

BIM为建筑界带来的冲击

冯树坚

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香港大学BIM 课程讲师

A.C.I.D. 董事總經理



甚麼是BIM?

B = Building

建筑

I = Information

资讯

M = Modelling

模型 / 模拟

建築資訊

图型性资讯

Plan 平面图

Section 剖面图

Elevation 立面图

Area Diagrams 面积图

Schematic Designs 方案图

Building Plan 审批图

Structural Plans 结构图

E/M Drawings 机电图

Schematics 机电示意图

Details 大样图

Other Diagrams... 其他图

图型性资讯

Area Schedule 面积表

Finishing Schedules 装潢表

Door/Window/Louvre 门窗表

Beam/Column Schedule 梁柱

Equipment Schedule... 机器表

Program 进度

Cost Estimate 造价表

Quantity Take Off 材料表

Bills of Quantities 物料清单

Variation Assessments 变更

建築資訊

图型性资讯

Plan 平面圖

Section 剖面圖

Elevation 立面圖

Area Diagrams 面積圖

Schematic Designs 方案圖

e.g. AutoCAD,

Microstation

Structural Plans 結構圖

E/M Drawings 機電圖

Schematics 機電示意圖

Details 大樣圖

Other Diagrams... 其他圖

非图型性资讯

Area Schedule 面積表

Finishing Schedules 裝潢表

Door/Window/Louvre 門窗表

Beam/Column Schedule 樑柱

Excel 試算表

Access (Data Base)

MS Project

BQ Softwares 造價表

Quantity Take Off 材料表

Bills of Quantities 物料清單

Variation Assessments 變更

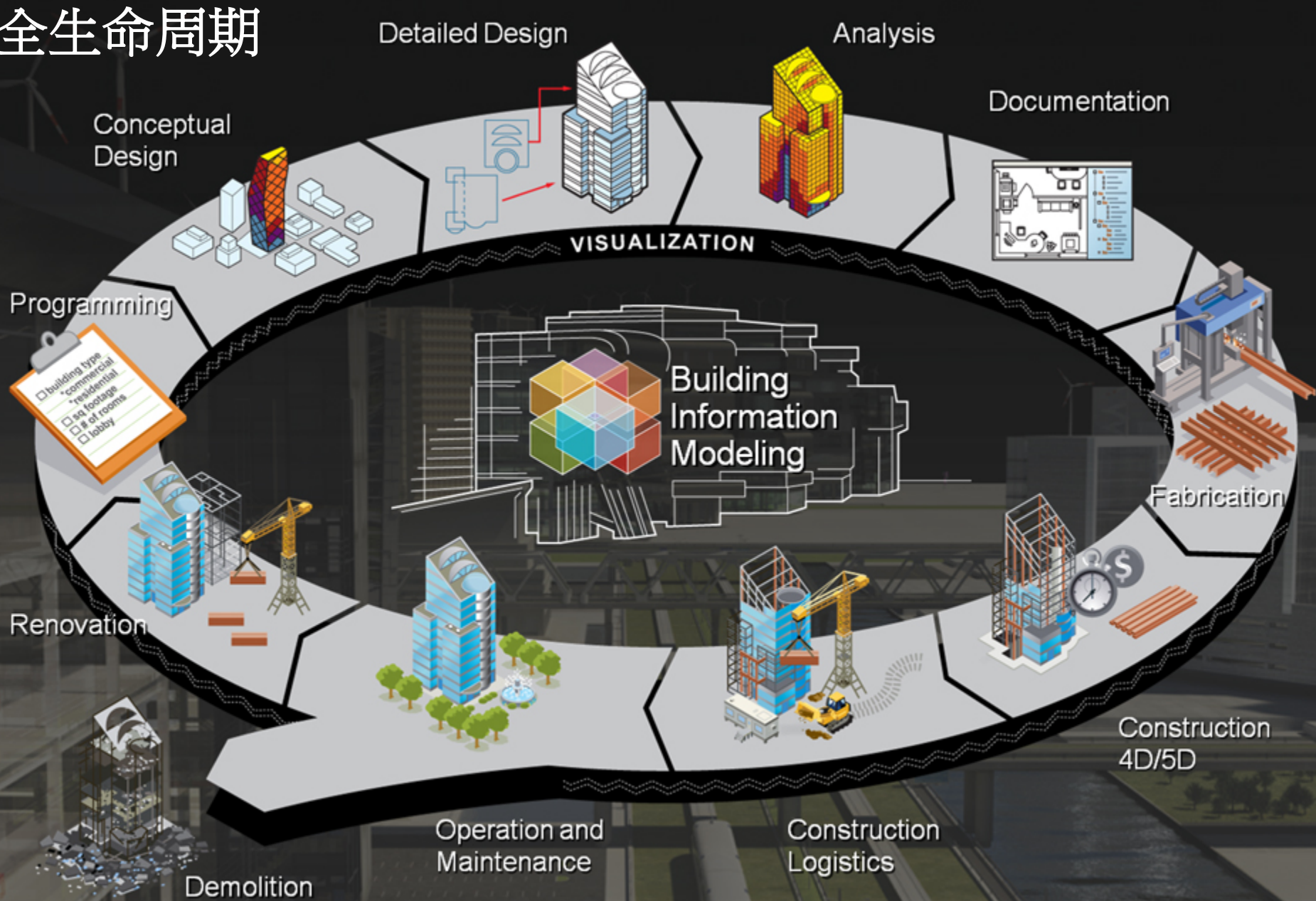
建筑资讯

BIM

Building Information Modeling

信息化建筑模型

全生命周期

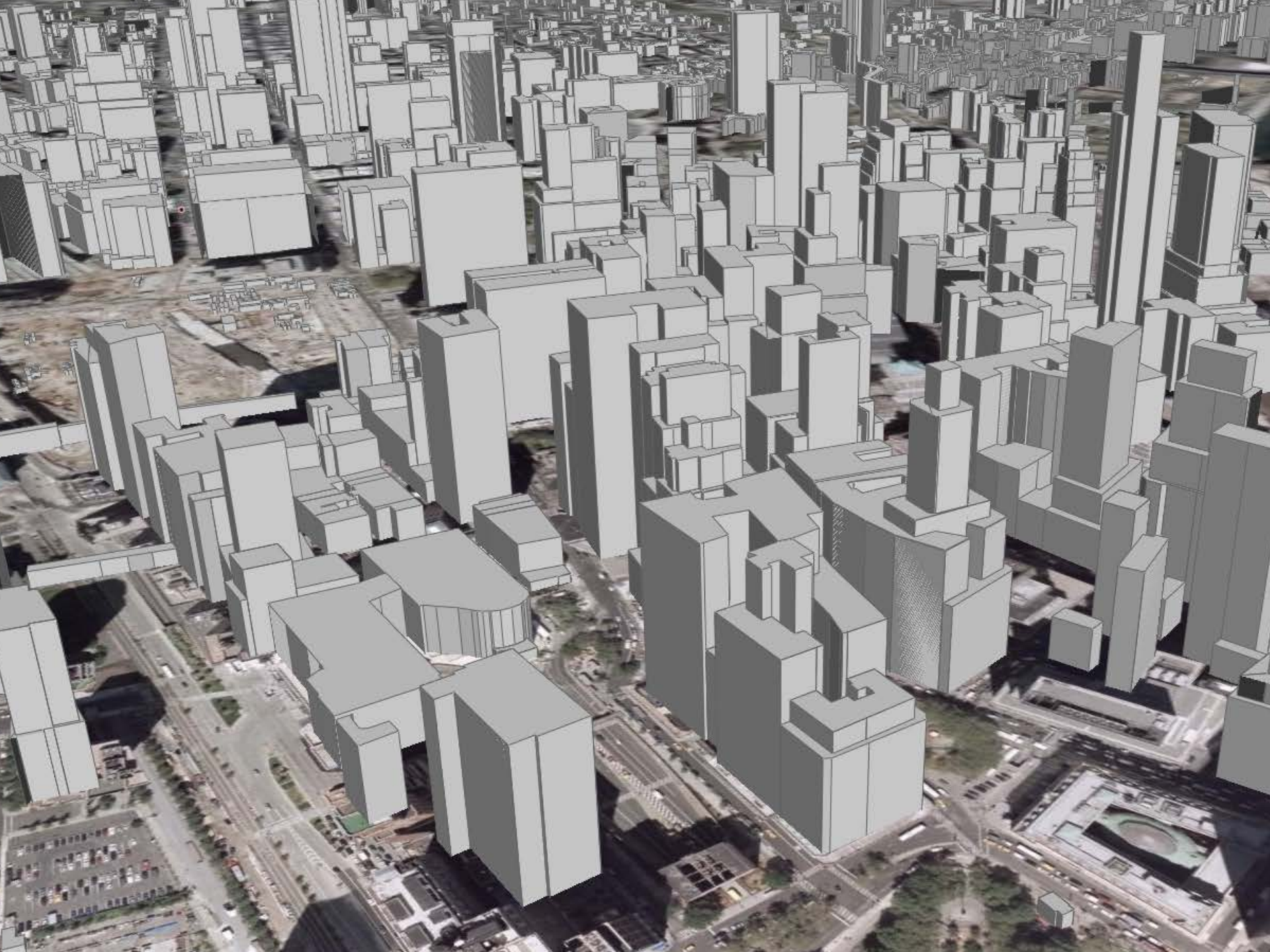


BIM为建筑界带来的冲击

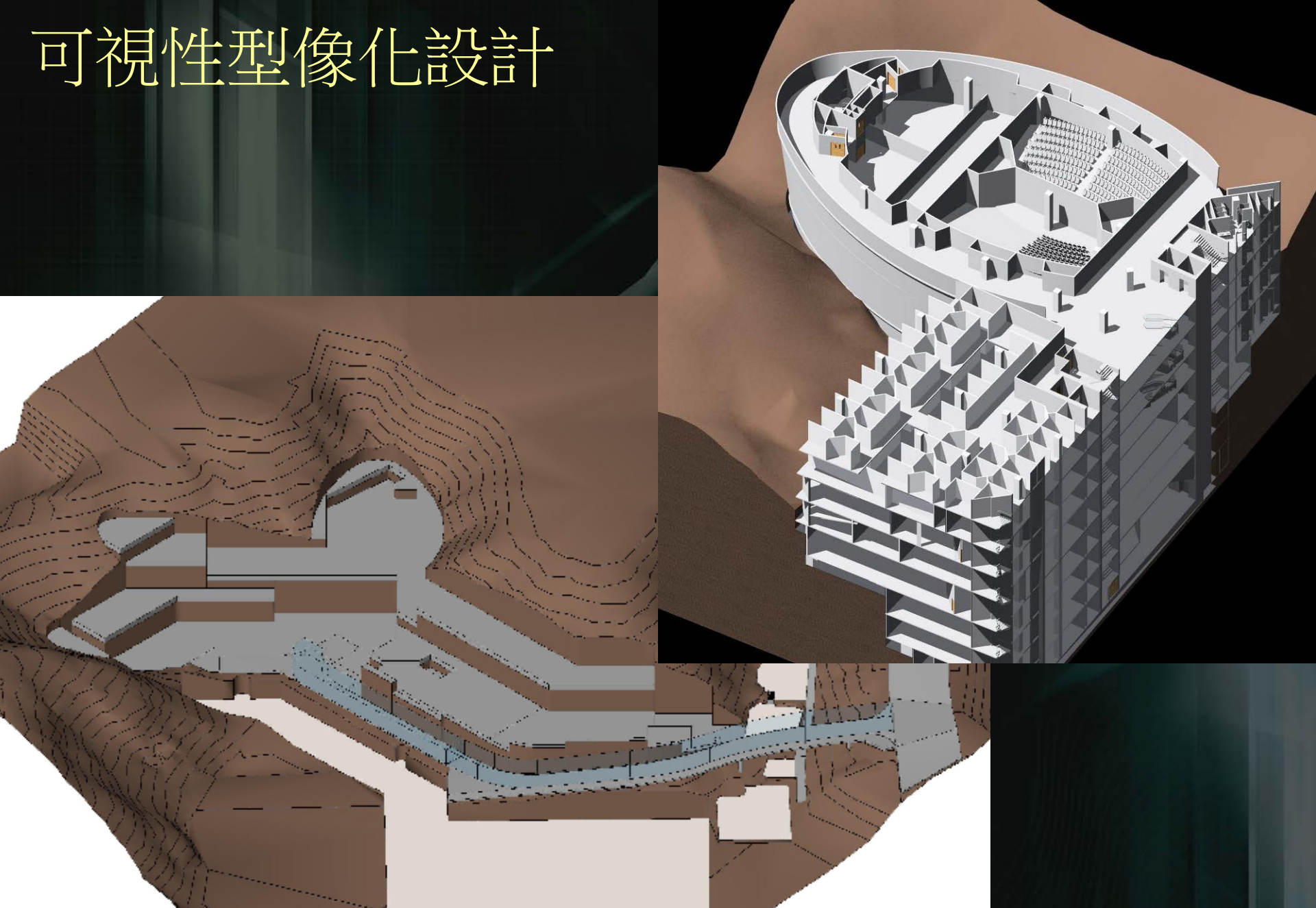
1. 可视性型像化设计
2. 图纸制作
3. 各专业协调合作
4. 物件清单及投标文件
5. 自动化送审文件
6. 科学性分析及可持续发展设计
7. 复杂几何形状建筑
8. 从建造到制造
9. 运维

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1. 可视性型像化设计
2. 图纸制作
3. 各专业协调合作
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可視性型像化設計

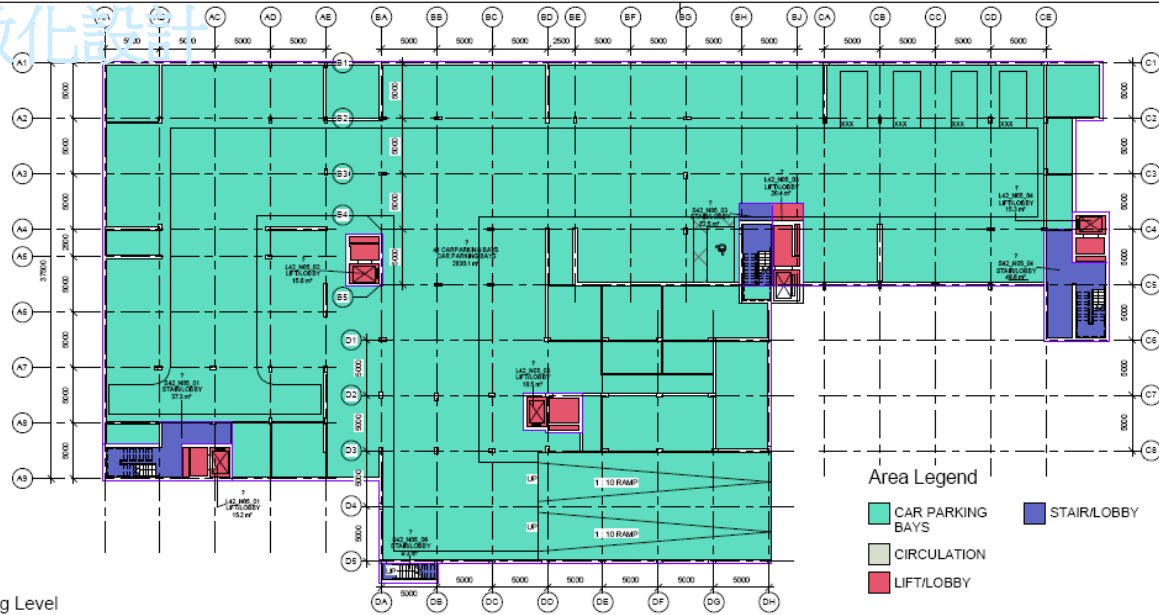






動態展示

互動展示



1 Parking Level
1:200



2 Level 1
1:200

Key: 0 2 4 6 8 10 METERS

THE BLUE CITY
PHASE-1

Drawing Title: NEIGHBORHOOD 05 BASEMENT & LEVEL 1 - AREA PLAN

Scale: 1:200

Project: Section 1 - 1.4.2 City Beach Apartments

Client: Al Sawadi Investment & Tourism Co.LLC

Developer: Blue City Company 1 SAOC

Architect: ASSOCIATED CONSULTING ENGINEERS (ACE) INTL

Design and Construction: AECO Development LLC

Deep Supervision: Aedas

Project Manager: Section 1 - 1.4.2 City Beach Apartments

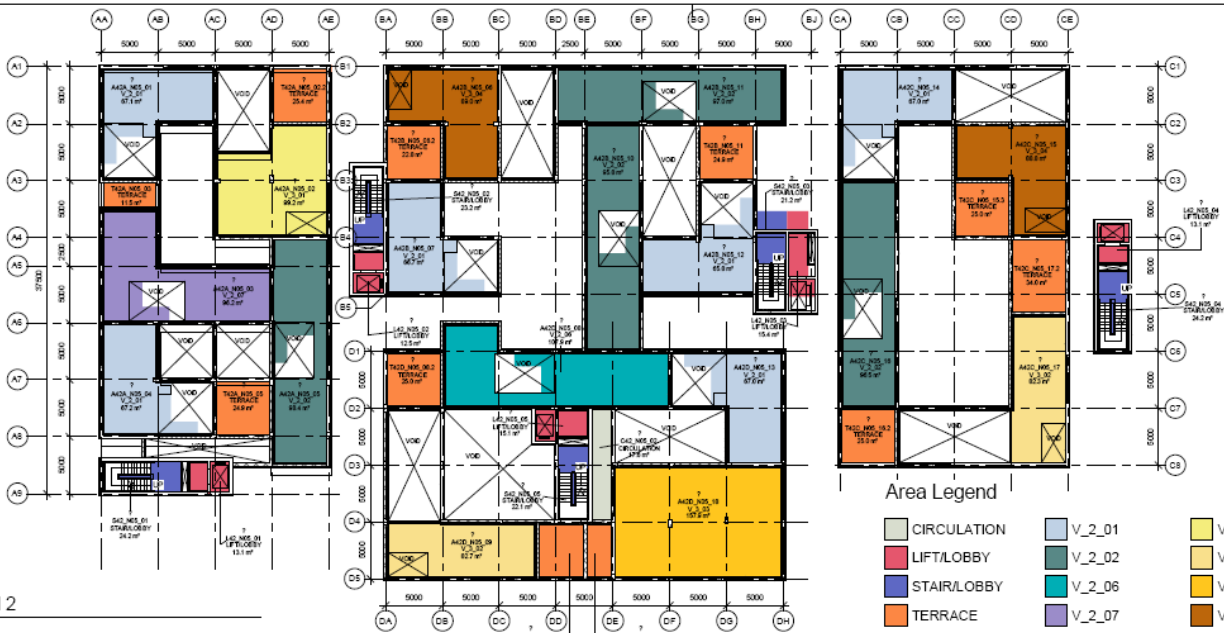
Design: Section 1 - 1.4.2 City Beach Apartments

Drawn by: EL

Checked by: PS

Approved by: M2

Approved by: M2



Scale: 0 2 4 6 8 10 meters

THE BLUE CITY
PHASE-1

Owner/Client: Al Sawadi Investment & Tourism Co.LLC

Developer: bluecity1 Blue City Company 1 SAOC

Project Engineer: ASSOCIATED CONSULTING ENGINEERS (ACE) INTL

Design and Construction: AECO AECO Development LLC

Design Submission: Aedas

Project Name: NEIGHBORHOOD 05 LEVEL 2 & LEVEL 3 - AREA PLAN

Drawing No: BCI-0420-PO-00A-01-061

Scale: 1 : 200 Date: 08/05/08 No.: 000

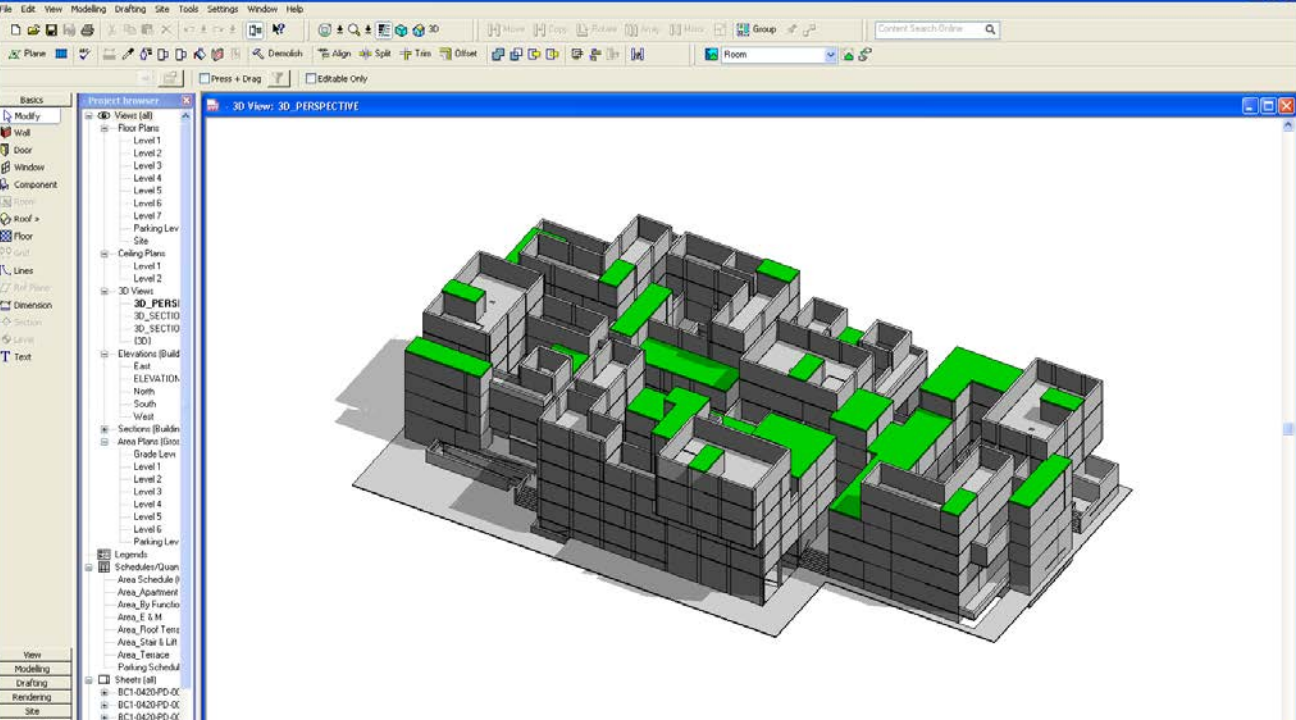
Submitted/Project Number: 07860

Designer: EL

Drawn by: PS

Approved by: R22

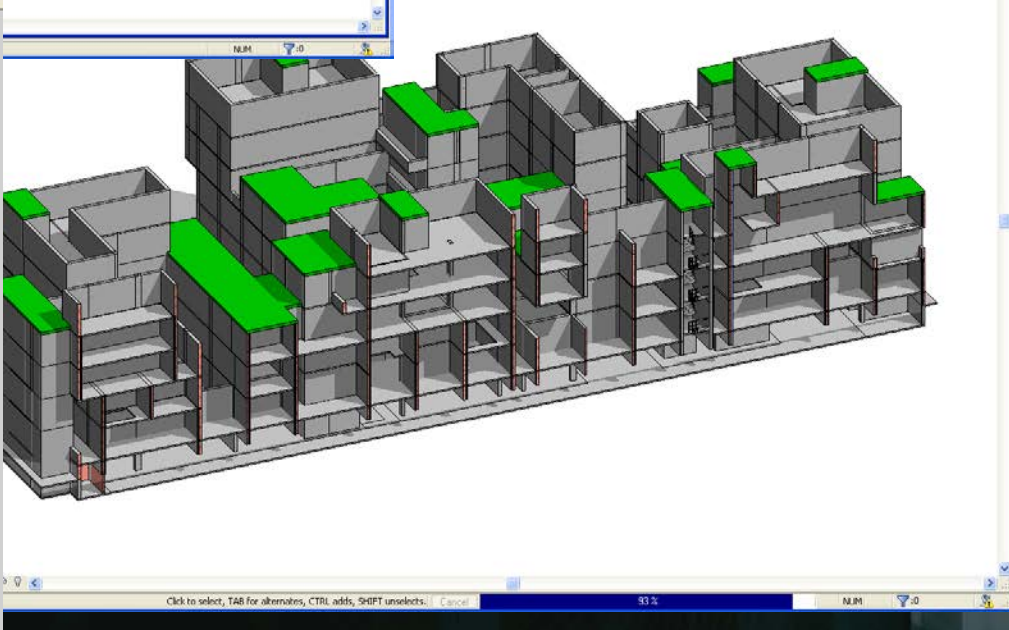
Approved by: R22



Project Browser

- Views (all)
 - Floor Plans
 - Level 1
 - Level 2
 - Level 3
 - Level 4
 - Level 5
 - Level 6
 - Level 7
 - Parking Lev
 - Site
 - Ceiling Plans
 - Level 1
 - Level 2
 - 3D Views
 - 3D_PERSP
 - 3D_SECTION
 - 3D_SECTION (3D)
 - Elevations (Build)
 - East
 - ELEVATION
 - North
 - South
 - West
 - Sections (Build)
 - Area Plans (Gross)
 - Grade Lev
 - Level 1
 - Level 2
 - Level 3
 - Level 4
 - Level 5
 - Level 6
 - Parking Lev
 - Legends
 - Schedules/Quan
 - Area Schedule (P)
 - Area_Apartment
 - Area_By Function
 - Area_E & M
 - Area_Floor Tent
 - Area_Stair & Lift
 - Area_Terrace
 - Parking Schedule
 - Sheets (all)
 - BC1-0420-PD-00
 - BC1-0420-PD-00
 - BC1-0420-PD-00

| Level | Number | FP Number | Area By Functions | AED Number | Name | Area |
|----------|-------------|-------------|-------------------|------------|-------|------|
| Level 1 | A42A_N05_08 | A42A_N05_08 | V_2_02 | | 78.2 | |
| Level 1 | A42B_N05_10 | A42B_N05_10 | V_2_02 | | 80.7 | |
| Level 1 | A42B_N05_11 | A42B_N05_11 | V_2_02 | | 80.7 | |
| Level 1 | A42C_N05_16 | A42C_N05_16 | V_2_02 | | 80.3 | |
| Level 2 | A42A_N05_08 | A42A_N05_08 | V_2_02 | | 98.4 | |
| Level 2 | A42B_N05_10 | A42B_N05_10 | V_2_02 | | 95.8 | |
| Level 2 | A42B_N05_11 | A42B_N05_11 | V_2_02 | | 97.0 | |
| Level 2 | A42C_N05_16 | A42C_N05_16 | V_2_02 | | 96.5 | |
| V_2_02.8 | | | | | 708.5 | |
| Level 1 | A42D_N05_08 | A42D_N05_08 | V_2_06 | | 91.6 | |
| Level 2 | A42D_N05_08 | A42D_N05_08 | V_2_06 | | 107.9 | |
| V_2_06.2 | | | | | 189.4 | |
| Level 1 | A42A_N05_03 | A42A_N05_03 | V_2_07 | | 80.2 | |
| Level 2 | A42A_N05_03 | A42A_N05_03 | V_2_07 | | 96.2 | |
| V_2_07.2 | | | | | 176.4 | |
| Level 1 | A42A_N05_02 | A42A_N05_02 | V_3_01 | | 158.0 | |
| Level 2 | A42A_N05_02 | A42A_N05_02 | V_3_01 | | 99.2 | |
| V_3_01.2 | | | | | 257.2 | |
| Level 1 | A42C_N05_17 | A42C_N05_17 | V_3_02 | | 187.3 | |
| Level 1 | A42D_N05_09 | A42D_N05_09 | V_3_02 | | 187.6 | |
| Level 2 | A42C_N05_17 | A42C_N05_17 | V_3_02 | | 82.3 | |
| Level 2 | A42D_N05_09 | A42D_N05_09 | V_3_02 | | 82.7 | |
| V_3_02.4 | | | | | 539.8 | |
| Level 2 | A42D_N05_18 | A42D_N05_18 | V_3_03 | | 157.9 | |
| Level 3 | A42D_N05_19 | A42D_N05_19 | V_3_03 | | 112.5 | |
| V_3_03.2 | | | | | 270.4 | |
| Level 1 | A42D_N05_06 | A42D_N05_06 | V_3_04 | | 157.8 | |
| Level 1 | A42C_N05_15 | A42C_N05_15 | V_3_04 | | 157.0 | |
| Level 2 | A42B_N05_06 | A42B_N05_06 | V_3_04 | | 88.0 | |
| Level 2 | A42C_N05_15 | A42C_N05_15 | V_3_04 | | 88.8 | |
| V_3_04.4 | | | | | 492.5 | |
| Level 3 | A42A_N05_19 | A42A_N05_19 | V_4_01 | | 215.7 | |
| Level 3 | A42B_N05_22 | A42B_N05_22 | V_4_01 | | 215.9 | |
| Level 3 | A42C_N05_28 | A42C_N05_28 | V_4_01 | | 217.2 | |
| Level 4 | A42A_N05_19 | A42A_N05_19 | V_4_01 | | 81.5 | |
| Level 4 | A42B_N05_22 | A42B_N05_22 | V_4_01 | | 82.1 | |
| Level 4 | A42C_N05_28 | A42C_N05_28 | V_4_01 | | 81.5 | |
| V_4_01.6 | | | | | 913.9 | |
| Level 2 | A42A_N05_20 | A42A_N05_20 | V_4_02 | | 157.9 | |
| Level 3 | A42B_N05_25 | A42B_N05_25 | V_4_02 | | 157.8 | |
| Level 3 | A42C_N05_27 | A42C_N05_27 | V_4_02 | | 158.8 | |
| Level 4 | A42A_N05_20 | A42A_N05_20 | V_4_03 | | 130.8 | |
| Level 4 | A42B_N05_25 | A42B_N05_25 | V_4_03 | | 130.8 | |
| Level 4 | A42C_N05_27 | A42C_N05_27 | V_4_03 | | 130.5 | |
| Level 4 | A42D_N05_30 | A42D_N05_30 | V_4_03 | | 130.9 | |

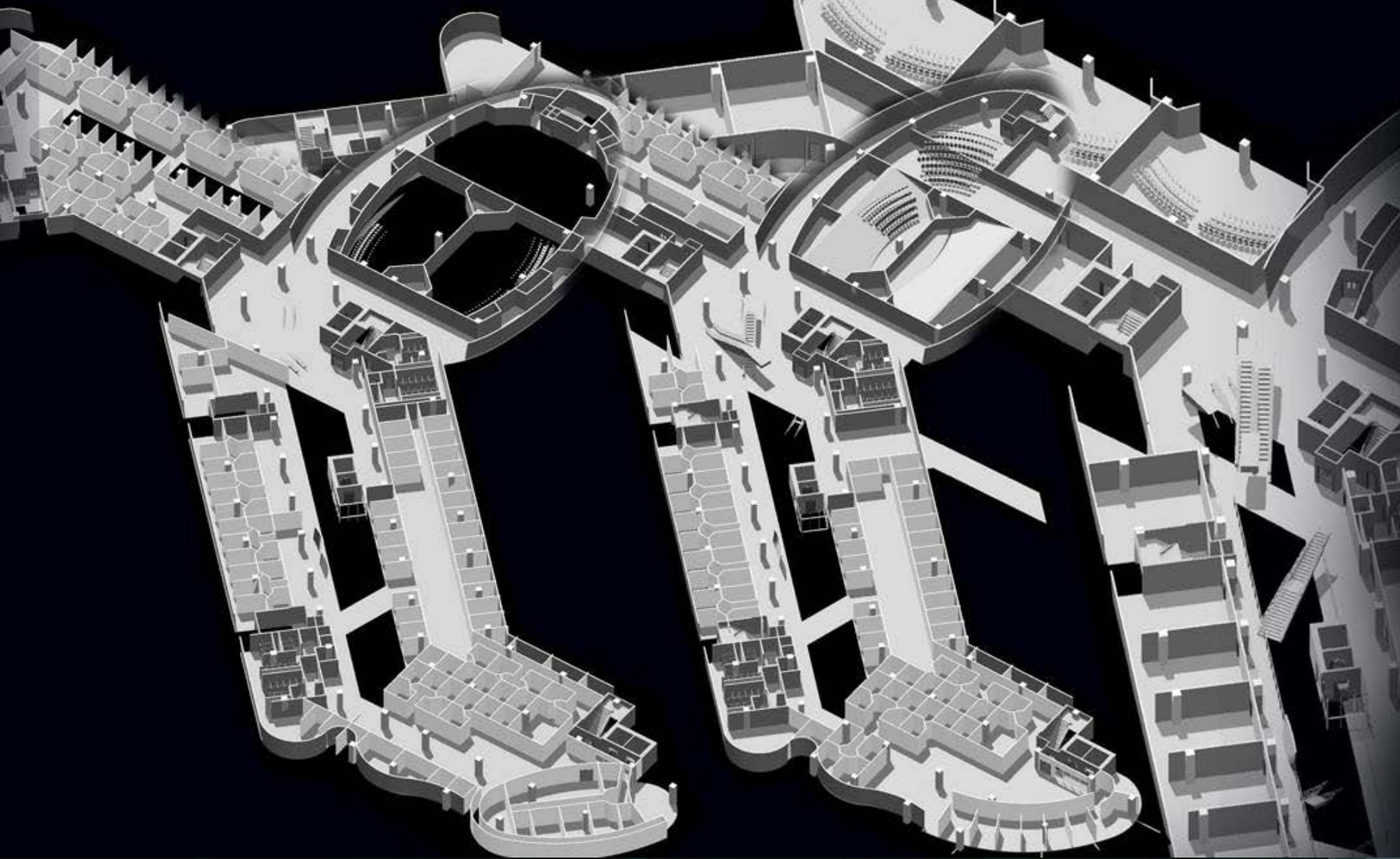


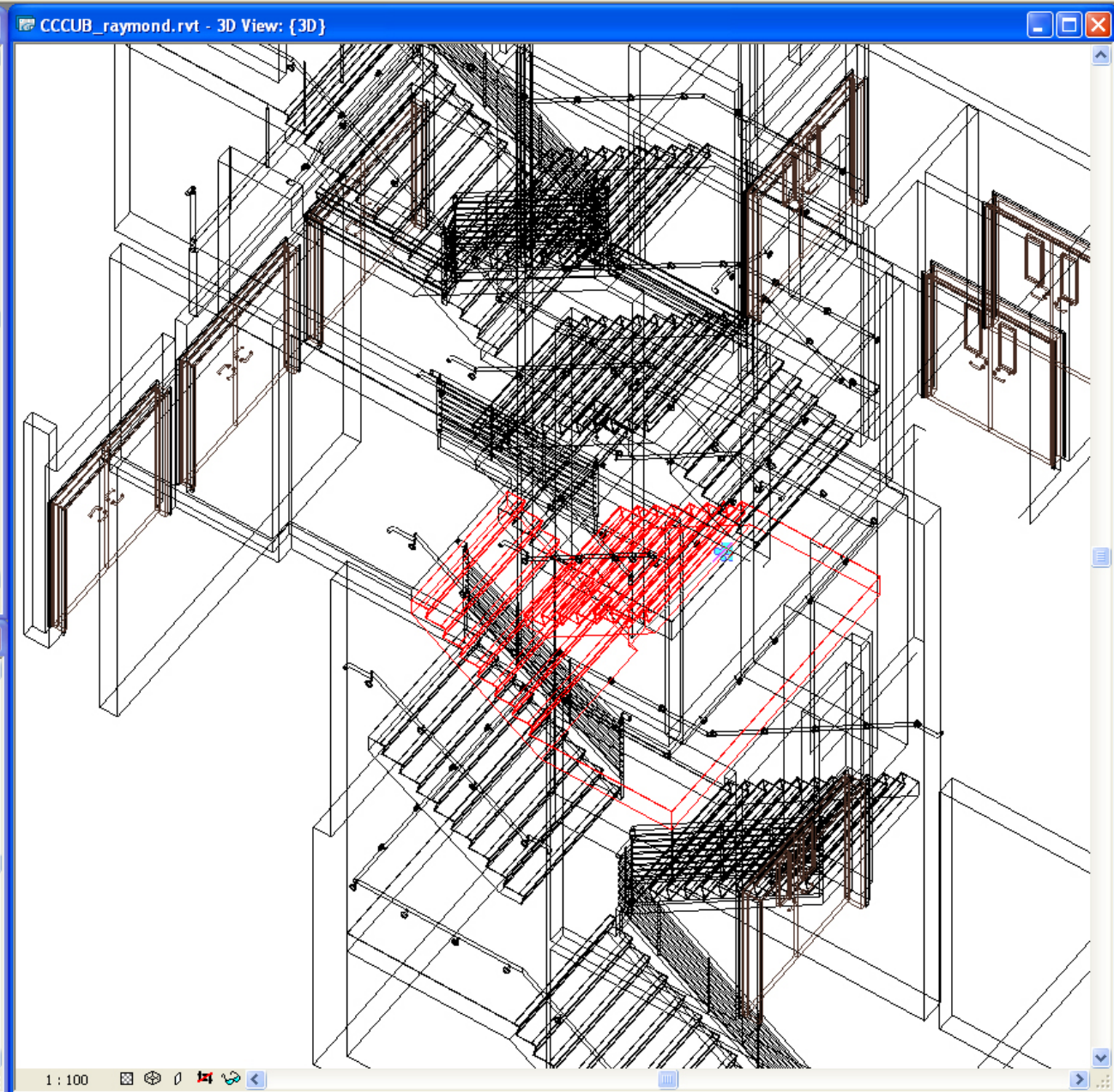
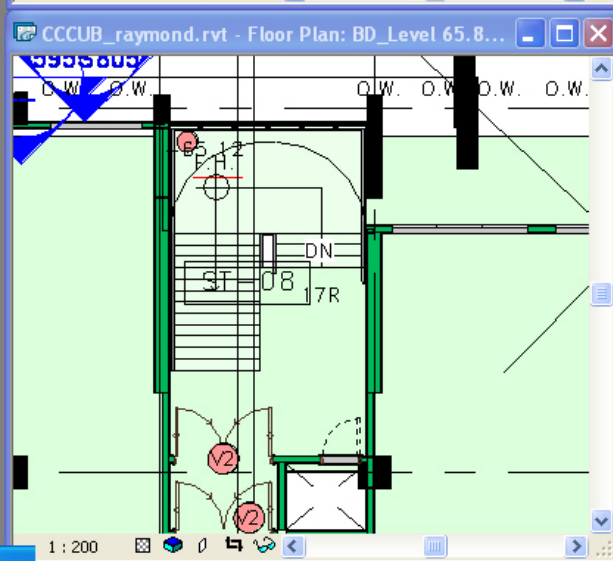
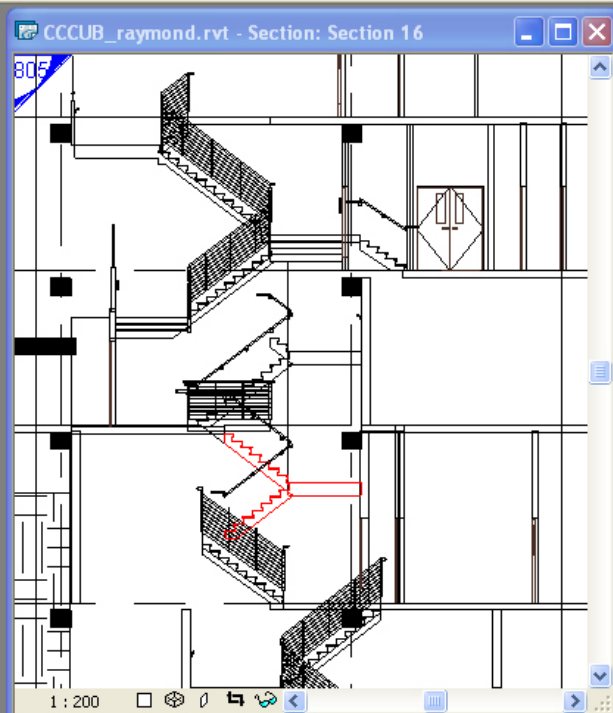
可視性型像化設計

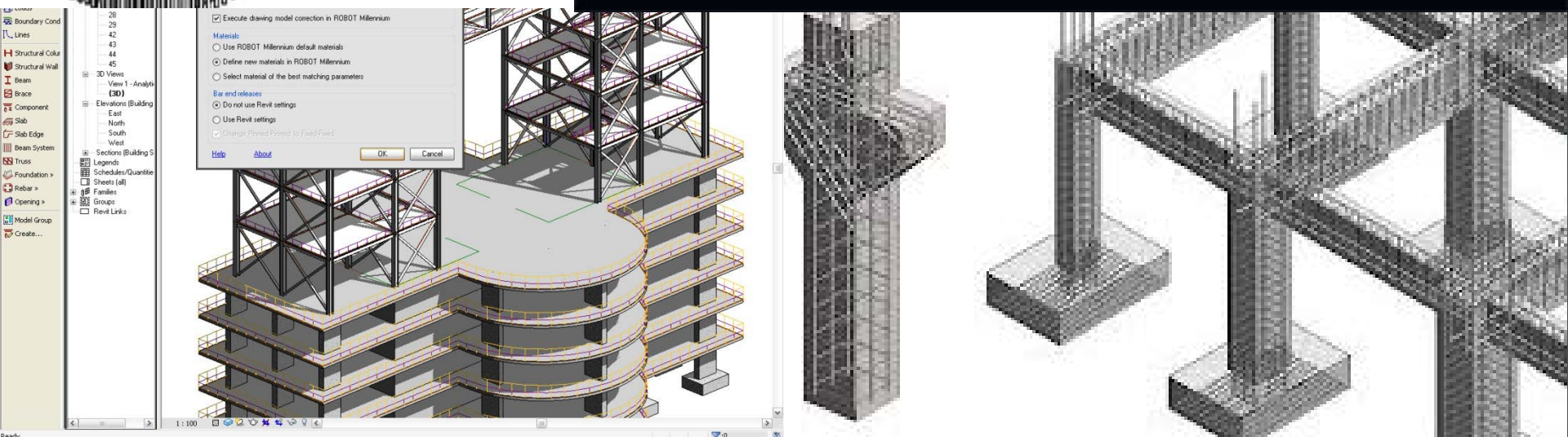
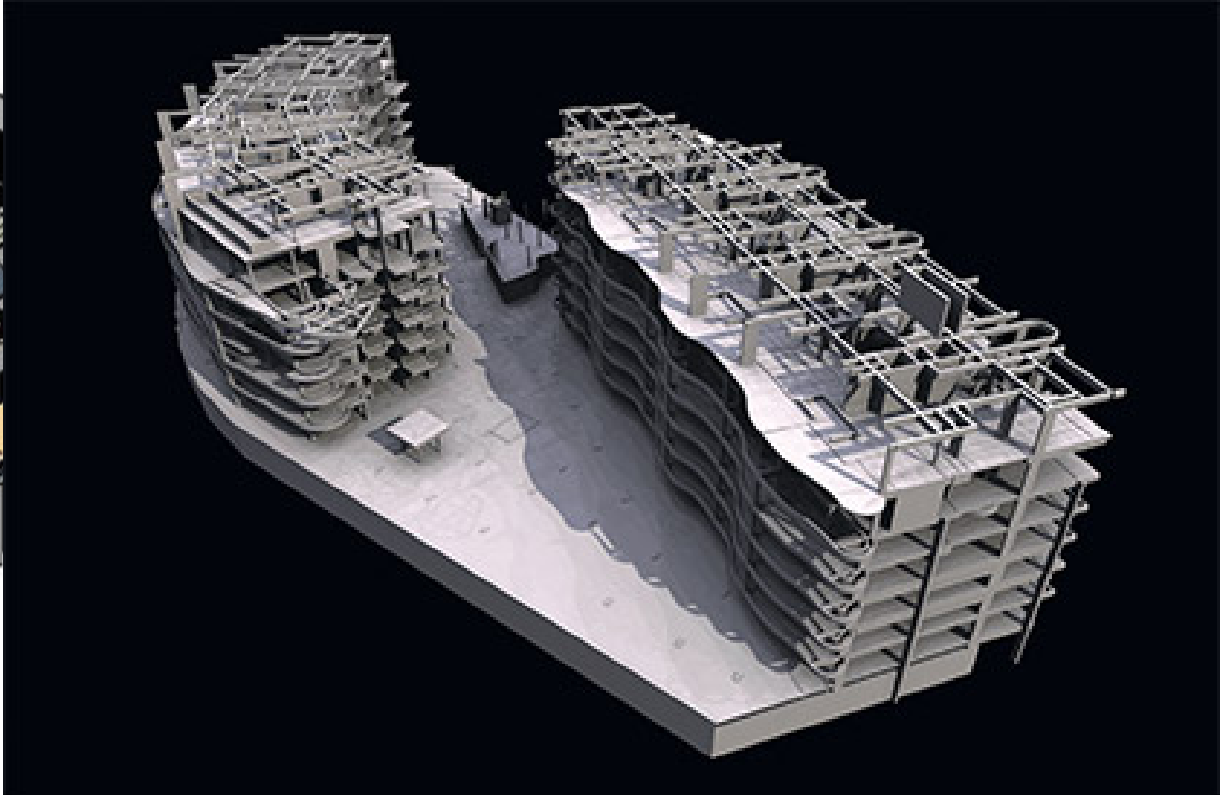
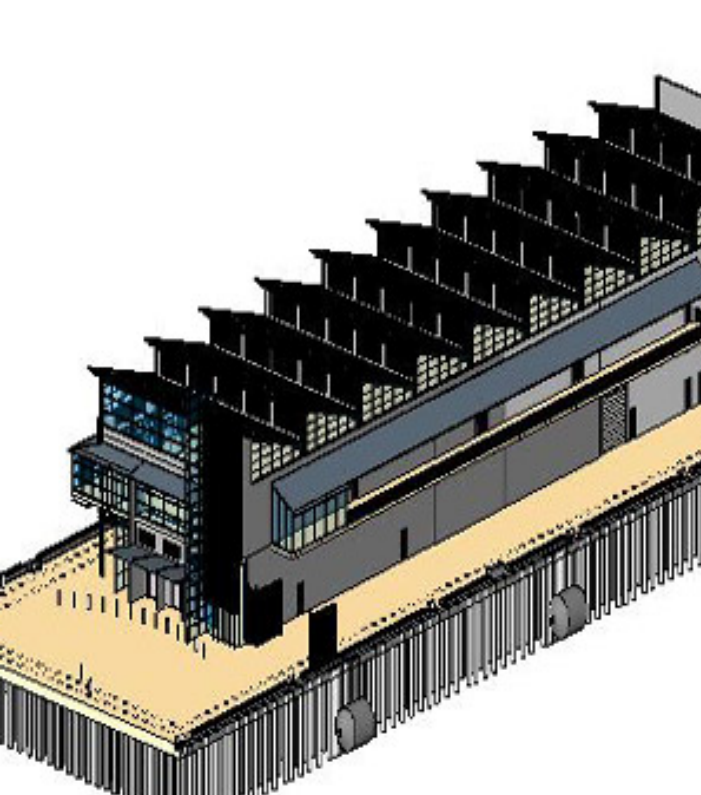




可視性型像化設計

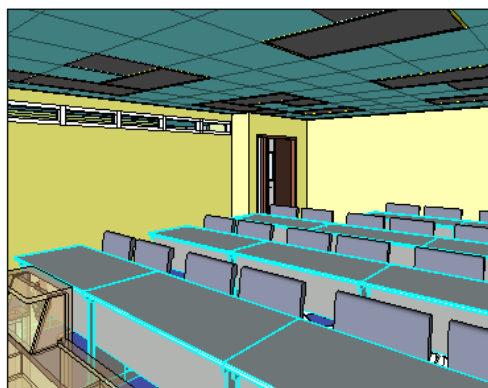




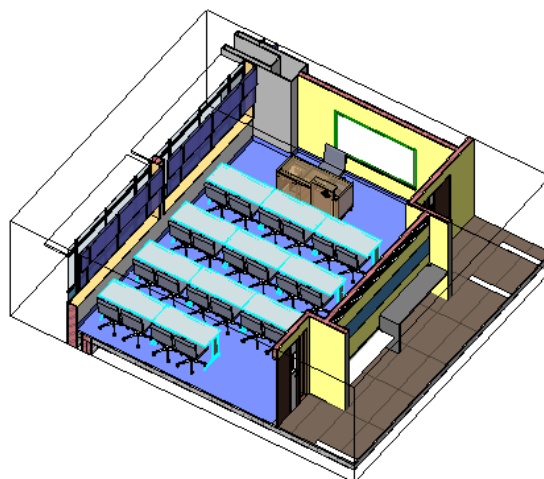


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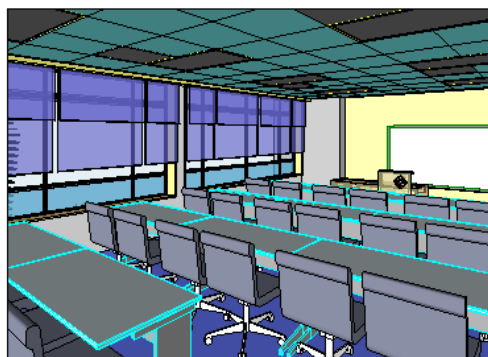
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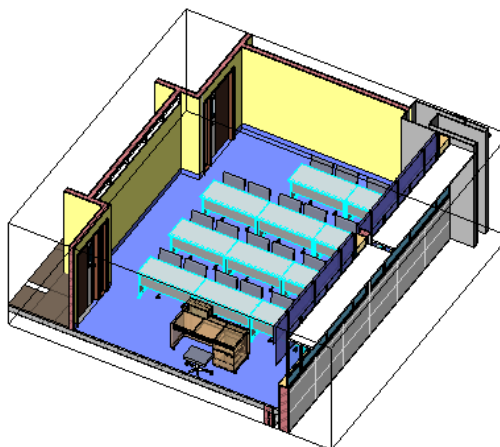
6 行政人员培训室立体示意图2



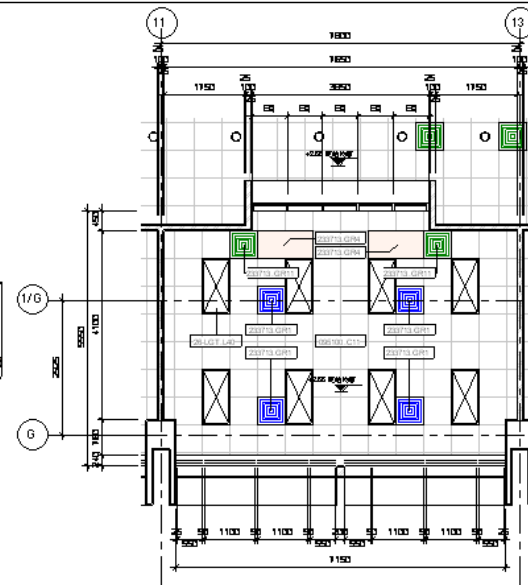
4 行政人员培训室立体剖面示意图2



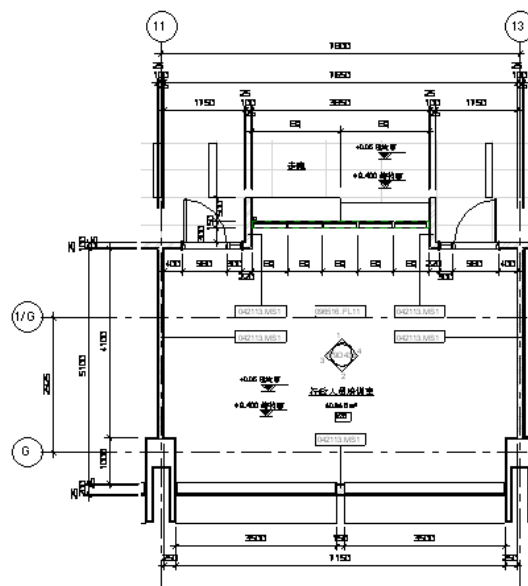
5 行政人员培训室立体示意图1







3 行政人员培训室立体剖面示意图1

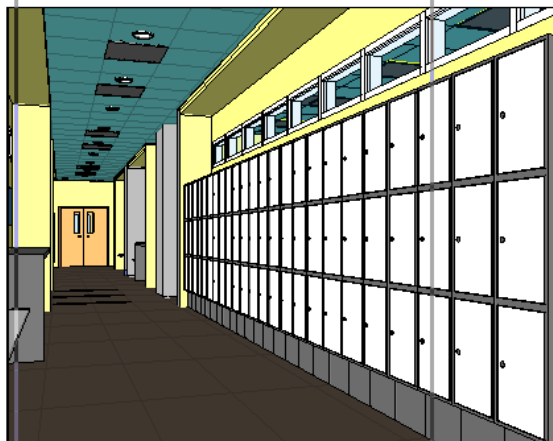


2 行政人员培训室天花平面图(高楼三层) 1:50

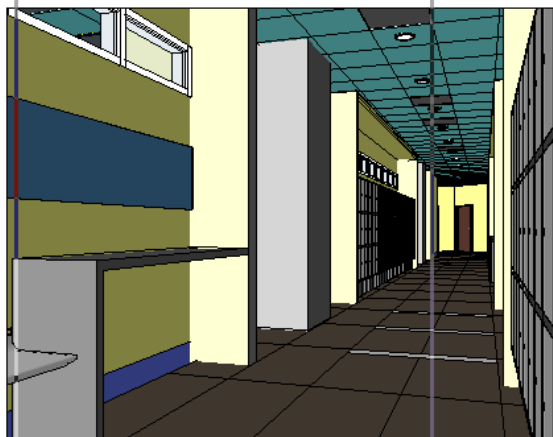


1 行政人员培训室平面图(高楼三层) 1:50

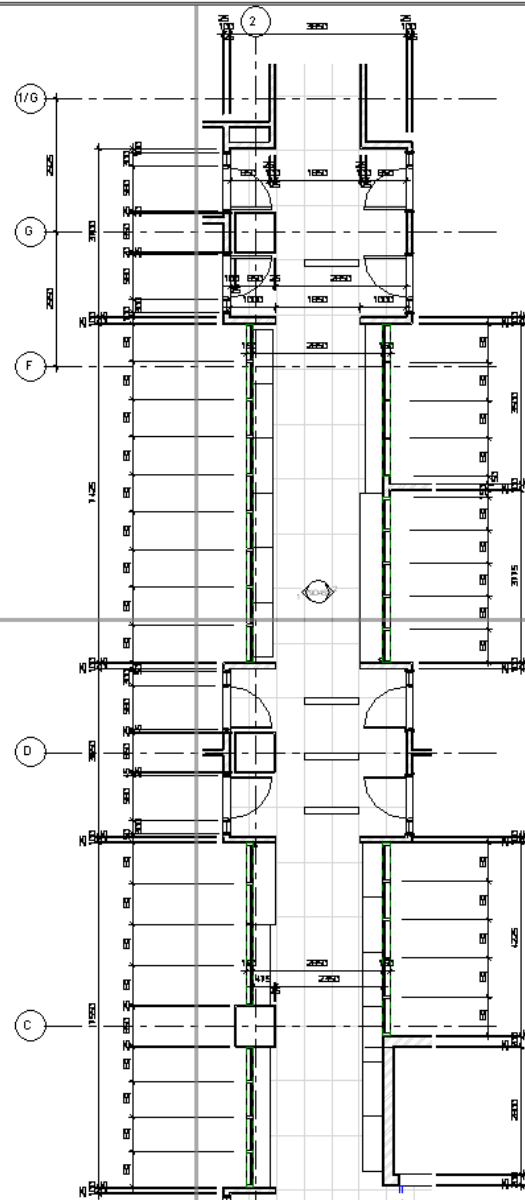
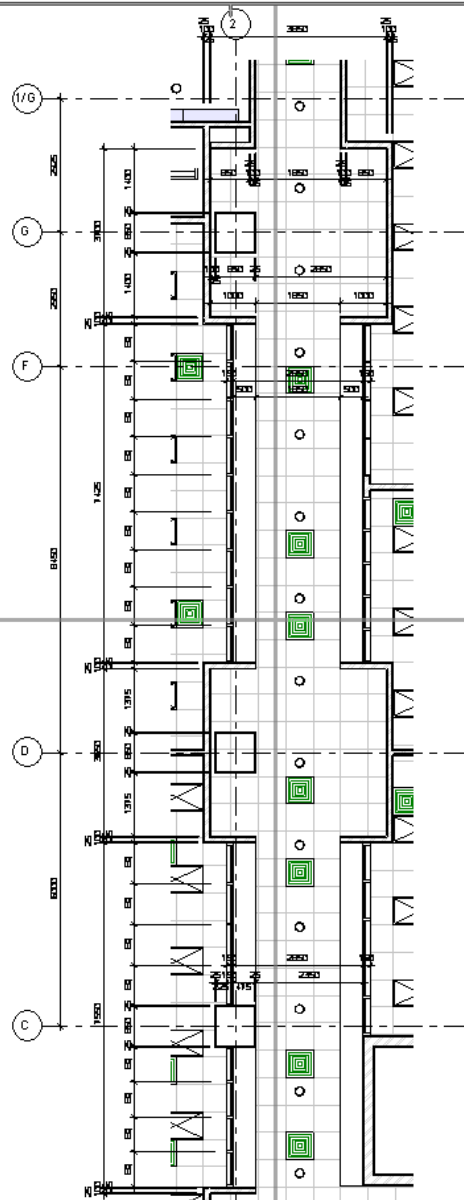
| | | | |
|--|--|---------------------------|--|
| Drawing Type | | B.D. SUMMARY | |
| B.C. Submission No. | | GOVERNMENT REFERENCE NO. | |
| F.C.D. Submission No. | | GOVERNMENT REFERENCE NO. | |
| Authorized By <div style="text-align: center;">AUTHORIZE PERSON FOR SIGNATURE AREA</div> | | | |
| Name <div style="text-align: center;">BENAM</div> | | | |
| <div style="display: flex; justify-content: space-between;"> <div> Title / Description Originator </div> <div> Drawn Checked Approved </div> <div> Revision / Date Check Approved </div> </div> | | | |
| Structural Engineer <div style="display: flex; justify-content: space-between;"> <div> BEAM E & M J. ROGER PRENTIS Q.S. 利比 RLB Rider Levett Bucknall 香港中環干諾道中111號 利比中環干諾道中111號有限公司 </div> <div>   </div> </div> | | | |
| Client <div style="display: flex; justify-content: space-between;"> <div>  Aedas Ltd. 1101 Tower 1101 Kings Road Quarry Bay Hong Kong </div> <div>  THE HONG KONG POLYTECHNIC UNIVERSITY 香港理工大學 </div> </div> | | | |
| Project 香港理工大學 圖書館 中環舊址 | | | |
| Drawing 行政人員培訓中心圖則 (舊址三層) 1 | | | |
| Drawing Number 88778 | | Revision 1 : 88 | |
| Drawing Number 778 (348) | | Date REV. | |
| Notes The Building is to be constructed with... 1. The Building is to be constructed with... 2. The Building is to be constructed with... 3. The Building is to be constructed with... 4. The Building is to be constructed with... 5. The Building is to be constructed with... 6. The Building is to be constructed with... 7. The Building is to be constructed with... 8. The Building is to be constructed with... 9. The Building is to be constructed with... 10. The Building is to be constructed with... 11. The Building is to be constructed with... 12. The Building is to be constructed with... 13. The Building is to be constructed with... 14. The Building is to be constructed with... 15. The Building is to be constructed with... 16. The Building is to be constructed with... 17. The Building is to be constructed with... 18. The Building is to be constructed with... 19. The Building is to be constructed with... 20. The Building is to be constructed with... 21. The Building is to be constructed with... 22. The Building is to be constructed with... 23. The Building is to be constructed with... 24. The Building is to be constructed with... 25. The Building is to be constructed with... 26. The Building is to be constructed with... 27. The Building is to be constructed with... 28. The Building is to be constructed with... 29. The Building is to be constructed with... 30. The Building is to be constructed with... 31. The Building is to be constructed with... 32. The Building is to be constructed with... 33. The Building is to be constructed with... 34. The Building is to be constructed with... 35. The Building is to be constructed with... 36. The Building is to be constructed with... 37. The Building is to be constructed with... 38. The Building is to be constructed with... 39. The Building is to be constructed with... 40. The Building is to be constructed with... 41. The Building is to be constructed with... 42. The Building is to be constructed with... 43. The Building is to be constructed with... 44. The Building is to be constructed with... 45. The Building is to be constructed with... 46. The Building is to be constructed with... 47. The Building is to be constructed with... 48. The Building is to be constructed with... 49. The Building is to be constructed with... 50. The Building is to be constructed with... 51. The Building is to be constructed with... 52. The Building is to be constructed with... 53. The Building is to be constructed with... 54. The Building is to be constructed with... 55. The Building is to be constructed with... 56. The Building is to be constructed with... 57. The Building is to be constructed with... 58. The Building is to be constructed with... 59. The Building is to be constructed with... 60. The Building is to be constructed with... 61. The Building is to be constructed with... 62. The Building is to be constructed with... 63. The Building is to be constructed with... 64. The Building is to be constructed with... 65. The Building is to be constructed with... 66. The Building is to be constructed with... 67. The Building is to be constructed with... 68. The Building is to be constructed with... 69. The Building is to be constructed with... 70. The Building is to be constructed with... 71. The Building is to be constructed with... 72. The Building is to be constructed with... 73. The Building is to be constructed with... 74. The Building is to be constructed with... 75. The Building is to be constructed with... 76. The Building is to be constructed with... 77. The Building is to be constructed with... 78. The Building is to be constructed with... 79. The Building is to be constructed with... 80. The Building is to be constructed with... 81. The Building is to be constructed with... 82. The Building is to be constructed with... 83. The Building is to be constructed with... 84. The Building is to be constructed with... 85. The Building is to be constructed with... 86. The Building is to be constructed with... 87. The Building is to be constructed with... 88. The Building is to be constructed with... 89. The Building is to be constructed with... 90. The Building is to be constructed with... 91. The Building is to be constructed with... 92. The Building is to be constructed with... 93. The Building is to be constructed with... 94. The Building is to be constructed with... 95. The Building is to be constructed with... 96. The Building is to be constructed with... 97. The Building is to be constructed with... 98. The Building is to be constructed with... 99. The Building is to be constructed with... 100. The Building is to be constructed with... | | | |



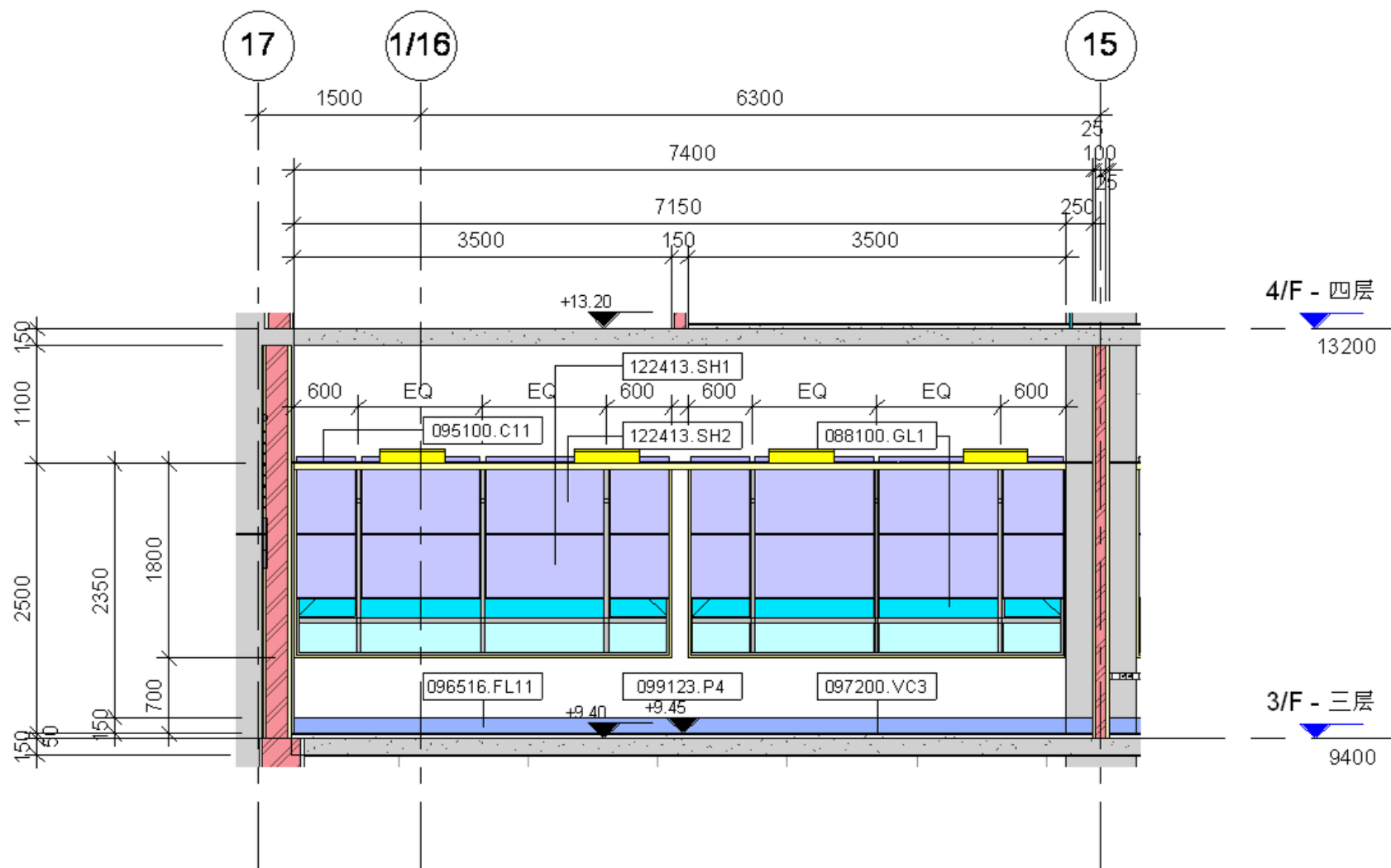
4 走廊立体示意图(低楼三至四层)2



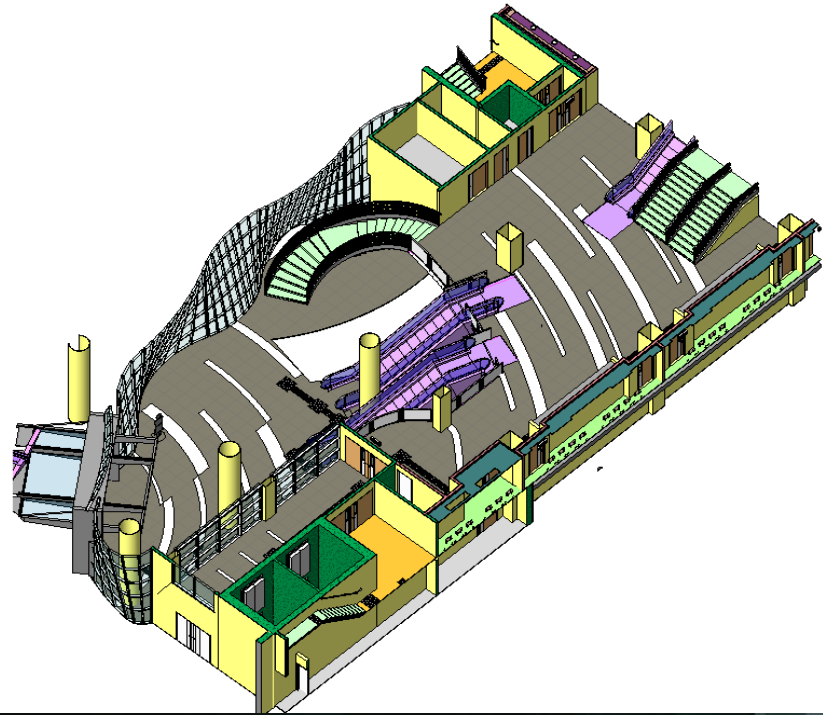
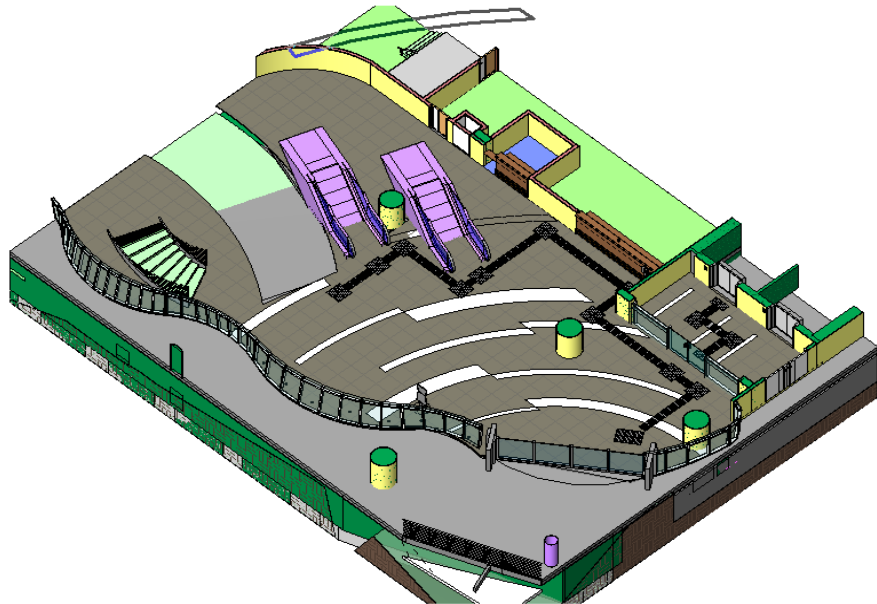
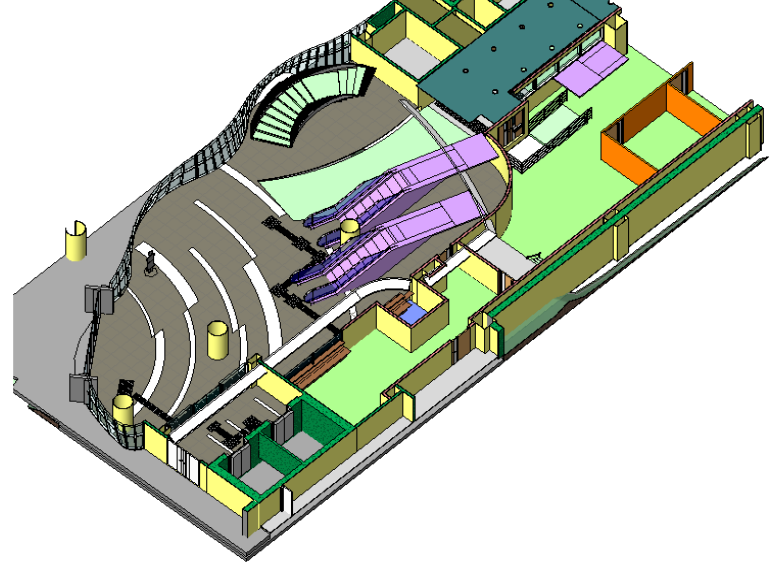
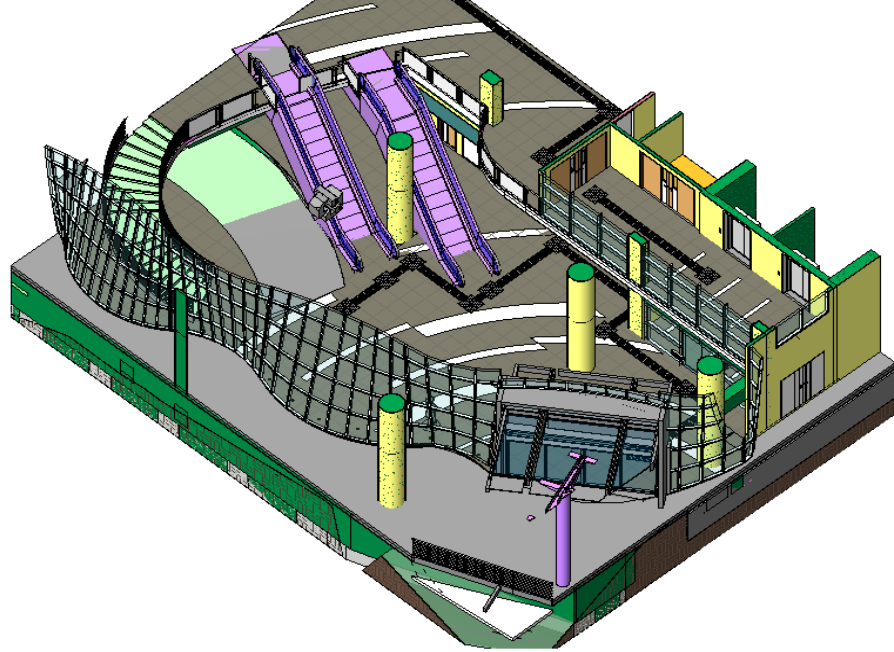
3 走廊立体示意图(低楼三至四层)1

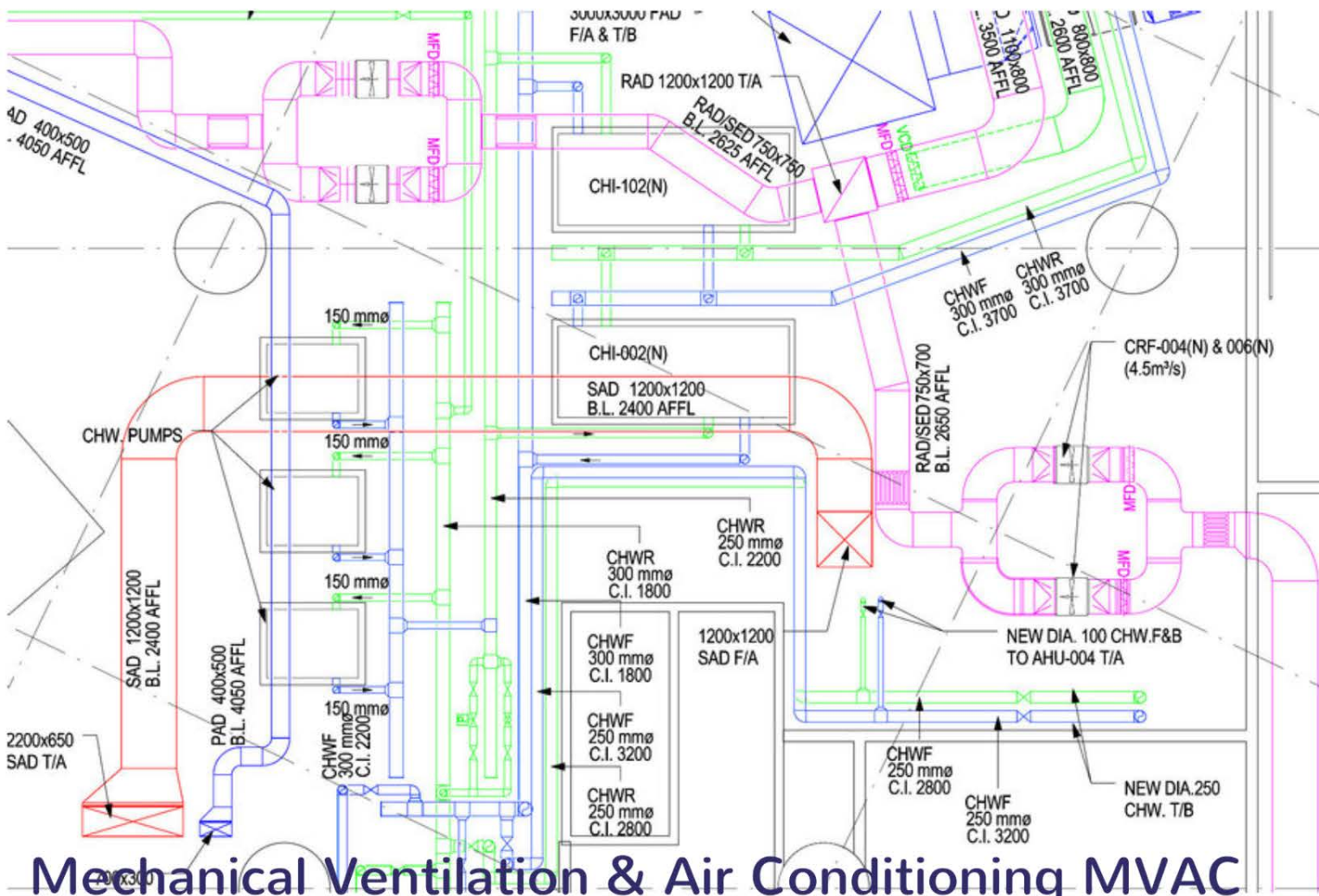


A vertical strip of various logos and advertisements. At the top, there are several small, partially visible logos. Below them is a large, empty white space. Further down, there are logos for 'Benaim' (a stylized 'b' logo), 'Rider Levett Bucknall' (RLB logo), 'Aedas' (a stylized 'A' logo), and 'The Hong Kong Polytechnic University' (a red square logo with a white geometric pattern). Below these are more logos, including 'Aedas Ltd.' and 'The Hong Kong Polytechnic University' again. The bottom of the strip shows more logos, including 'Aedas' and 'The Hong Kong Polytechnic University'.

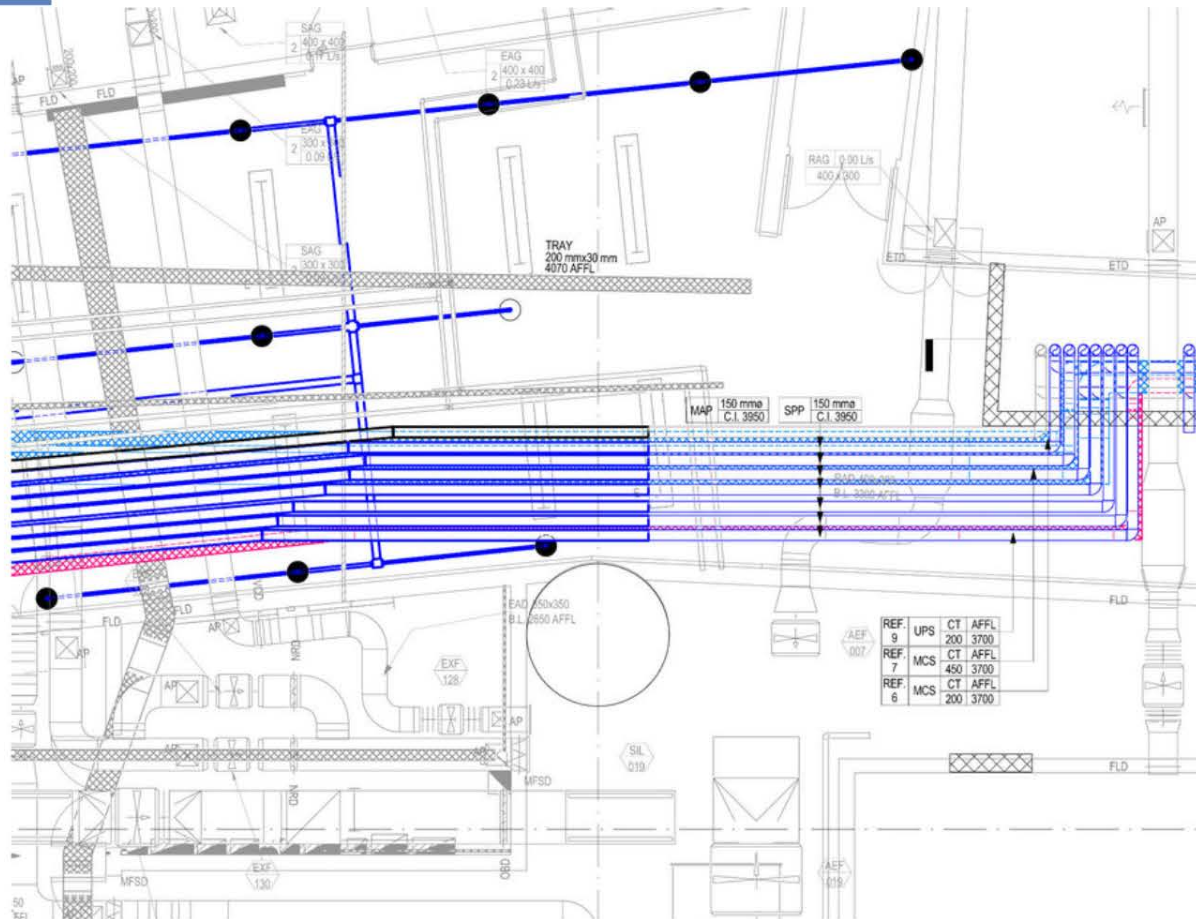


2 行政人员培训室立面图(高楼三层)6
1:50

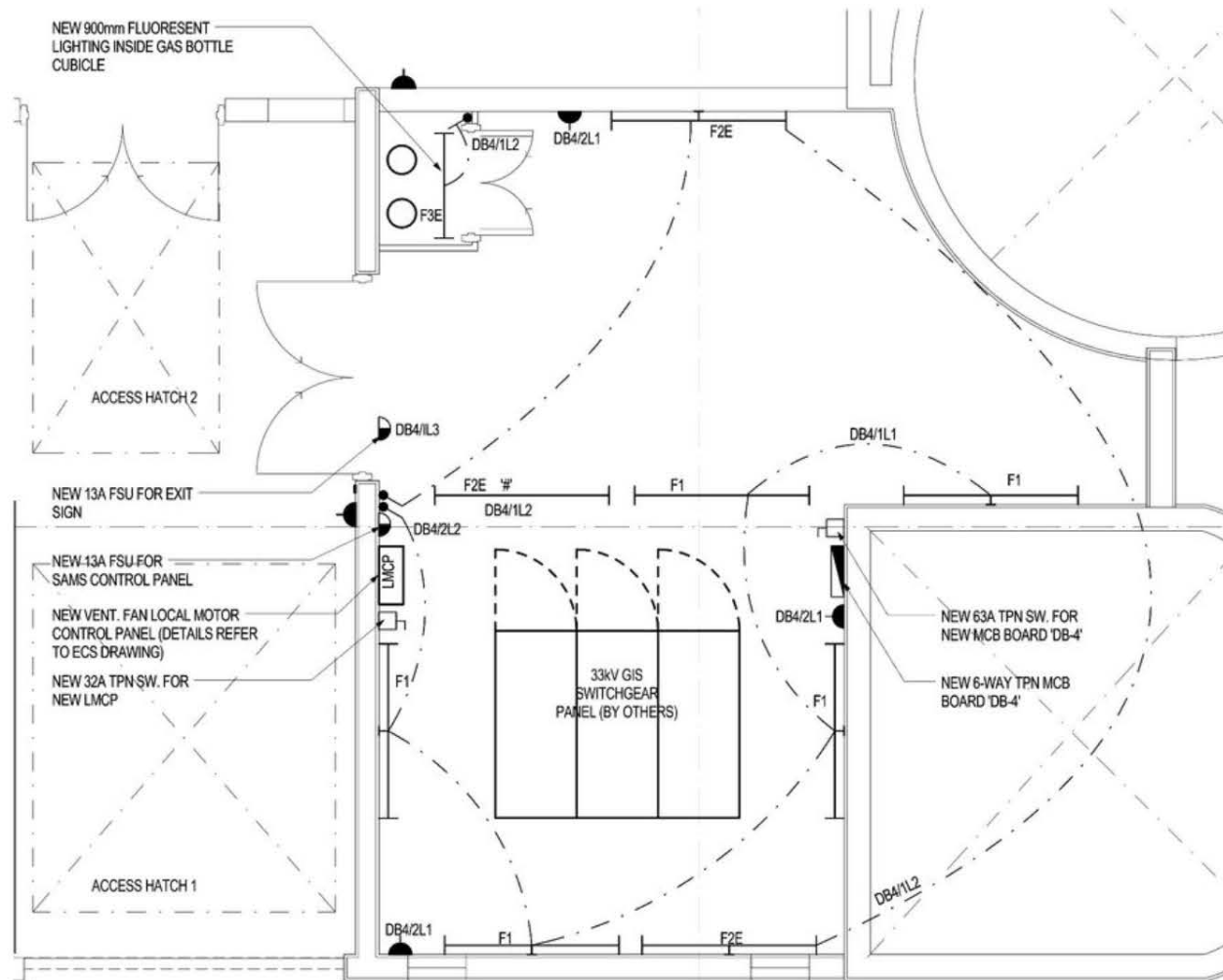




Mechanical Ventilation & Air Conditioning MVAC



Fire Services, Plumbing & Drainage

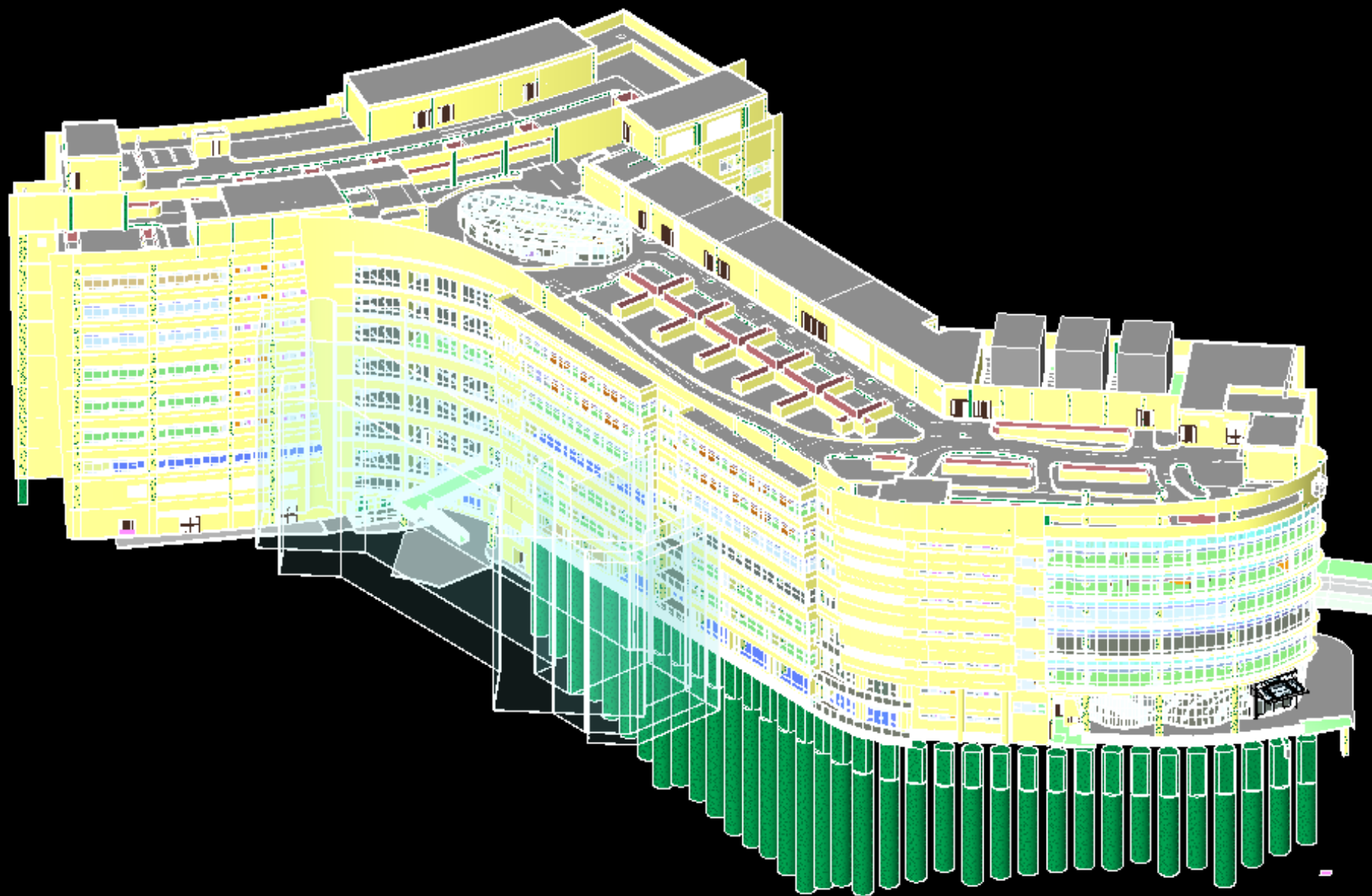


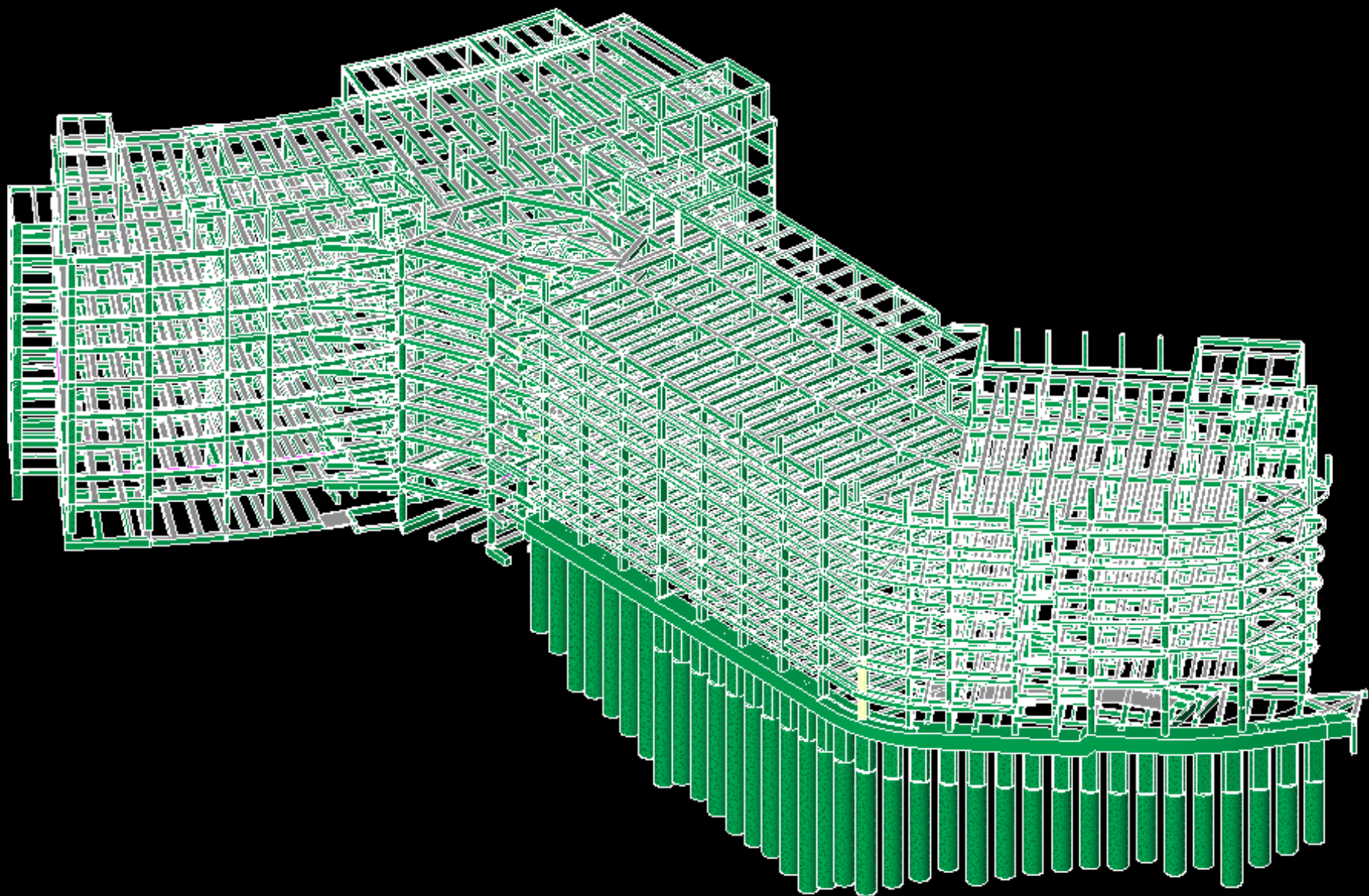
Electrical

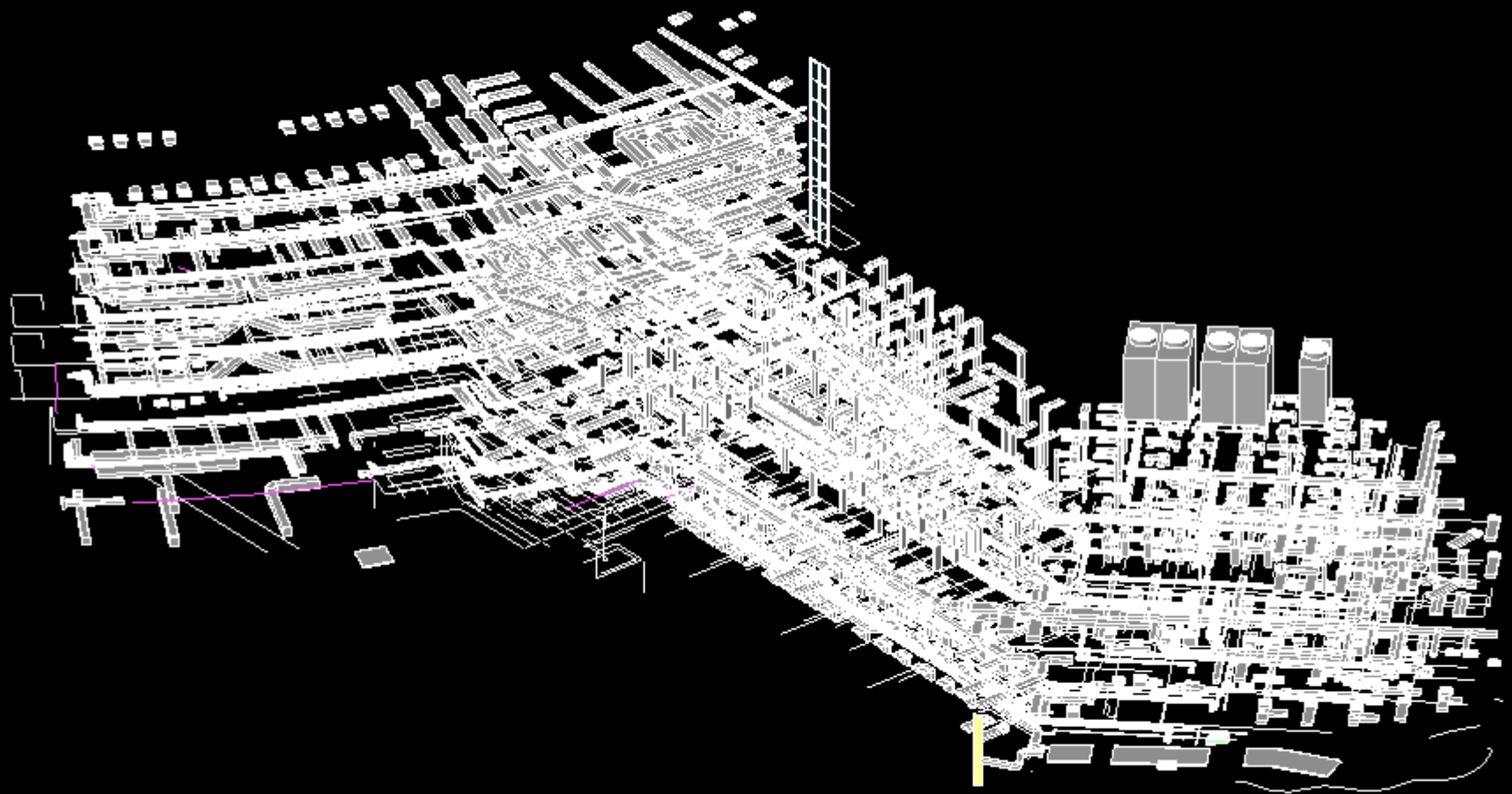


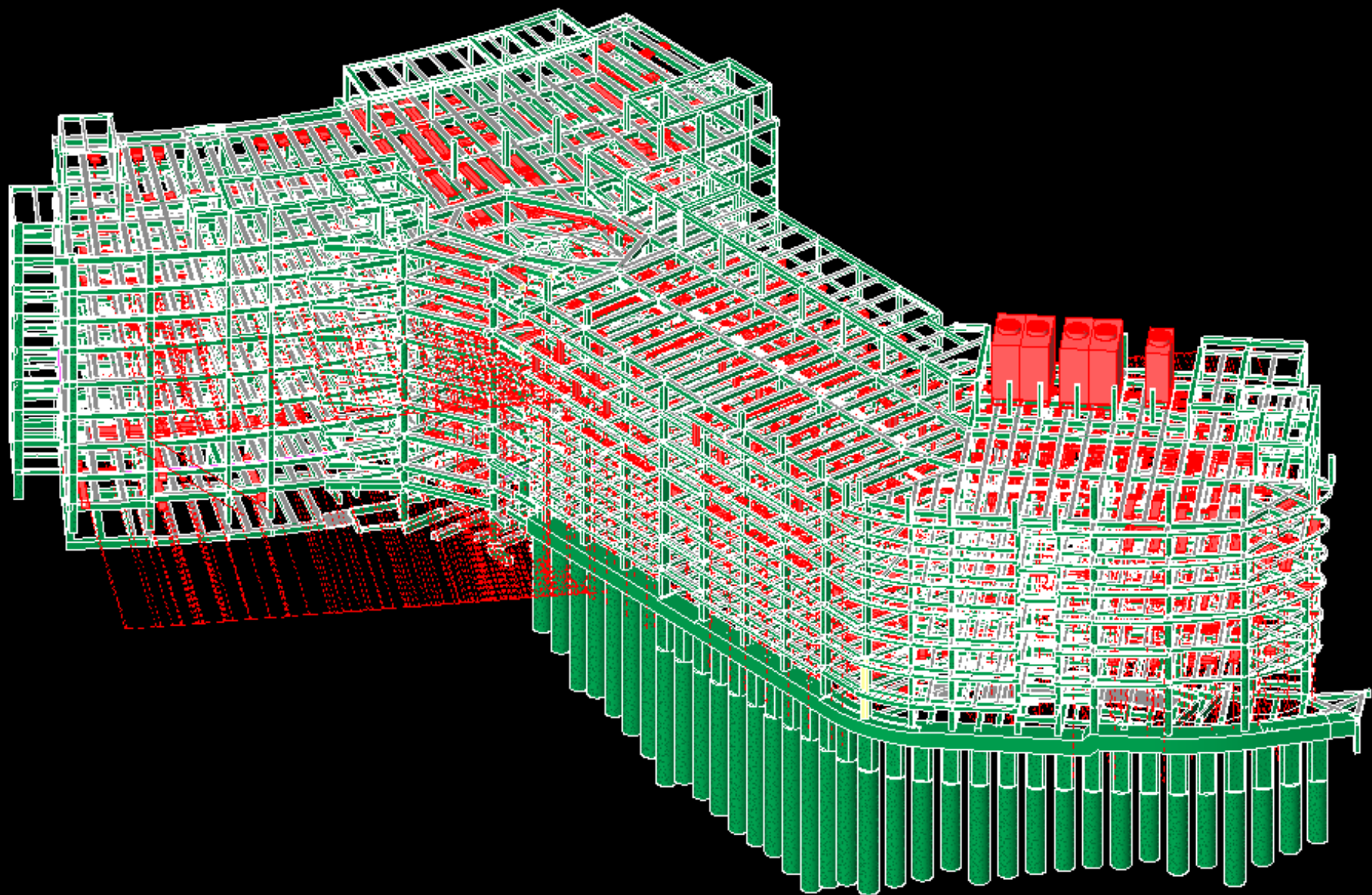
BIM为建筑界带来的冲击

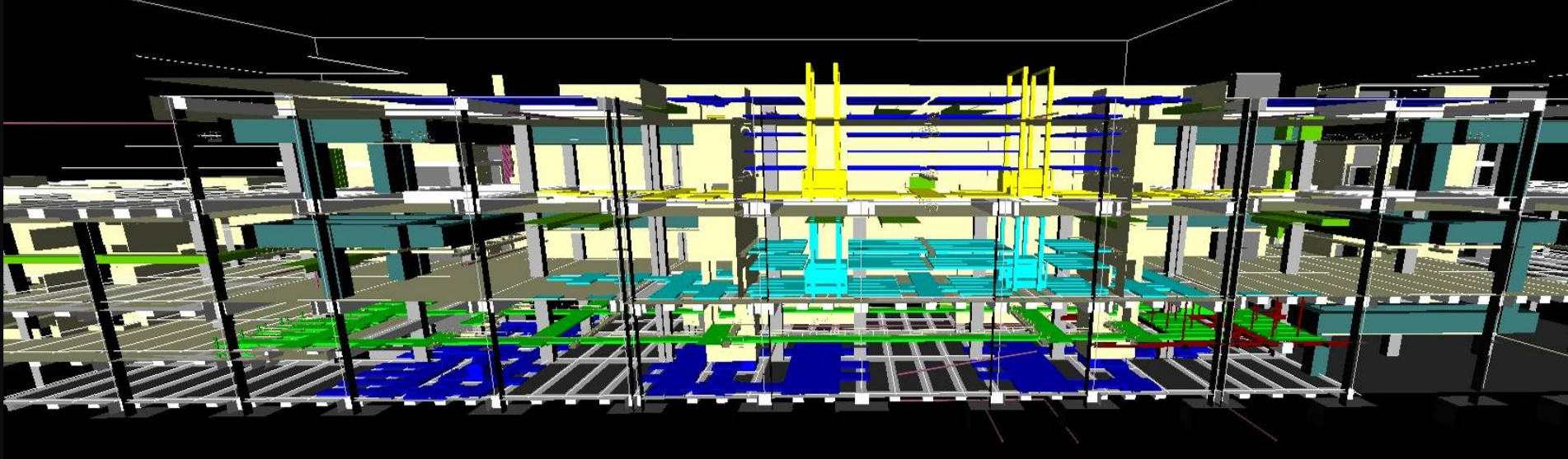
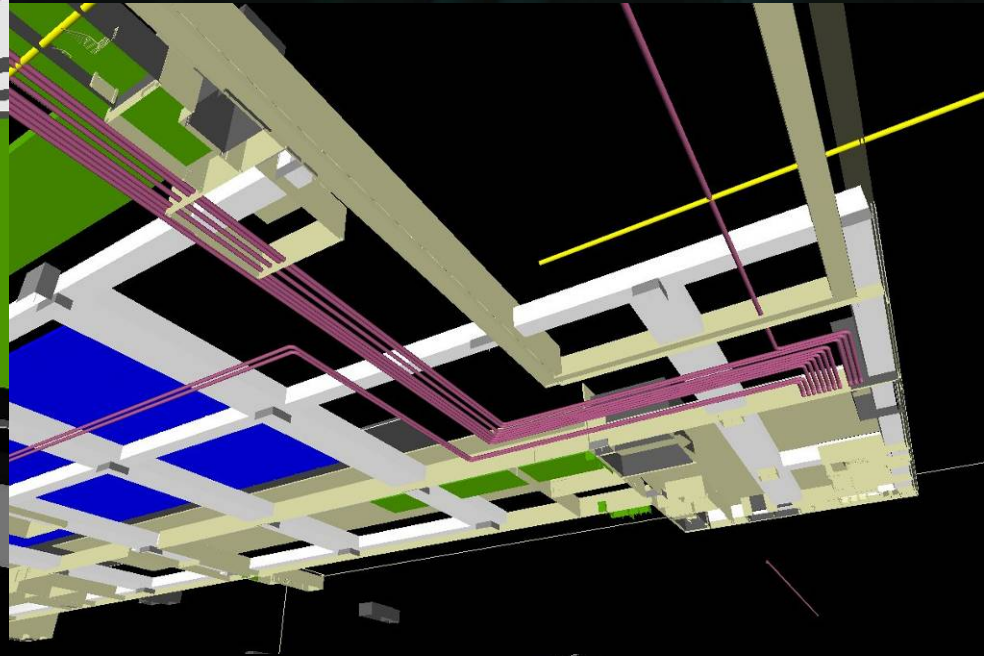
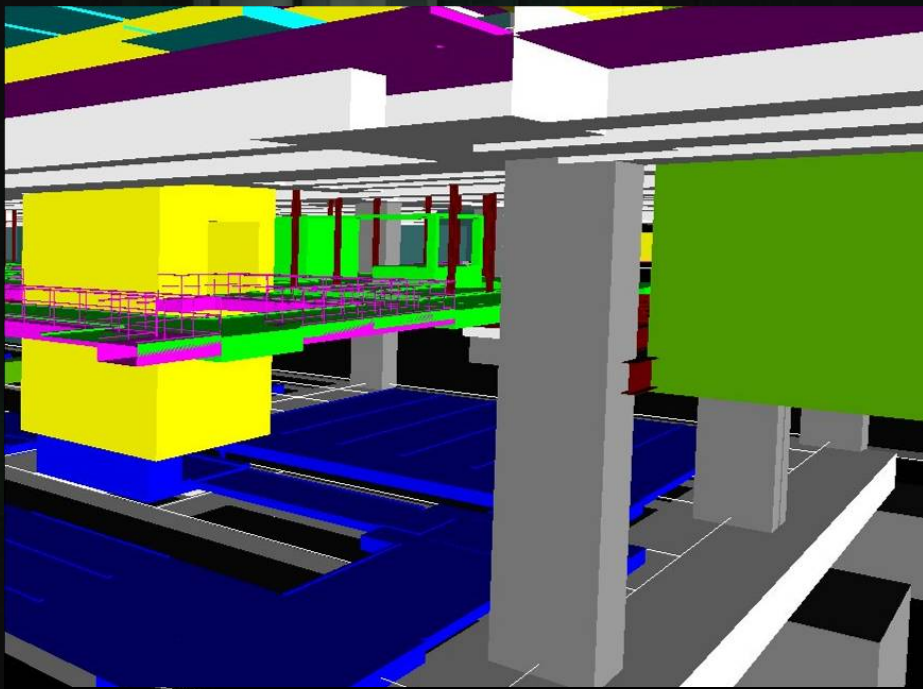
1. 可视性型像化设计
2. 图纸制作
3. 各专业协调合作
4. 物件清单及投标文件
5. 自动化送审文件
6. 科学性分析及可持续发展设计
7. 复杂几何形状建筑
8. 从建造到制造
9. 运维

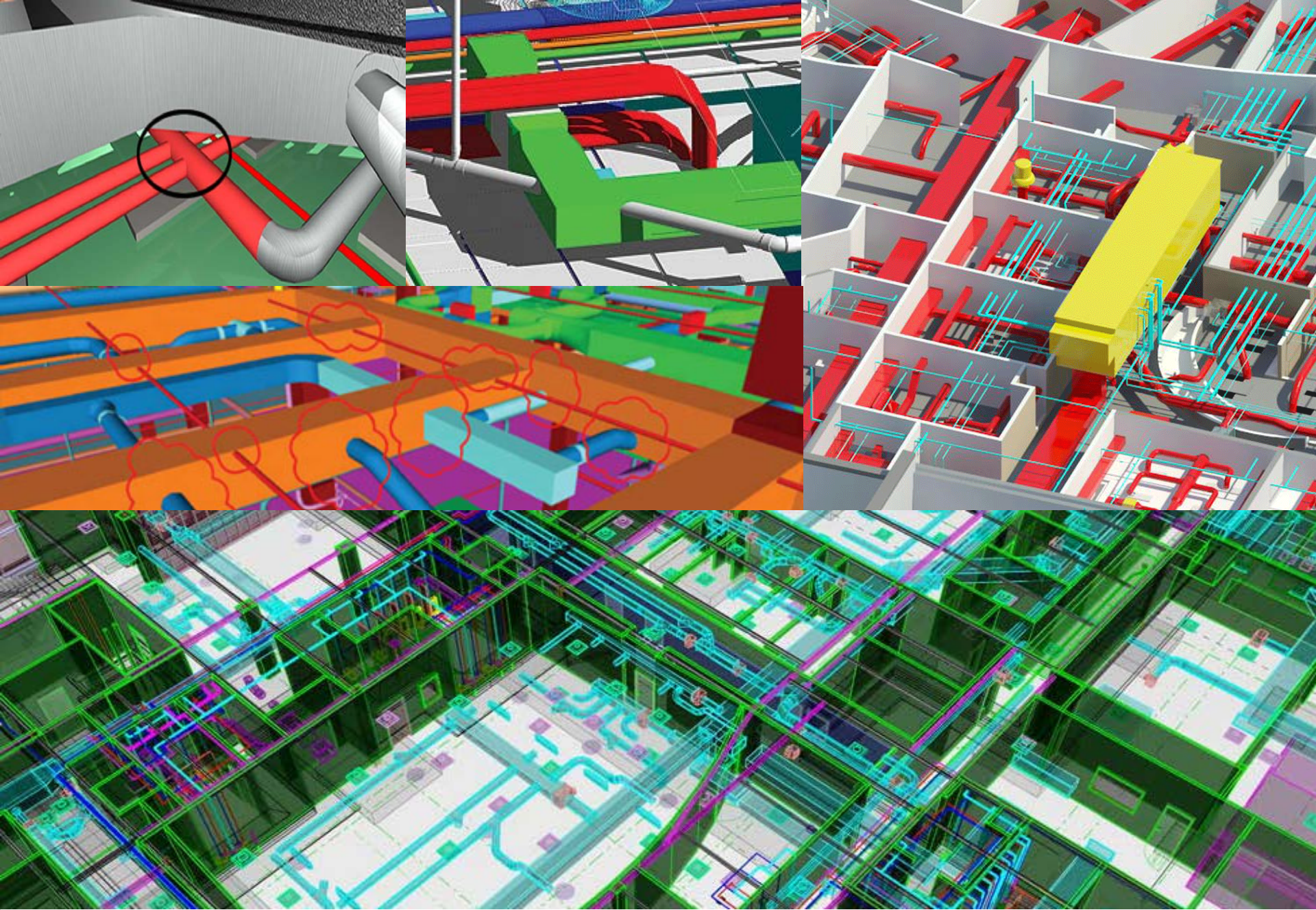












BIM为建筑界带来的冲击

1. 可视性型像化设计
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7. 复杂几何形状建筑
8. 从建造到制造
9. 运维

物業管理

Properties

Sheet: LEGEND, ABBREVI... Edit Type

Graphics

Visibility/Graphi... Edit...

Scale

Text

C&R No.

Figure No. Prefix Z/LRL/PUT/M...

Sheet Name 2nd...

Identity Data

Properties help

Apply

Z_LRL_PUT_ARC.rvt - Project Browser

Views (all)

Floor Plans

(CONTRACT)_Z_PLATFORM LE

(CONTRACT)_Z_RAIL LEVEL_S

(CONTRACT)_Z_S1000_Site Pl

(CONTRACT)_Z_TRACK LEVEL

(CONTRACT)_Z_TRACK_S100...

3D Views

(CONTRACT)_Z_ISO

(CONTRACT)_Z_PER01

(CONTRACT)_Z_PER02

SOLAR DECEMBER 22 0900

SOLAR DECEMBER 22 1200

SOLAR DECEMBER 22 1500

SOLAR JUNE 22 0900

SOLAR JUNE 22 1200

SOLAR JUNE 22 1500

SOLAR MARCH 21 0900

SOLAR MARCH 21 1200

SOLAR MARCH 21 1500

SOLAR SEPTEMBER 21 0900

SOLAR SEPTEMBER 21 1200

SOLAR SEPTEMBER 21 1500

(3D)

Elevations (Building Elevation)

(CONTRACT)_Z_S100 EAST EL

(CONTRACT)_Z_S100 NORTH

(CONTRACT)_Z_S100 SOUTH

(CONTRACT)_Z_S100 WEST EL

Sections (Building Section)

01

02

PLATFORM 1

PLATFORM 2

Legends

Schedules/Quantities

DRAWING LIST

Tiling Schedule

VOICE PCP (All types)

Sheets (all)

A01/010 - LEGEND, ABBREVIAT

A01/100 - SITE PLAN

A01/101 - PLATFORM PLAN SHE

DRAWING LIST

| DRAWING | DRAWING TITLE | REVISION | SHEET ISSUE DATE |
|---------|------------------------------------|----------|------------------------|
| A01/010 | LEGEND, ABBREVIATION, DRAWING LIST | | 07/22/10 |
| A01/100 | SITE PLAN | | 07/22/10 |
| A01/101 | PLATFORM PLAN SHEET 1 OF 2 | | 07/22/10 |
| A01/102 | PLATFORM PLAN SHEET 2 OF 2 | | 07/30/10 |
| A01/103 | EAST ELEVATION | | 08/25/10 |
| A01/104 | WEST ELEVATION | | 07/22/10 |
| A01/105 | SOUTH ELEVATION | | 07/22/10 |
| A01/106 | NORTH ELEVATIONS | | 07/22/10 |
| A01/107 | SECTION 01 | | 07/22/10 |
| A01/108 | SECTION 02 | | 07/30/10 |
| A01/110 | ISOMETRIC & PERSPECTIVES | | 07/22/10 |
| A01/109 | SOLAR STUDY MARCH | | 07/22/10 |
| A01/121 | SOLAR STUDY MARCH | | 08/28/10 |
| A01/122 | SOLAR STUDY JUNE | | 08/28/10 |
| A01/123 | SOLAR STUDY JUNE | | 08/28/10 |
| A01/124 | SOLAR STUDY JUNE | | 08/28/10 |
| A01/125 | SOLAR STUDY JUNE | | 08/28/10 |
| A01/126 | SOLAR STUDY SEPT | | 08/28/10 |
| A01/127 | SOLAR STUDY SEPT | | 08/28/10 |
| A01/128 | SOLAR STUDY SEPT | | 08/28/10 |
| A01/129 | SOLAR STUDY DEC | | 08/28/10 |
| A01/130 | SOLAR STUDY DEC | | 08/28/10 |
| A01/131 | SOLAR STUDY DEC | | 08/28/10 |
| A01/132 | SECTIONS | | 10/28/10 |

Tiling Schedule

| Family | Level | Type | Type Mark | Keynote | Count |
|--|----------|---------------------------------------|-----------|---------|-------|
| GEM_MTR_Floor Care Mark Based_DimGray | | GEM_MTR_Floor Care Mark Based_DimGray | | | 12 |
| GEM_MTR_Floor Security Line Based_Yellow | PLATFORM | | | | 2 |
| TLG-DRN-MTR-Type_A | PLATFORM | Brick Frame Colour Khaki | A | | 36 |
| TLG-DRN-MTR-Type_B | | Brick Frame Colour Khaki | B | | 194 |
| TLG-DRN-MTR-Type_C | PLATFORM | | C | | 240 |

VOICE PCP (All types)

| Family | Mark | Type Mark |
|---------------------------|------|-----------|
| ELF-ARC-MTR-PCP | xxxx | E |
| ELF-ARC-MTR-PCP | xxxx | E |
| ELF-ARC-MTR-PCP | xxxx | E |
| ELF-ARC-MTR-PCP-Ext_Voice | xxxx | E |
| ELF-ARC-MTR-PCP-Ext_Voice | xxxx | E |
| ELF-ARC-MTR-PCP | xxxx | X |
| ELF-ARC-MTR-PCP | xxxx | X |
| ELF-ARC-MTR-PCP | xxxx | X |
| ELF-ARC-MTR-PCP | xxxx | X |
| ELF-ARC-MTR-PCP | xxxx | X |
| ELF-ARC-MTR-PCP | xxxx | X |
| ELF-ARC-MTR-PCP | xxxx | X |
| ELF-ARC-MTR-PCP-Ext_Voice | xxxx | X |
| ELF-ARC-MTR-PCP-Ext_Voice | xxxx | X |
| ELF-ARC-MTR-PCP-Ext_Voice | xxxx | X |
| ELF-ARC-MTR-PCP-Ext_Voice | xxxx | X |
| ELF-ARC-MTR-PCP-Ext_Voice | xxxx | X |
| Grand total: 15 | | |

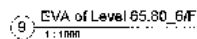
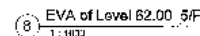
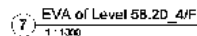
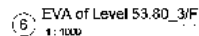
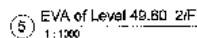
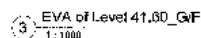
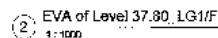
| | | | | |
|-----|---------|--|---|----------|
| A14 | | 1530141 | | |
| | A | J | K | L |
| 1 | Id | FamilyName | TypeName | TypeMark |
| 2 | 7848 | Model Text | 600mm Arial | |
| 3 | 1148899 | Model Text | 200mm - wood | |
| 4 | 1148901 | Model Text | 300mm - black | |
| 5 | 1148904 | Model Text | 50mm - steel | |
| 6 | 1193027 | GEM_MTR_Floor Care Mark Based_DimGray | GEM_MTR_Floor Care Mark Based_DimGray | |
| 7 | 1194842 | GEM_MTR_Floor Security Line Based_Yellow | Security Line_MTR_Floor Based_Yellow | |
| 8 | 1206709 | GEM_MTR_Floor Security Line Based_Yellow | Security Line_MTR_Floor Based_Yellow W39600mm | |
| 9 | 1282975 | GEM_MTR_Floor Security Line Based_Yellow | Security Line_MTR_Floor Based_Yellow W39500mm | |
| 10 | 1528388 | TLG-DRN-MTR-Type_A | Brick Frame Colour Khaki | A |
| 11 | 1528390 | TLG-DRN-MTR-Type_A | Brick Frame Colour DimGray | |
| 12 | 1529333 | TLG-DRN-MTR-Type_B | Brick Frame Colour Khaki | B |
| 13 | 1529335 | TLG-DRN-MTR-Type_B | Brick Frame Colour DimGray | |
| 14 | 1530141 | TLG-DRN-MTR-Type_C | Brick Frame Colour Khaki | C |
| 15 | 1530143 | TLG-DRN-MTR-Type_C | Brick Frame Colour DimGray | |
| 16 | 1532279 | TLG-DRN-MTR-Type_C | Brick Frame Colour Khaki W200mm | C |
| 17 | 1606926 | TRN-TRN-MTR-LRL-Headstock | TRN-TRN-MTR-LRL-Headstock | |
| 18 | 1618524 | TRN-TRN-MTR-LRL-Coach | TRN-TRN-MTR-LRL-Coach | |
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BIM为建筑界带来的冲击

1. 可视性型像化设计
2. 图纸制作
3. 各专业协调合作
4. 物件清单及投标文件
5. 自动化送审文件
6. 科学性分析及可持续发展设计
7. 复杂几何形状建筑
8. 从建造到制造
9. 运维

[illegible]

自動化送審文件



CALCULATION OF TOTAL LENGTH OF BUILDING FACADE TO BE SERVED BY EVA AND HENGCHIAI
OF SUCH LENGTH OVER THE TOTAL LENGTH OF ALL THE PERIMETER WALLS OF THE BUILDING

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ |] ^ _ ` { } ~ ? , ; : " ' * & % \$ # @ ! ~ . - / + = < > [\] ^ _ { } ~ ? , ; : " ' * & % \$ # @ ! ~ . - / + = < > [\] ^ _ { } ~ ? , ; : " ' * & % \$ # @ ! ~ . - / + = < > | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 0 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 0A | 0B | 0C | 0D | 0E | 0F | 0G | 0H | 0I | 0J | 0K | 0L | 0M | 0N | 0O | 0P | 0Q | 0R | 0S | 0T | 0U | 0V | 0W | 0X | 0Y | 0Z | 0[| 0\ | 0] | 0^ | 0_ | 0{ | 0 | 0} | 0~ | 0? | 0, | 0; | 0: | 0" | 0' | 0* | 0& | 0% | 0\$ | 0# | 0@ | 0! | 0~ | 0. | 0- | 0/ | 0+ | 0= | 0< | 0> | 0[| 0\ | 0] | 0^ | 0_ | 0{ | 0 | 0} | 0~ | 0? | 0, | 0; | 0: | 0" | 0' | 0* | 0& | 0% | 0\$ | 0# | 0@ | 0! | 0~ | 0. | 0- | 0/ | 0+ | 0= | 0< | 0> | 0[| 0\ | 0] | 0^ | 0_ | 0{ | 0 | 0} | 0~ | 0? | 0, | 0; | 0: | 0" | 0' | 0* | 0& | 0% | 0\$ | 0# | 0@ | 0! | 0~ | 0. | 0- | 0/ | 0+ | 0= | 0< | 0> | 0[| 0\ | 0] | 0^ | 0_ | 0{ | 0 | 0} | 0~ | 0? | 0, | 0; | 0: | 0" | 0' | 0* | 0& | 0% | 0\$ | 0# | 0@ | 0! | 0~ | 0. | 0- | 0/ | 0+ | 0= | 0< | 0> | 0[| 0\ | 0] | 0^ | 0_ | 0{ | 0 | 0} | 0~ | 0? | 0, | 0; | 0: | 0" | 0' | 0* | 0& | 0% | 0\$ | 0# | 0@ | 0! | 0~ | 0. | 0- | 0/ | 0+ | 0= | 0< | 0> | 0[| 0\ | 0] | 0^ | 0_ | 0{ | 0 | 0} | 0~ | 0? | 0, | 0; | 0: | 0" | 0' | 0* | 0& | 0% | 0\$ | 0# | 0@ | 0! | 0~ | 0. | 0- | 0/ | 0+ | 0= | 0< | 0> | 0[| 0\ | 0] | 0^ | 0_ | 0{ | 0 | 0} | 0~ | 0? | 0, | 0; | 0: | 0" | 0' | 0* | 0& | 0% | 0\$ | 0# | 0@ | 0! | 0~ | 0. | 0- | 0/ | 0+ | 0= | 0< | 0> | 0[| 0\ | 0] | 0^ | 0_ | 0{ | 0 | 0} | 0~ | 0? | 0, | 0; | 0: | 0" | 0' | 0* | 0& | 0% | 0\$ | 0# | 0@ | 0! | 0~ | 0. | 0- | 0/ | 0+ | 0= | 0< | 0> | 0[| 0\ | 0] | 0^ | 0_ | 0{ | 0 | 0} | 0~ | 0? | 0, | 0; | 0: | 0" | 0' | 0* | 0& | 0% | 0\$ | 0# | 0@ | 0! | 0~ | 0. | 0- | 0/ | 0+ | 0= | 0< | 0> | 0[| 0\ | 0] | 0^ | 0_ | 0{ | 0 | 0} | 0~ | 0? | 0, | 0; | 0: | 0" | 0' | 0* | 0& | 0% | 0\$ | 0# | 0@ | 0! | 0~ | 0. | 0- | 0/ | 0+ | 0= | 0< | 0> | 0[| 0\ | 0] | 0^ | 0_ | 0{ | 0 | 0} | 0~ | 0? | 0, | 0; | 0: | 0" | 0' | 0* | 0& | 0% | 0\$ | 0# | 0@ | 0! | 0~ | 0. | 0- | 0/ | 0+ | 0= | 0< | 0> | 0[| 0\ | 0] | 0^ | 0_ | 0{ | 0 | 0} | 0~ | 0? | 0, | 0; | 0: | 0" | 0' | 0* | 0& | 0% | 0\$ | 0# | 0@ | 0! | 0~ | 0. | 0- | 0/ | 0+ | 0= | 0< | 0> | 0[| 0\ | 0] | 0^ | 0_ | 0{ | 0 | 0} | 0~ | 0? | 0, | 0; | 0: | 0" | 0' | 0* | 0& | 0% | 0\$ | 0# | 0@ | 0! | 0~ | 0. | 0- | 0/ | 0+ | 0= | 0< | 0> | 0[| 0\ | 0] | 0^ | 0_ | 0{ | 0 | 0} | 0~ | 0? | 0, | 0; | 0: | 0" | 0' | 0* | 0& | 0% | 0\$ | 0# | 0@ | 0! | 0~ | 0. | 0- | 0/ | 0+ | 0= | 0< | 0> | 0[| 0\ | 0] | 0^ | 0_ | 0{ | 0 | 0} | 0~ | 0? | 0, | 0; | 0: | 0" | 0' | 0* | 0& | 0% | 0\$ | 0# | 0@ | 0! | 0~ | 0. | 0- | 0/ | 0+ | 0= | 0< | 0> | 0[| 0\ | 0] | 0^ | 0_ | 0{ | 0 | 0} | 0~ | 0? | 0, | 0; | 0: | 0" | 0' | 0* | 0& | 0% | 0\$ | 0# | 0@ | 0! | 0~ | 0. | 0- | 0/ | 0+ | 0= | 0< | 0> | 0[| 0\ | 0] | 0^ | 0_ | 0{ | 0 | 0} | 0~ | 0? | 0, | 0; | 0: | 0" | 0' | 0* | 0& | 0% | 0\$ | 0# | 0@ | 0! | 0~ | 0. | 0- | 0/ | 0+ | 0= | 0< | 0> | 0[| 0\ | 0] | 0^ | 0_ | 0{ | 0 | 0} | 0~ | 0? | 0, | 0; | 0: | 0" | 0' | 0* | 0& | 0% | 0\$ | 0# | 0@ | 0! | 0~ | 0. | 0- |

| 姓名 | 性别 | 出生年月 | 籍贯 | 民族 | 文化程度 | 政治面貌 | 工作单位 | 职务 | 备注 |
|-----|----|------------|------|----|------|------|--------|-------|----|
| 王德胜 | 男 | 1945.10.15 | 山东烟台 | 汉族 | 高中 | 中共党员 | 烟台市政府 | 市长 | |
| 李国强 | 男 | 1952.03.22 | 河南郑州 | 汉族 | 大学 | 中共党员 | 河南省政府 | 副省长 | |
| 张为民 | 男 | 1958.07.08 | 江苏苏州 | 汉族 | 大学 | 中共党员 | 苏州工业园区 | 管委会主任 | |
| 赵子龙 | 男 | 1965.11.20 | 四川成都 | 汉族 | 大学 | 中共党员 | 成都高新区 | 管委会主任 | |
| 周树人 | 男 | 1970.05.10 | 浙江杭州 | 汉族 | 大学 | 中共党员 | 杭州西湖景区 | 管委会主任 | |
| 吴永年 | 男 | 1975.09.05 | 广东广州 | 汉族 | 大学 | 中共党员 | 广州南沙新区 | 管委会主任 | |
| 陈永年 | 男 | 1980.12.18 | 福建厦门 | 汉族 | 大学 | 中共党员 | 厦门软件园 | 管委会主任 | |
| 林永年 | 男 | 1985.06.25 | 广西桂林 | 汉族 | 大学 | 中共党员 | 桂林两江新区 | 管委会主任 | |
| 黄永年 | 男 | 1990.01.12 | 湖南长沙 | 汉族 | 大学 | 中共党员 | 长沙高新区 | 管委会主任 | |
| 刘永年 | 男 | 1995.08.03 | 湖北武汉 | 汉族 | 大学 | 中共党员 | 武汉经开区 | 管委会主任 | |

| | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058 | 2059 | 2060 | 2061 | 2062 | 2063 | 2064 | 2065 | 2066 | 2067 | 2068 | 2069 | 2070 | 2071 | 2072 | 2073 | 2074 | 2075 | 2076 | 2077 | 2078 | 2079 | 2080 | 2081 | 2082 | 2083 | 2084 | 2085 | 2086 | 2087 | 2088 | 2089 | 2090 | 2091 | 2092 | 2093 | 2094 | 2095 | 2096 | 2097 | 2098 | 2099 | 2100 | 2101 | 2102 | 2103 | 2104 | 2105 | 2106 | 2107 | 2108 | 2109 | 2110 | 2111 | 2112 | 2113 | 2114 | 2115 | 2116 | 2117 | 2118 | 2119 | 2120 | 2121 | 2122 | 2123 | 2124 | 2125 | 2126 | 2127 | 2128 | 2129 | 2130 | 2131 | 2132 | 2133 | 2134 | 2135 | 2136 | 2137 | 2138 | 2139 | 2140 | 2141 | 2142 | 2143 | 2144 | 2145 | 2146 | 2147 | 2148 | 2149 | 2150 | 2151 | 2152 | 2153 | 2154 | 2155 | 2156 | 2157 | 2158 | 2159 | 2160 | 2161 | 2162 | 2163 | 2164 | 2165 | 2166 | 2167 | 2168 | 2169 | 2170 | 2171 | 2172 | 2173 | 2174 | 2175 | 2176 | 2177 | 2178 | 2179 | 2180 | 2181 | 2182 | 2183 | 2184 | 2185 | 2186 | 2187 | 2188 | 2189 | 2190 | 2191 | 2192 | 2193 | 2194 | 2195 | 2196 | 2197 | 2198 | 2199 | 2200 | 2201 | 2202 | 2203 | 2204 | 2205 | 2206 | 2207 | 2208 | 2209 | 2210 | 2211 | 2212 | 2213 | 2214 | 2215 | 2216 | 2217 | 2218 | 2219 | 2220 | 2221 | 2222 | 2223 | 2224 | 2225 | 2226 | 2227 | 2228 | 2229 | 2230 | 2231 | 2232 | 2233 | 2234 | 2235 | 2236 | 2237 | 2238 | 2239 | 2240 | 2241 | 2242 | 2243 | 2244 | 2245 | 2246 | 2247 | 2248 | 2249 | 2250 | 2251 | 2252 | 2253 | 2254 | 2255 | 2256 | 2257 | 2258 | 2259 | 2260 | 2261 | 2262 | 2263 | 2264 | 2265 | 2266 | 2267 | 2268 | 2269 | 2270 | 2271 | 2272 | 2273 | 2274 | 2275 | 2276 | 2277 | 2278 | 2279 | 2280 | 2281 | 2282 | 2283 | 2284 | 2285 | 2286 | 2287 | 2288 | 2289 | 2290 | 2291 | 2292 | 2293 | 2294 | 2295 | 2296 | 2297 | 2298 | 2299 | 2300 | 2301 | 2302 | 2303 | 2304 | 2305 | 2306 | 2307 | 2308 | 2309 | 2310 | 2311 | 2312 | 2313 | 2314 | 2315 | 2316 | 2317 | 2318 | 2319 | 2320 | 2321 | 2322 | 2323 | 2324 | 2325 | 2326 | 2327 | 2328 | 2329 | 2330 | 2331 | 2332 | 2333 | 2334 | 2335 | 2336 | 2337 | 2338 | 2339 | 2340 | 2341 | 2342 | 2343 | 2344 | 2345 | 2346 | 2347 | 2348 | 2349 | 2350 | 2351 | 2352 | 2353 | 2354 | 2355 | 2356 | 2357 | 2358 | 2359 | 2360 | 2361 | 2362 | 2363 | 2364 | 2365 | 2366 | 2367 | 2368 | 2369 | 2370 | 2371 | 2372 | 2373 | 2374 | 2375 | 2376 | 2377 | 2378 | 2379 | 2380 | 2381 | 2382 | 2383 | 2384 | 2385 | 2386 | 2387 | 2388 | 2389 | 2390 | 2391 | 2392 | 2393 | 2394 | 2395 | 2396 | 2397 | 2398 | 2399 | 2400 | 2401 | 2402 | 2403 | 2404 | 2405 | 2406 | 2407 | 2408 | 2409 | 2410 | 2411 | 2412 | 2413 | 2414 | 2415 | 2416 | 2417 | 2418 | 2419 | 2420 | 2421 | 2422 | 2423 | 2424 | 2425 | 2426 | 2427 | 2428 | 2 |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|

Van Appenzel
CTDP King of the Hill
Chief Building Supervisor
OR BUILDING AUTHORITY

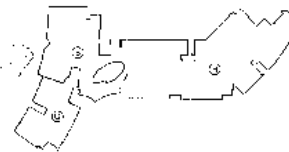


自動化送審文件

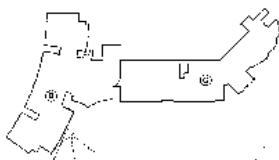
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3/F (+53.80) COMPARTMENT CALCULATION



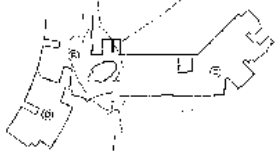
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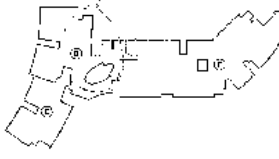
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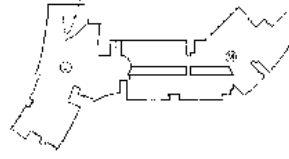
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2/F (+49.80) COMPARTMENT CALCULATION



6/F (+55.80) COMPARTMENT CALCULATION



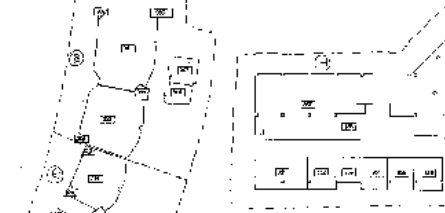
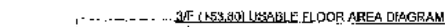
| COMPARTMENT OF FLOOR | | | | |
|----------------------|--------|-----------|-----------|-----------|
| FLOOR | AREA | PERIMETER | PERIMETER | PERIMETER |
| FLOOR | AREA | PERIMETER | PERIMETER | PERIMETER |
| LG/5/F | 146.42 | 146.42 | 146.42 | 146.42 |
| 3/F | 146.42 | 146.42 | 146.42 | 146.42 |
| G/F | 146.42 | 146.42 | 146.42 | 146.42 |
| 4/F | 146.42 | 146.42 | 146.42 | 146.42 |
| 1/F | 146.42 | 146.42 | 146.42 | 146.42 |
| 2/F | 146.42 | 146.42 | 146.42 | 146.42 |
| 5/F | 146.42 | 146.42 | 146.42 | 146.42 |
| 6/F | 146.42 | 146.42 | 146.42 | 146.42 |

| Total Capacity of COQUE | | | | |
|--------------------------|-----------------|---------|--------|----------------|
| Location | Use | Area | Factor | Total Capacity |
| LG/5/F | Office | 275.442 | 9 | 31 |
| G/F | Shop | 54.208 | 3 | 19 |
| G/F | Office | 412.208 | 9 | 41 |
| 3/F | Restaurant | 146.42 | 1 | 146 |
| 3/F | Kitchen | 481.136 | 4.5 | 107 |
| 5/F | Office | 212.144 | 9 | 294 |
| 6/F | Office | 203.126 | 9 | 226 |
| 6/F | Restaurant | 176.557 | 1 | 177 |
| 6/F | Kitchen | 166.561 | 4.5 | 42 |
| 6/F | Exhibition hall | 704.208 | 2 | 353 |
| Total number of students | | | | 6000 |
| Total | | | | 848 |

| SCHEDULE 1: MINIMUM NUMBER & WIDTH OF EXIT ROUTES FOR EACH FLOOR | | | | | | | | | |
|--|-----------------|---------|-----|-------------------------|-----|-------------------------------|-----|---------------------------------|-----|
| LOCATION | | FLOOR | | MIN. NO. OF EXIT ROUTES | | MIN. WIDTH OF EACH EXIT ROUTE | | MIN. TOTAL WIDTH OF EXIT ROUTES | |
| LOCATION | | FLOOR | | MIN. NO. OF EXIT ROUTES | | MIN. WIDTH OF EACH EXIT ROUTE | | MIN. TOTAL WIDTH OF EXIT ROUTES | |
| LG/5/F | Office | 275.442 | 9 | 31 | 1.0 | 31.0 | 1.0 | 31.0 | 1.0 |
| G/F | Shop | 54.208 | 3 | 19 | 1.0 | 19.0 | 1.0 | 19.0 | 1.0 |
| G/F | Office | 412.208 | 9 | 41 | 1.0 | 41.0 | 1.0 | 41.0 | 1.0 |
| 3/F | Restaurant | 146.42 | 1 | 146 | 1.0 | 146.0 | 1.0 | 146.0 | 1.0 |
| 3/F | Kitchen | 481.136 | 4.5 | 107 | 1.0 | 107.0 | 1.0 | 107.0 | 1.0 |
| 5/F | Office | 212.144 | 9 | 294 | 1.0 | 294.0 | 1.0 | 294.0 | 1.0 |
| 6/F | Office | 203.126 | 9 | 226 | 1.0 | 226.0 | 1.0 | 226.0 | 1.0 |
| 6/F | Restaurant | 176.557 | 1 | 177 | 1.0 | 177.0 | 1.0 | 177.0 | 1.0 |
| 6/F | Kitchen | 166.561 | 4.5 | 42 | 1.0 | 42.0 | 1.0 | 42.0 | 1.0 |
| 6/F | Exhibition hall | 704.208 | 2 | 353 | 1.0 | 353.0 | 1.0 | 353.0 | 1.0 |

| THE RESISTANCE REQUIREMENTS FOR SUBSTRUCTURE OF CONSTRUCTION | | | | | | | | | |
|--|-----------|-------|-----------|-------------|-----------|-----------|-----------|-----------|-----------|
| COMPONENT | | TOTAL | | R.C. COLUMN | | R.C. BEAM | | R.C. SLAB | |
| COMPONENT | | TOTAL | | R.C. COLUMN | | R.C. BEAM | | R.C. SLAB | |
| 1. COLUMN | 1592.283 | 1 | 1592.283 | 1 | 1592.283 | 1 | 1592.283 | 1 | 1592.283 |
| 2. BEAM | 1044.146 | 1 | 1044.146 | 1 | 1044.146 | 1 | 1044.146 | 1 | 1044.146 |
| 3. SLAB | 3452.18 | 1 | 3452.18 | 1 | 3452.18 | 1 | 3452.18 | 1 | 3452.18 |
| 4. WALL | 1814.527 | 1 | 1814.527 | 1 | 1814.527 | 1 | 1814.527 | 1 | 1814.527 |
| 5. FLOOR | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 6. ROOF | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 7. STAIR | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 8. ELEVATOR | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 9. EXTERIOR WALL | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 10. EXTERIOR COLUMN | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 11. EXTERIOR BEAM | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 12. EXTERIOR SLAB | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 13. EXTERIOR WALL | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 14. EXTERIOR COLUMN | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 15. EXTERIOR BEAM | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 16. EXTERIOR SLAB | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 17. EXTERIOR WALL | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 18. EXTERIOR COLUMN | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 19. EXTERIOR BEAM | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 20. EXTERIOR SLAB | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 21. EXTERIOR WALL | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 22. EXTERIOR COLUMN | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 23. EXTERIOR BEAM | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 24. EXTERIOR SLAB | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 25. EXTERIOR WALL | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 26. EXTERIOR COLUMN | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 27. EXTERIOR BEAM | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 28. EXTERIOR SLAB | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 29. EXTERIOR WALL | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 30. EXTERIOR COLUMN | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 31. EXTERIOR BEAM | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 32. EXTERIOR SLAB | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 33. EXTERIOR WALL | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 34. EXTERIOR COLUMN | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 35. EXTERIOR BEAM | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 36. EXTERIOR SLAB | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 37. EXTERIOR WALL | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 38. EXTERIOR COLUMN | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 39. EXTERIOR BEAM | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 40. EXTERIOR SLAB | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 41. EXTERIOR WALL | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 42. EXTERIOR COLUMN | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 43. EXTERIOR BEAM | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 44. EXTERIOR SLAB | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 45. EXTERIOR WALL | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 46. EXTERIOR COLUMN | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 47. EXTERIOR BEAM | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 48. EXTERIOR SLAB | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 49. EXTERIOR WALL | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 50. EXTERIOR COLUMN | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 51. EXTERIOR BEAM | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 52. EXTERIOR SLAB | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 53. EXTERIOR WALL | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 54. EXTERIOR COLUMN | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 55. EXTERIOR BEAM | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 56. EXTERIOR SLAB | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 57. EXTERIOR WALL | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 58. EXTERIOR COLUMN | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 59. EXTERIOR BEAM | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 60. EXTERIOR SLAB | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 61. EXTERIOR WALL | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 62. EXTERIOR COLUMN | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 63. EXTERIOR BEAM | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 64. EXTERIOR SLAB | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 65. EXTERIOR WALL | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 66. EXTERIOR COLUMN | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 67. EXTERIOR BEAM | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 68. EXTERIOR SLAB | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 69. EXTERIOR WALL | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
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| 71. EXTERIOR BEAM | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 72. EXTERIOR SLAB | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 73. EXTERIOR WALL | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 74. EXTERIOR COLUMN | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 75. EXTERIOR BEAM | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 | 1 | 10249.383 |
| 76. EXTERIOR SLAB | 10249.383 | 1 | 10249. | | | | | | |

自動化送審文件

[illegible][illegible]

4/F (+58.20) USABLE FLOOR AREA DIAGRAM

[illegible]

| BASIC INFORMATION | | | | | | | | | |
|-------------------|------|------|----------|--------|---------|----------|-----------|------|------|
| NAME | DATE | TIME | LOCATION | STATUS | REMARKS | INITIALS | SIGNATURE | DATE | TIME |
| NAME | DATE | TIME | LOCATION | STATUS | REMARKS | INITIALS | SIGNATURE | DATE | TIME |
| NAME | DATE | TIME | LOCATION | STATUS | REMARKS | INITIALS | SIGNATURE | DATE | TIME |

[illegible][illegible][illegible][illegible]

6/F (+85.80) USABLE FLOOR AREA DIAGRAM



B D SUBMISSION

| PERSONAL DATA | | FAMILY DATA | | EDUCATION DATA | | EMPLOYMENT DATA | | MILITARY DATA | |
|---------------|---------------|---------------|---------------|----------------|--------|-----------------|----------------|---------------|----------------|
| NAME | DATE OF BIRTH | FATHER'S NAME | MOTHER'S NAME | SCHOOL | DEGREE | DATE OF ENTRY | DATE OF LEAVES | DATE OF ENTRY | DATE OF LEAVES |
| JOHN DOE | 10/10/1945 | JOHN DOE | JANE DOE | JOHN DOE | B.S. | 10/10/1945 | 10/10/1945 | 10/10/1945 | 10/10/1945 |

[illegible][illegible]

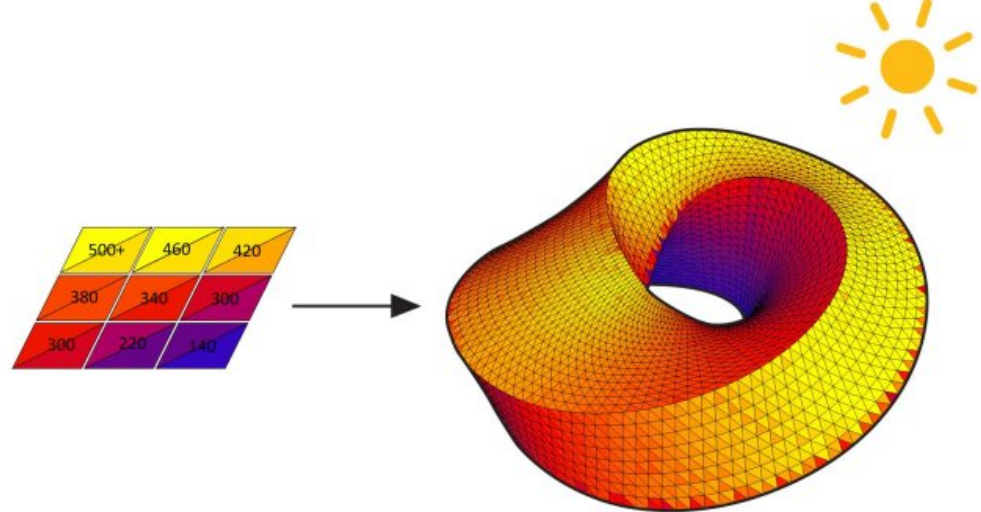
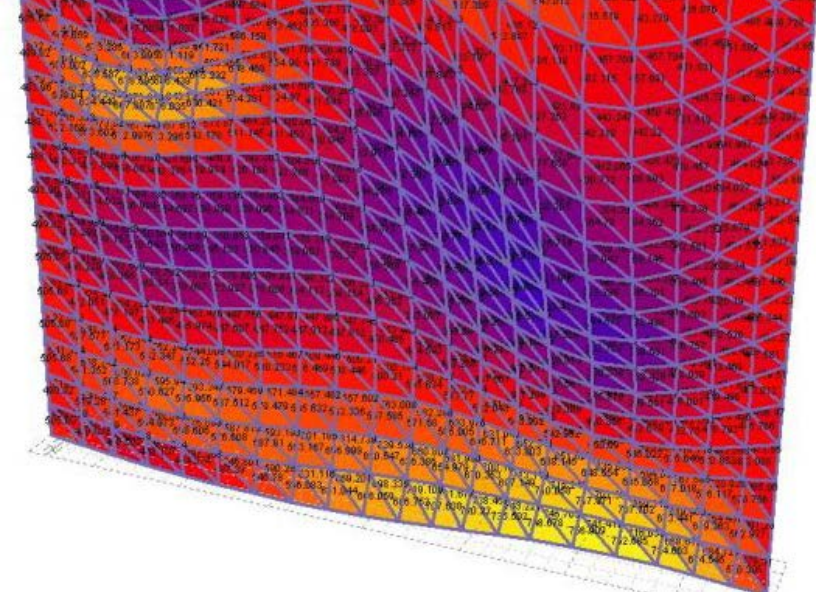
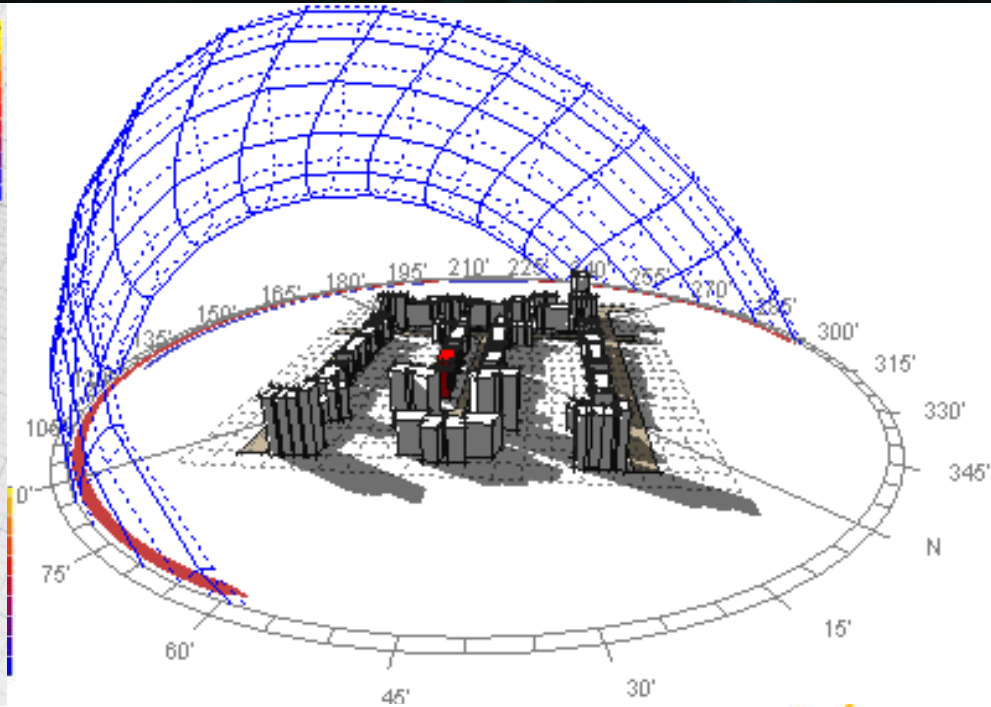
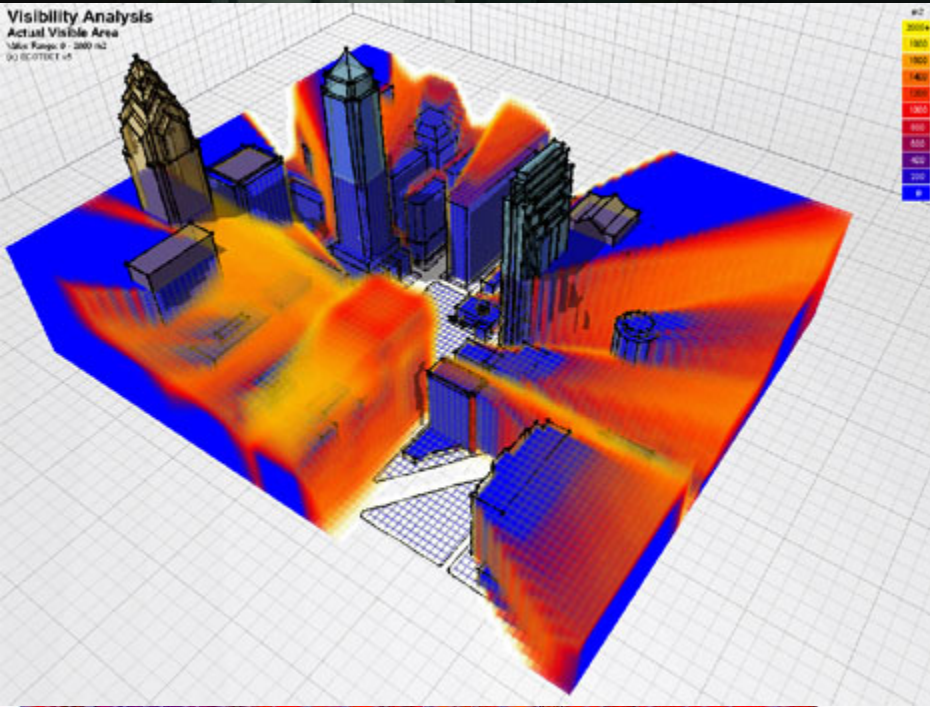
| VEHICLE TYPE | | DATE OF PURCHASE | | US POWER OF ATTORNEY | |
|--------------|------------------|------------------|------------------|----------------------|------------------|
| VEHICLE TYPE | DATE OF PURCHASE | DATE OF PURCHASE | DATE OF PURCHASE | DATE OF PURCHASE | DATE OF PURCHASE |
| 1977 FORD | 1977 FORD | 1977 FORD | 1977 FORD | 1977 FORD | 1977 FORD |
| 1977 FORD | 1977 FORD | 1977 FORD | 1977 FORD | 1977 FORD | 1977 FORD |

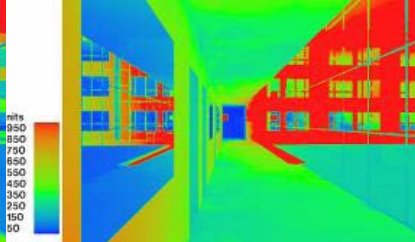
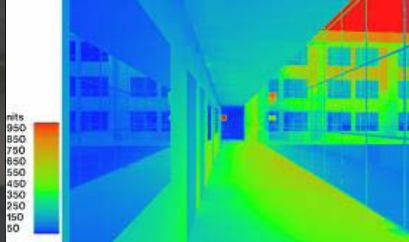
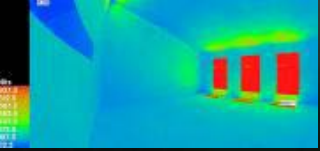
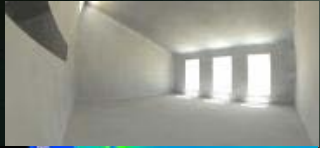
[illegible]

BIM为建筑界带来的冲击

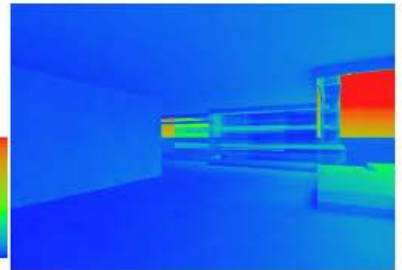
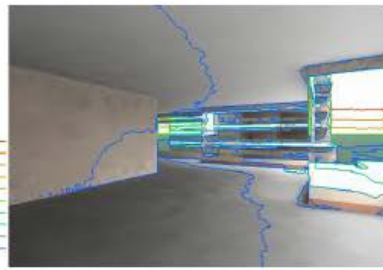
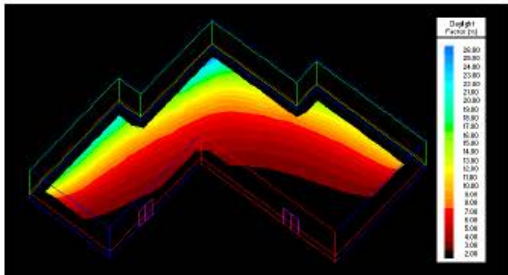
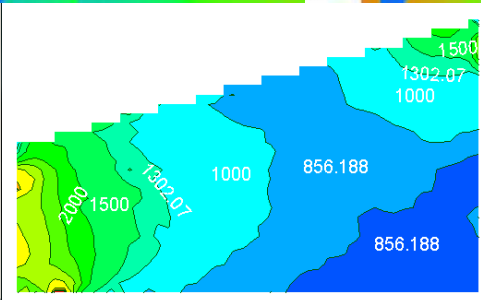
1. 可视性型像化设计
2. 图纸制作
3. 各专业协调合作
4. 物件清单及投标文件
5. 自动化送审文件
6. 科学性分析及可持续发展设计
7. 复杂几何形状建筑
8. 从建造到制造
9. 运维

科學性分析及可持續發展設計

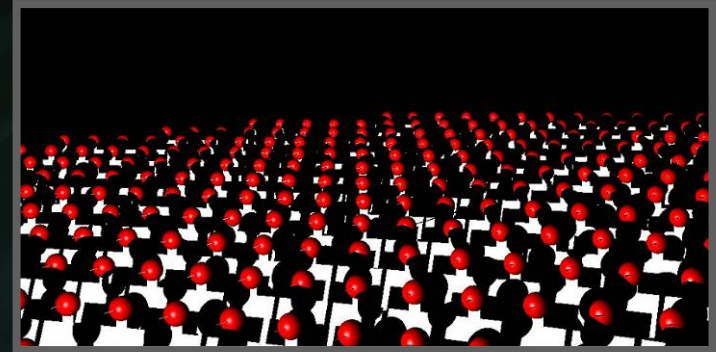
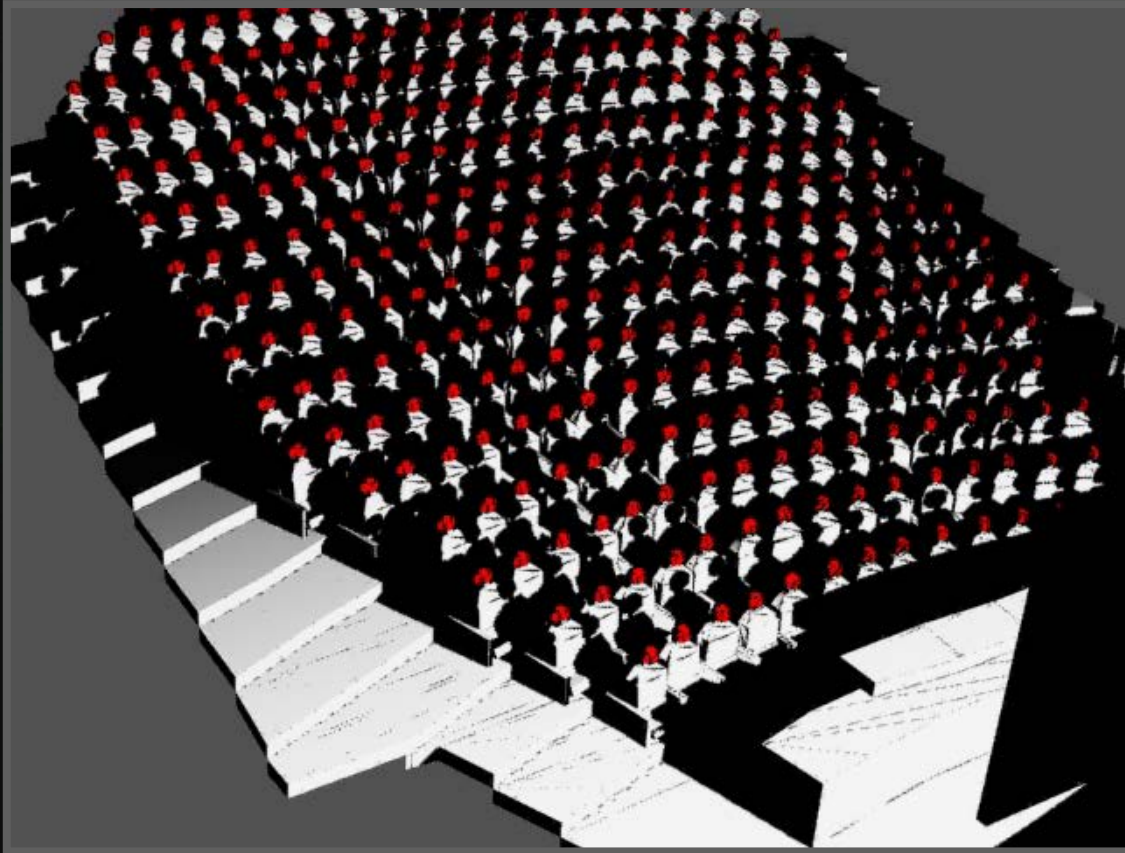




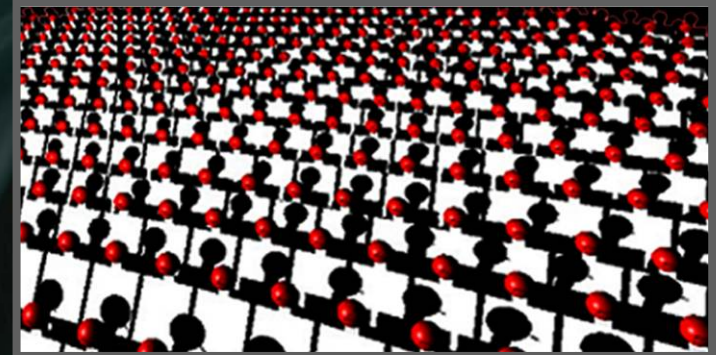
| Month\ | 01:00 | 02:00 | 03:00 | 04:00 | 05:00 | 06:00 | 07:00 | 08:00 | 09:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 24:00 | |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Jan | | | | | | | | | 100.0 | 99.7 | 100.0 | 100.0 | 100.0 | 84.6 | 38.8 | 5.2 | | | | | | | | | |
| Feb | | | | | | | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 98.7 | 73.9 | 32.7 | 3.0 | | | | | | | | |
| Mar | | | | | | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 91.5 | 60.4 | 25.7 | | | | | | | | |
| Apr | | | | | 0.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 98.0 | 84.0 | 51.3 | 0.0 | | | | | | | | |
| May | | | | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 92.9 | 0.0 | 0.0 | 0.0 | | | | | | |
| Jun | | | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 96.5 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | |
| Jul | | | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 96.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | |
| Aug | | | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 90.2 | 64.8 | 0.0 | 0.0 | | | | | | |
| Sep | | | 0.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 92.2 | 64.0 | 30.8 | 0.0 | | | | | | | |
| Oct | | | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 95.0 | 63.7 | 26.7 | | | | | | | | | |
| Nov | | | | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 77.0 | 31.7 | 1.8 | | | | | | | | | |
| Dec | | | | | | | | 100.0 | 95.1 | 93.6 | 100.0 | 93.0 | 67.6 | 22.2 | | | | | | | | | | | 71.82% |



科學性分析及可持續發展設計



低可視性

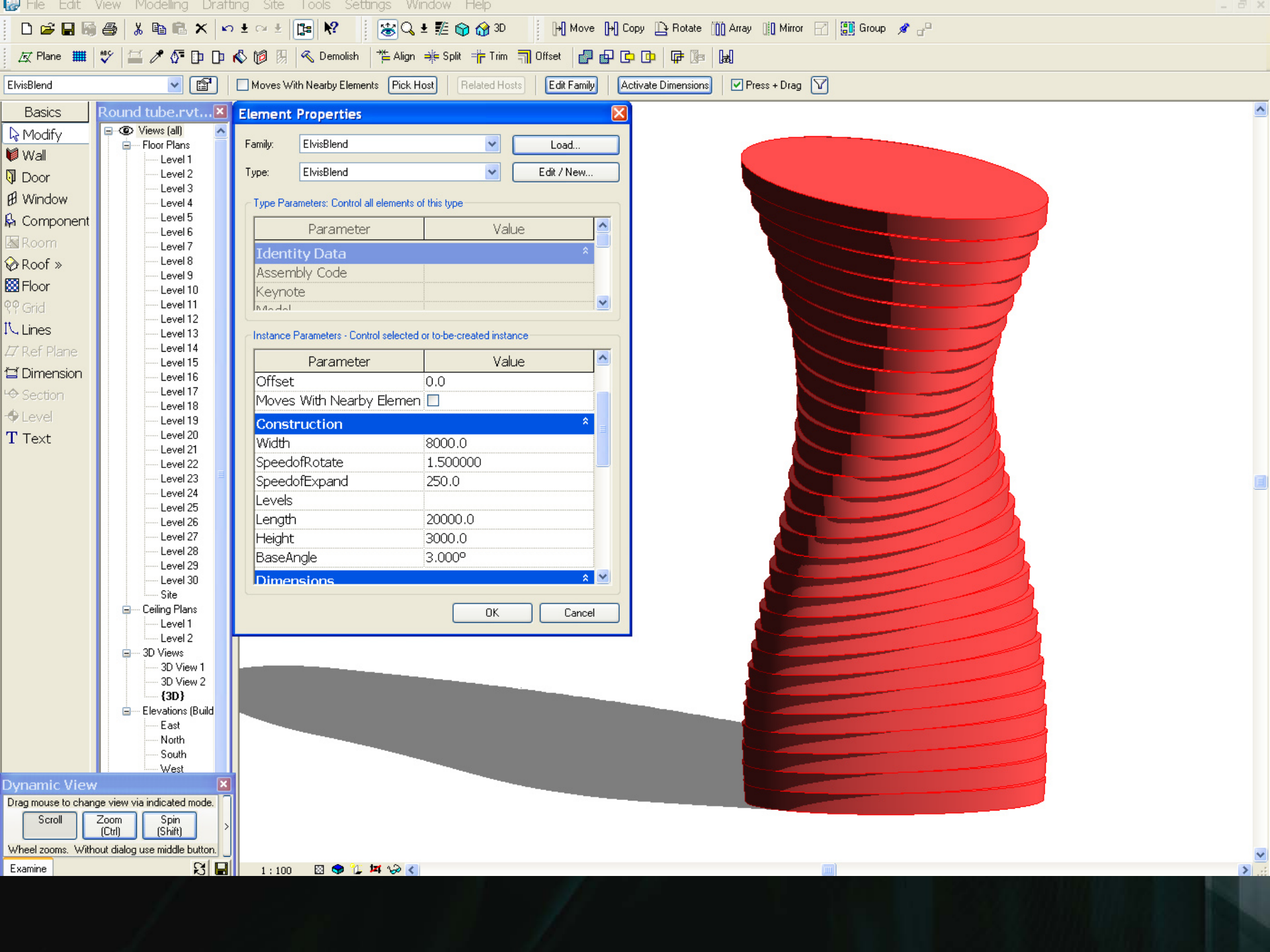
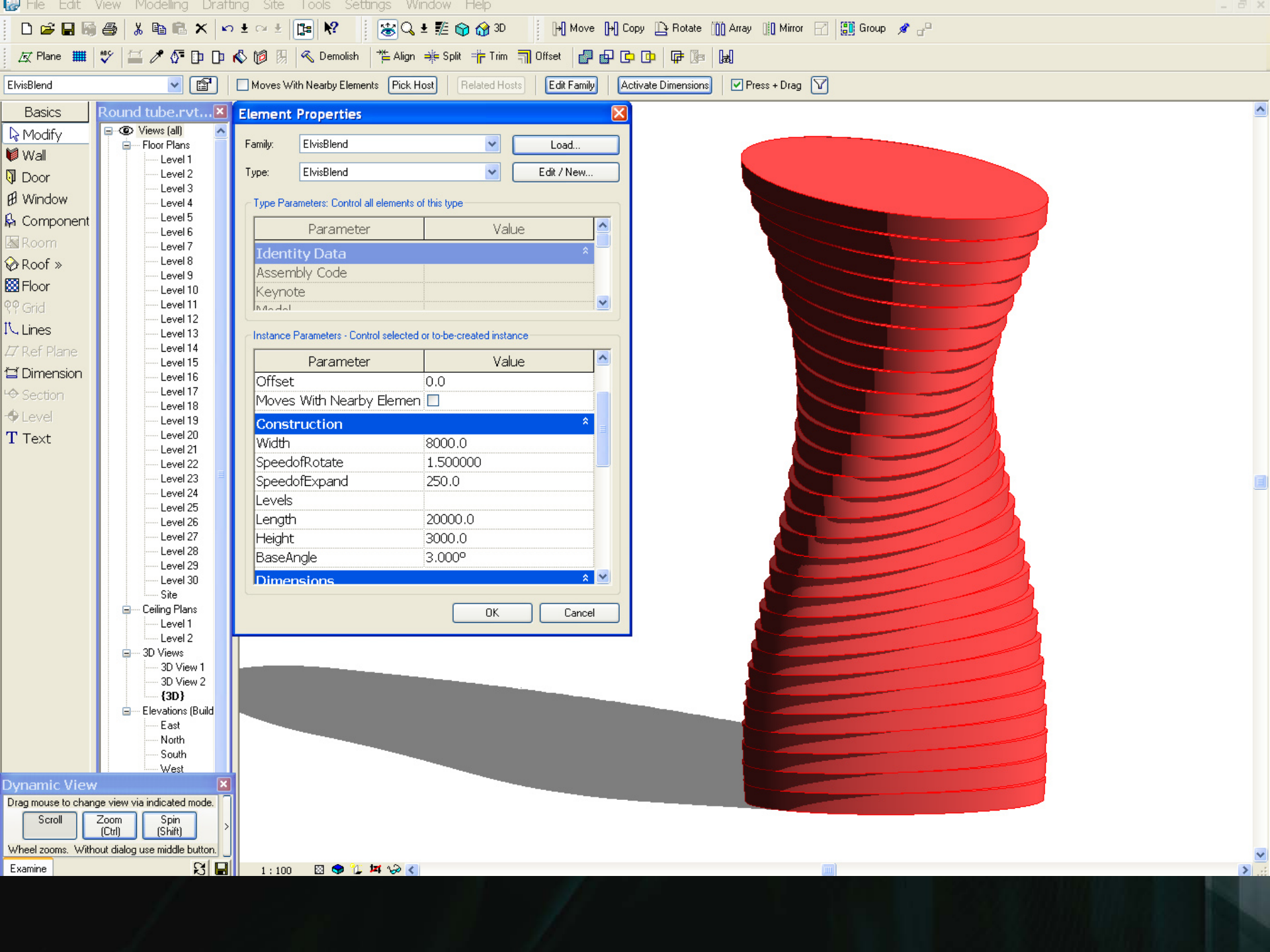


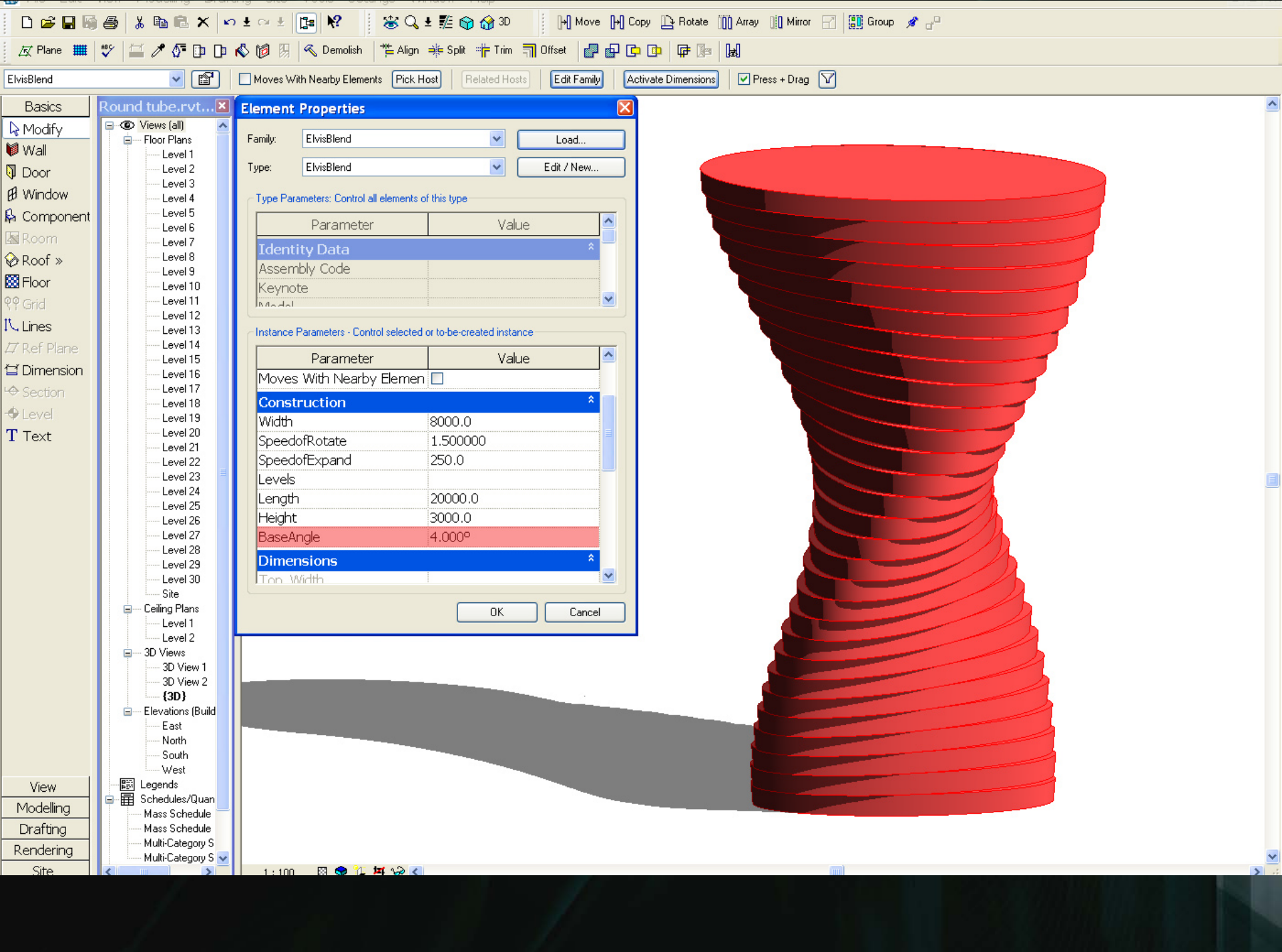
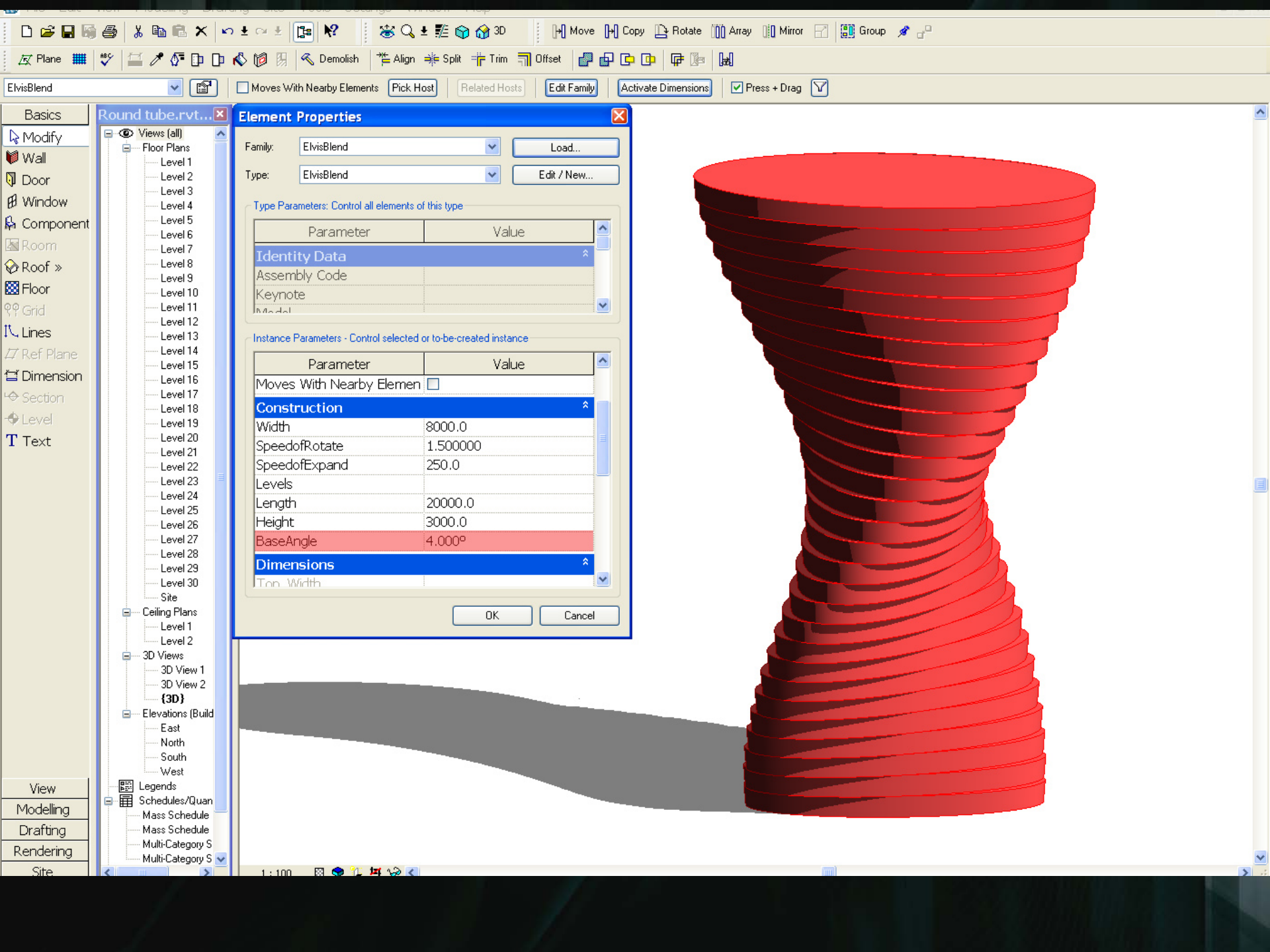
高可視性

可視性設計

BIM为建筑界带来的冲击

1. 可视性型像化设计
2. 图纸制作
3. 各专业协调合作
4. 物件清单及投标文件
5. 自动化送审文件
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absolute world

BUILDING 2

AbsoluteWorld's two buildings, as envisioned by their creator, Yansong Ma. The buildings were designed to complement and enhance each other, each with its own unique personality, but created from the same architectural language.

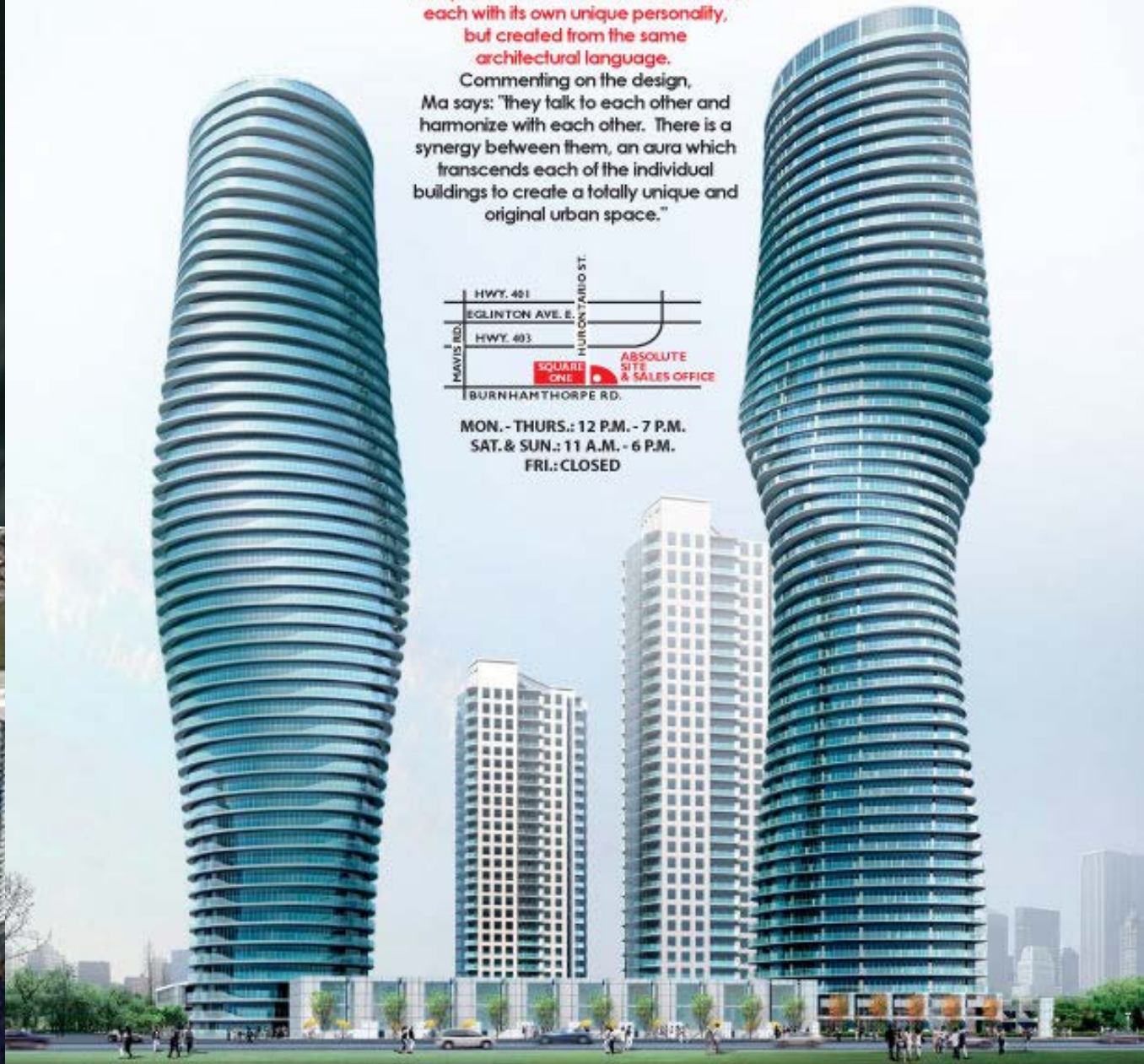
Commenting on the design, Ma says: "They talk to each other and harmonize with each other. There is a synergy between them, an aura which transcends each of the individual buildings to create a totally unique and original urban space."

absolute world

BUILDING 1



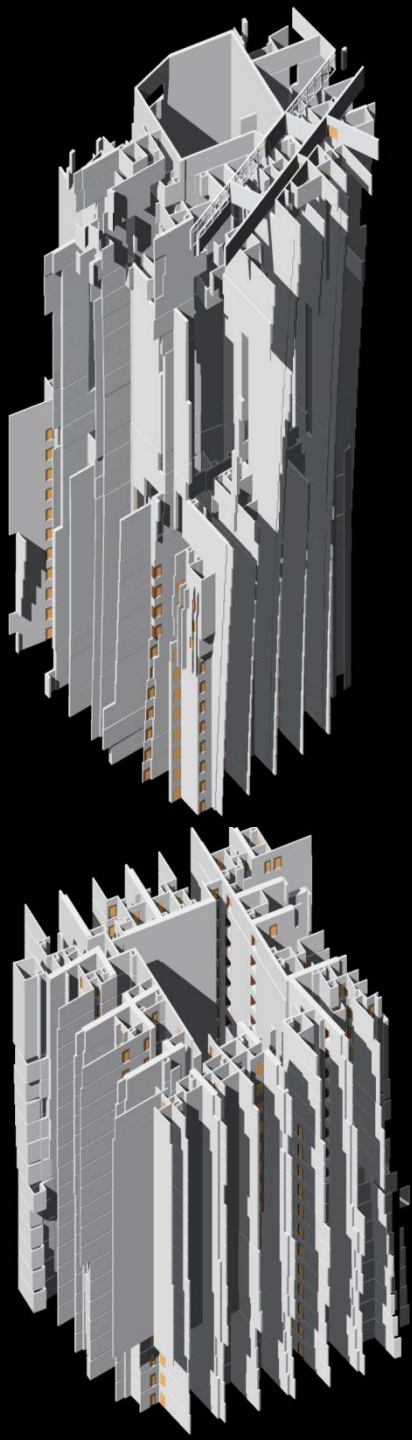
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SAT. & SUN.: 11 A.M. - 6 P.M.
FRI.: CLOSED

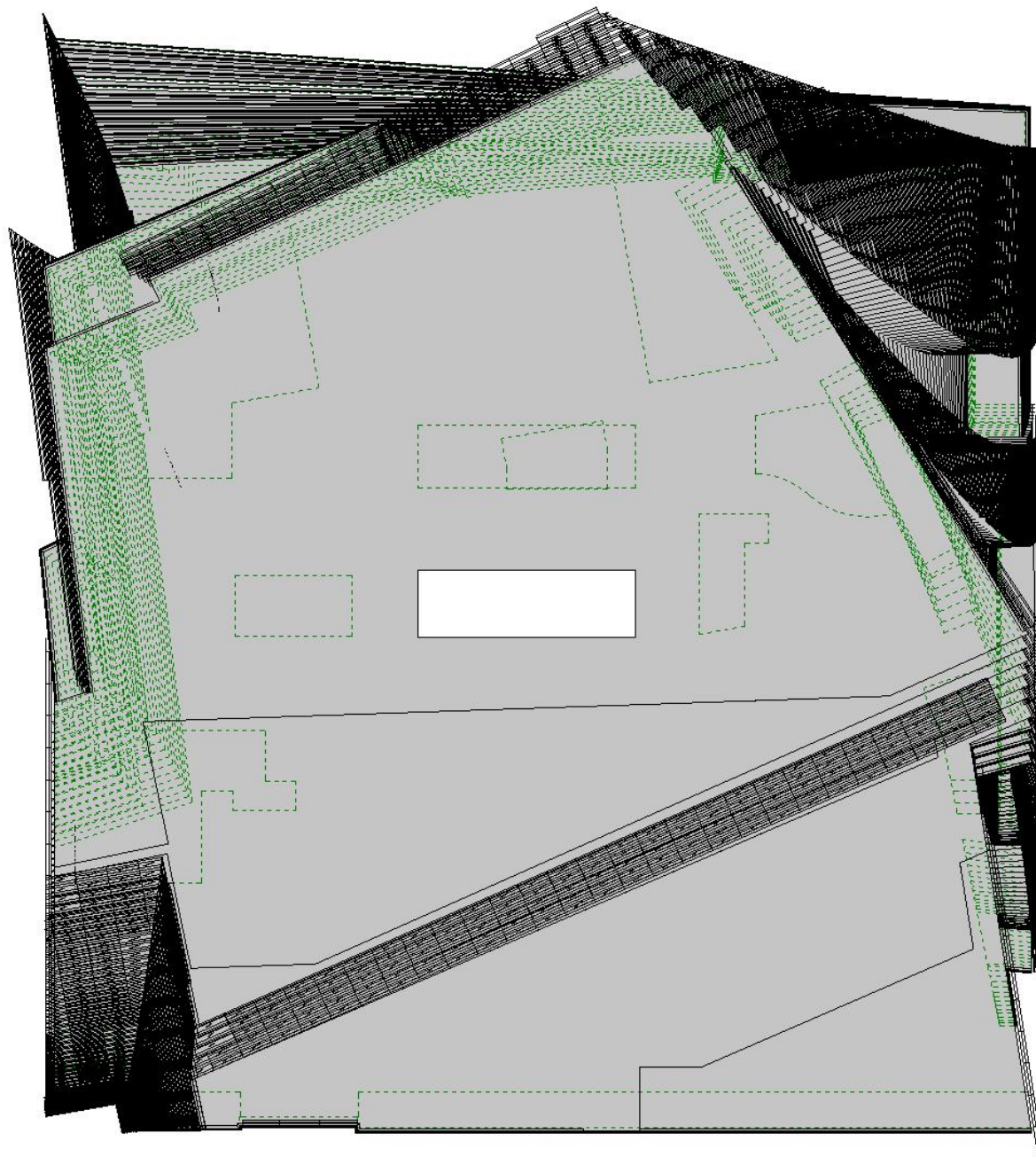


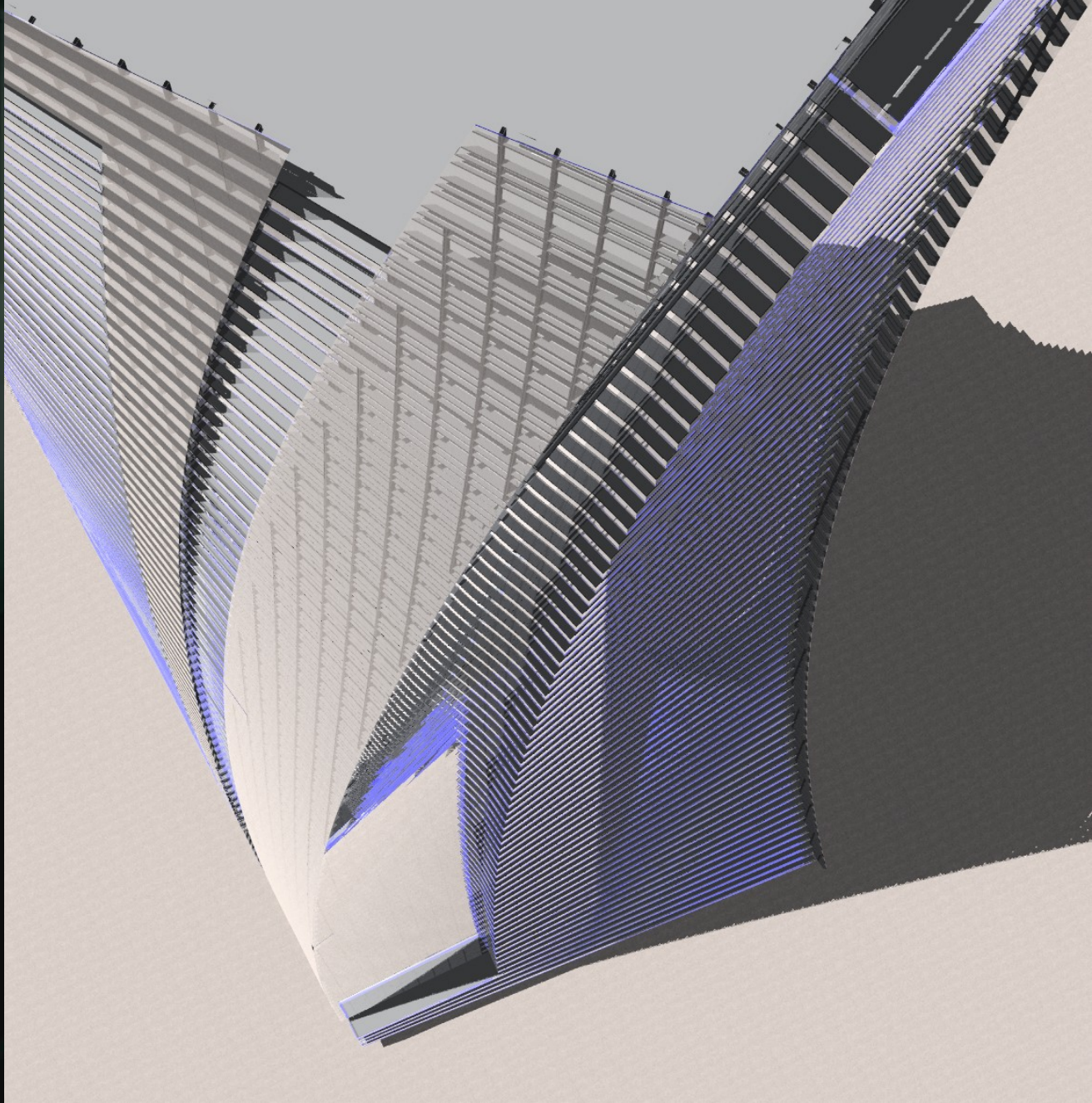
Program: Residential Site Area: 3,746 sqm
Floor Area: 659,652 sqm Building Height: 347 m

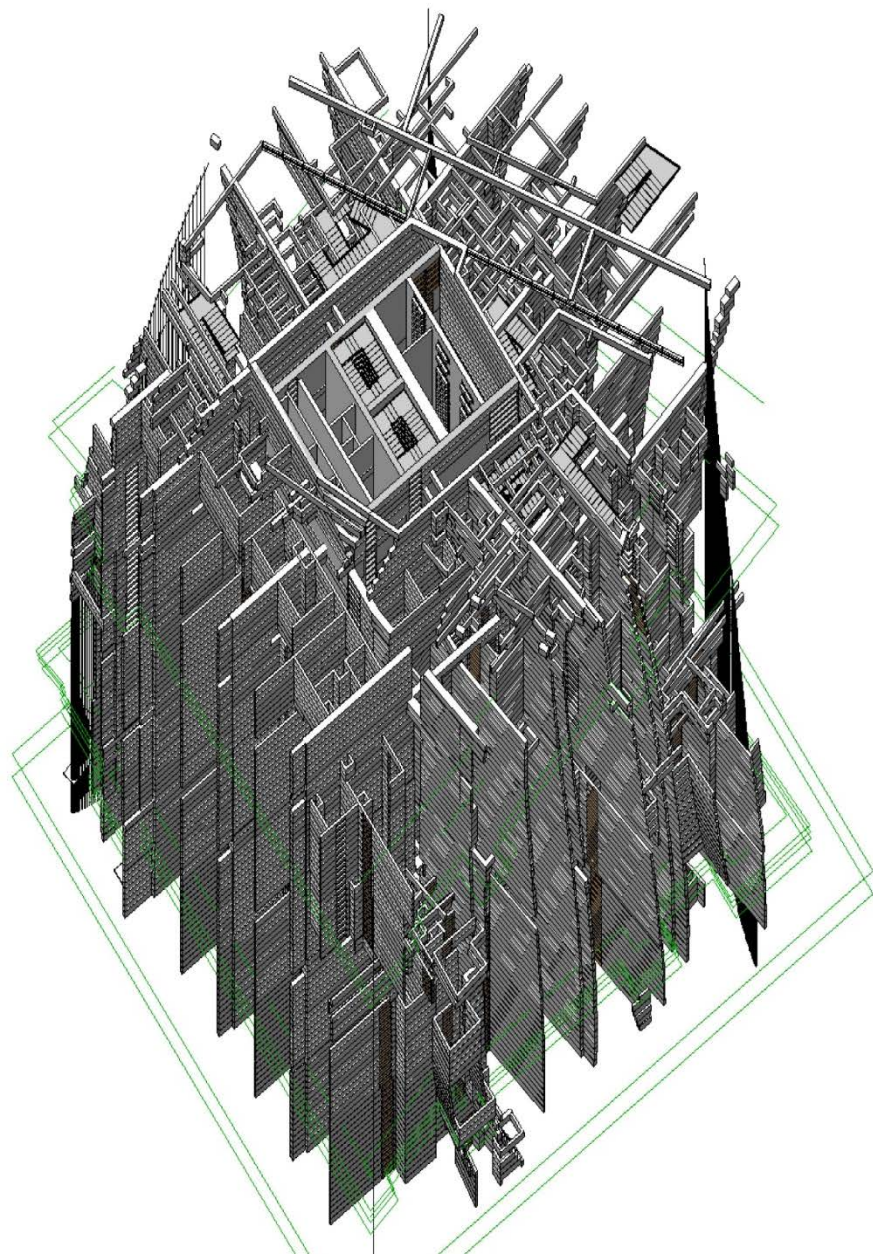
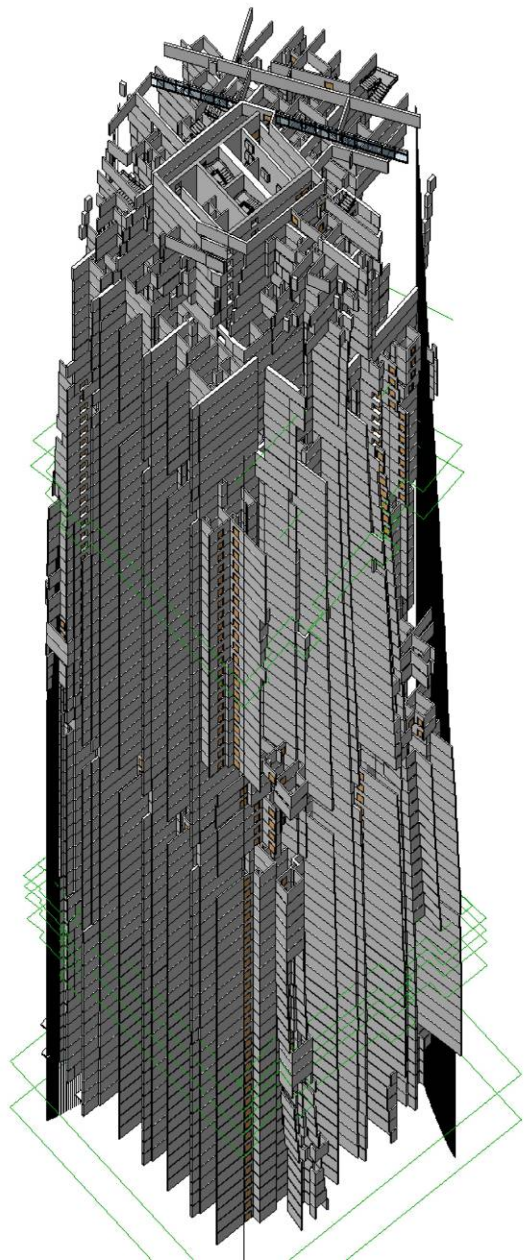


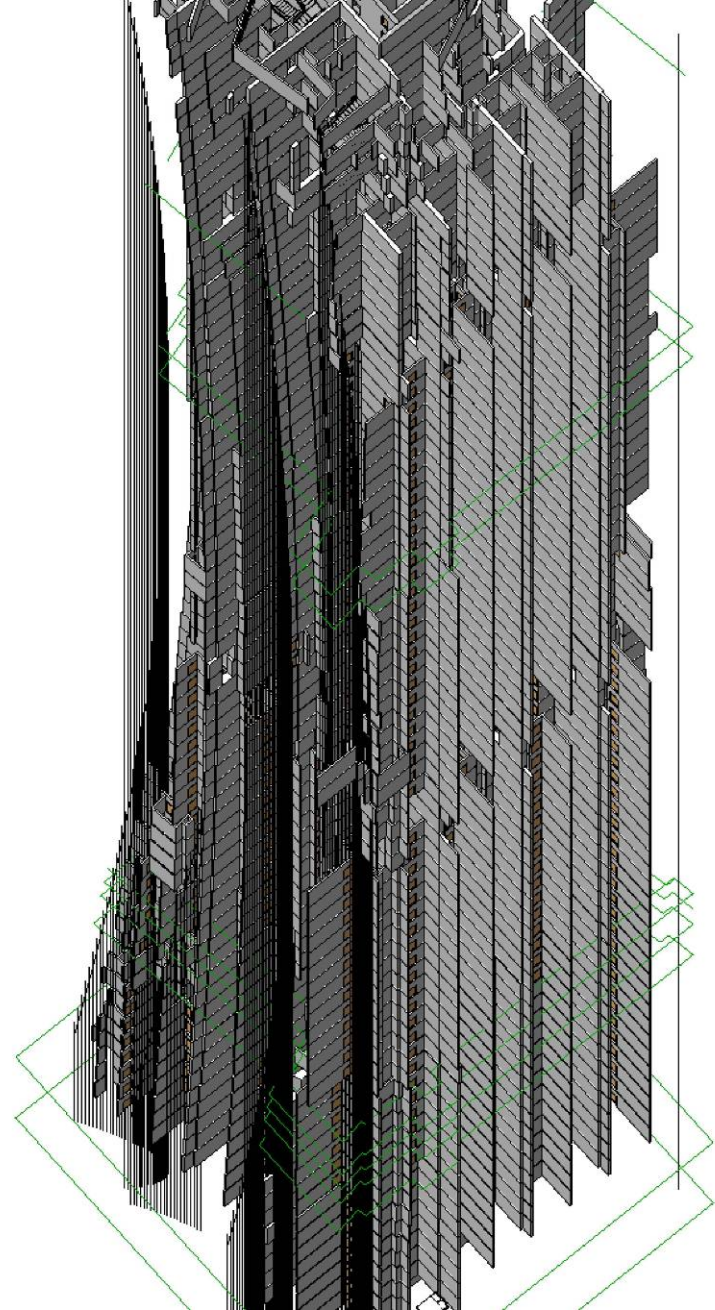
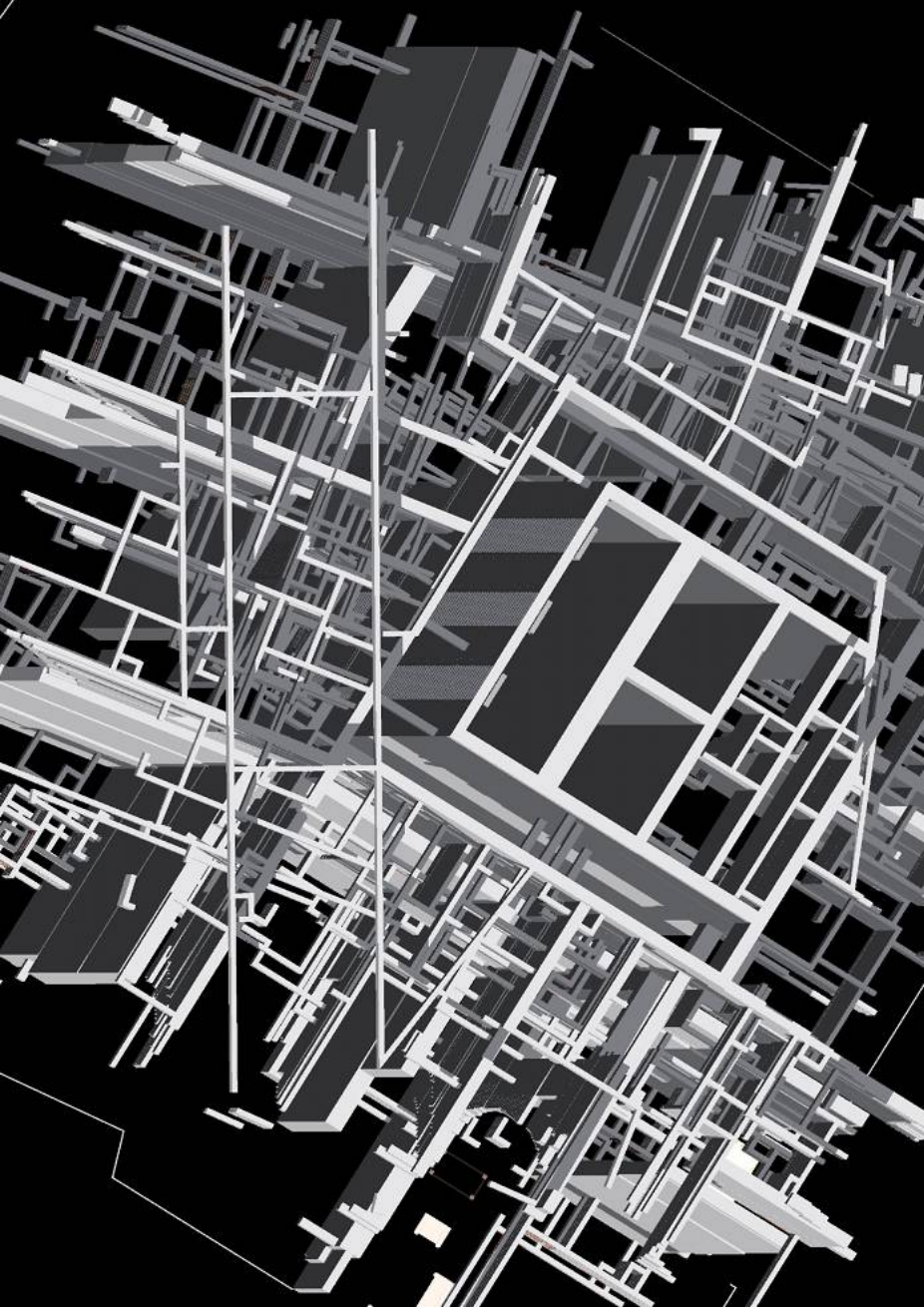
Dubai **Ocean Heights One**

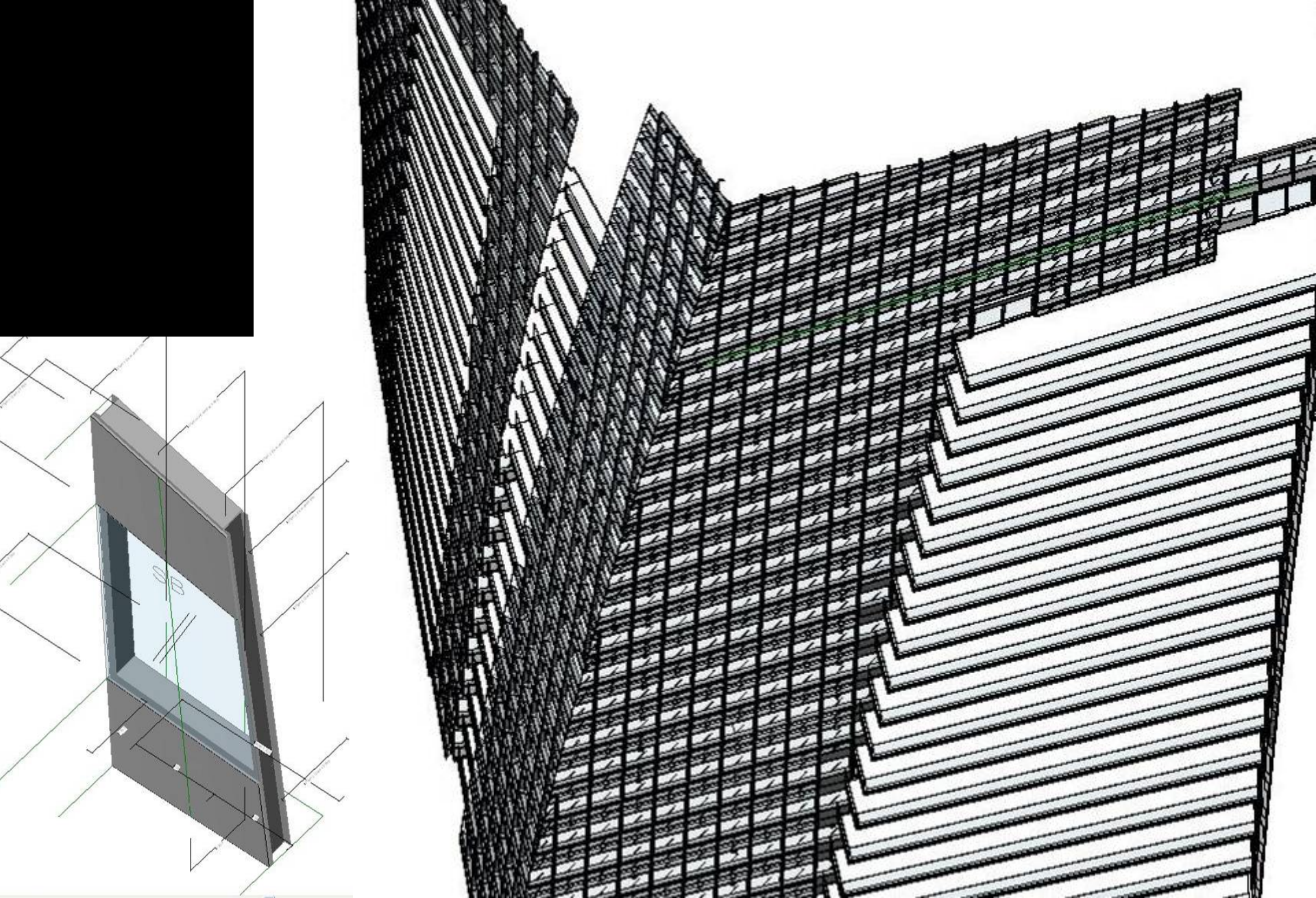














Program Residential Site Area 7,007 sqm
 Floor Area 90,208 sqm Building Height 225 m

Abu Dhabi Empire Tower

Empire Tower was challenged through a client request of not "pushing the limits" too far. The concern is that the residential project was located in the middle of a master plan filled with potential icons. The design standardizes the units to accommodate the client request but manipulates the section to develop a very dynamic solution, which holds its own amidst the visual clutter of its neighbors. This was deemed crucial to the financial viability of this project, which is dependent on pre-sales within a highly competitive market.

The design maximizes the tower's presence on the street, with vertical layers spreading out to the property lines. The building then bends back away from the street across from a large commercial tower, allowing for an enlarged view corridor between the central park of the community and the sea, one block away. The splayed vertical layers converge and rise up before bending forward together, as the 230-meter tower extends into the sky – maximizing its views between the park and the sea ■



Initial Massing



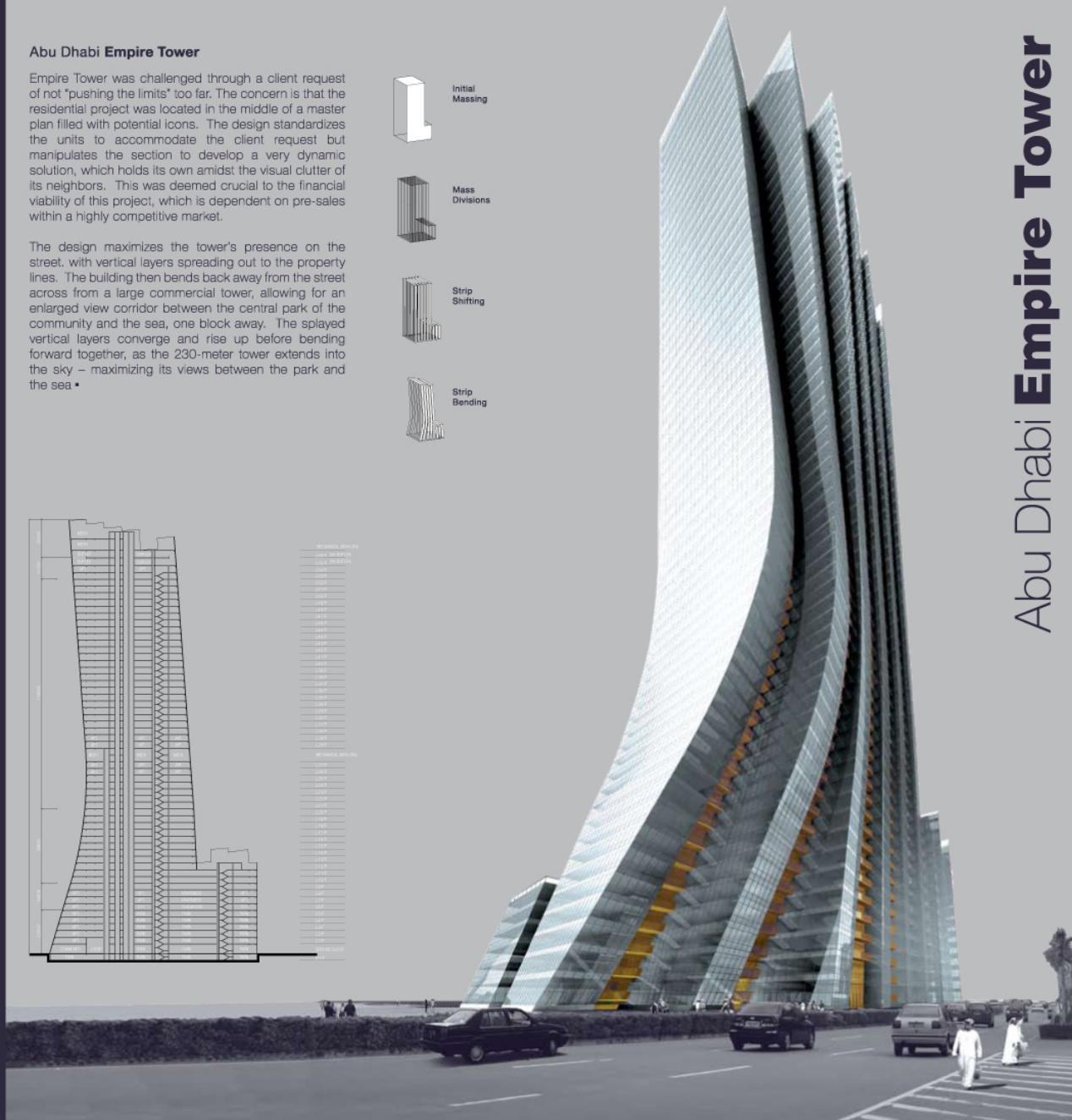
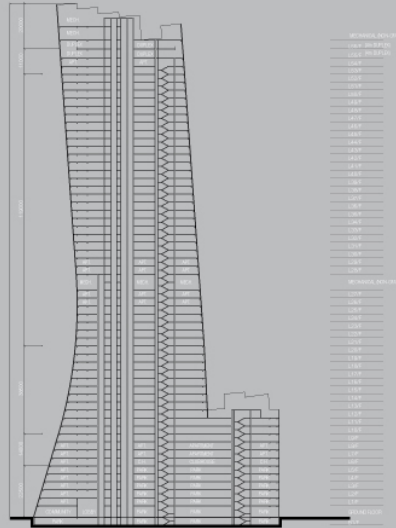
Mass Divisions



Strip Shifting



Strip Bending

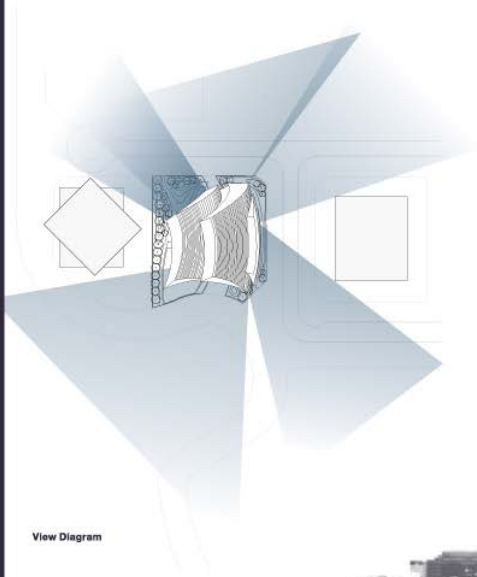


Abu Dhabi Empire Tower

Dubai Ocean Heights Two

Ocean Heights Two is also located in Dubai Marina, UAE, along with its sister project, Ocean Heights One. At 460 meters in height and 105 floors, it will be the tallest tower in its vicinity. However, unlike its predecessor, the requirements for more modulated units up to the 60th floor, forced a different approach while intending to maintain the spirit of its sister.

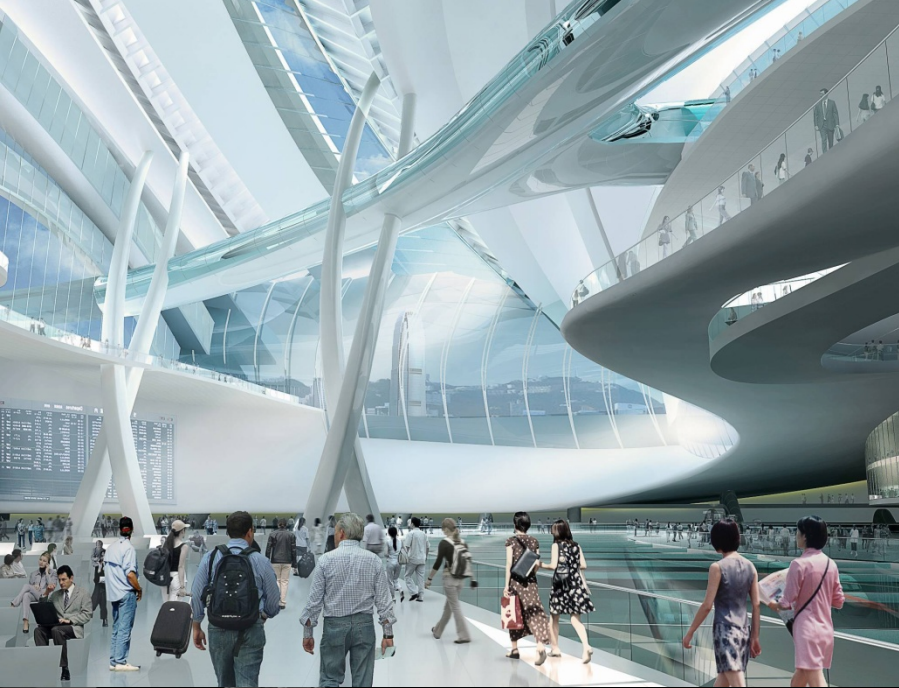
The first 60th floors of the tower are intended to be service apartments, which in order to be marketable, needed to have the majority of units standardized. The curved shape of the tower improves views past its densely located neighbors. The playfulness of this tower was concentrated into the two most visible faces, allowing units to bend up the tower in two blades. These blades were still modulated up to the 60th floor before the tight restrictions of unit area fluctuations become more relaxed. At this point, the modules drop off and the blades continue, tapering and bending into the sky •



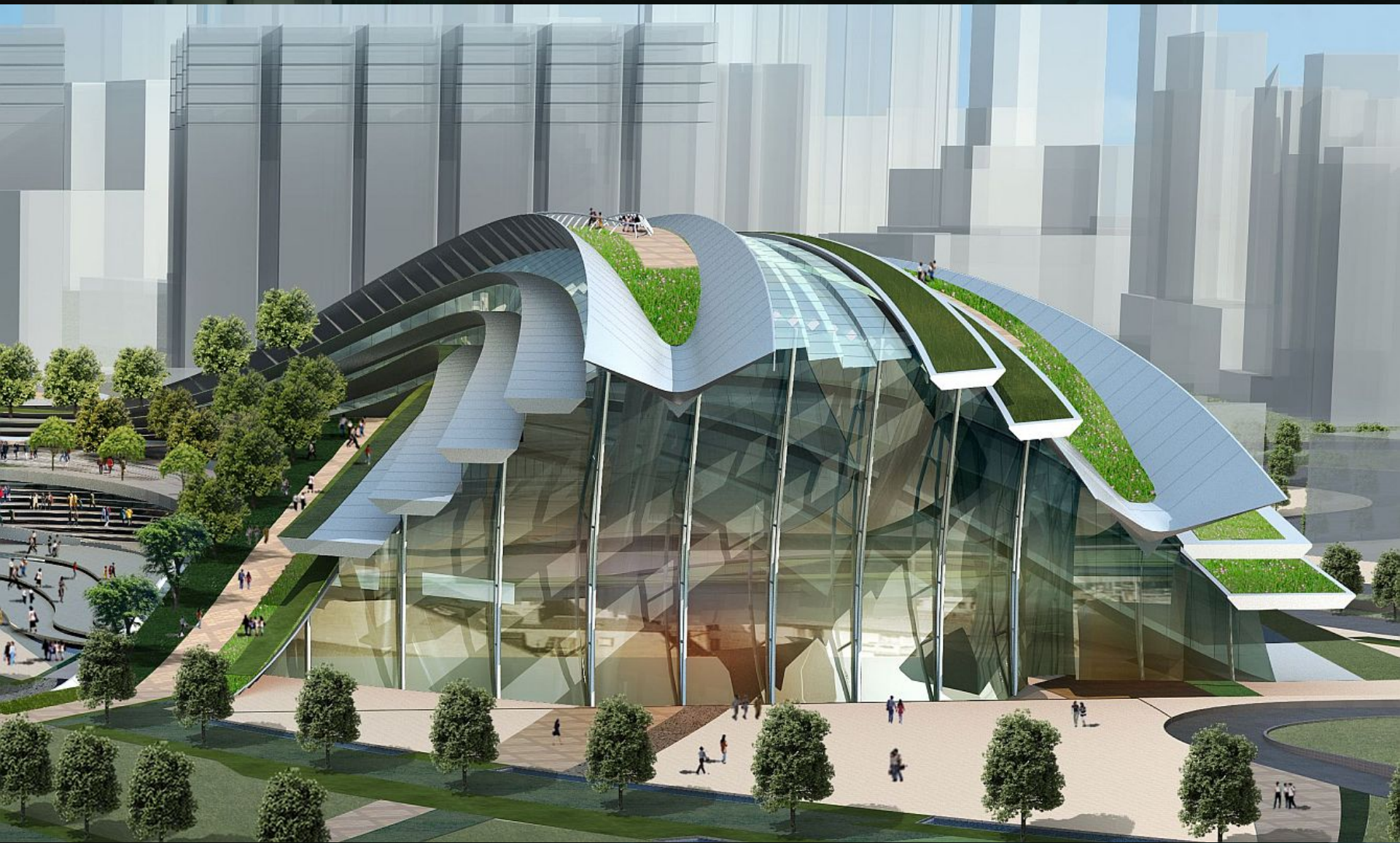
View Diagram

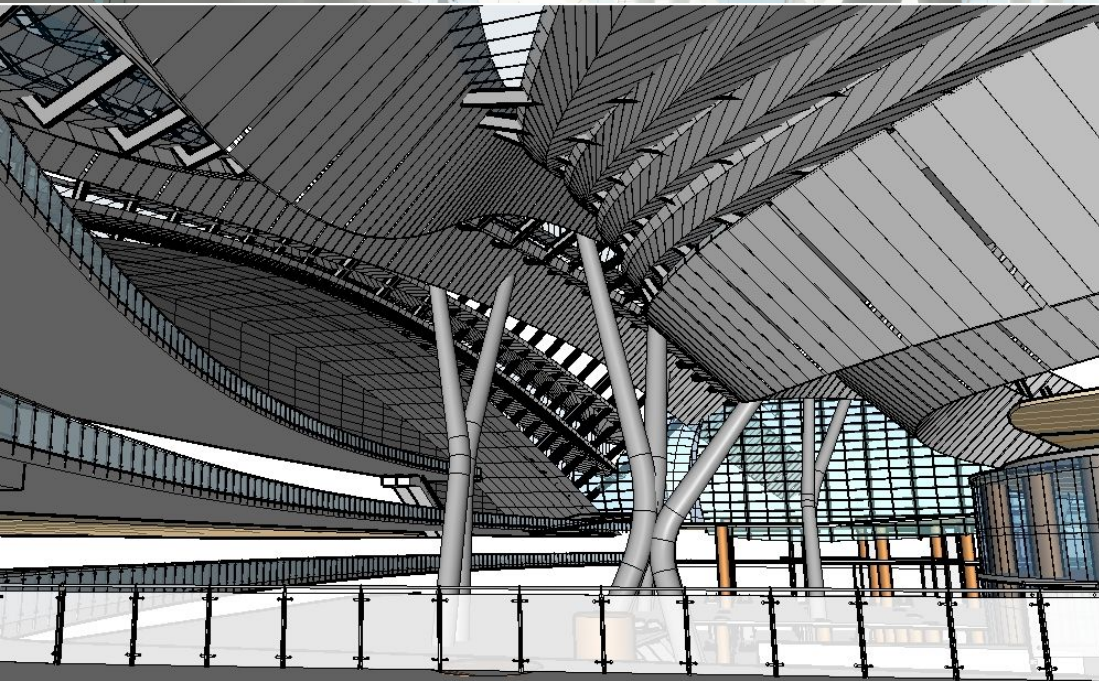
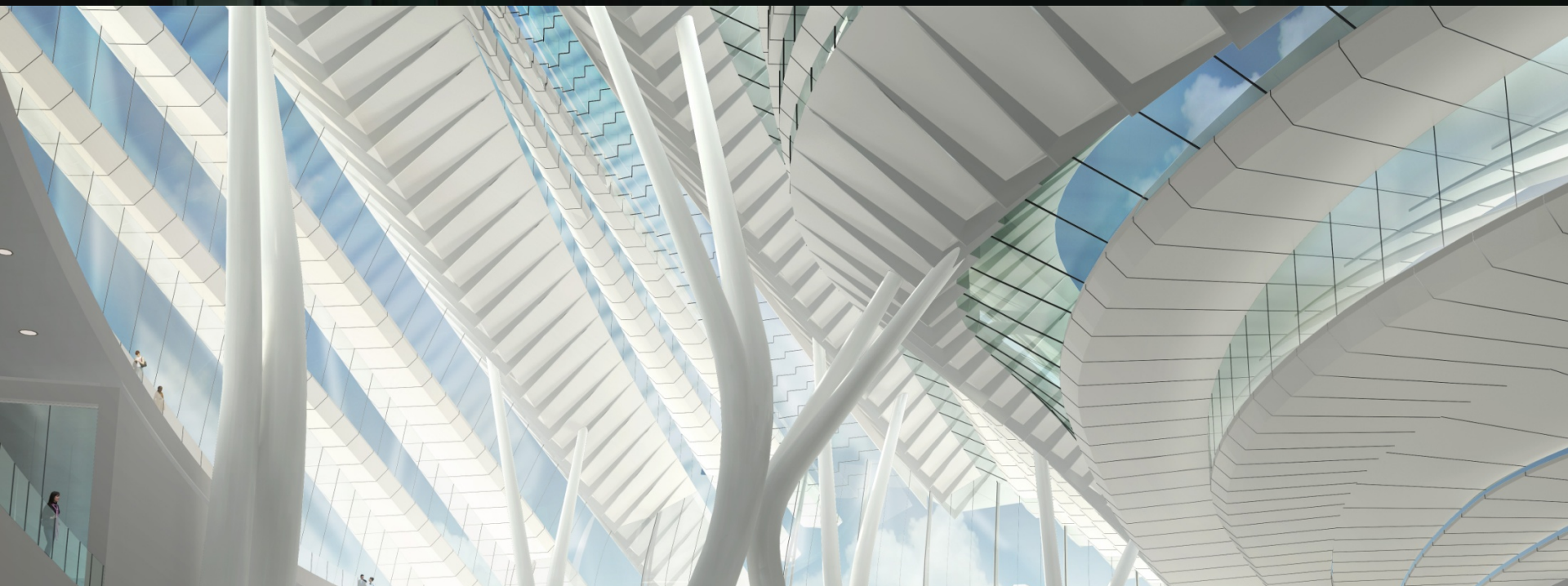


Dubai Ocean Heights Two



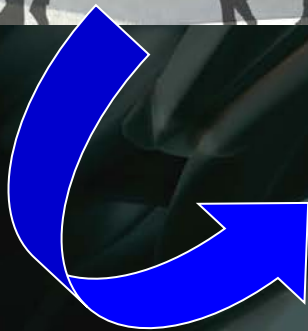




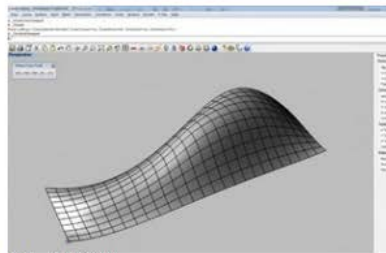


BIM为建筑界带来的冲击

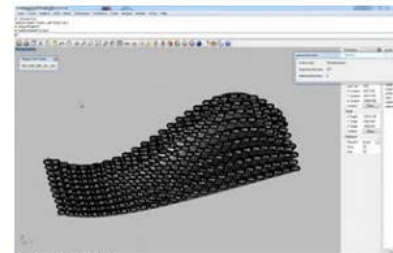
1. 可视性型像化设计
2. 图纸制作
3. 各专业协调合作
4. 物件清单及投标文件
5. 自动化送审文件
6. 科学性分析及可持续发展设计
7. 复杂几何形状建筑
8. 从建造到制造
9. 运维



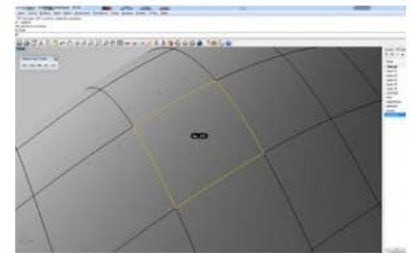
从建造到制造



1.1 – 3D Model



1.2 – Indexing



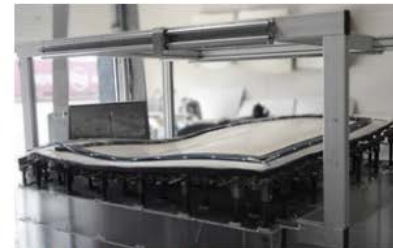
1.3 – Panel

Step 2 – Mould Preparation

The casting sides are applied to the mould surface in reference to the projected lines from the above suspended laser projector. The mould position is tested to verify the final panel shape, finally the material is added to the mould surface.



2.1 – Casting sides



2.2 – Panel shape verification



2.3 – Material application

Step 3 – Casting panel

The mould is positioned to the final panel shape and is left until the material is hardened. After hardening, the mould is positioned to release the panel from the surface and the finished panel can be extracted.



3.1 – Casting verified panel



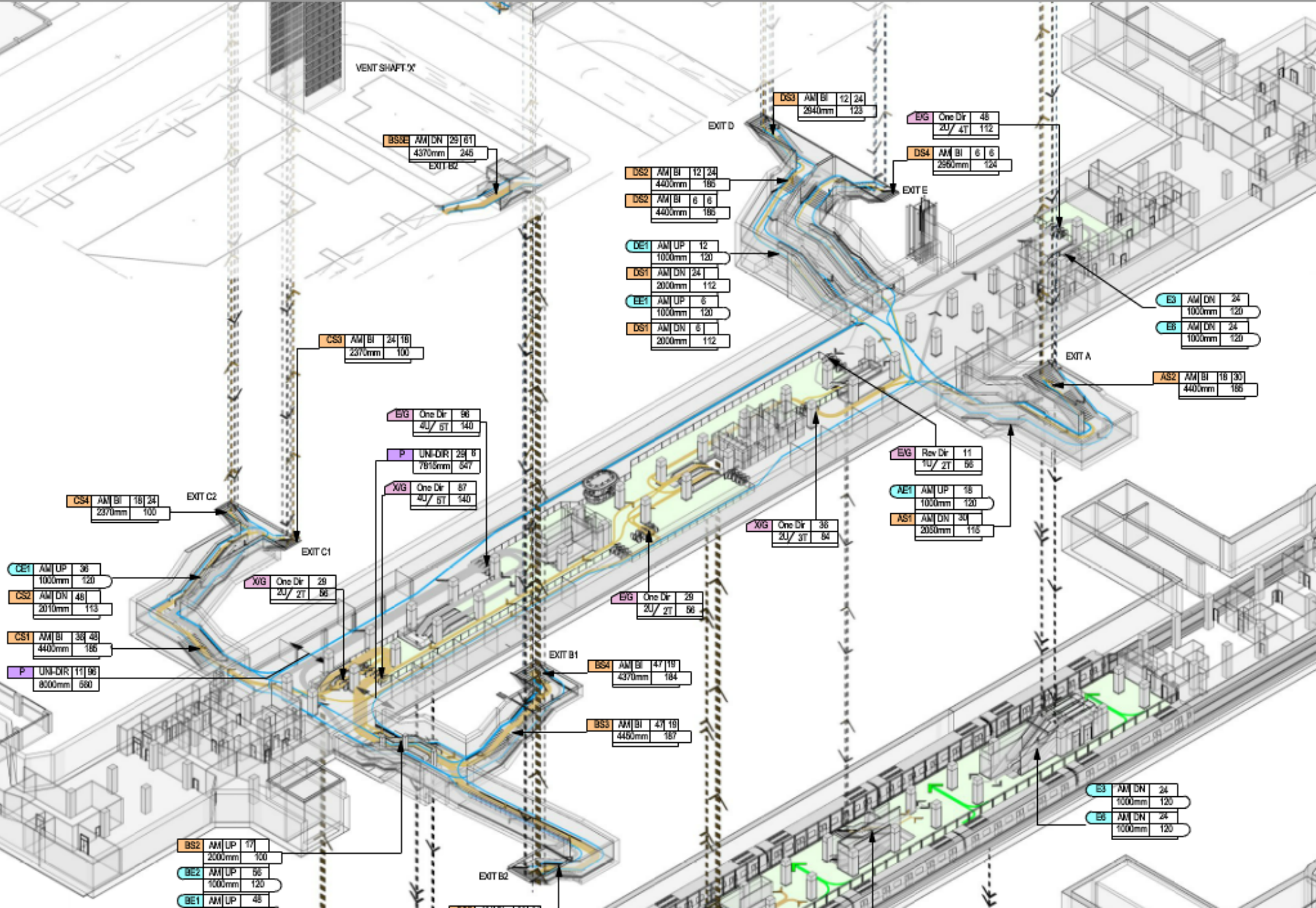
3.2 – Panel hardening



3.3 – Panel release

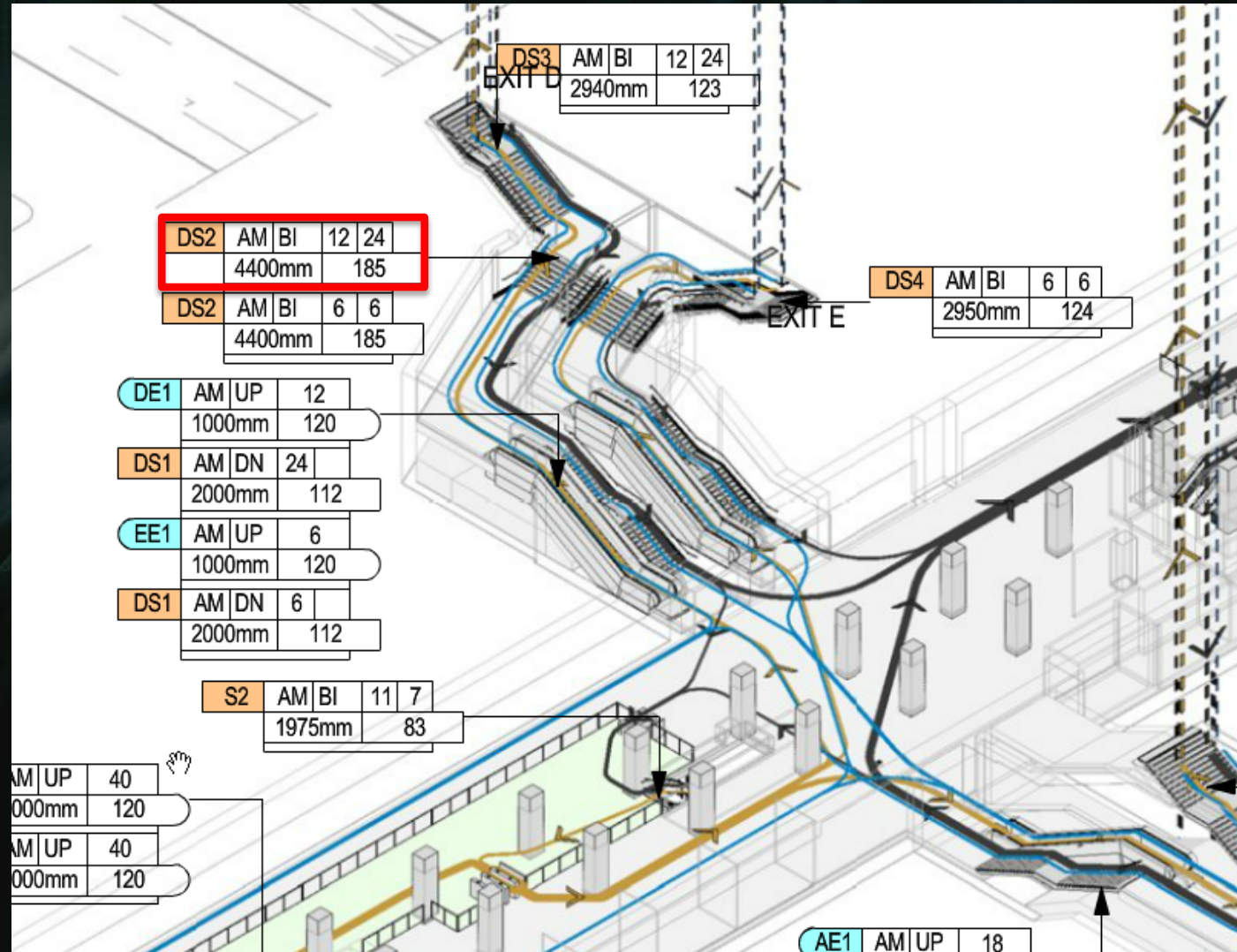
BIM为建筑界带来的冲击

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STAIR SCHEDULE

| NAME | STAIR WIDTH (mm) | NORMAL AM PEAK | | | | |
|------|------------------|--------------------|----------|-----|-----|--------------------|
| | | DIR. (UP/DN/BI) | CAL.CAP. | | | TOTAL CAPACITY (U) |
| | | | UP | DN | BI | |
| AS1 | 2050 | DN | 103 | 115 | 86 | 115 |
| AS2 | 4400 | BI | 220 | 246 | 185 | 185 |
| AS2E | 4400 | UP | 220 | 246 | 185 | 220 |
| BS1 | 2000 | UP | 100 | 112 | 84 | 100 |
| BS2 | 2000 | UP | 100 | 112 | 84 | 100 |
| BS3 | 4450 | BI | 223 | 249 | 187 | 187 |
| BS4 | 4370 | BI | 219 | 245 | 184 | 184 |
| BS4E | 2630 | UP | 132 | 147 | 110 | 219 |
| BS5 | 4370 | BI | 219 | 245 | 184 | 184 |
| BS5E | 4370 | DN | 219 | 245 | 184 | 245 |
| CS1 | 4400 | BI | 220 | 246 | 185 | 185 |
| CS2 | 2010 | DN | 101 | 113 | 84 | 113 |
| CS3 | 2370 | BI | 119 | 133 | 100 | 100 |
| CS3E | 2370 | UP | 119 | 133 | 100 | 119 |
| CS4 | 2370 | BI | 119 | 133 | 100 | 100 |
| CS4E | 2370 | UP | 119 | 133 | 100 | 119 |
| DS1 | 2000 | DN | 100 | 112 | 84 | 112 |
| DS1 | 2000 | DN | 100 | 112 | 84 | 112 |
| DS2 | 4400 | BI | 220 | 246 | 185 | 185 |
| DS2 | 4400 | BI | 220 | 246 | 185 | 185 |
| DS3 | 2940 | BI | 147 | 165 | 123 | 123 |



| | |
|---|---|
| ? | x |
|---|---|

Enter sample values to represent this label in the family environment.

☐ Wrap between parameters only

Select available fields from:

Actual Number of Risers
Actual Riser Height
Actual Tread Depth
Assembly Code
Assembly Description
Assembly Name
Calculated Capacity_AM
Calculated Capacity_Evacuation
Comments
Cost
Description
Dir_AM (UP/DN/BI)
Dir_EVA (UP/DN)
Dir_PM (UP/DN/BI)




| | Parameter Name | Spaces | Prefix | Sample Value | Suffix | Break |
|---|----------------------------|--------|--------|--------------|--------|--------------------------|
| 1 | Calculated Capacity_Evacua | | | EVA | | <input type="checkbox"/> |




Cancel

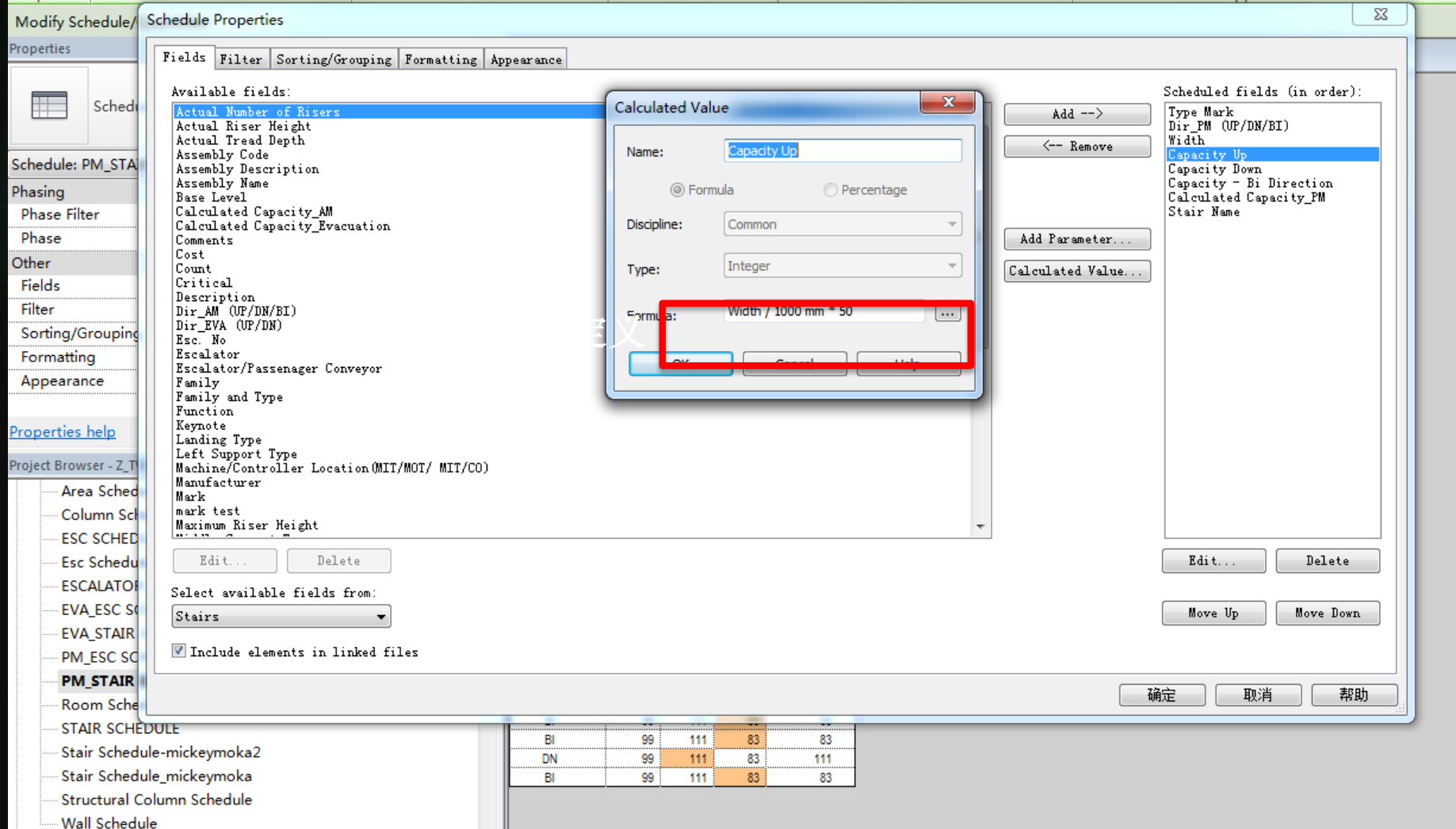
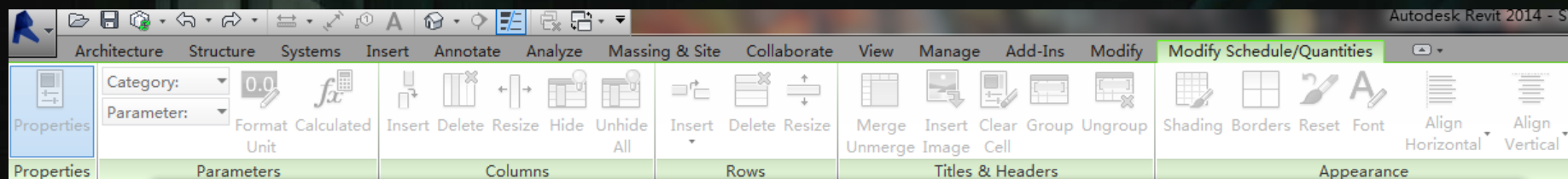
Apply

Properties

 Schedule

Schedule: Stair Schedule-mickevmoka2  Edit Type

[illegible]

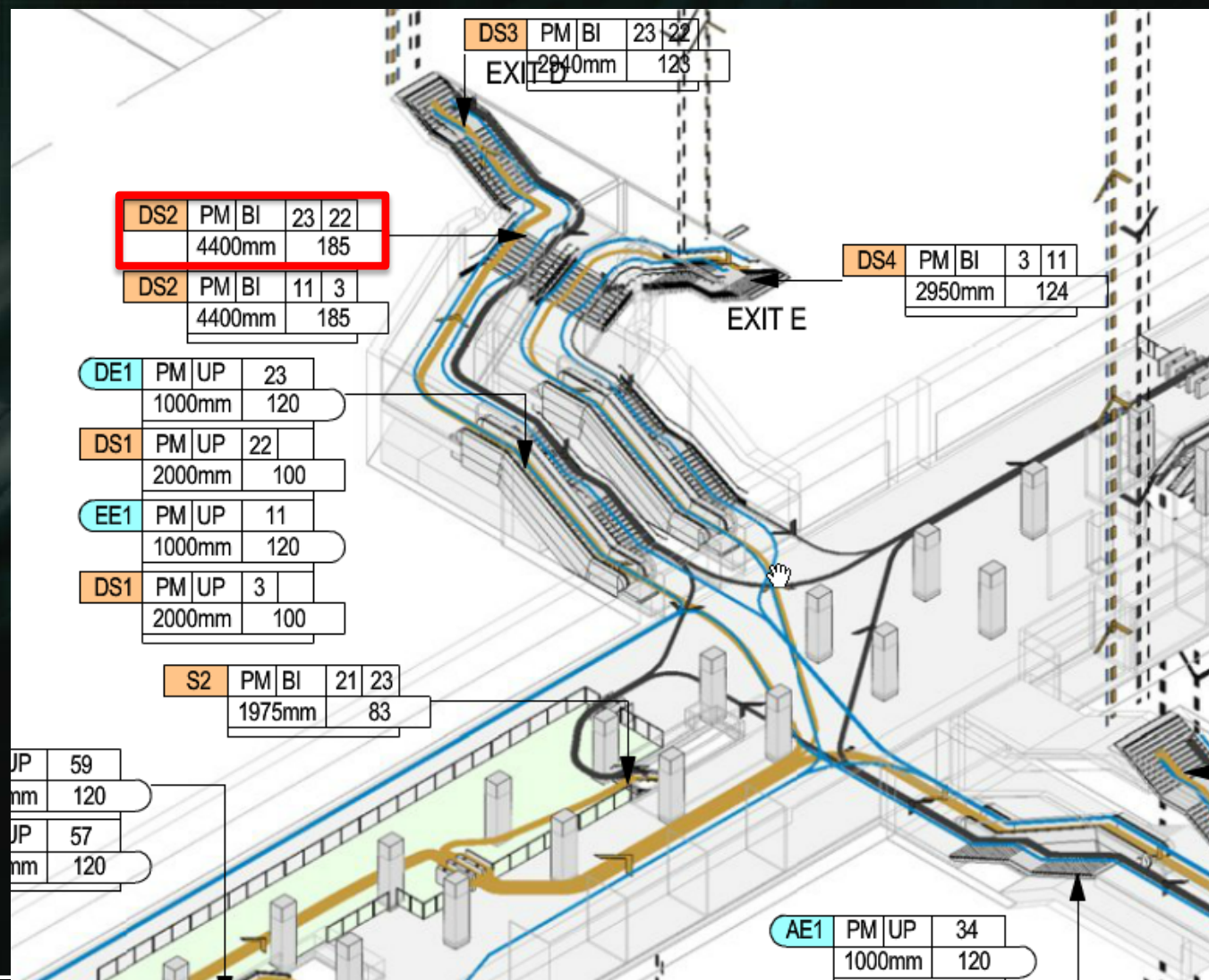


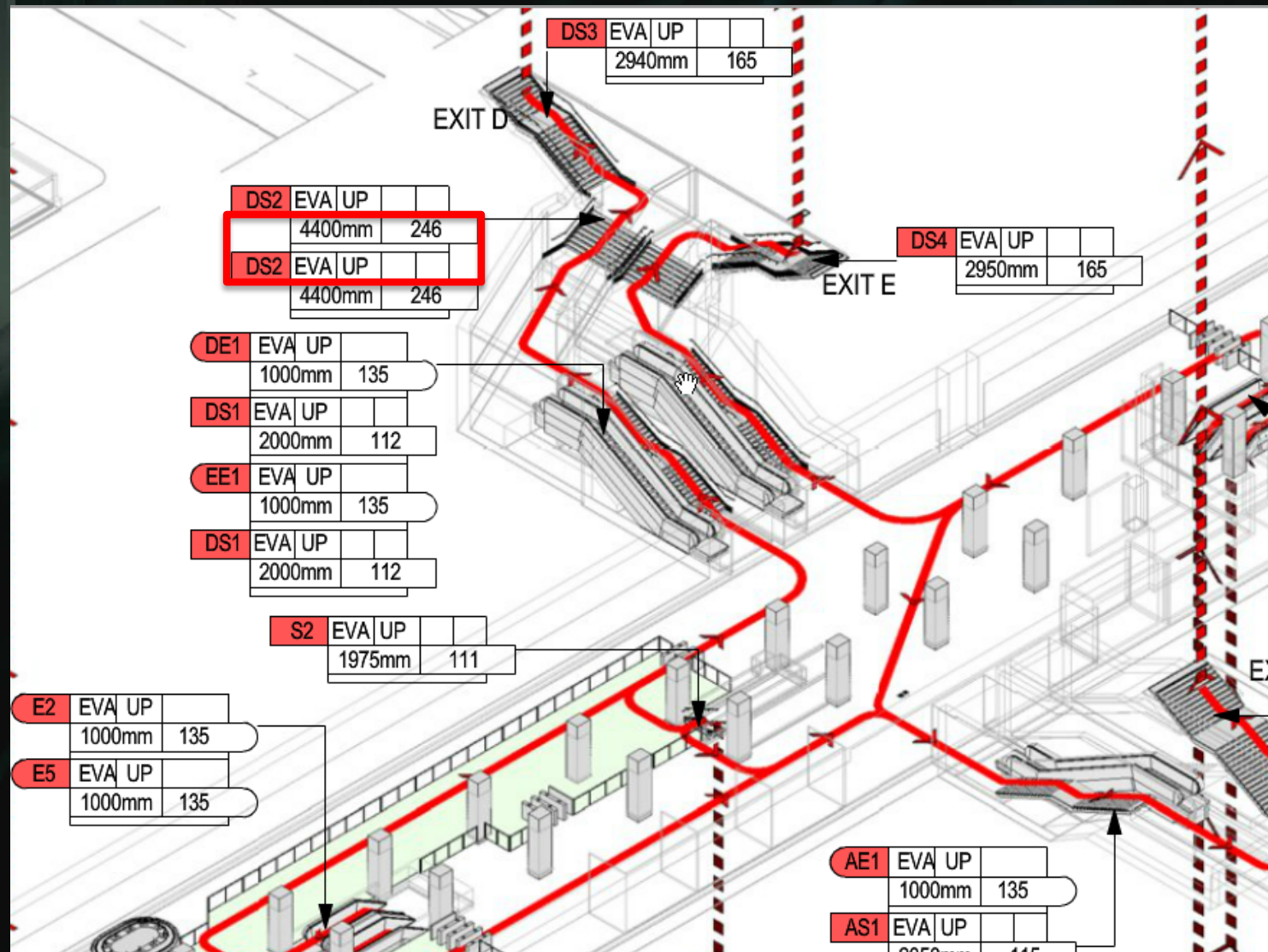
$$(23 + 22) / 185$$

$$= 24.3\%$$

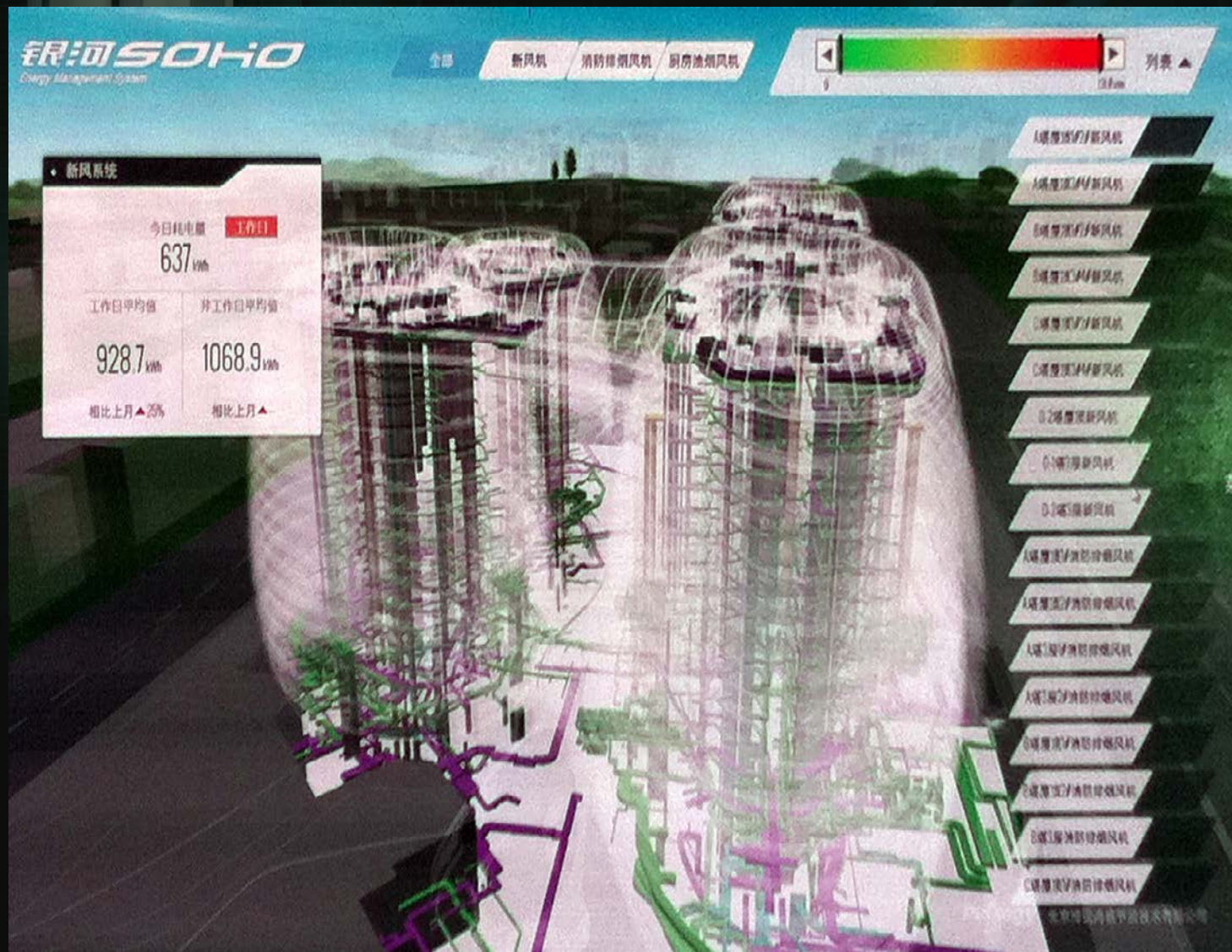
$$= \text{安全}$$

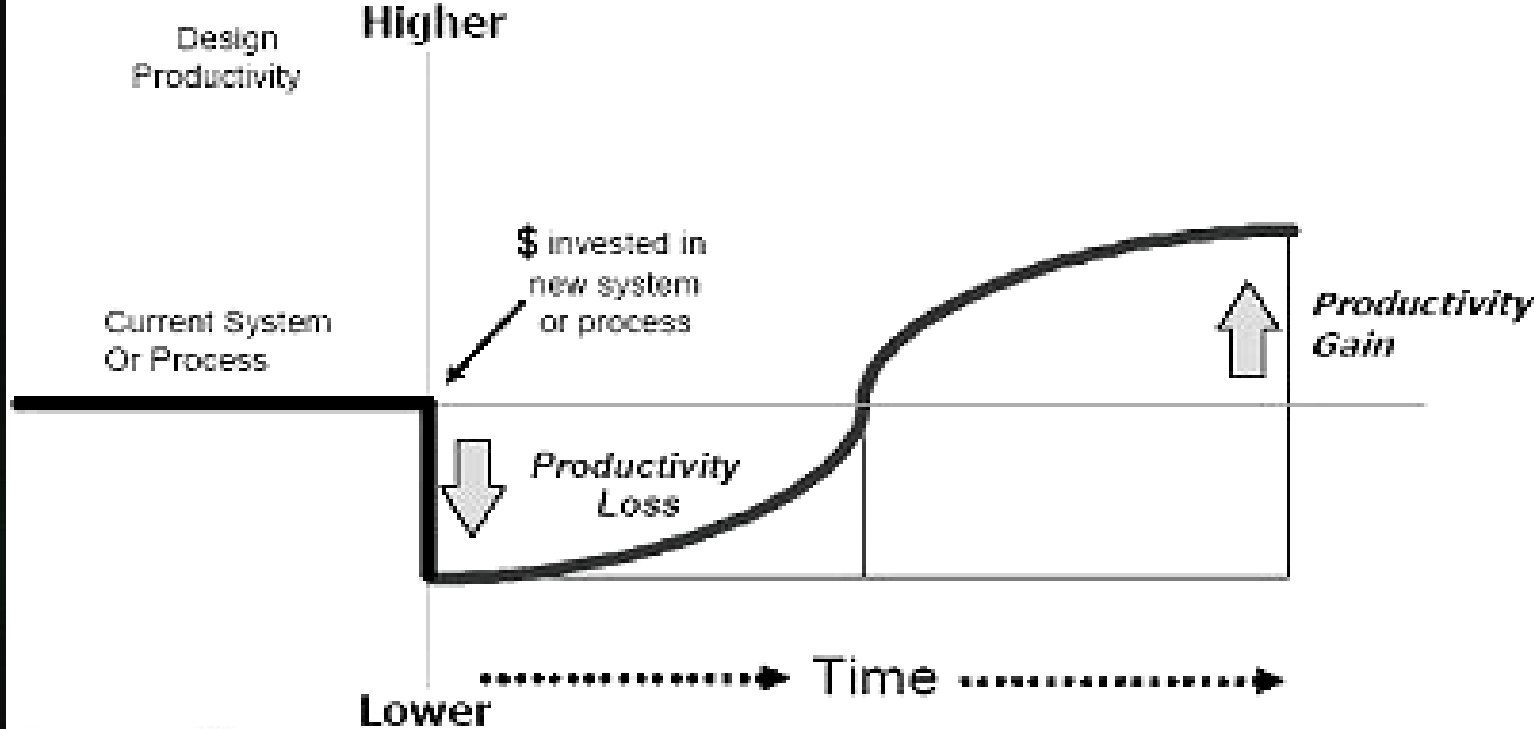
(安全指标超过80%，
可能会有危机)





物业管理 - 维修保养





$$\frac{(B - (\frac{B}{1+E})) \times (12 - C)}{A + (B \times C \times D)} = \text{First Year ROI}$$

| | |
|--|--|
| A = cost of hardware and software (dollars) | |
| B = monthly labor cost (dollars) | |
| C = training time (months) | |
| D = productivity lost during training (percentage) | |
| E = productivity gain after training (percentage) | |

| | |
|---------------------------------------|----------|
| A = cost of hardware and software | \$6,000 |
| B = monthly labor cost | \$4,200 |
| C = training time | 3 months |
| D = productivity loss during training | 50% |
| E = productivity gain after training | 25% |

資料來源 26/1/07:

<http://aec.cadalyst.com/aec/article/articleDetail.jsp?id=124222>

生產效率 >60%

BIM为建筑界带来的冲击

1. 可视性型像化设计
2. 图纸制作
3. 各专业协调合作
4. 物件清单及投标文件
5. 自动化送审文件
6. 科学性分析及可持续发展设计
7. 复杂几何形状建筑
8. 从建造到制造
9. 运维
10.