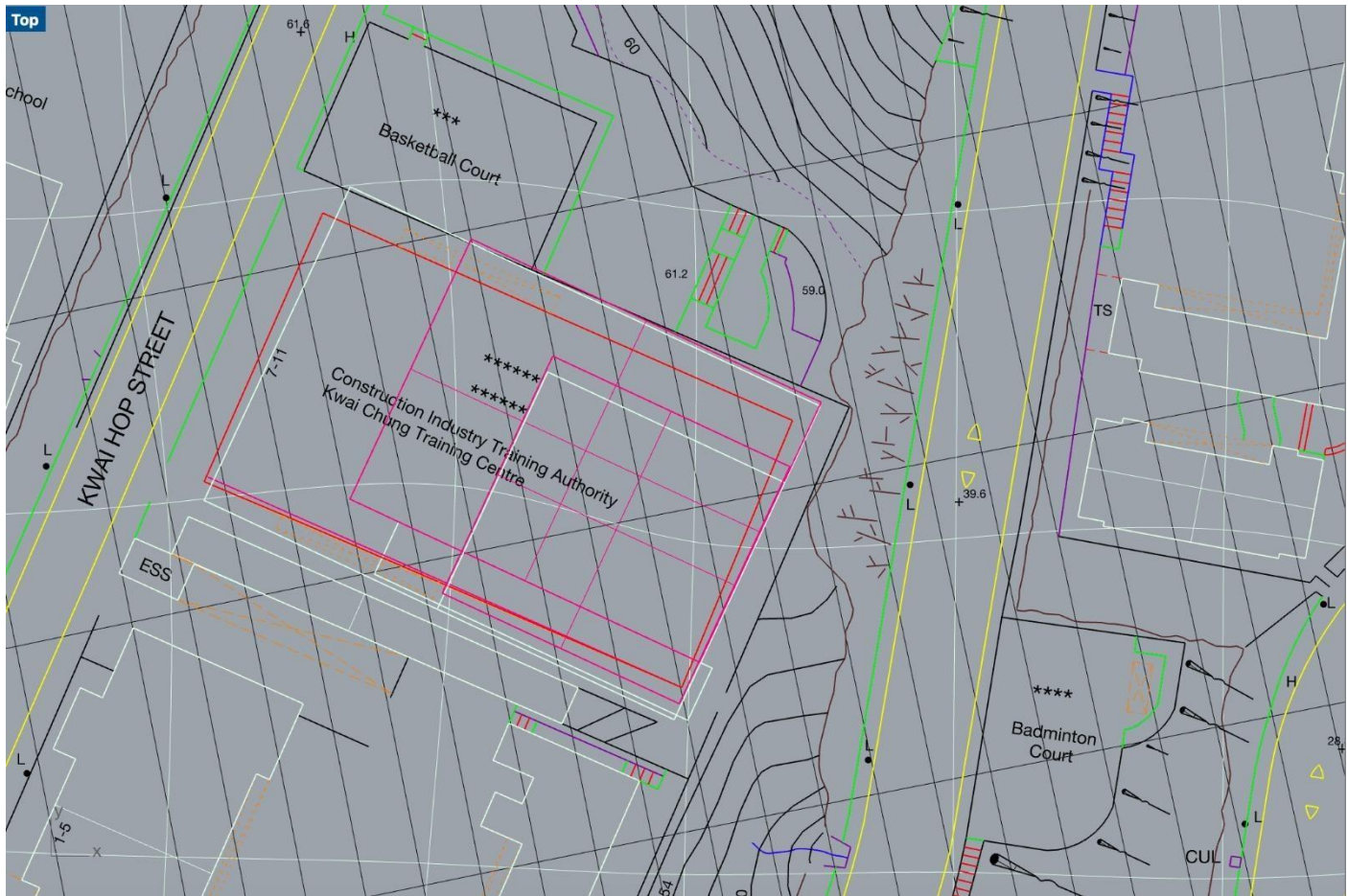


Location Plan 1:2000



About the New Development of the Student Hostel

Design Concept:
The student hostel generally can be divided into two structural blocks: the Main Building block and the underlying podium block. The Main building block, positioned at a higher altitude, would be majorly hosting residential units which could hence benefit from a wider landscape. Meanwhile, the spacious podium section holds multiple facilities for sports and other recreational activities, which could also reserve as a flexible space for possible future development.

The main features of the student hostel includes a huge courtyard on the middle of building, which is majorly considered to be fundamental for extensive use of natural light throughout the building. Besides, it does convey an architectural concept which residents could have more social interactions with their neighbors and hence improve the life quality and scaling of the residents. A large area of landscape area and rooftop is used for greenings implementations as well as sustainable design to decrease energy usage and thus adopting an environmental-friendly design.

Spatial Arrangement: How is the Dormitory Areas, Common Areas and Sports Facility being arranged?

Sports facilities, canteen, and management offices locate on the podium section, while residential units, facilities to post-secondary students, laundries, common areas, and landscape areas would be within the main building structure

Connectivity: What is the vehicular and pedestrian connectivity, accessibility and evacuation considerations?

The entrance of the building consists of a grass yield extends to the pedestrian road. Vehicles could directly access to the underground carpark via the entrance and exit on two sides of the building.

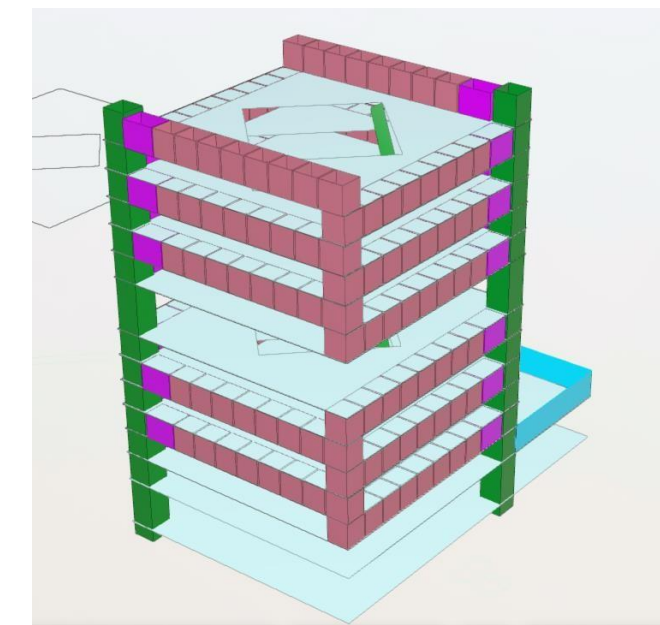
BIM Collaboration approach: What is the approach and BIM tools for design collaboration?

Revit, Autodesk Naviswork, Autodesk Ecotech, SAP2000, HAP, and Fuzor would be adopted in the project. Rhino is used for the site surrounding as well

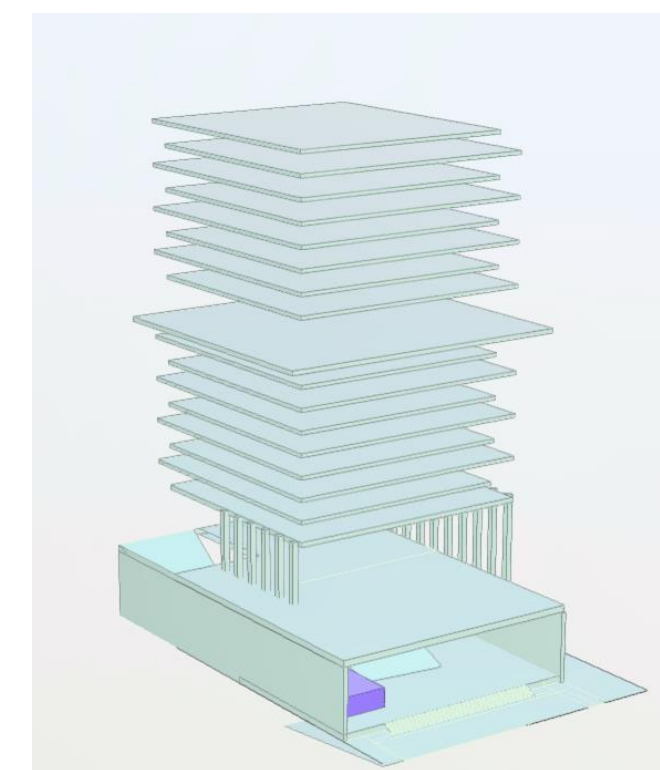
Constructability: Any innovative approach introduced for construction?

MIC units would be installed to the building directly. Analysis and 4D simulation from the Naviswork would also be undertaken to facilitate the management and construction sequence of the project.

Conceptual Diagram: The design history of the student hostel



Stage 01:
A typical building block with an exterior outdoor canteen is designed. Rooms are decided to be placed on opposite orientations, varied from level to level, to provide an extraordinary floor plan layout. A large courtyard is furthermore decided to convey the idea of strengthening social interactions between residents.



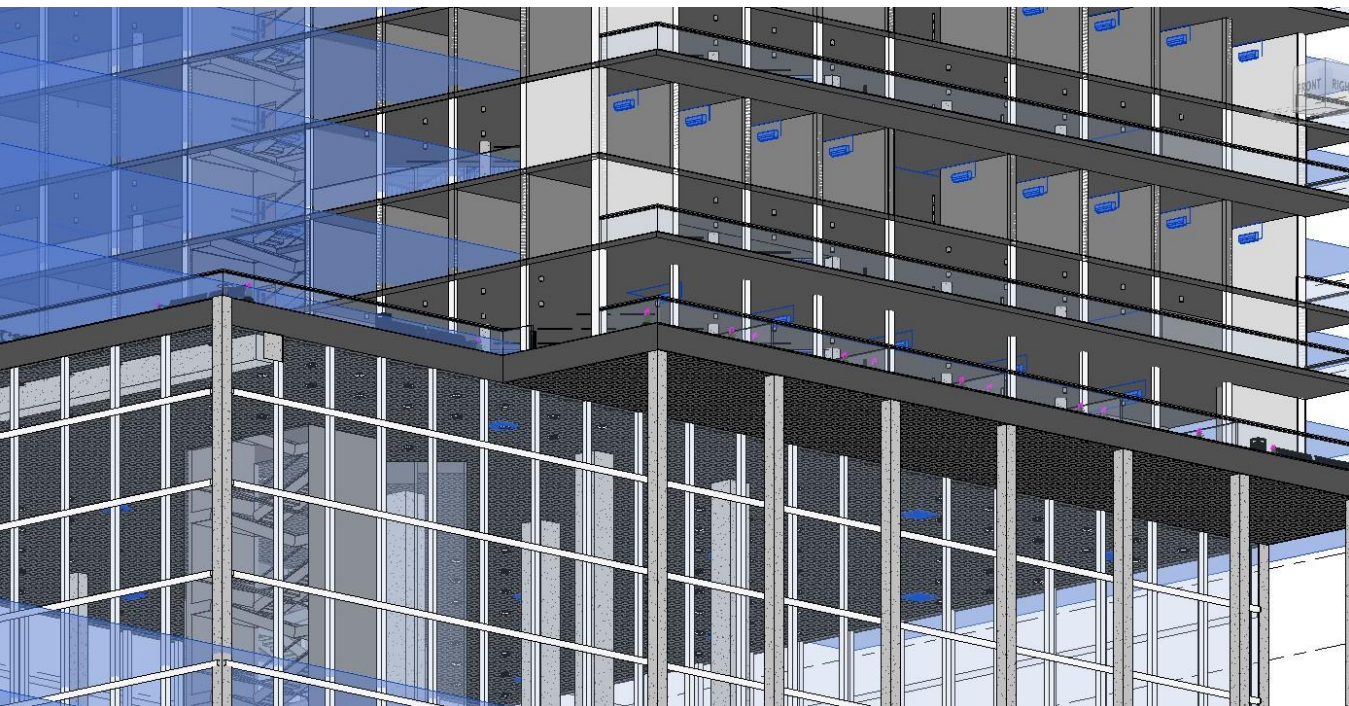
Stage 02:
A “two-volume” design element is introduced to the building by inserting a podium structure to the bottom of the main building. Not only does it provide significantly more spaces for multi-disciplinary facilities and entertainment, but more importantly to enhance the spatial perception of the building design



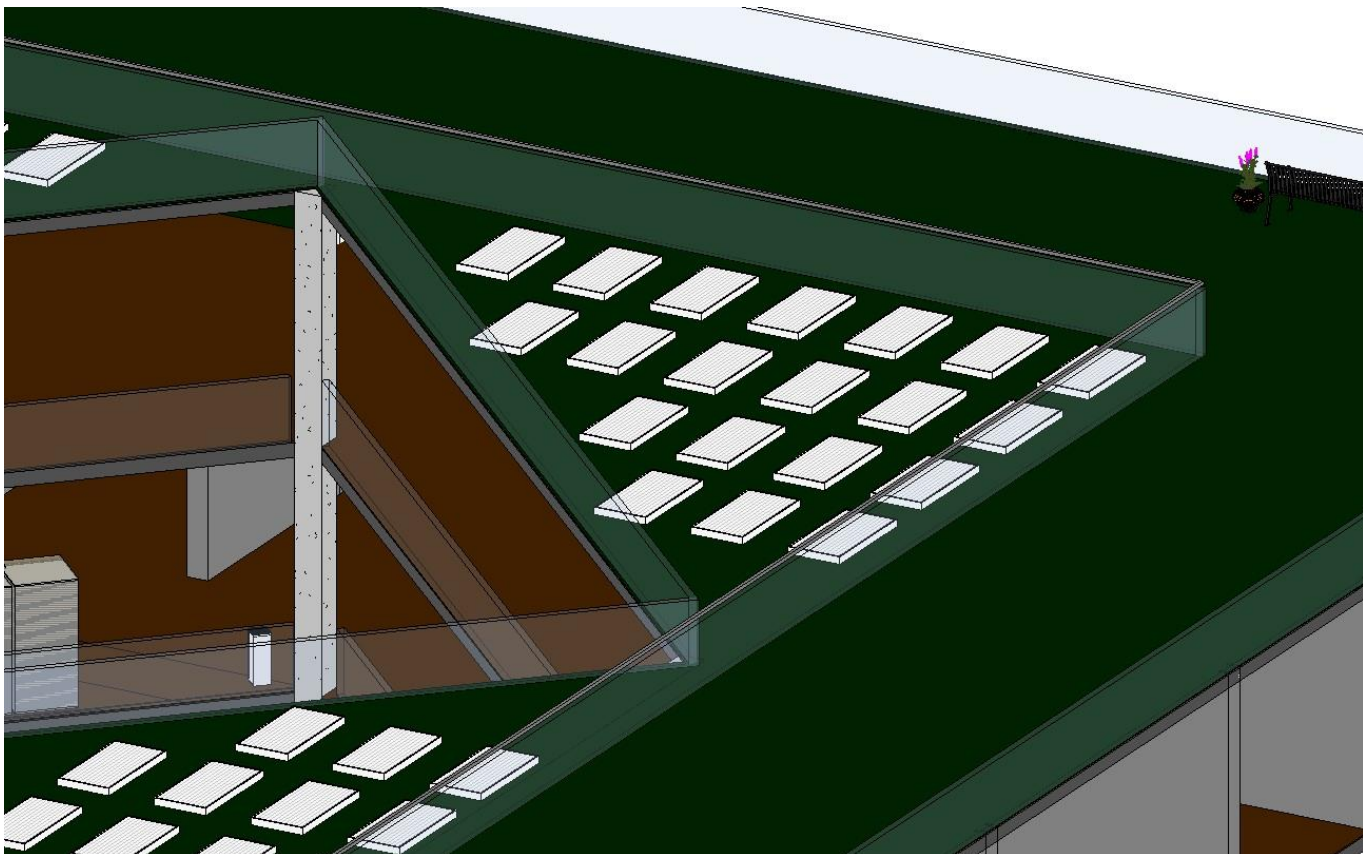
Overall Bird Eye view:
The building is located in No. 7-11, Kwai Hop Street, Kwai Chung Kowloon, with a proposed functionality of providing living accommodation and multi-disciplinary



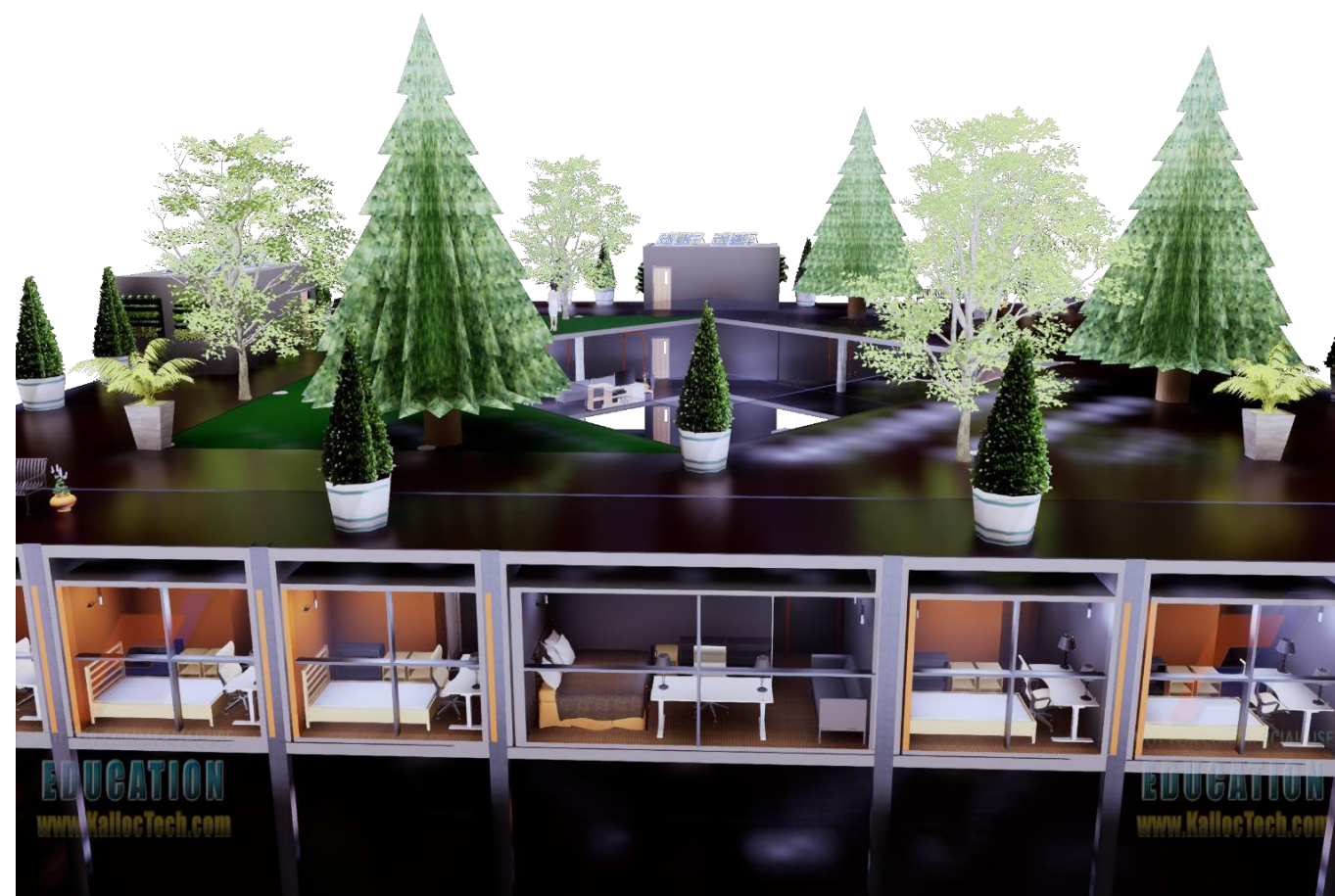
Building Form and Space:
The student hostel consists of a main building structure, where residential rooms are located, and a Podium with a spacious interior space to hold various facilities for miscellaneous activities.



Quality:
Thanks to the extensive collaboration granted by sophisticated BIM software, mechanical devices can be accurately designed and visualized, further securing their parameters being in line with the structural layout to facilitate on-site installation as well as the maintenance work.

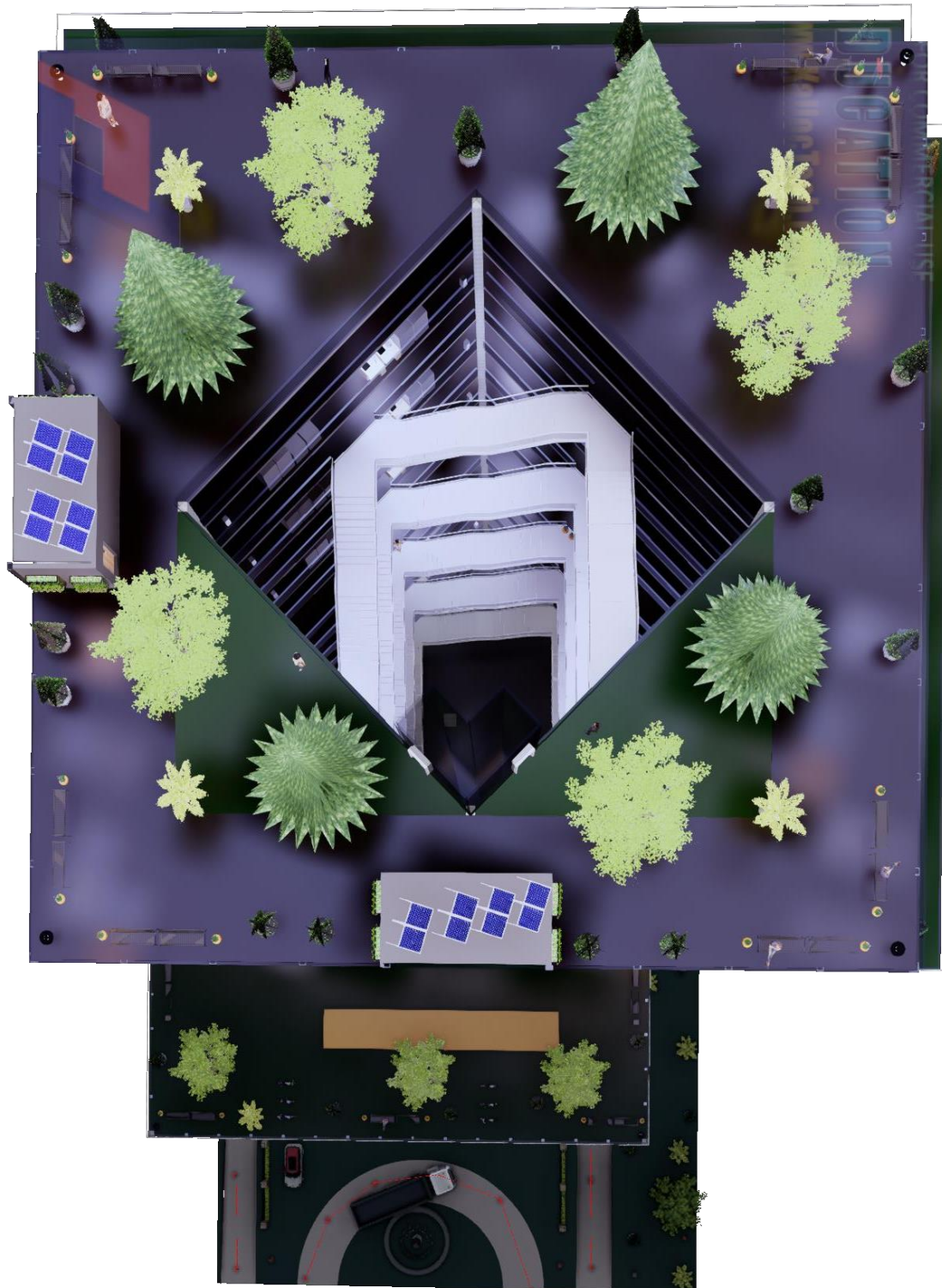


Solar Panels:
Solar Panels are installed at the main building to maximise the efficiency of land use as well as decreasing the reliance on non-renewable energy. Operational cost of the hostel can be reduced and more meaningfully less pollution can be dealt to the environment.



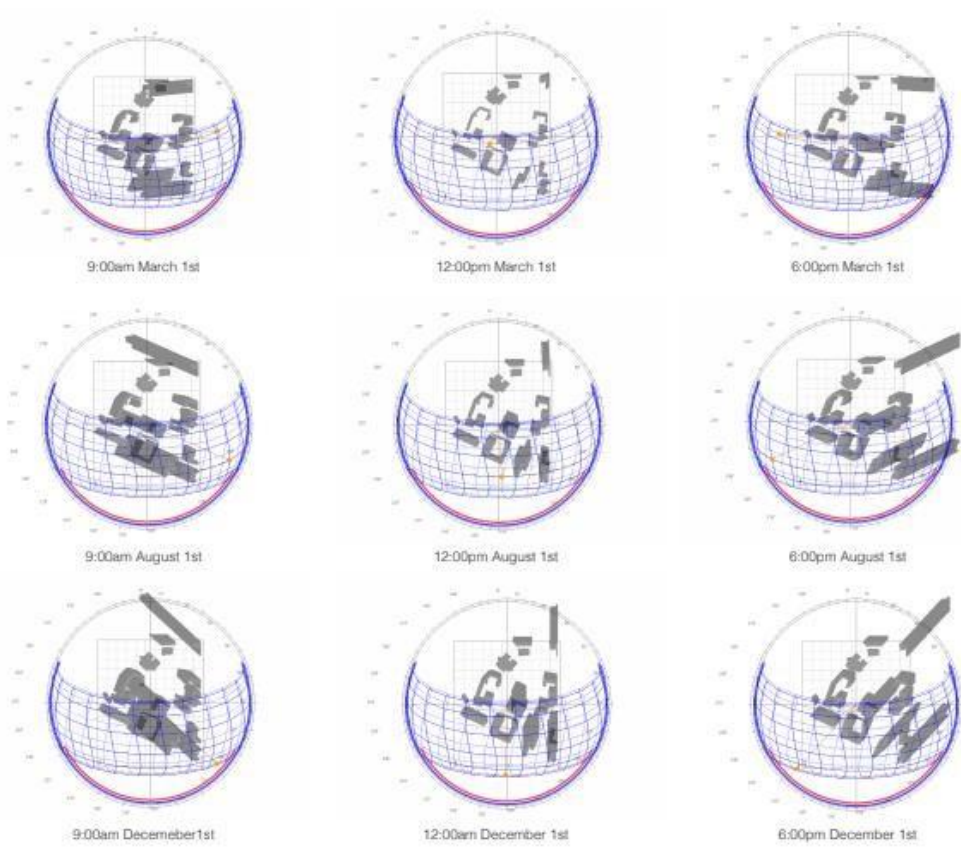
Greenings:
Plants on the landscape areas provide extra aesthetics and diversity to the building design. Besides, the considerable amount of heat the plants absorbed from the building can lower the workload on the air-conditioning system, further decreasing energy consumption and operational cost.

Sustainability:
As being increasingly advocated by modern building design practices, integration of sustainable elements to structures would be aesthetically and environmentally beneficial to the new student hostel. Positive impression from the general public could also be received.

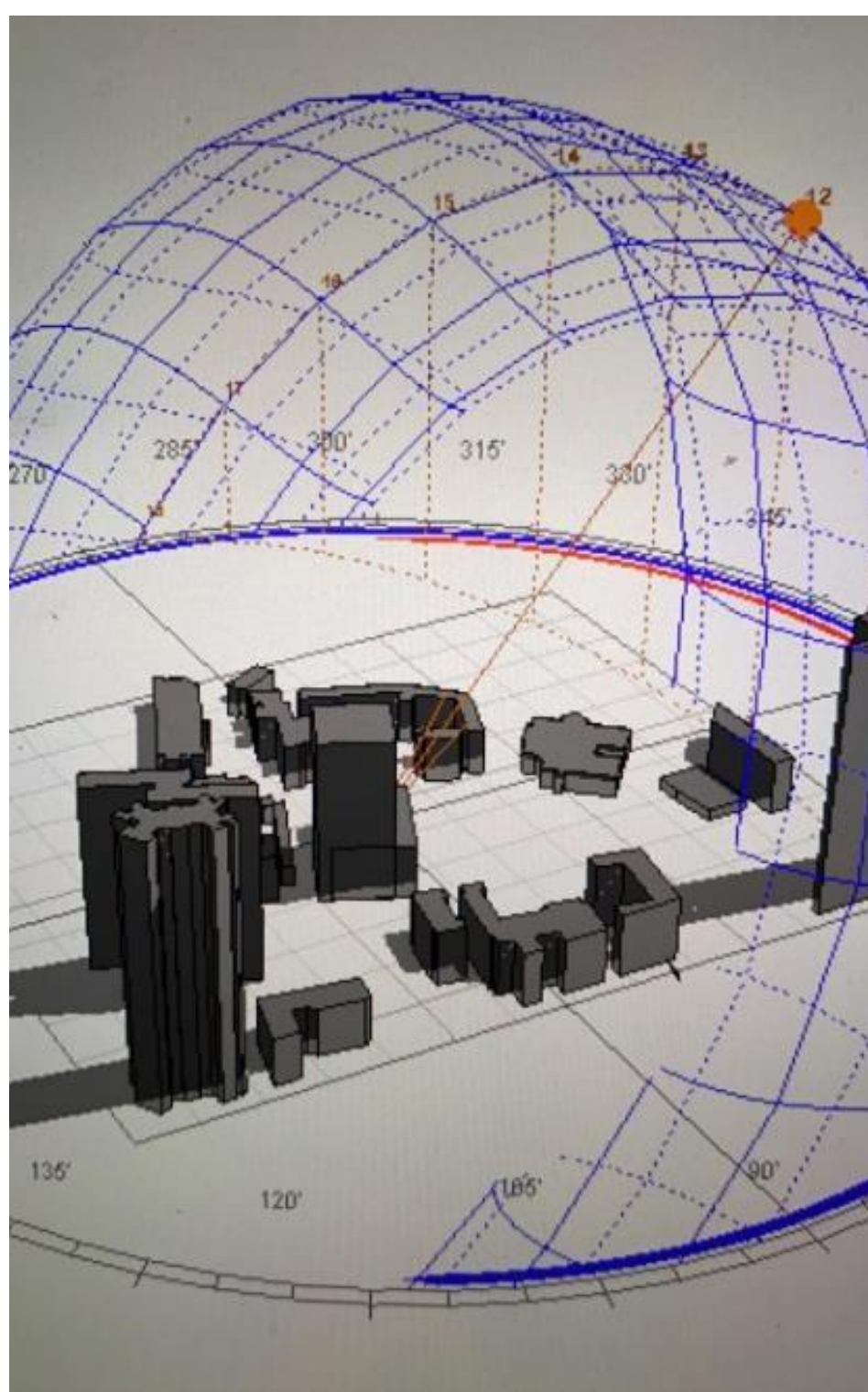


Site Layout Plan 1:1000

Shading of the building in different period of time



Software Interface

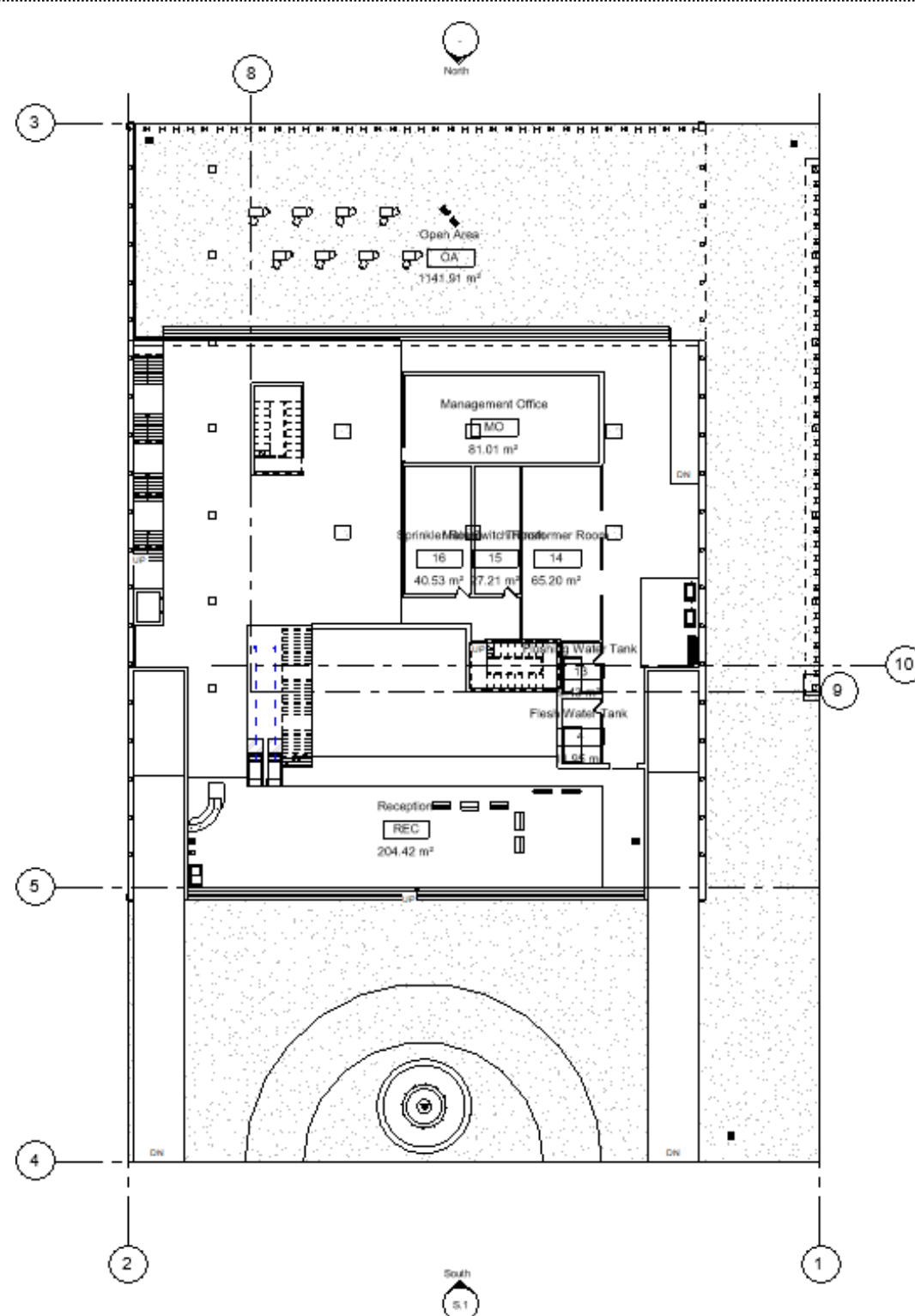


Computational Design:

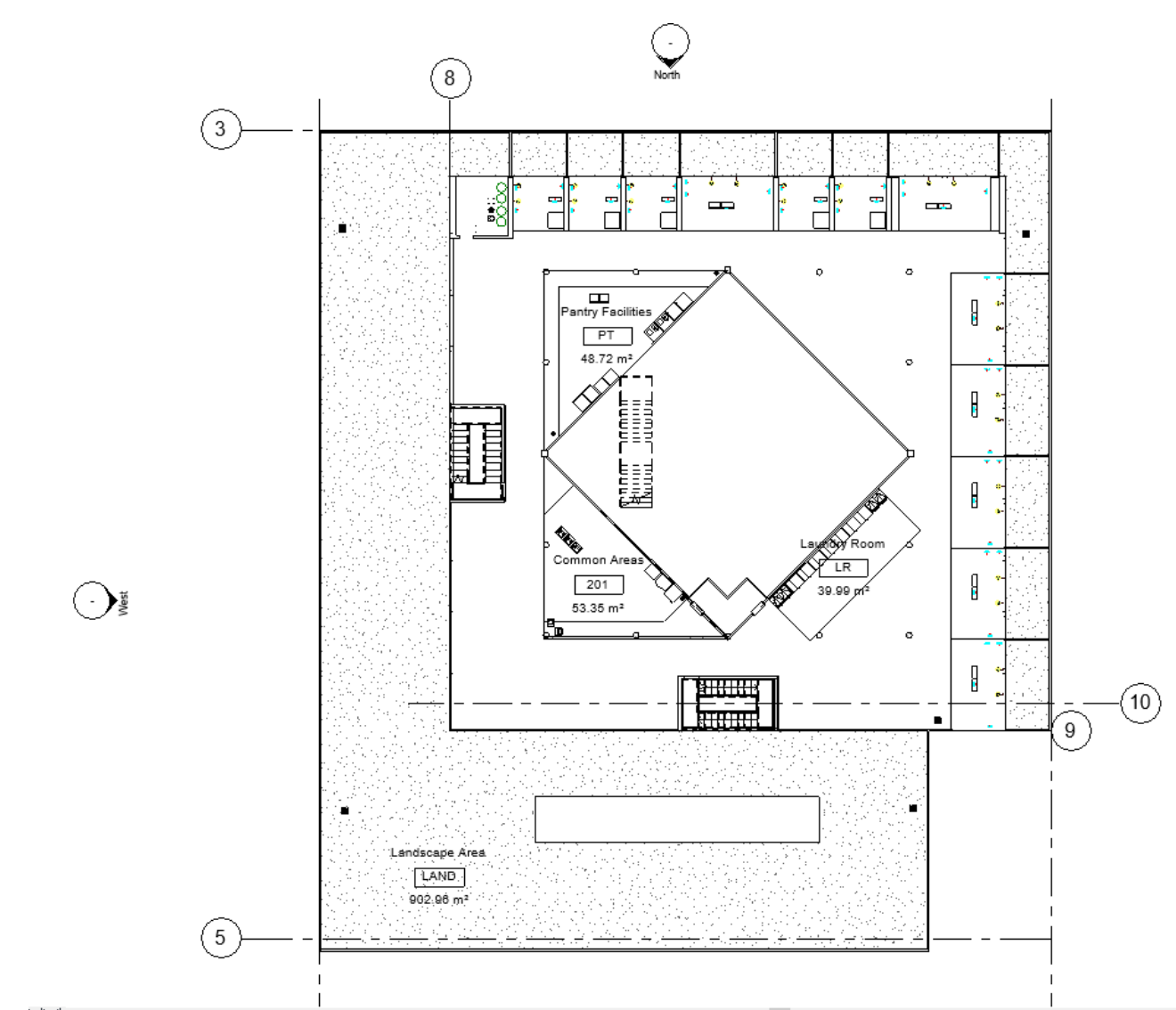


Perspective View:

Located at the top of the podium structure, the landscape area grants an enormous capacity for recreation activities and provide extensive scenes for residents. A small garden could be moreover be formed to provide extra functionality and sustainability to the building. Residential units as shown are designed to have a glass panel to replace its outward-facing wall to provide wide landscape to the residents to improve the everyday living of students and guests.



Podium (Ground) Floor Plan 1:500



Main Building Floor Plan 1:500

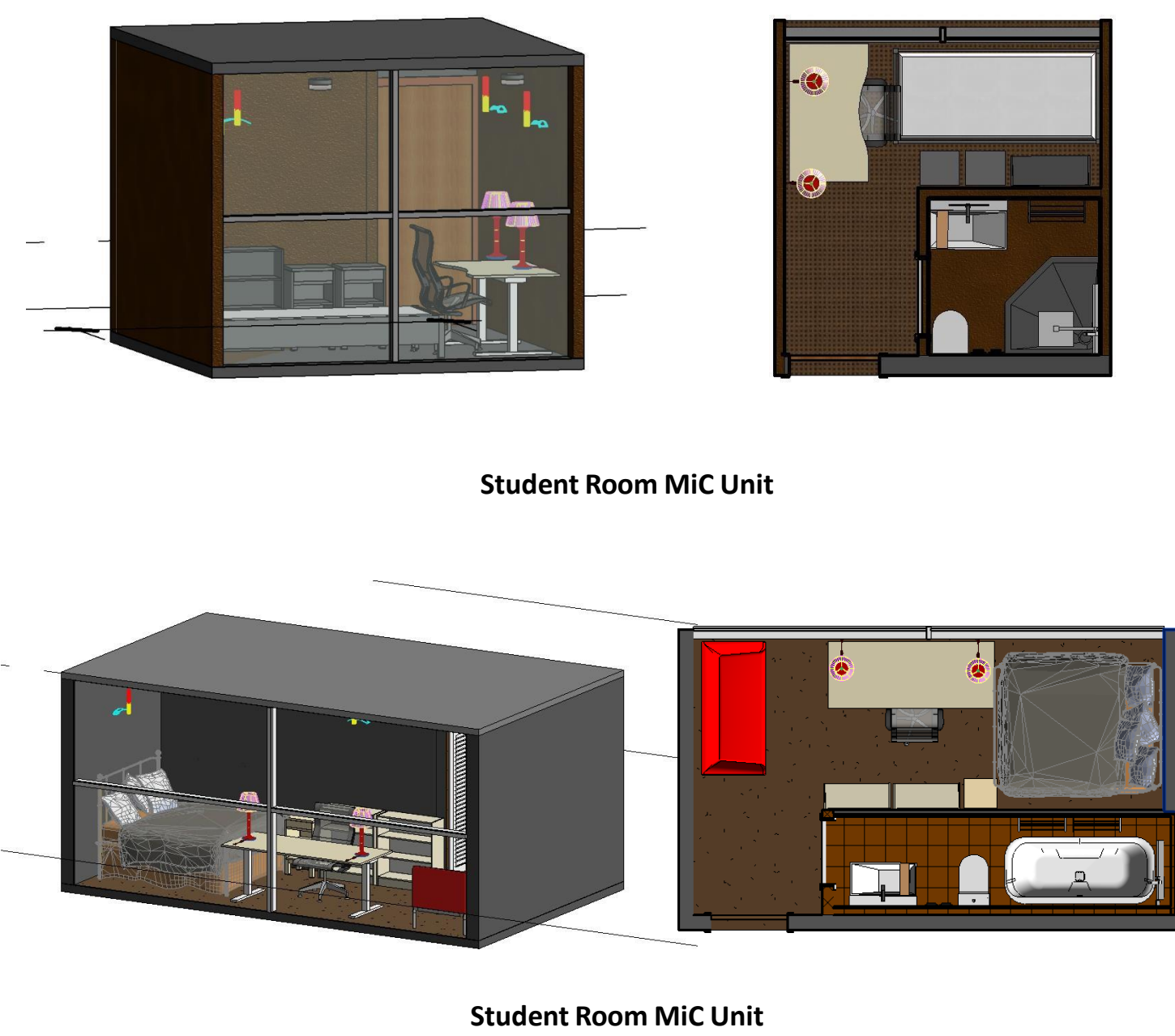


Novel forms of staircases and railings can be produced with the advancement of BIM technologies. Furniture can also be displayed to visualise interior layout of different levels, defining new methods to demonstrate the result of a construction project to business partners.

Internal Perspective 1:500



Overall Bird Eye view (Night View)



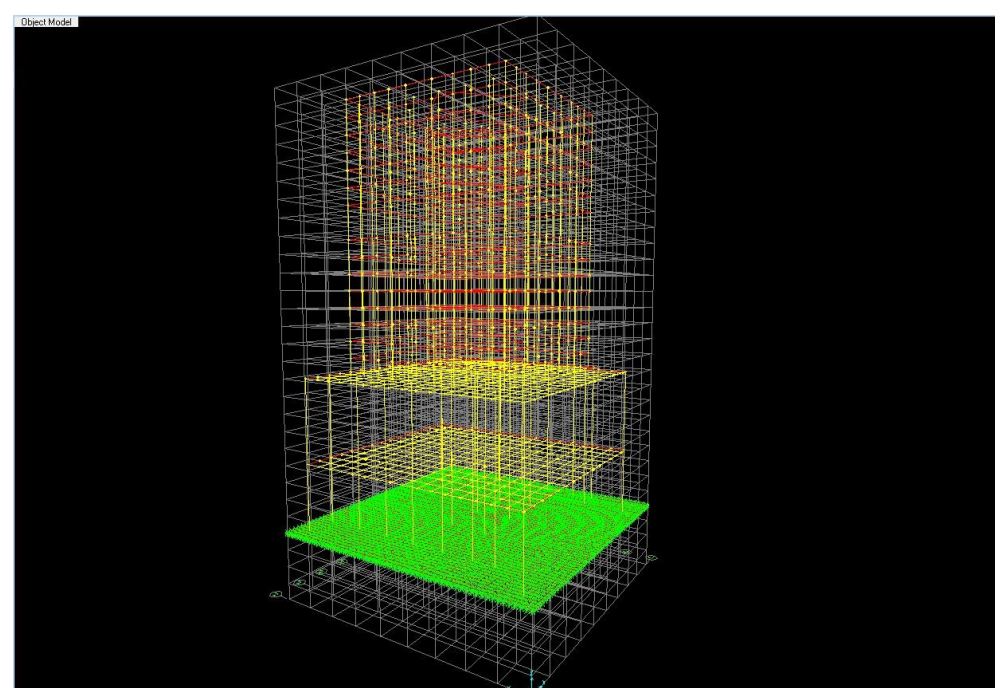
Student Room MIC Unit

Student Room MIC Unit

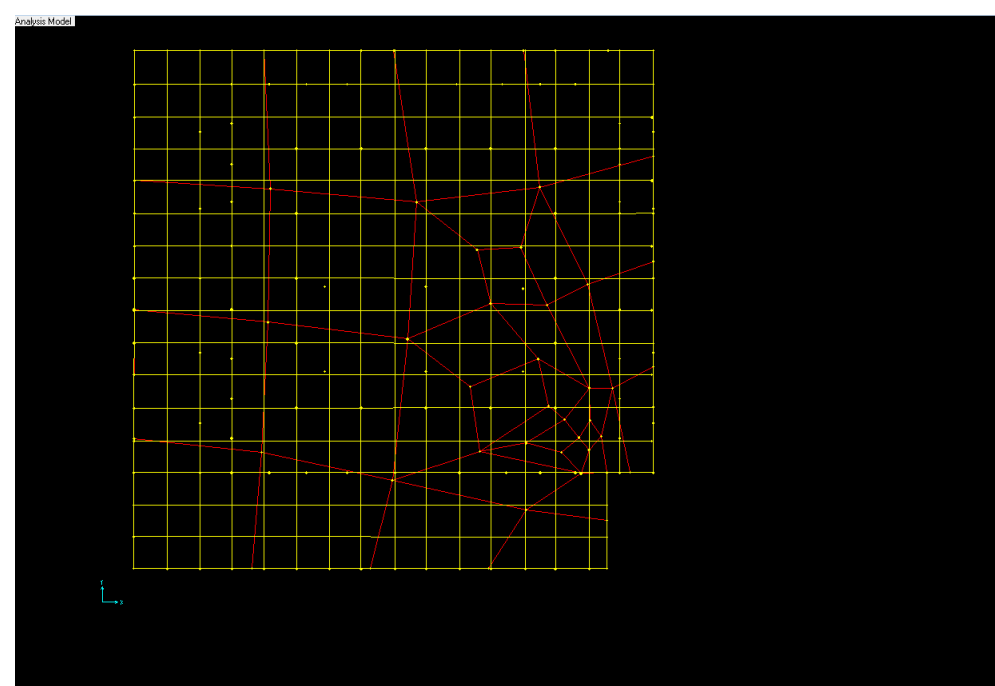
MiC: Being a trendy construction strategy in modern engineering, MiC technologies are suitable for the residential units in view of their relatively small spatial dimensions as well as the fact of the high labour cost and land storage rent in Hong Kong.

Perspective View:

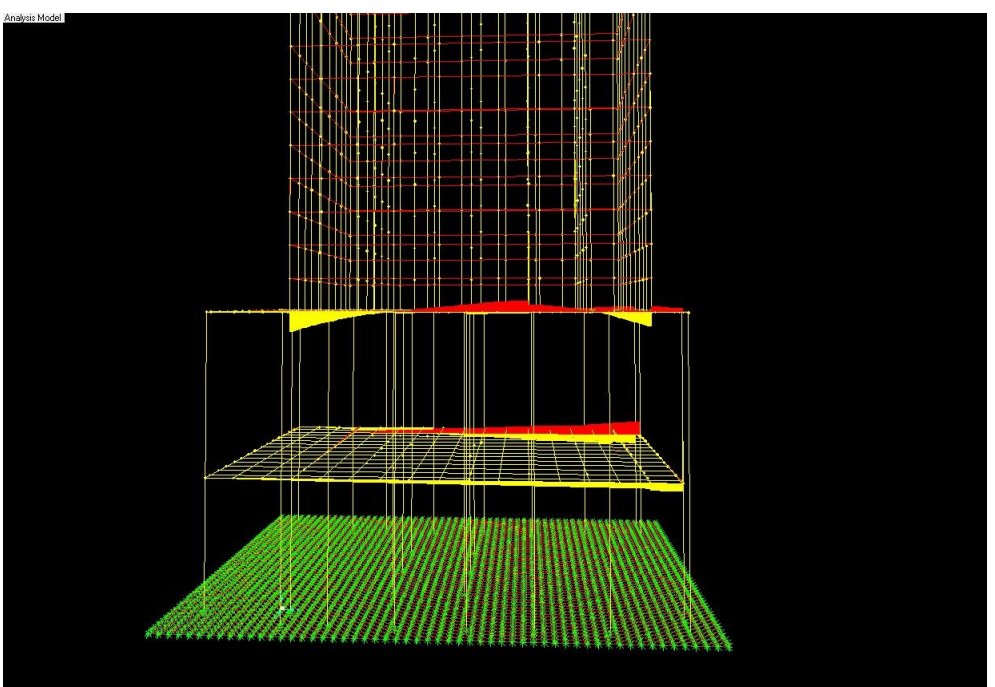
The outermost columns and those on the corners of the podium structure are Reinforced Concrete with appropriate quantities of rebars installed, which could demonstrate satisfactory tensile stresses induced from the moment generated by the main building. On the walls of the podium, rather steel bars are used in a framing pattern majorly due to their lightweight characteristics and high strength-to-weight ratio.



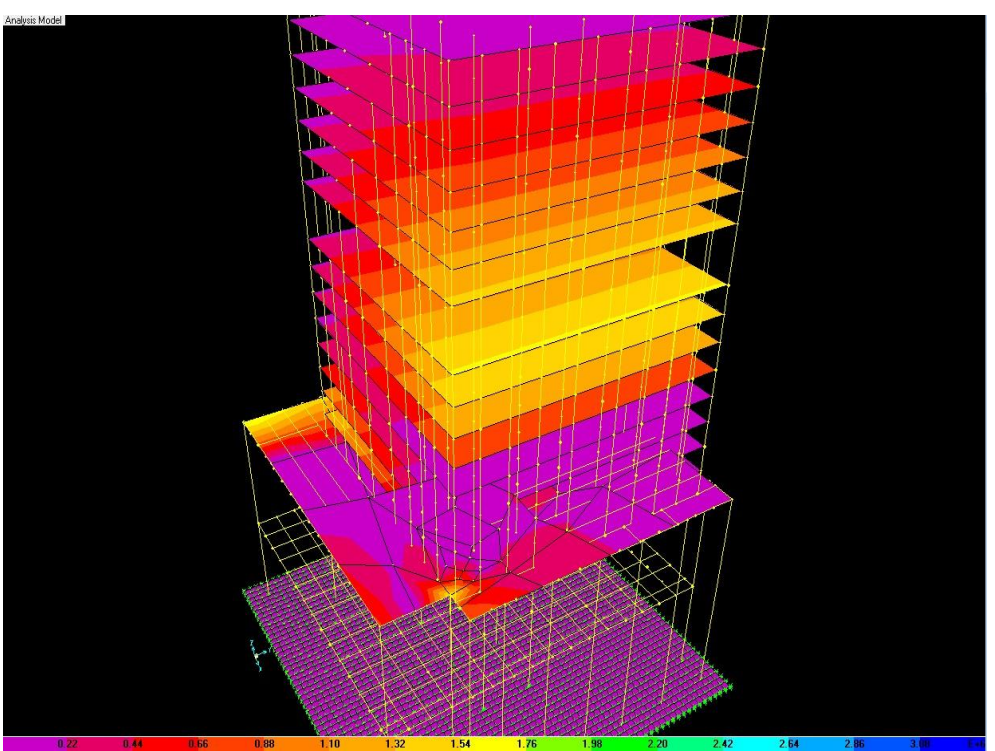
Structural Framework of the building



Exaggerated Deformation at the base of the Main Building Structure



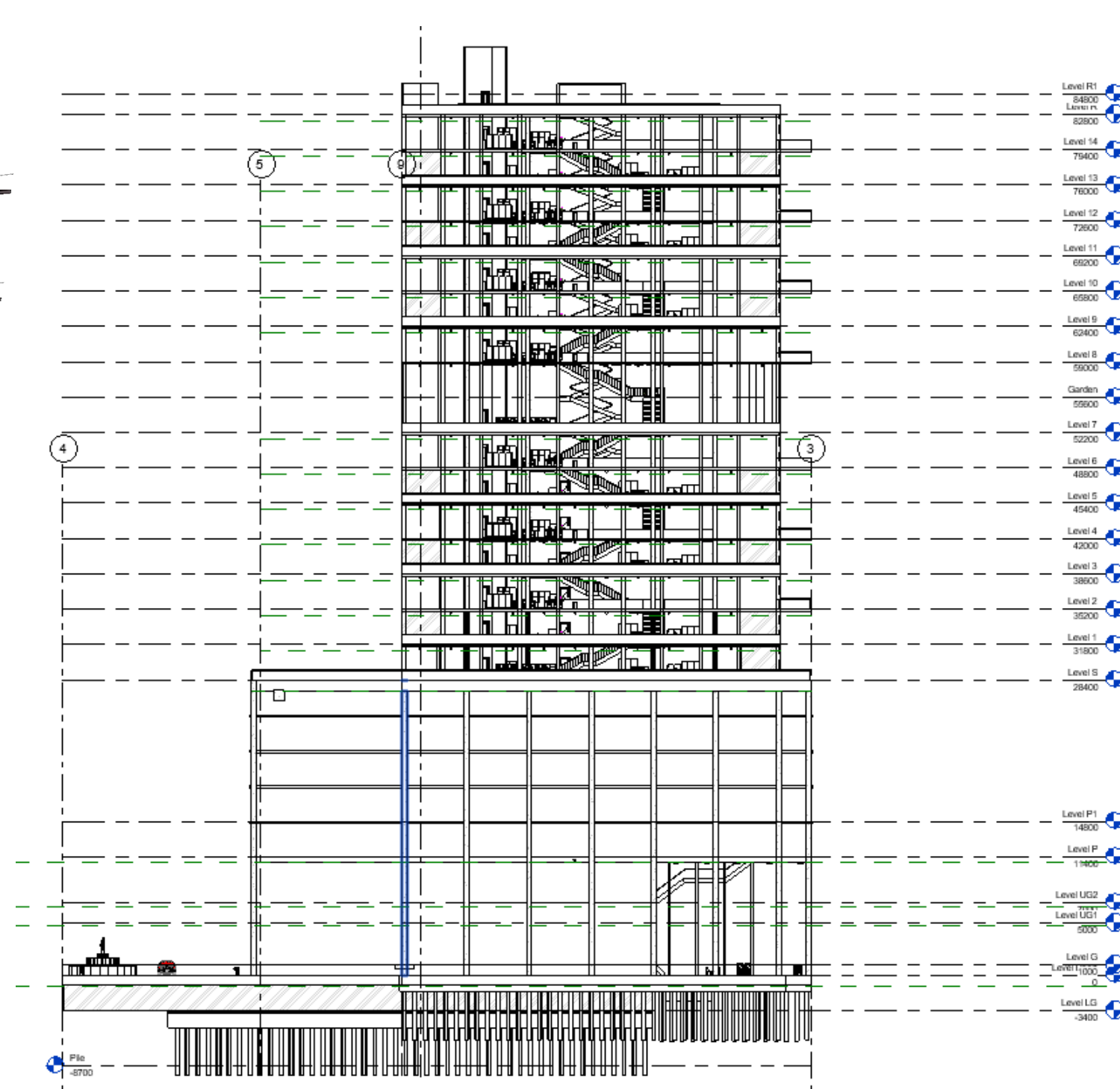
Bending Moment Diagram on Major Structural Slabs



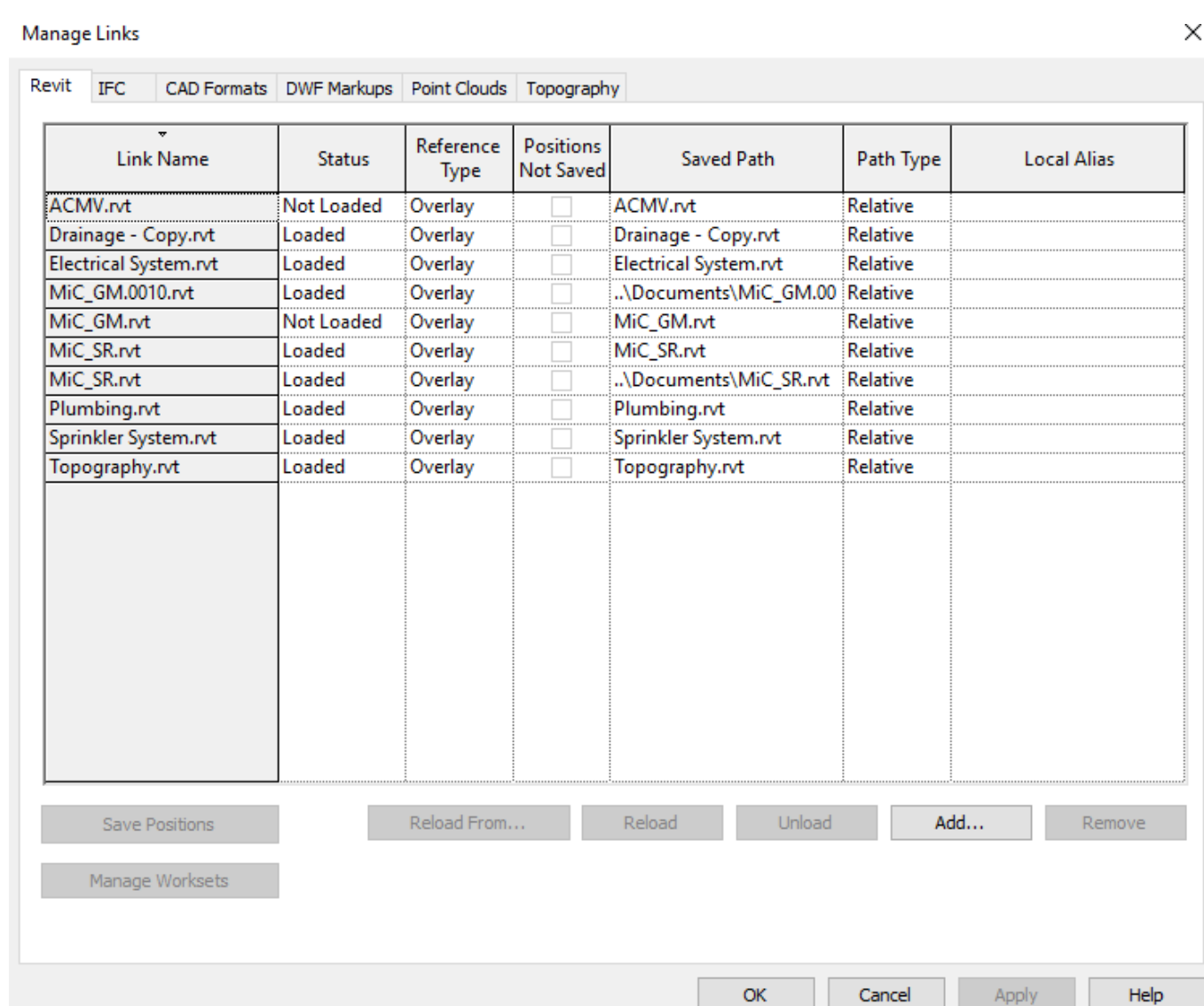
Maximum Shear Forces Distribution on All Floor Slabs

Internal Perspective 1:500

Meanwhile, for the main building structure, a case system superstructure is adopted with inner reinforced concrete columns near the courtyard enclosed by the outermost steel bars installed at the periphery of the building. Concrete columns thus can majorly tolerate the downward-acting Dead Load of the building, meanwhile the steel bars demonstrating decent tensile loading capabilities would be majorly dealt with tensile forces due to z-direction moment or tensile stresses exerted by bending moment along the direction of the steel bars,

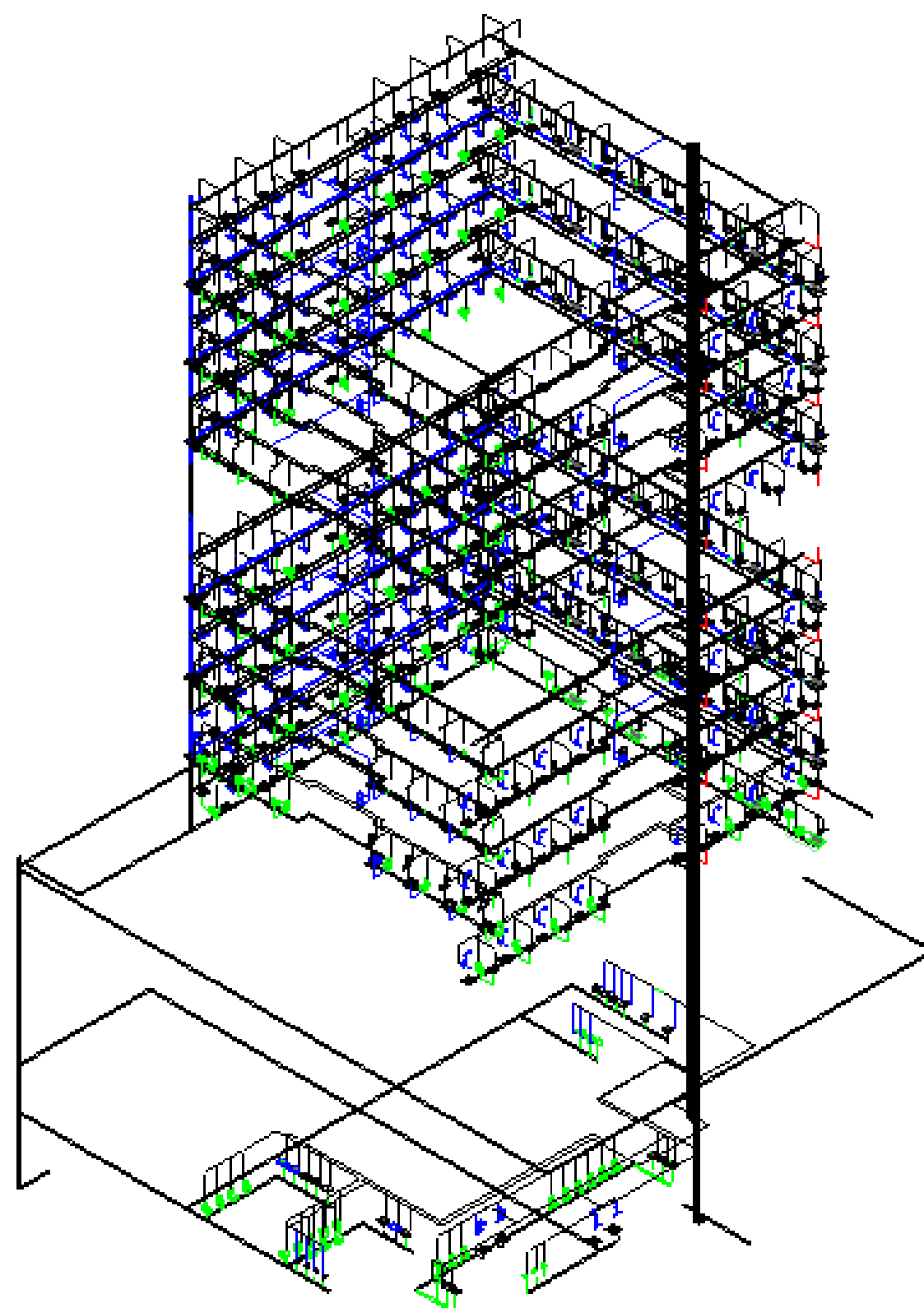


CIC BIM Competition 2020 – Submission Poster Template

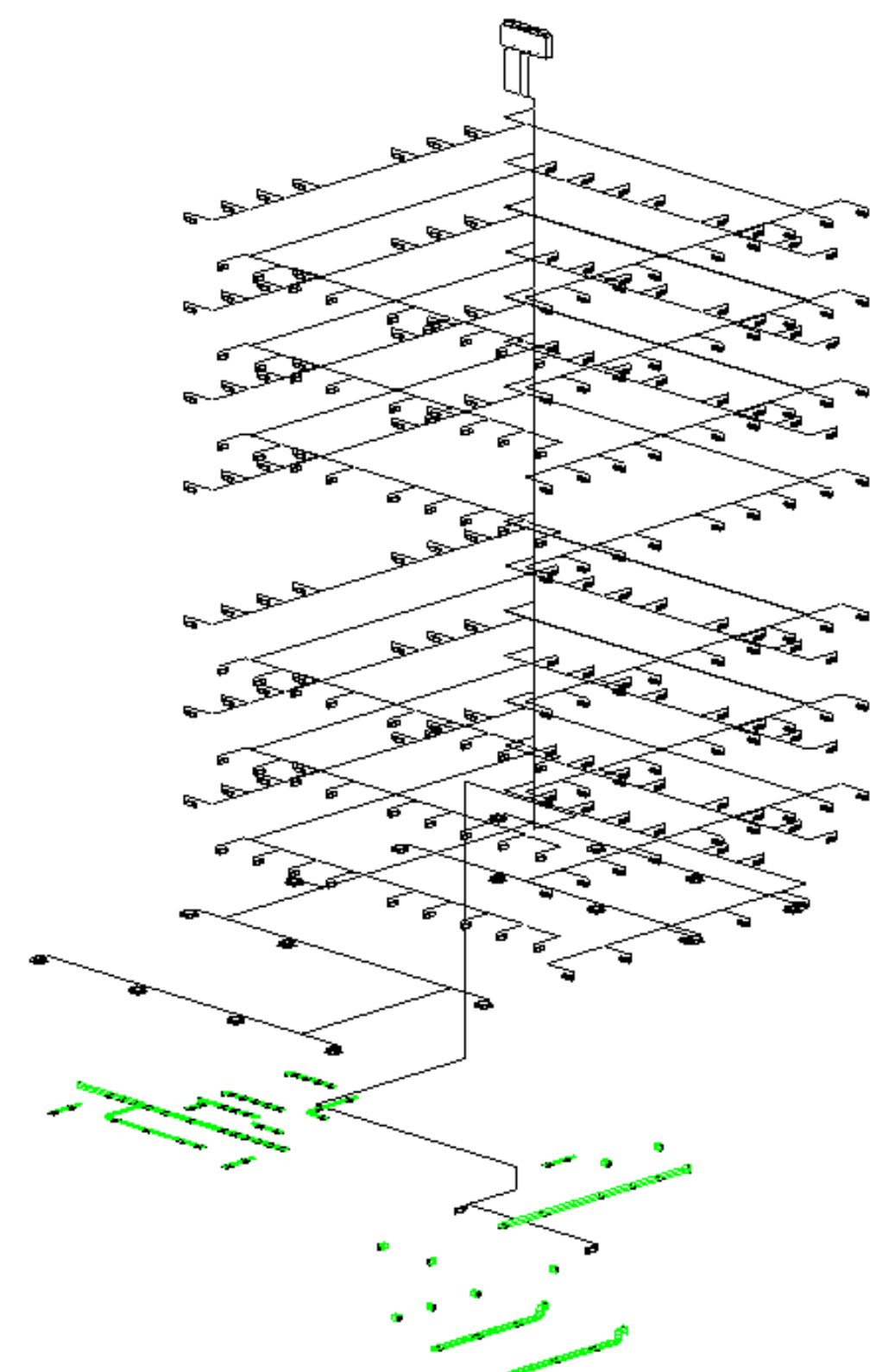


Design Coordination:

Being one of the most popular BIM software, Revit accepts modelling files imported from other BIM software which would greatly facilities division of work and a working environment. Communication between participants from different discipline, namely architects, structural engineers, MEPs, and surveyors, would be greatly enhanced. Productivity would be significantly improved.



Plumbing and Drainage System



Air Conditioning and Mechanical Ventilation System

Perspective View:

Energy crisis is a major issue concerned all around the world nowadays. Sustainable building shall be one of the solutions achieving by saving energy. In this design project, it targets and implies to consume less energy, achieve more energy efficient and environmentally friendly. Variable refrigerant flow systems is provided for single student room, guest room, management office, medical room, sport hall and auditorium while the common areas is natural ventilated. T5 lamp and LED is employed to provide sufficiency luminance along with save electricity. Besides concerning basic comfort and needs for the occupants, healthy and safe environment shall also be main considered. Appropriate water supply and drainage system is adopted to prevent the presence of bacteria. Natural ventilation for toilet is further designed by providing anti-contagion measures.



Environment Analysis

4D Modelling & Construction Analysis



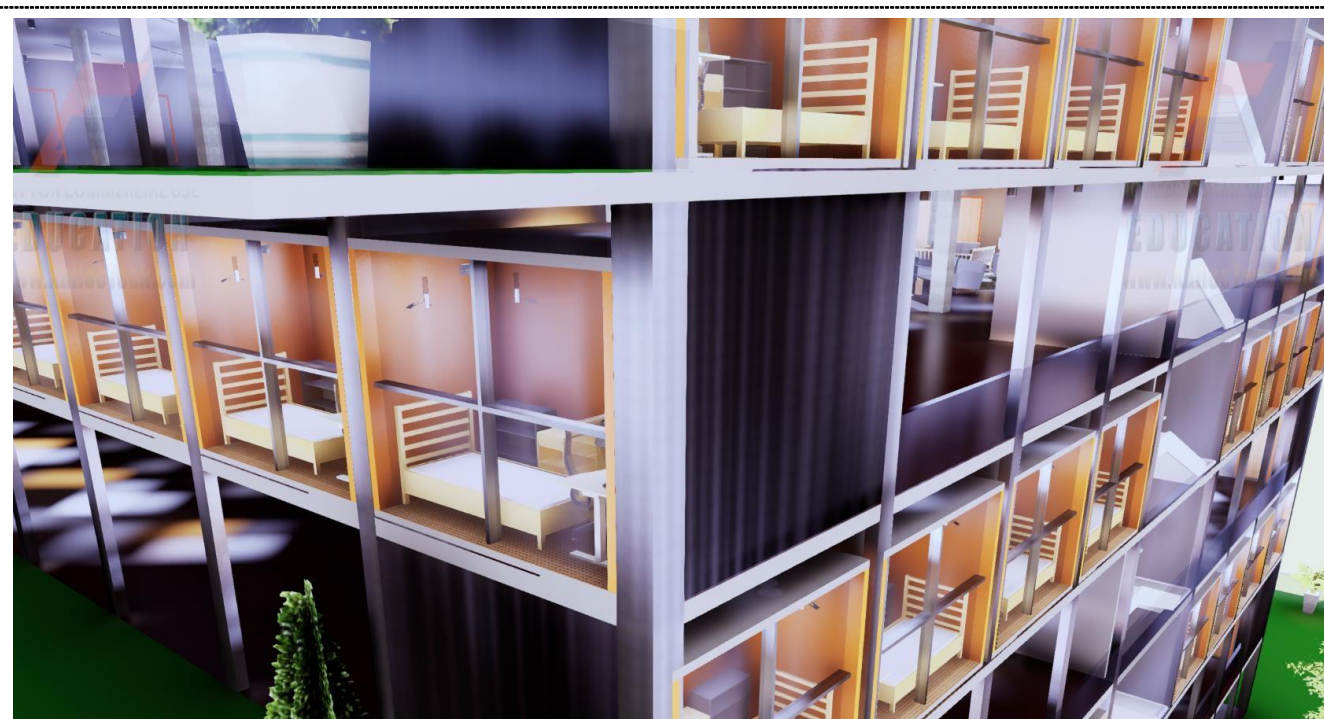
Structural Analysis

MEP Devices Analysis

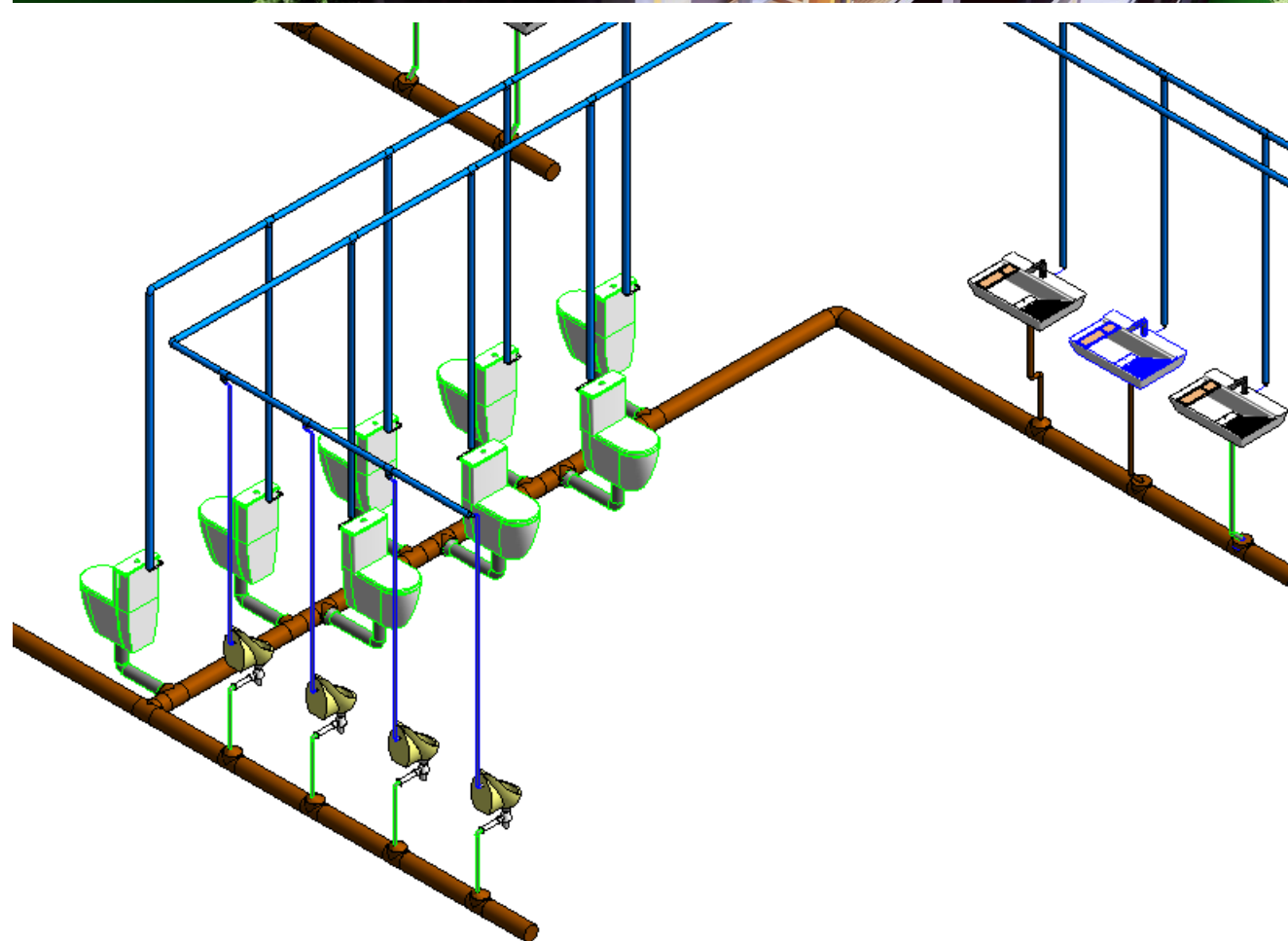


Final-stage Project Visualisation

Project Team Collaboration

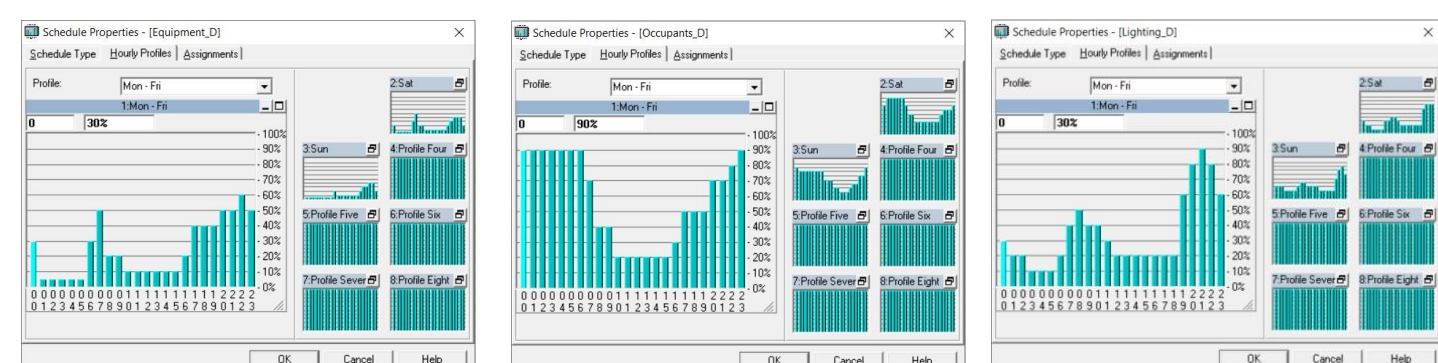


Installation of Building Services System in Single Single Student Room and Guest Room

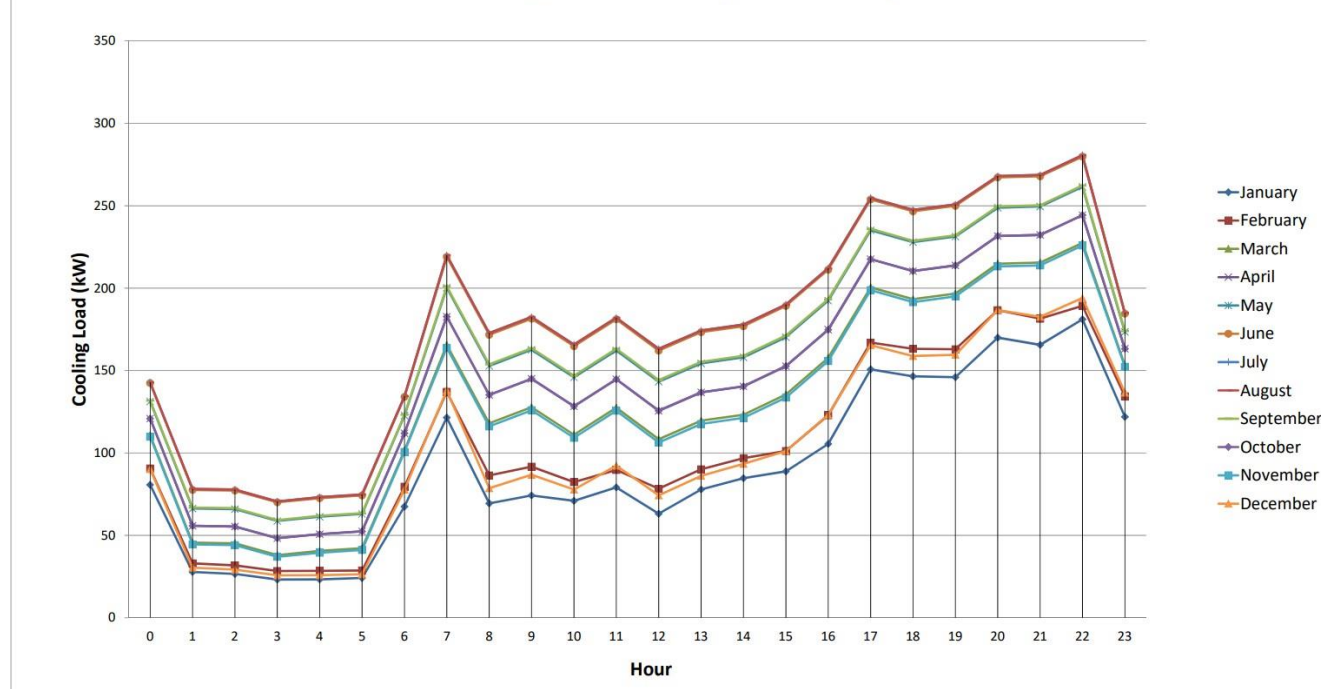


Plumbing and Drainage System for Toilets in Male Toilet in Canteen

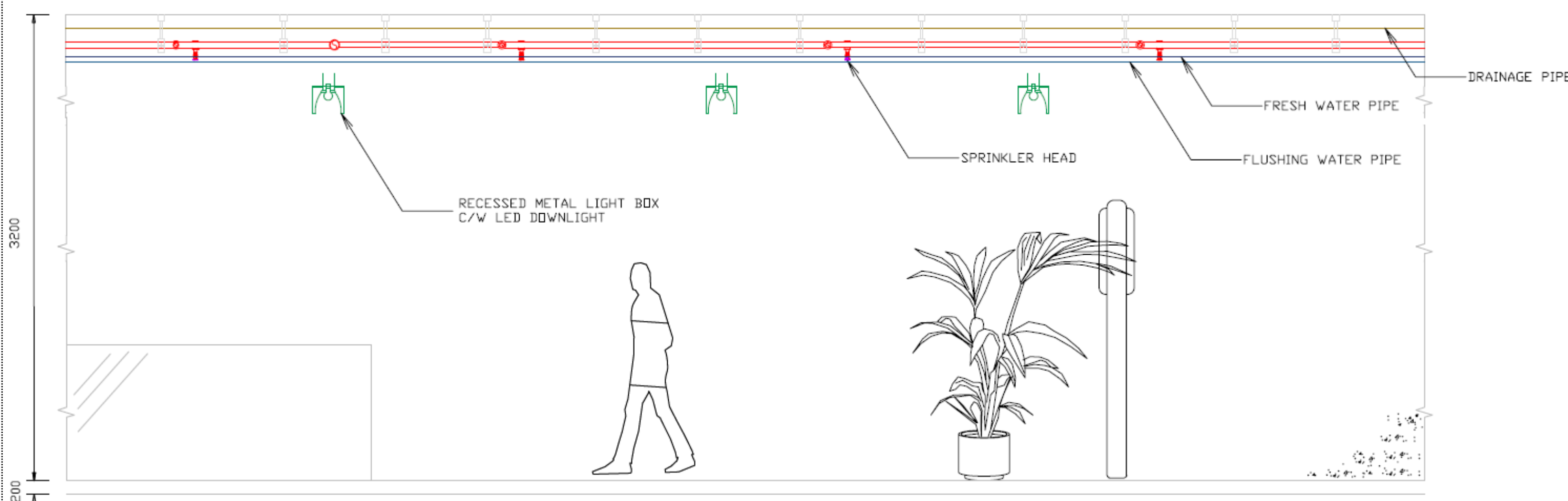
Internal Perspective 1:500



Cooling Load Profile (E-20 Result)



Computational Design



Section Perspective View for Combined Services in Common Area

Sectional Perspective 1:500