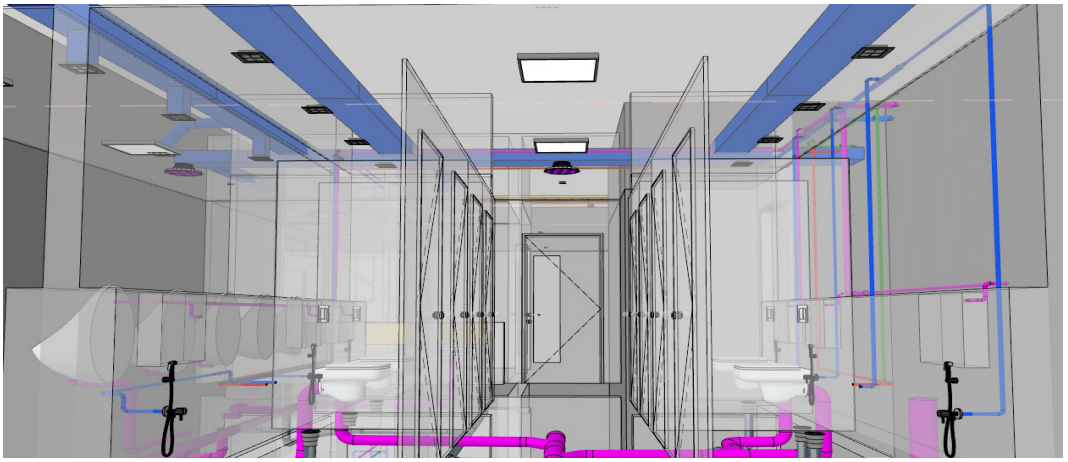


Figure CS-30 *The 3D view of the hospital*



Note

The content and the images in the case studies are copyright property of Clancy Global

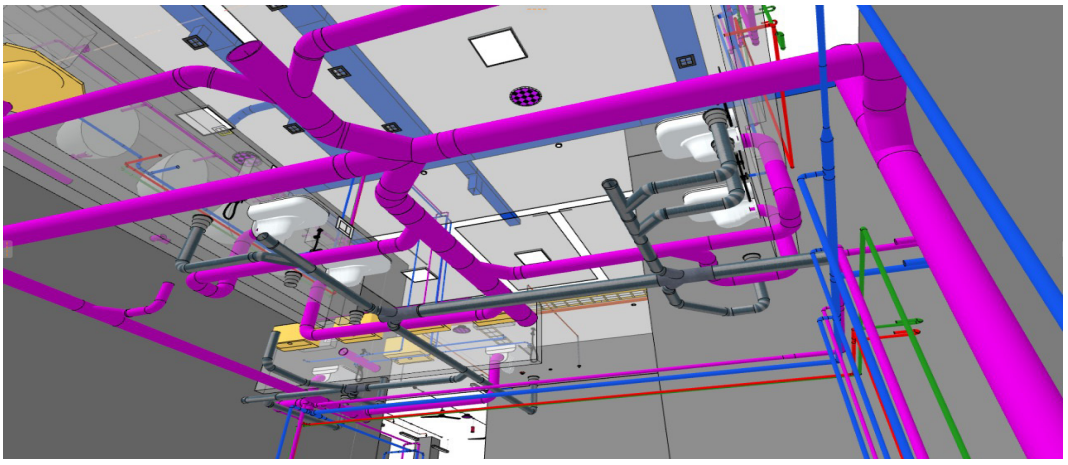


Figure CS-31 *The 3D view of the plumbing services*

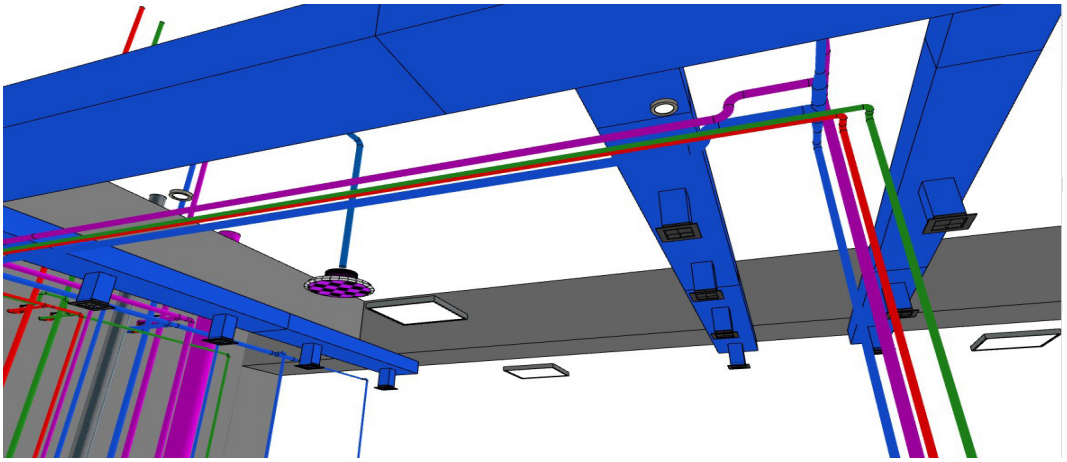


Figure CS-32 *The 3D view of the HVAC ducts and pipes*

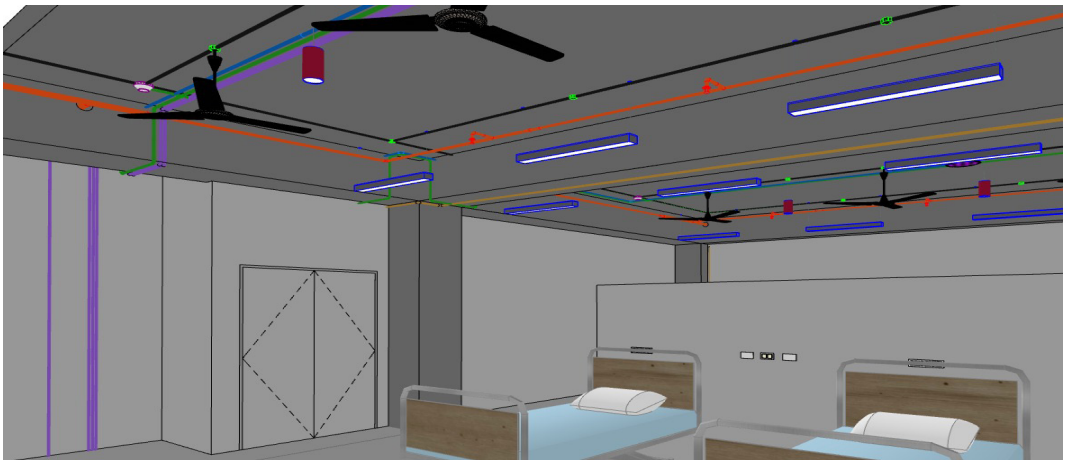


Figure CS-33 *The 3D view of the fire fighting pipes*

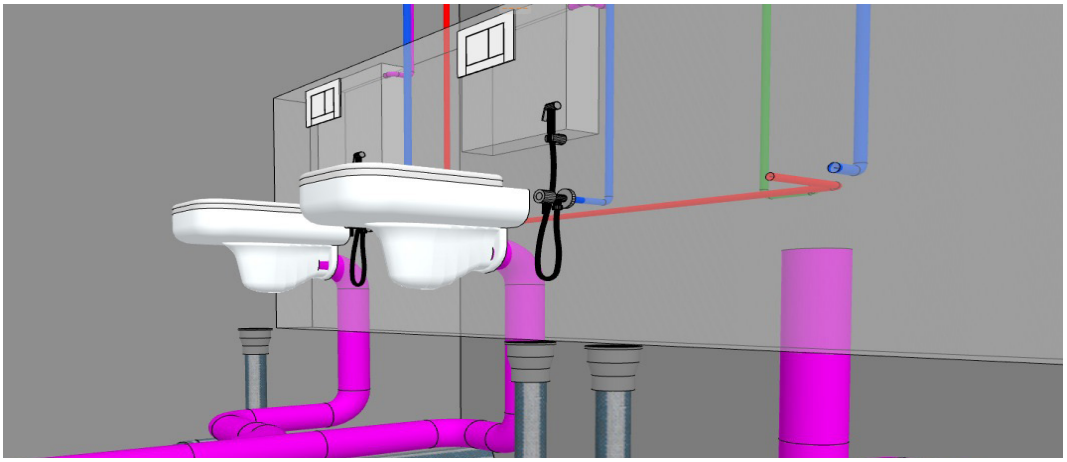


Figure CS-34 *The 3D view of the plumbing fixtures and pipes*

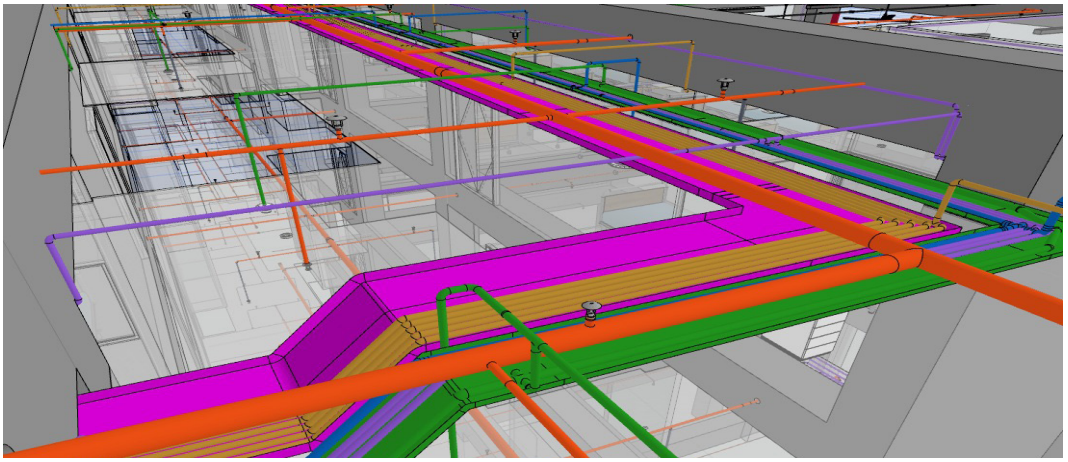


Figure CS-35 *The 3D view of the conduits run and cable trays*

This page is intentionally left blank