HKHS Presentation

BIM -
Building Information Modelling

David Fung

Building Projects

Modelling
図面上

Plan
Section
Elevation
Area Diagrams
Schematic Designs
General Building Plan
Structural Plans
E/M Drawings
Schematics
Details
Other Diagrams…

Information

Area Schedule
Finishing Schedules
Door/Window/Louvre Schedules
Beam/ Column Schedule
Equipment Schedule…

Program

Cost Estimate
Quantity Take Off
Bills of Quantities
Variation Assessments

As a result……

Inefficiencies（低生産性）, mistakes(エラー） and delays（工期延長） account for $200 billion of the $650 billion spent on construction in America every year.

New wiring, The Economist, January 13th, 2000

In the UK alone, the annual cost of rectifying construction defects(デフェク） caused by poorly detailed drawings and operatives being given incorrect instructions has been put a £1bn (≈$1.66bn).

IT Construction Best Practice service, http://www.itcbp.org.uk

The process of construction is itself repeated in its essentials from project to project. Indeed, research suggests that up to 80% of inputs into buildings are repeated.

M4i, http://www.m4i.org.uk

Modelling

CAD SYSTEMs

e.g. AutoCAD, Microstation

- Plan
- Section
- Elevation
- Area Diagrams
- Schematic Designs
- General Building Plan
- Structural Plans
- E/M Drawings
- Schematics
- Other Diagrams

Information

- Area Schedule
- Finishing Schedules
- Door/Window/Louvre Sch
- Beam/Column Schedule
- Room Schedule
- Program
- Cost
- Quantity Take Off
- Bills of Quantities
- Variations

Word

Excel (spreadsheet)

Access (Data Base)

MS Project

BQ Softwares

……

Building Projects

Modelling

- Plan
Section
Elevation
Area Diagrams
Schematic Designs
General Building Plan
Structural Plans
E/M Drawings
Schematics
Other Diagrams

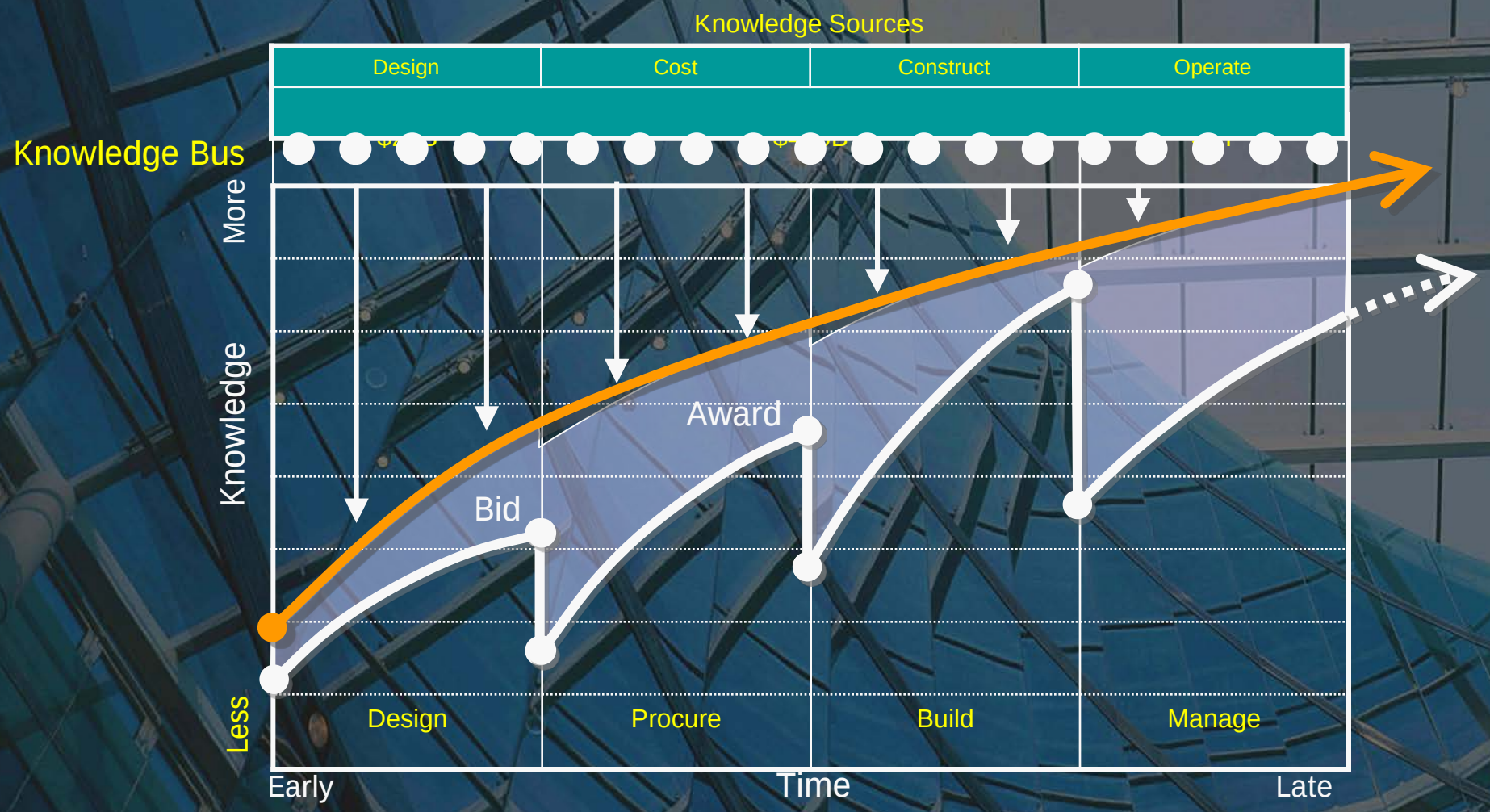
Information

- Area Schedule
Finishing Schedules
Door/Window/Louvre Sch
Beam/Column Schedule
Equipment Schedule
Diagrams
Cost Estimate
Quantity Take Off
Bills of Quantities
Variations

BIM

Building Information Modeling

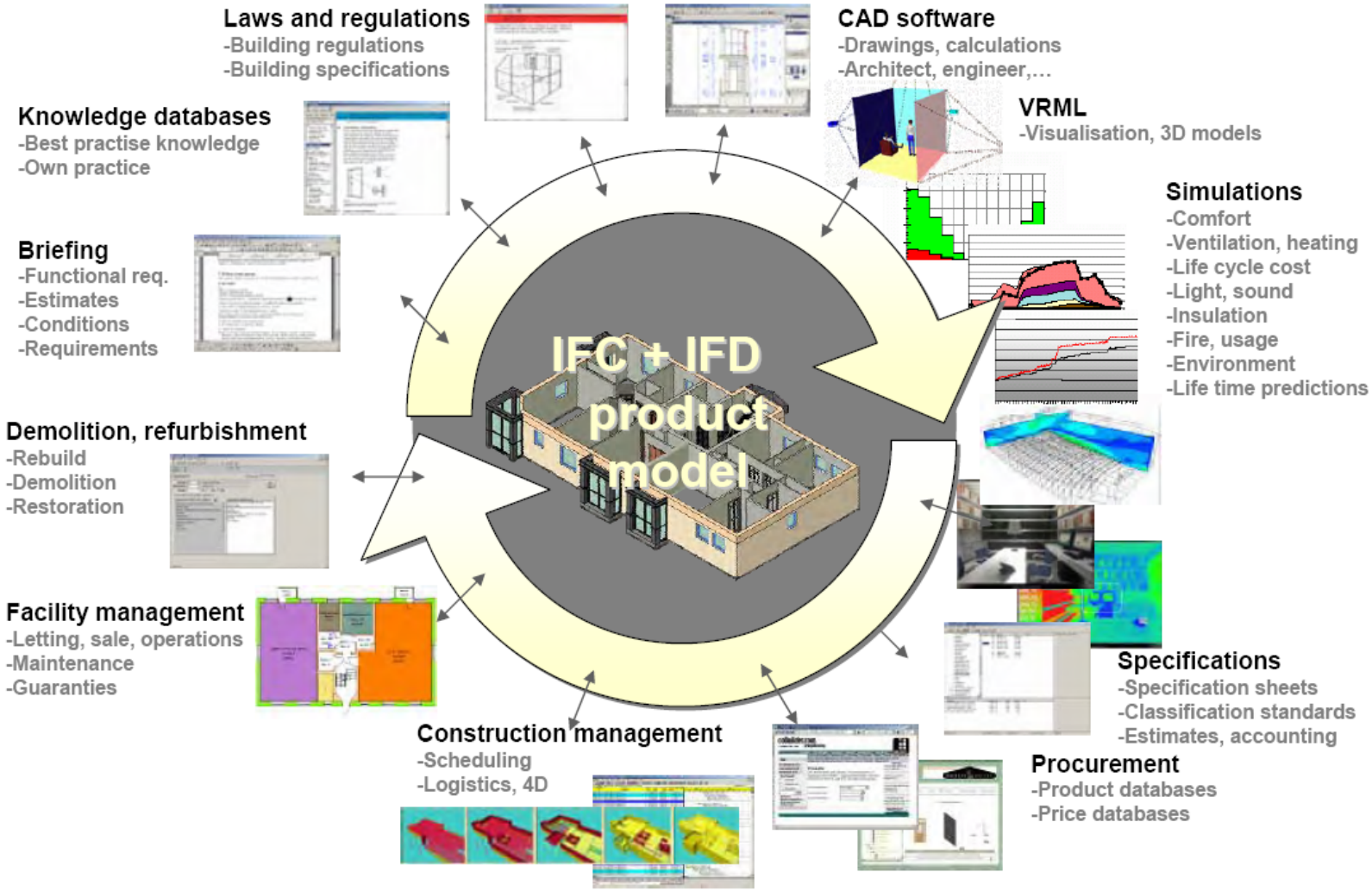
信息化建築模型



INFORMATION "BACKFLOW"

National Institute of Building Sciences
Facilities Information Council
National BIM Standard Committee

Tier 3 – Derived Lifecycle View



What is BIM (Building Information Model)

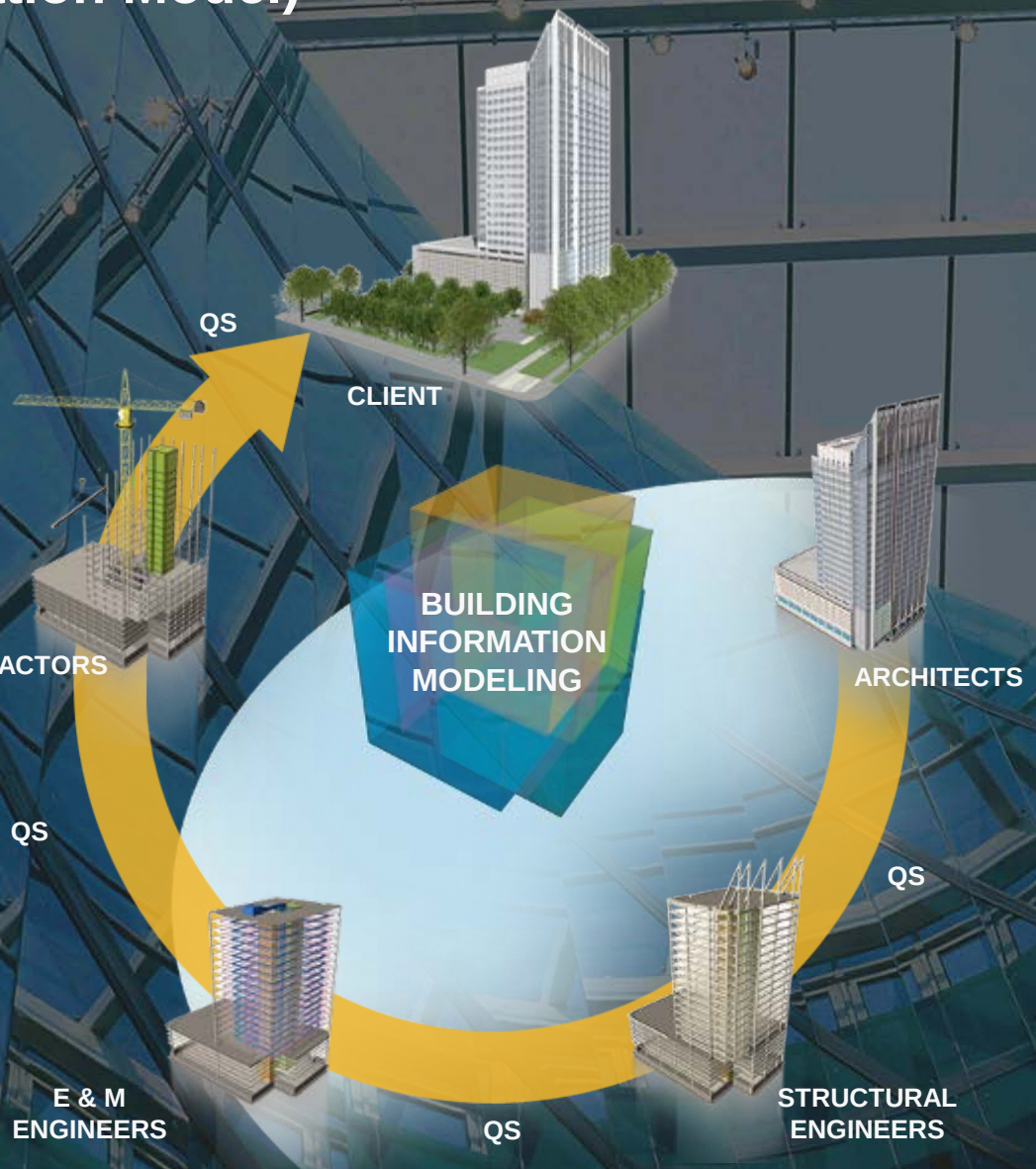
Graphical Data

+

Non-Graphical Data

+

New workflow



Use of Building Information Modeling (BIM)
BIMの活用

1. **Design visualization**　設計の可視化
2. **Drawing Productions**　図面製作
3. **Services Co-ordination and Clash detection with other disciplines**　多部門との連携と干渉チェック
4. **Quantity taking and preparation of Tender Document**　数量拾い及び入札書類の作成
5. **Automated Statutory Submission**　確認申請図書作成の自動化
6. **Scientific analysis of different environmental aspects**　様々な環境解析
7. **Supply Chain Integration with the manufacturing and production**　サプライヤとの連携
8. **Complex Geometry**　複雑な形状を実現可能

Use of Building Information Modeling (BIM)

1. **Design visualization** 設計の可視化
2. Drawing Productions
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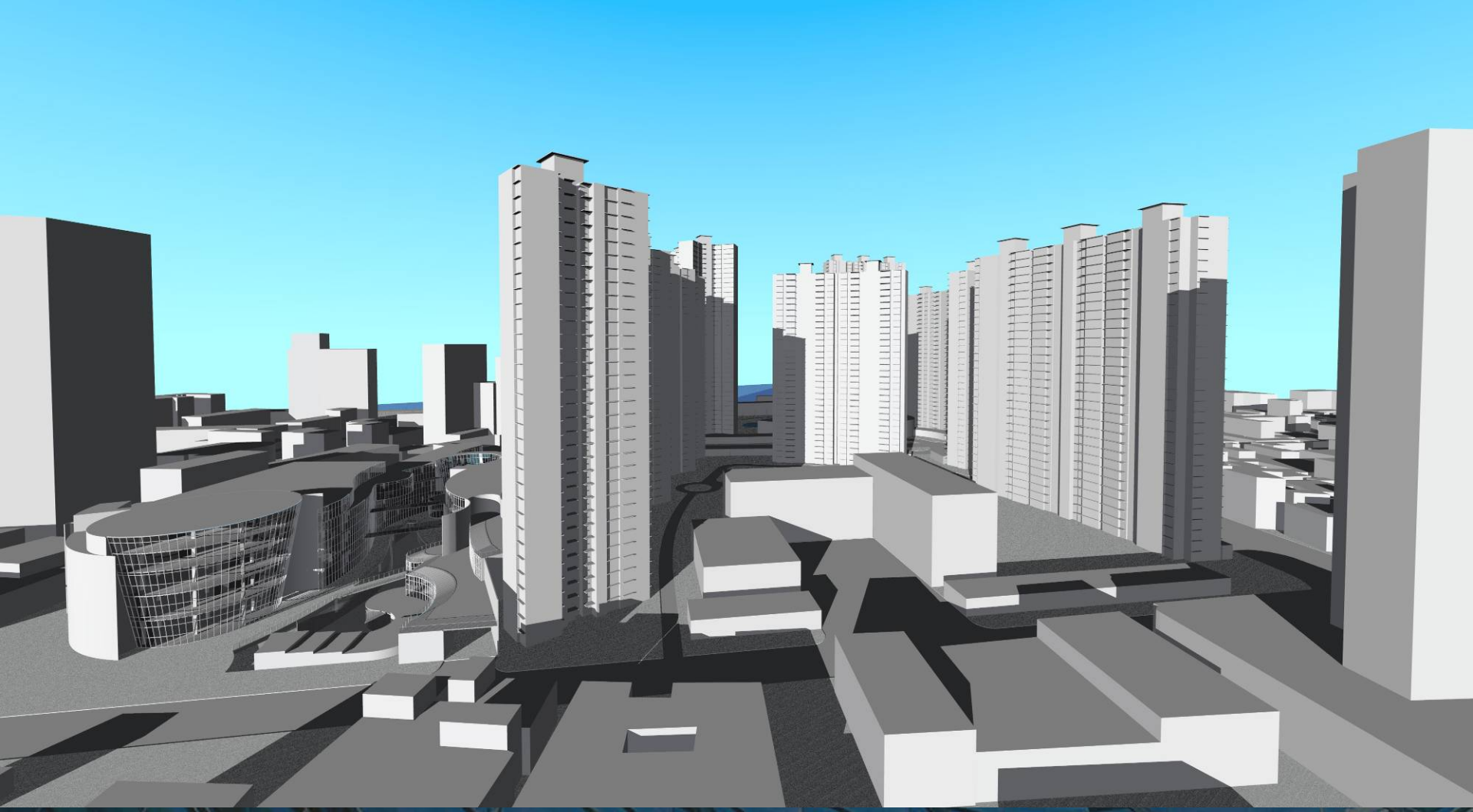
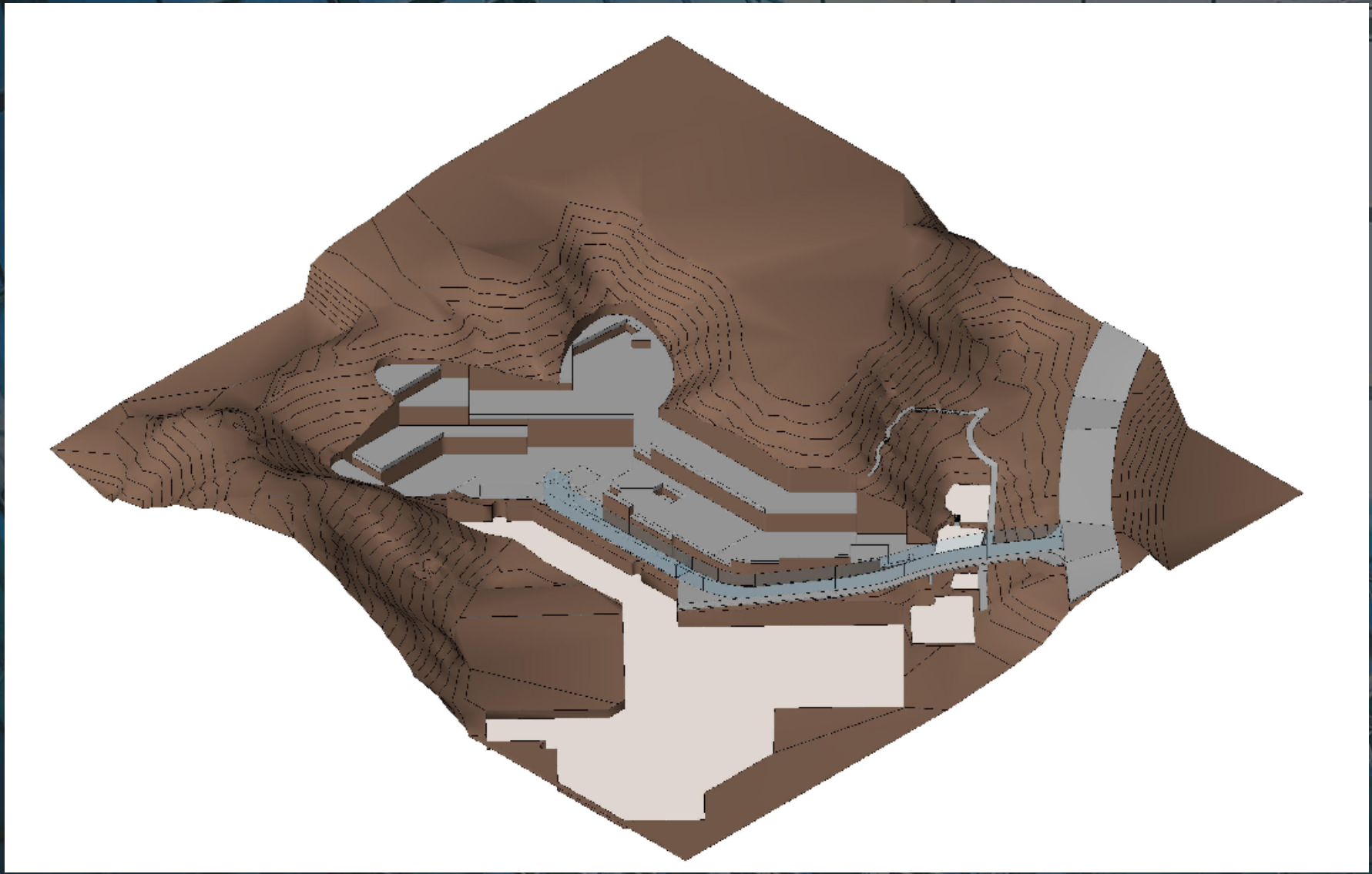
4. Quantity taking and preparation of Tender Document
5. Automated Statutory Submission
6. Scientific analysis of different environmental aspects
7. Supply Chain Integration with the manufacturing and production
8. Complex Geometry

BUILDING IN CONTEXT

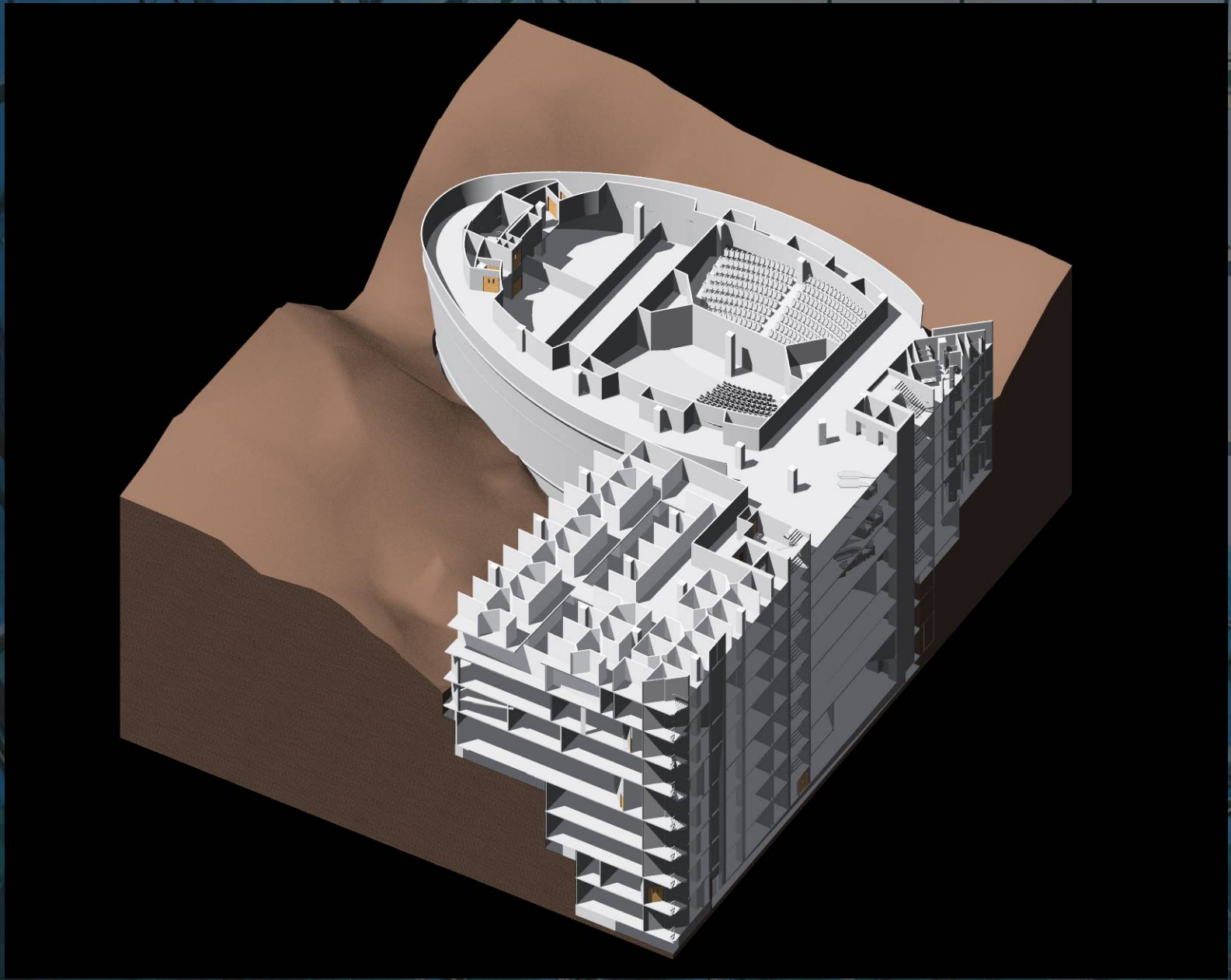


BUILDING IN CONTEXT

BUILDING IN GOOGLE EARTH



TOPOGRAPHY HANDLING



BUILDING IN SITE CONTEXT

VISUALIZATION & DRAWING PRODUCTION

VISUALIZATION & PRODUCTION

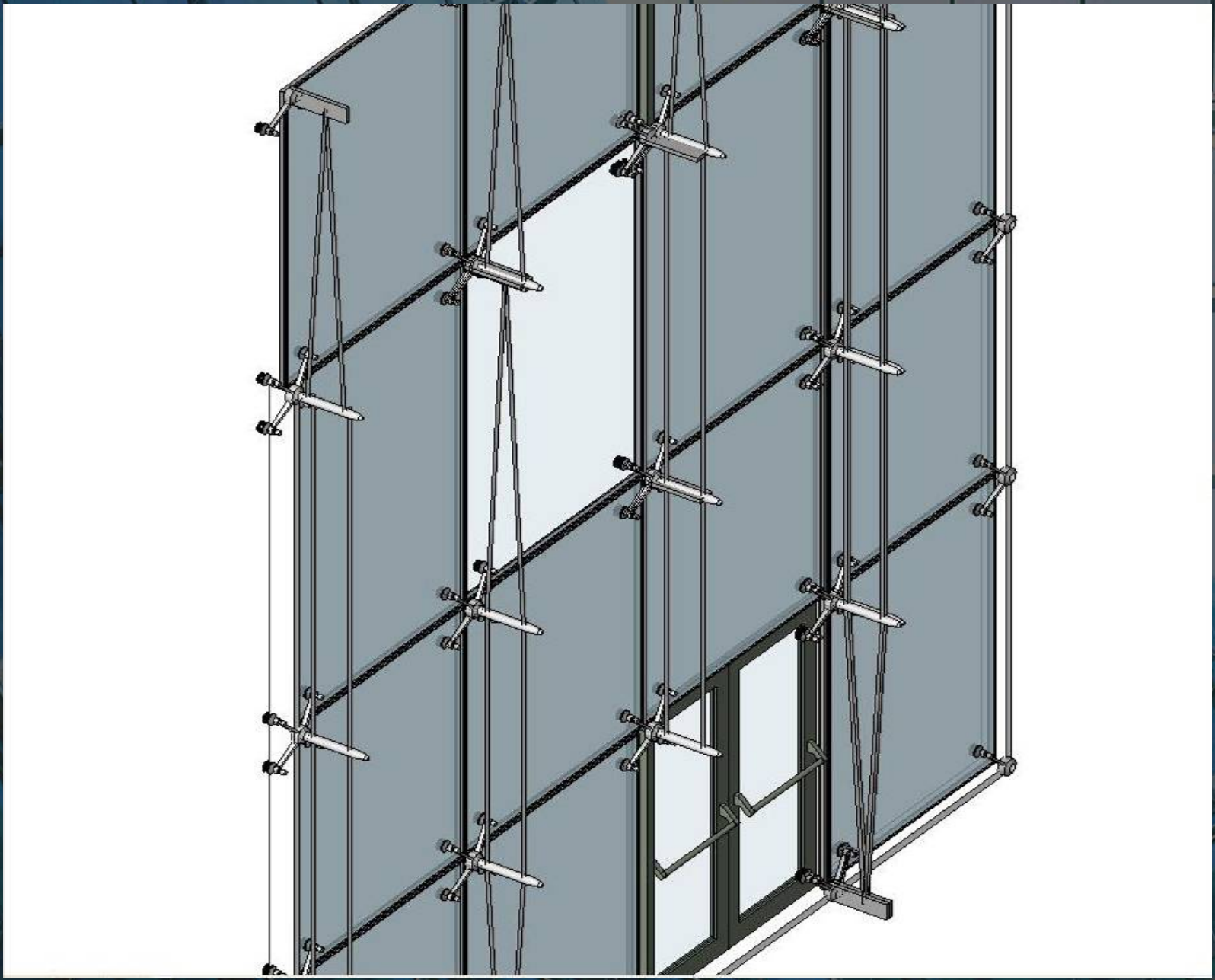
PERSPECTIVE

VISUALIZATION & PRODUCTION

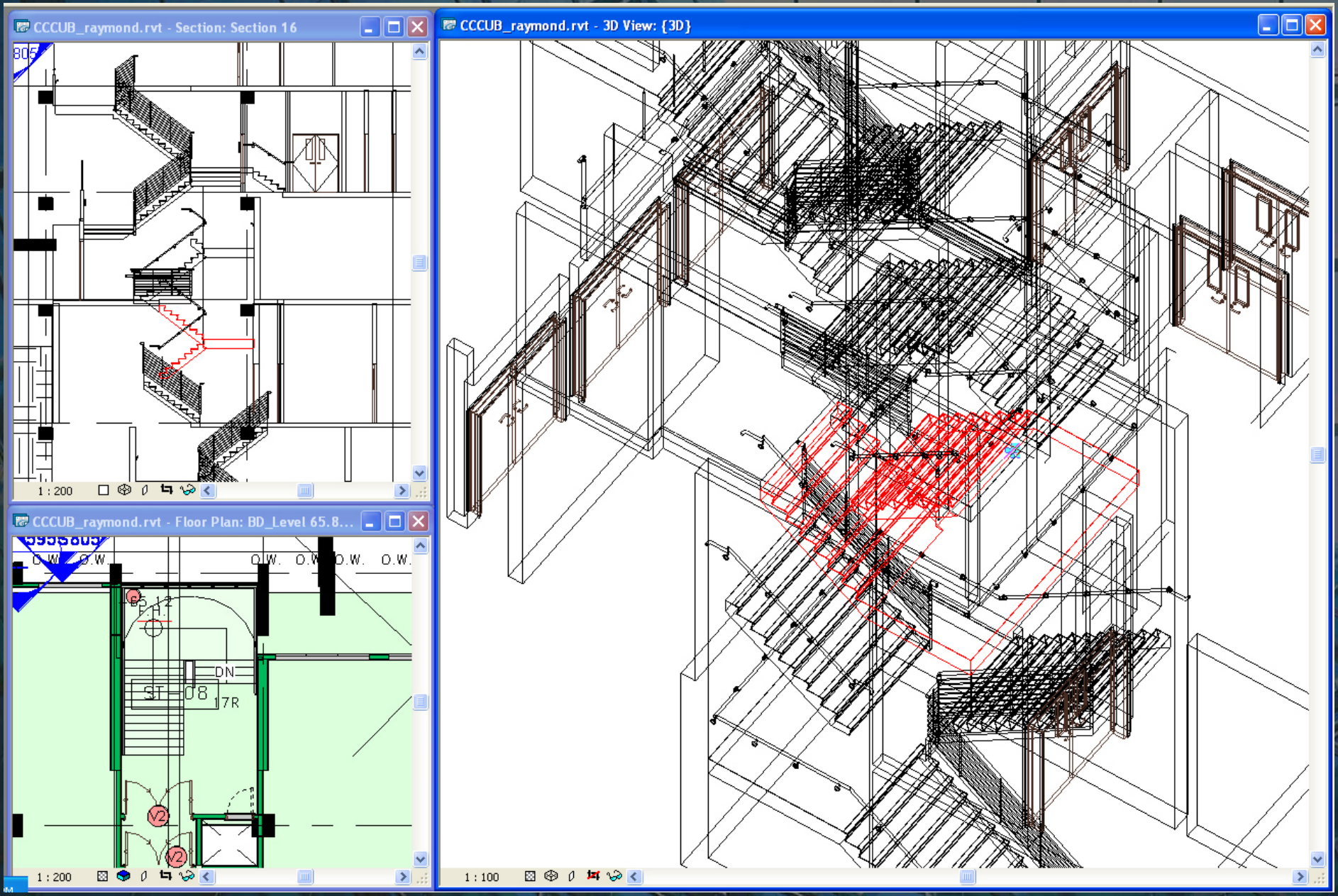
VISUALIZATION & PRODUCTION

VISUALIZATION & PRODUCTION

VISUALIZATION

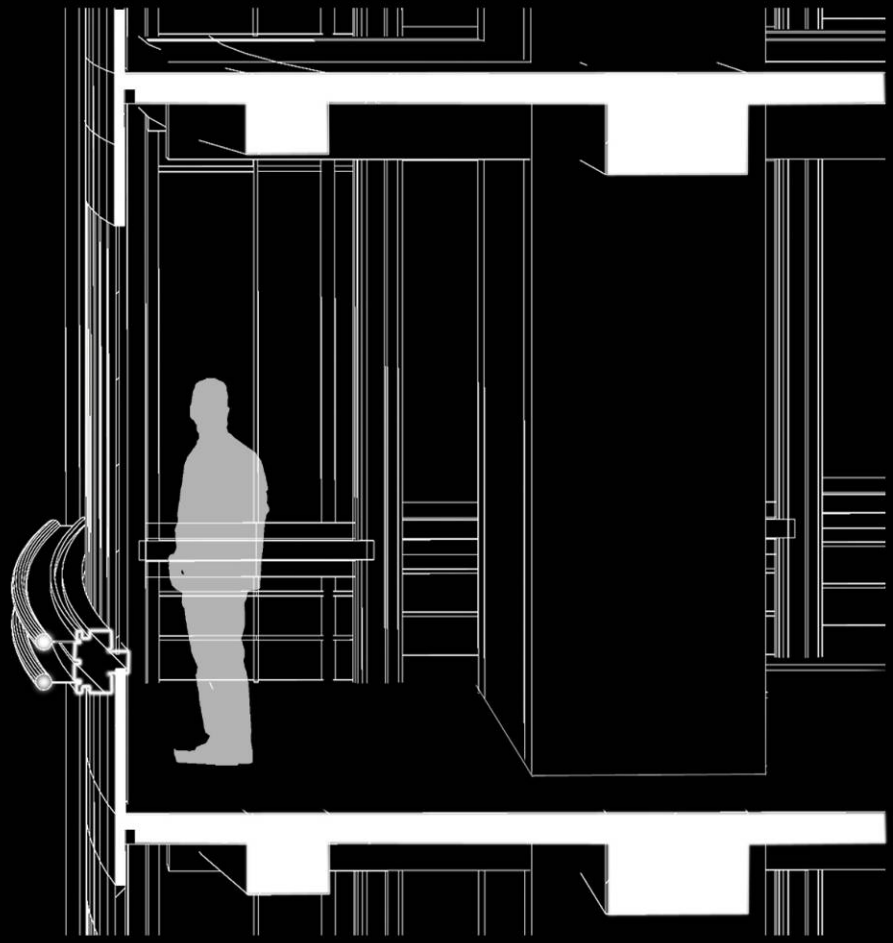


FAÇADE PANEL DESIGN



VERTICAL CO-ORDINATION

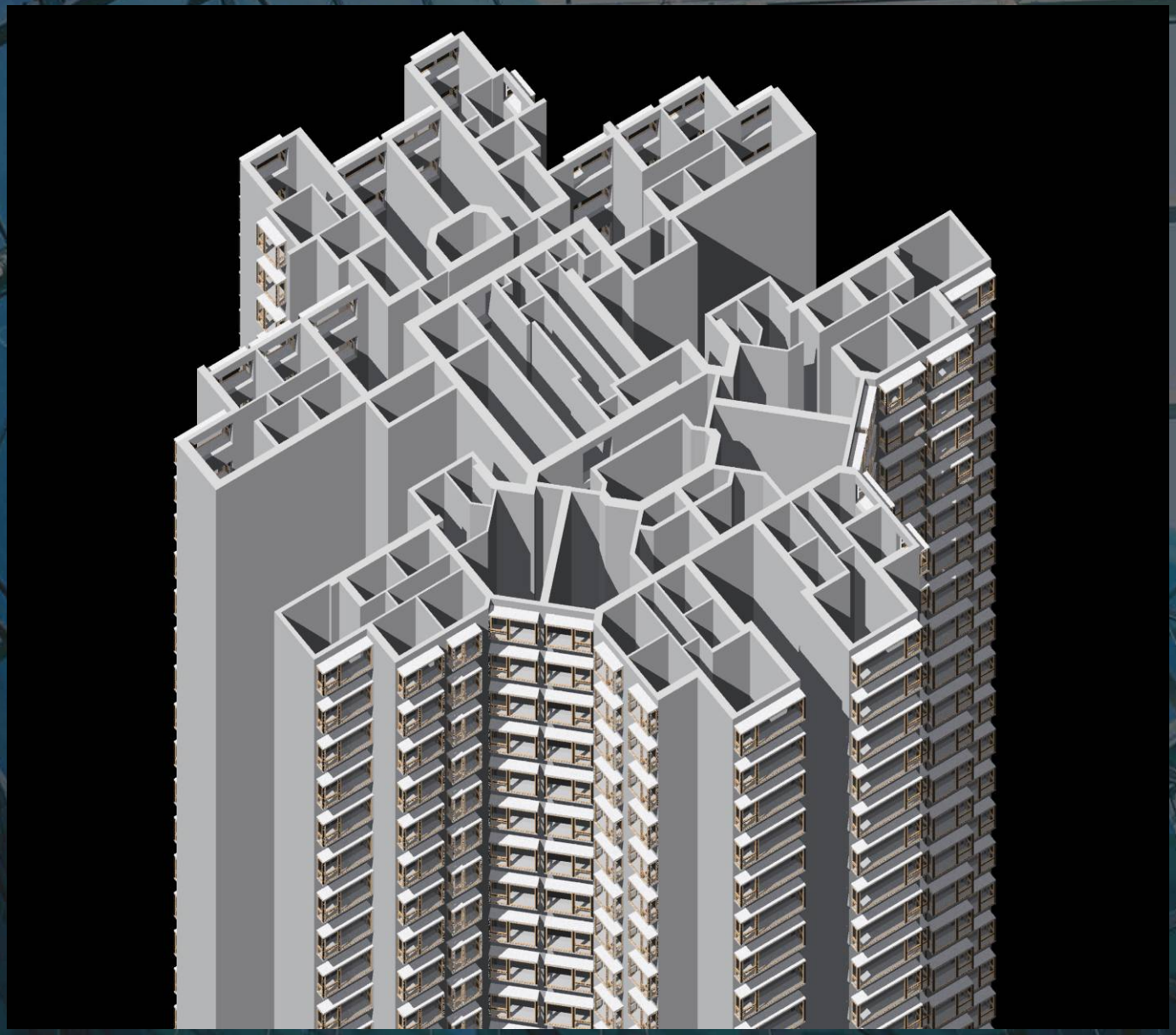
FAÇADE DESIGN and CO-ORDINATION



FAÇADE DESIGN and CO-ORDINATION

REPETITIONS vs VARIATIONS

PARAMETRIC MODELLING



Autodesk Revit Building 9.1 - [AED-Bay Window.rfa - 3D View: View 1]

File Edit View Modelling Drafting Site Tools Settings Window Help

Family
Modify
Family Typ
Dimension
Model Lines
Symbolic Lir
Opening...
Ref Plane
Reference L
Control
Text
Model Text
Section
Component
Symbol
Detail Comp
Solid Form
Void Form
Load into Pr

Family Types

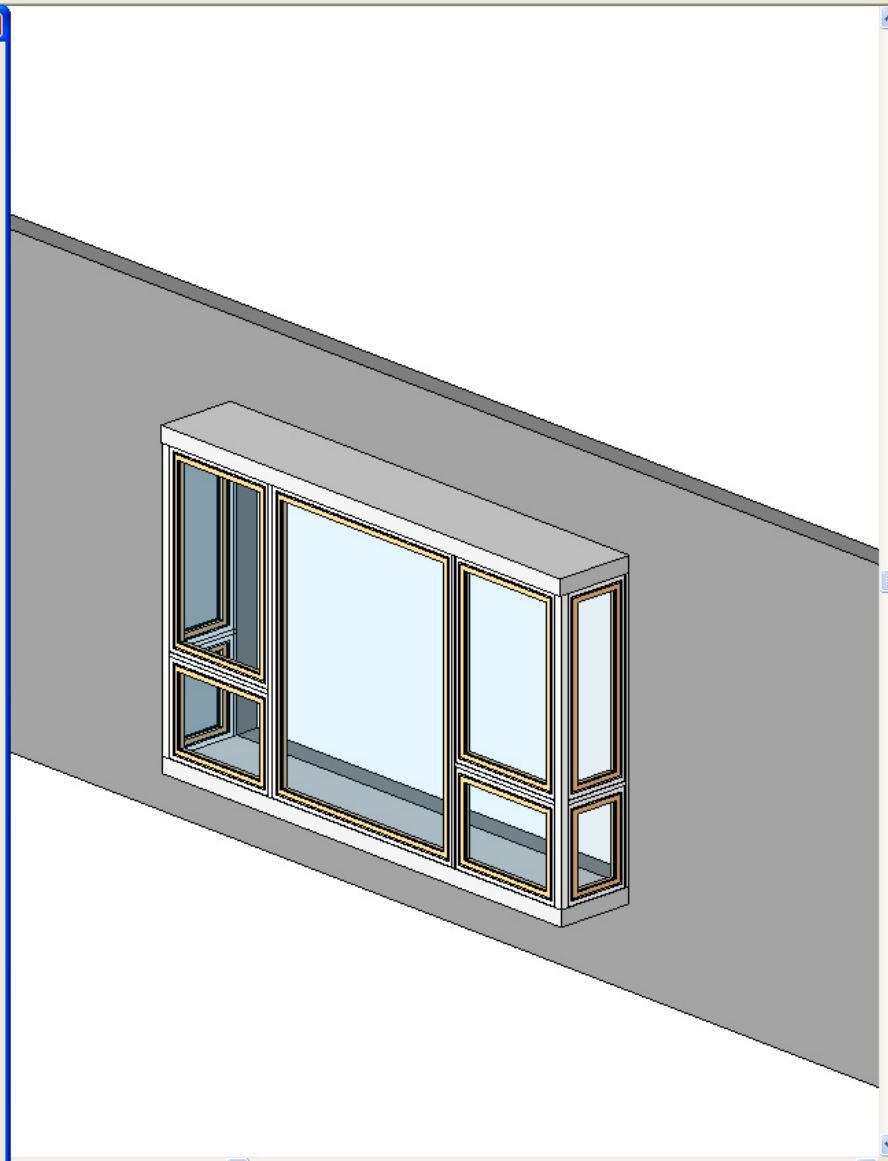
Name: AED-Bay Window

Parameter	Value	Formula
Lslab Overhang_Right	0.0	=
Lslab Overhang_Left	0.0	=
Lslab Overhang_Dept	0.0	=
Left Window Width	800.0	=
Height	1800.0	=Wall Height - (Openning Offset *
Width	3000.0	=
Bay Depth	500.0	=
Rough Width		=
Rough Height		=
Identity Data		
IFC Parameters		
Operation		=
Other		
Vmullion Edge	12.5	=Middle Vmullion Thickness / 2
Uslab_Top	2500.0	=Uslab_Bottom + Slab Thickness
Uslab_Bottom	2400.0	=Wall Height - Openning Offset
Sash Offset	70.0	=
Right Window	☑	=Right Window Width > 0 mm
Openning Offset	600.0	=Window Offset + Slab Thickness
Open Window Middle	593.8	=(Uslab_Bottom - Hmullion_Top) /
Lslab_Top	600.0	=Openning Offset
Lslab_Bottom	500.0	=Lslab_Top - Slab Thickness
Left Window	☑	=Left Window Width > 0 mm
Hmullion_Top	1212.5	=Middle Mullion Height + Openning
Hmullion_Bottom	1187.5	=Middle Mullion Height + Openning
Hmullion Edge	12.5	=Middle Hmullion Thickness / 2
Glass Offset	65.0	=65 mm
Glass Height_Top	2335.0	=Uslab_Bottom - Glass Offset
Glass Height_Mtop	1122.5	=Hmullion_Bottom - Glass Offset
Glass Height_MBotto	1277.5	=Hmullion_Top + Glass Offset
Glass Height_Bottom	665.0	=Lslab_Top + Glass Offset

Family Types
New...
Rename...
Delete

Parameters
Add...
Modify...
Remove

OK Cancel Apply Help



Ready

start | Control Panel | 20070107 Shunde Re... | Autodesk Revit Buildi... | Adobe Photoshop | EN | 51% | 9:33 AM

Autodesk Revit Building 9.1 - [AED-Bay Window.rfa - 3D View: View 1]

File Edit View Modelling Drafting Site Tools Settings Window Help

Family
Modify
Family Typ
Dimension
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Load into Pr

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Lslab Overhang_Left	0.0	=
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Left Window Width	800.0	=
Height	1800.0	=Wall Height - (Openning Offset *
Width	4500.0	=
Bay Depth	500.0	=
Rough Width		=
Rough Height		=
Identity Data		
IFC Parameters		
Operation		=
Other		
Vmullion Edge	12.5	=Middle Vmullion Thickness / 2
Uslab_Top	2500.0	=Uslab_Bottom + Slab Thickness
Uslab_Bottom	2400.0	=Wall Height - Openning Offset
Sash Offset	70.0	=
Right Window	☑	=Right Window Width > 0 mm
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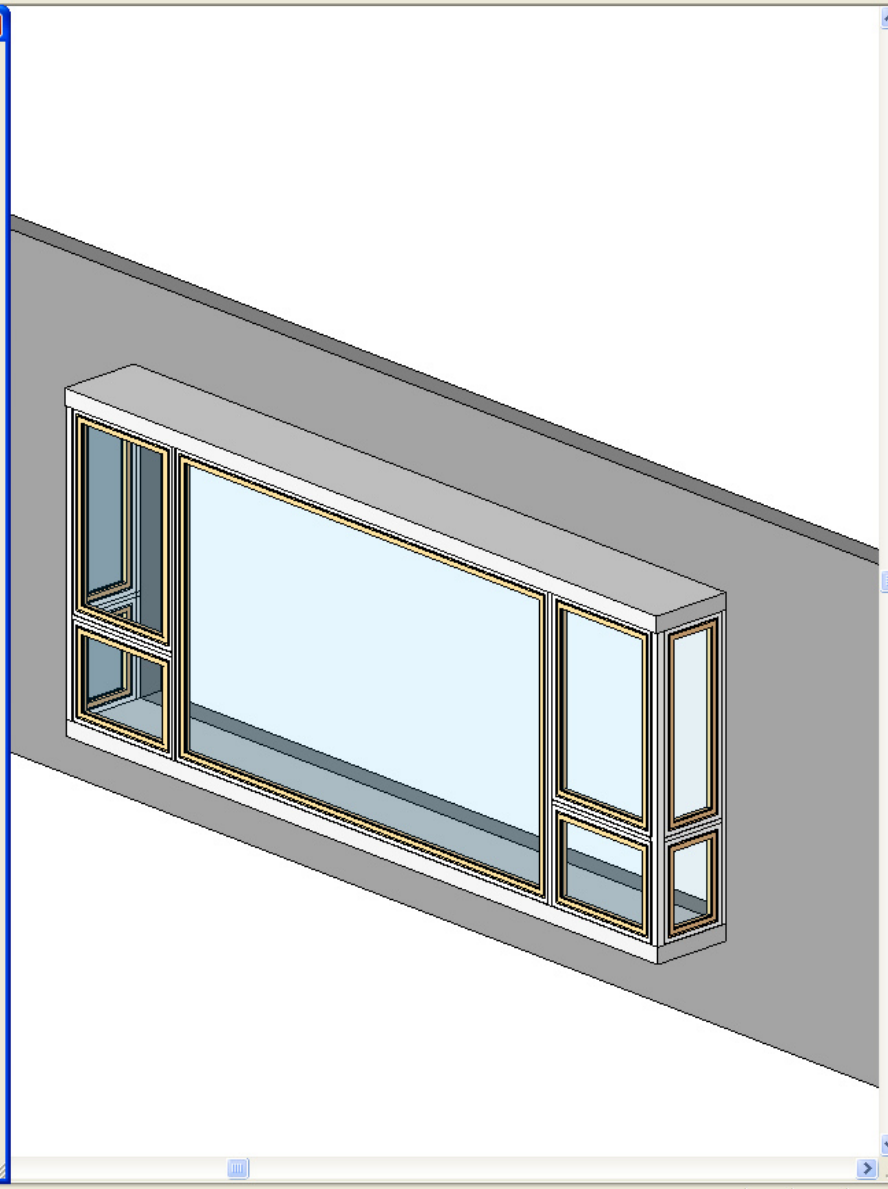
Glass Height_Bottom	665.0	=Lslab_Top + Glass Offset

Family Types: New... Rename... Delete

Parameters: Add... Modify... Remove

OK Cancel Apply Help



Ready

start | Control Panel | Microsoft PowerPoint ... | 20070107 Shunde Re... | Autodesk Revit Buildi... | Adobe Photoshop | EN | 55% | 9:36 AM

Use of Building Information Modeling (BIM)

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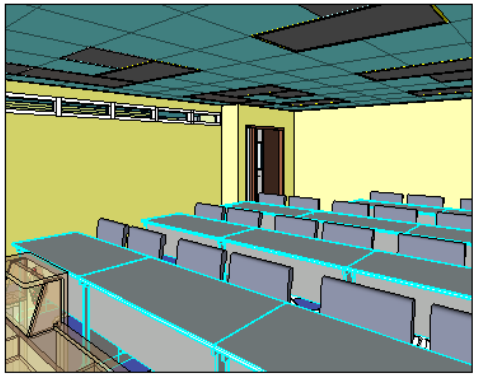
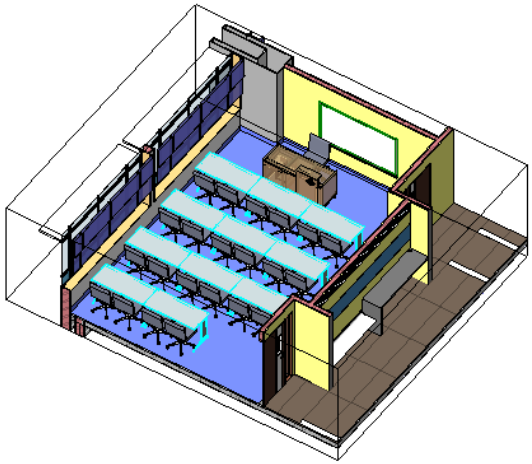
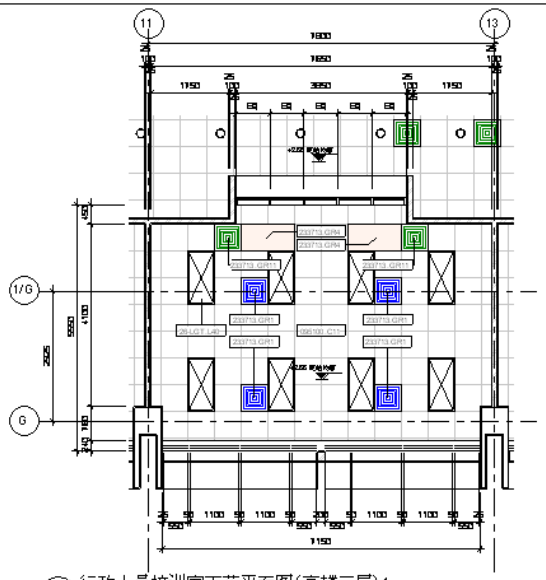


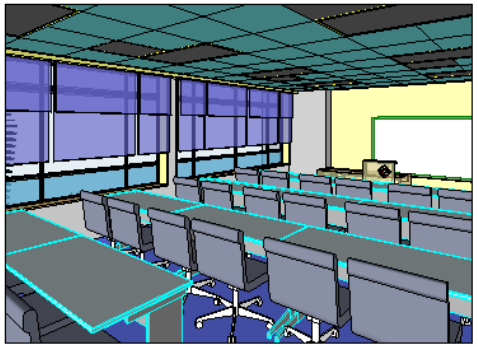
6 行政人员培訓室立体示意图2



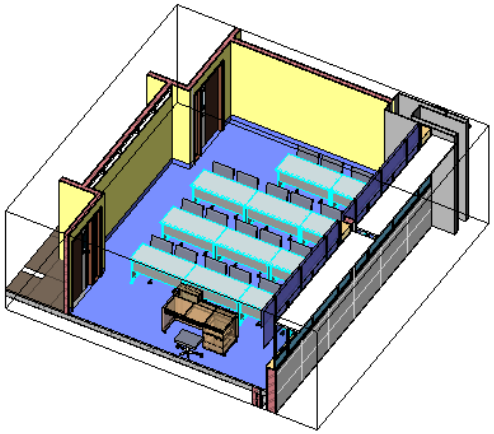
4 行政人员培训室立体剖面示意图2



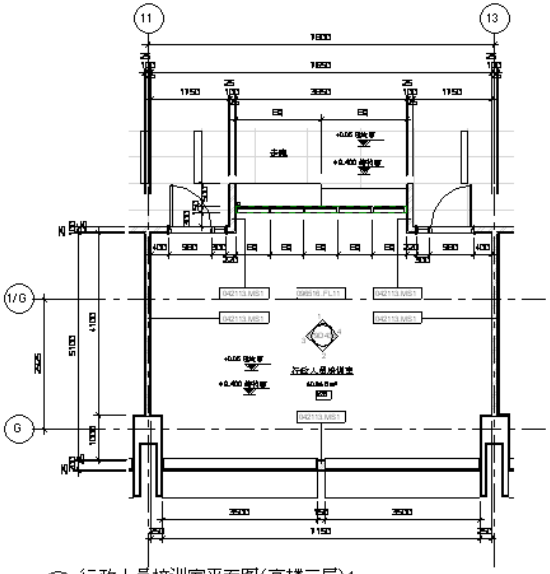
2 行政人员培训室天花平面图(高楼三层)1
1 : 50



5 行政人员培訓室立体示意图1



3 行政人员培训室立体剖面示意图1



1 行政人员培训室平面图(高楼三层)1
1 : 50

Drawing Type: B.D. SUBMISSION
B.D. Reference No.: GOVERNMENT_REFERENCE_NO.
F.S.D. Reference No.: GOVERNMENT_REFERENCE_NO.
Authorised by: AUTHORIZE PERSON EXCLUDE AREA
Notes:

Rev.	Description	Issue Date	Initial

Originator: Drawn 08/06/07 Drawn Checked Approved
Structural Engineer: BENAIM benaim
E & M: J.ROGER PRESTON
Q.S.: 利比 RLB | Rider Levett Bucknall
Aedas
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18th Floor
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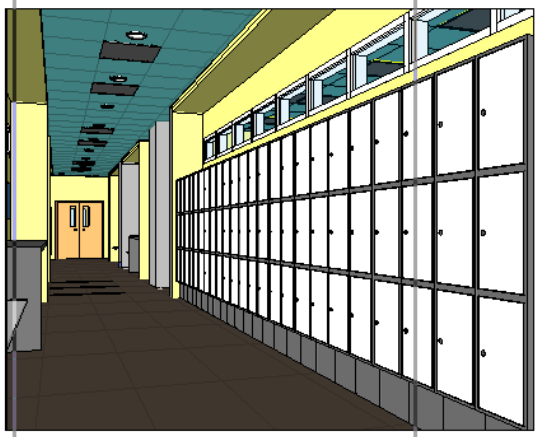
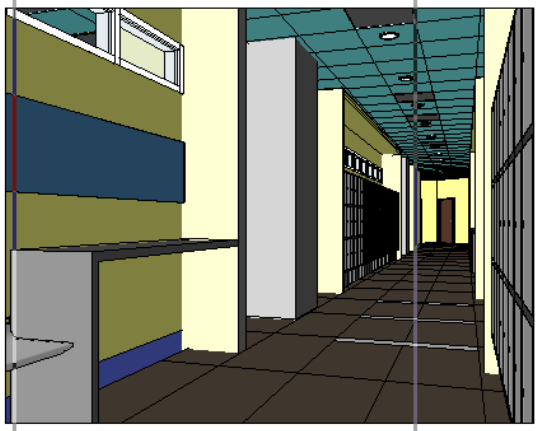
F +852 2520 6419
E hongkong@aedas.com
aedas.com
Client: THE HONG KONG POLYTECHNIC UNIVERSITY 香港理工大學
Project: 香港理工大學高層一餐廳場地
Drawing: 行政人员培训室平面图(高楼三层)1
Rev. Date: 08/06/07
Project Number: 08778
Scale: 1 : 50
Drawing Number: 778 D430
Rev.: REV.
Issue Status: TENDER

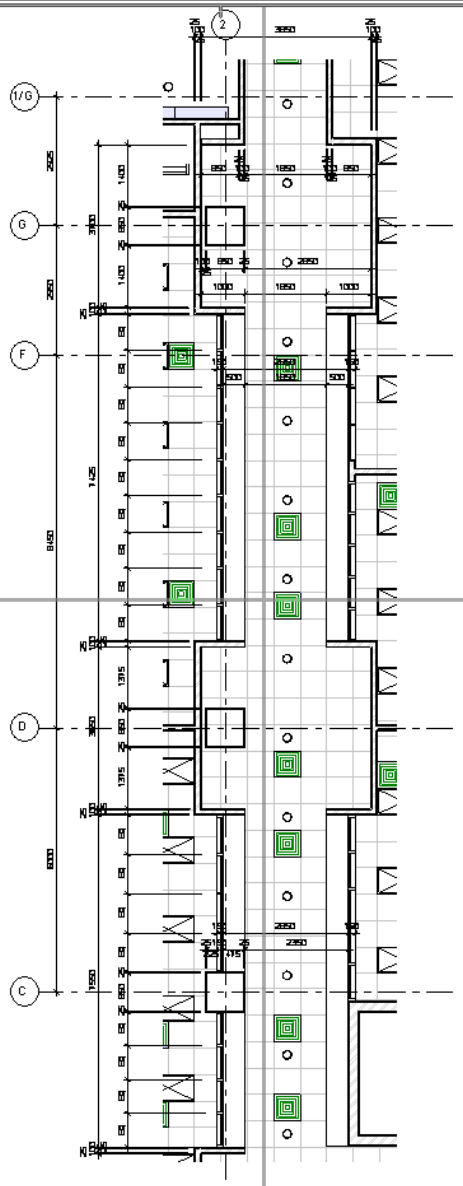
This drawing is to be read in conjunction with all relevant drawings. Check such further drawing if discrepancies and/or unclarified conflict exist without commencing any work or producing shop drawings. The originator should be notified immediately of any discrepancy.
This drawing is copyright and remains the property of Aedas.



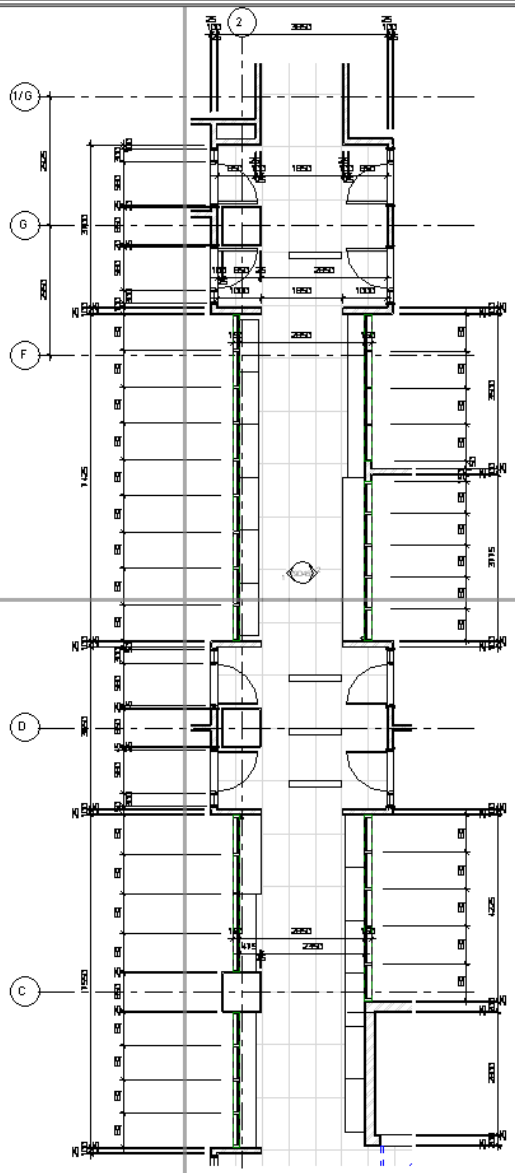
4 走廊立体示意图(低楼三至四层)2



3 走廊立体示意图(低楼三至四层)1



2 走廊天花平面图(低楼三至四层)
1 : 50



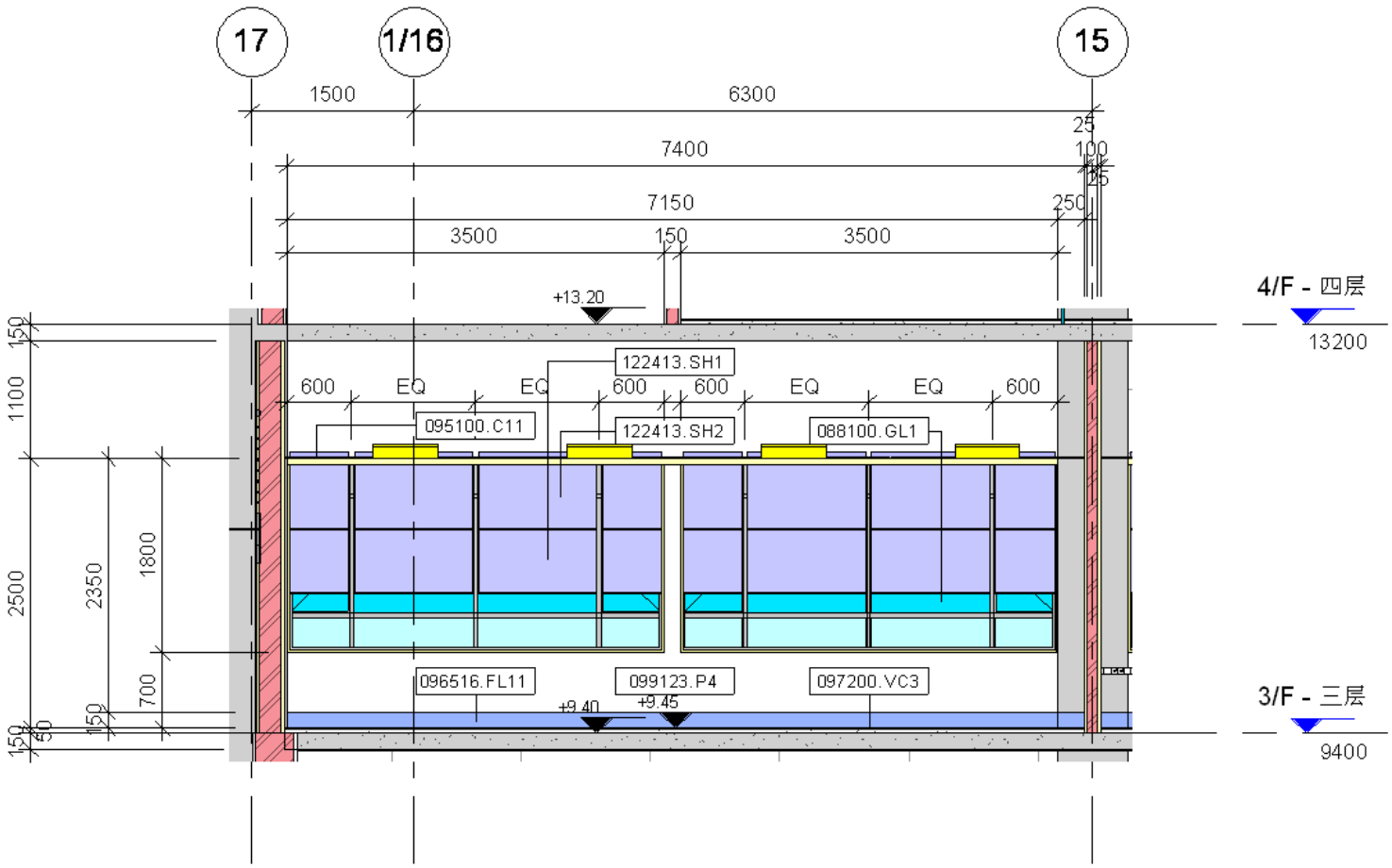
1 走廊平面图(低楼三至四层)
1 : 50

benaim

利比 RLB | Rider Levett Bucknall

Aedas

THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學



2 行政人员培训室立面图(高楼三层)6

1 : 50

Use of Building Information Modeling (BIM)

1. Design visualization
2. Drawing Productions
3. **Services Co-ordination and Clash detection with other disciplines**
   多部門との連携と干渉チェック
4. Quantity taking and preparation of Tender Document
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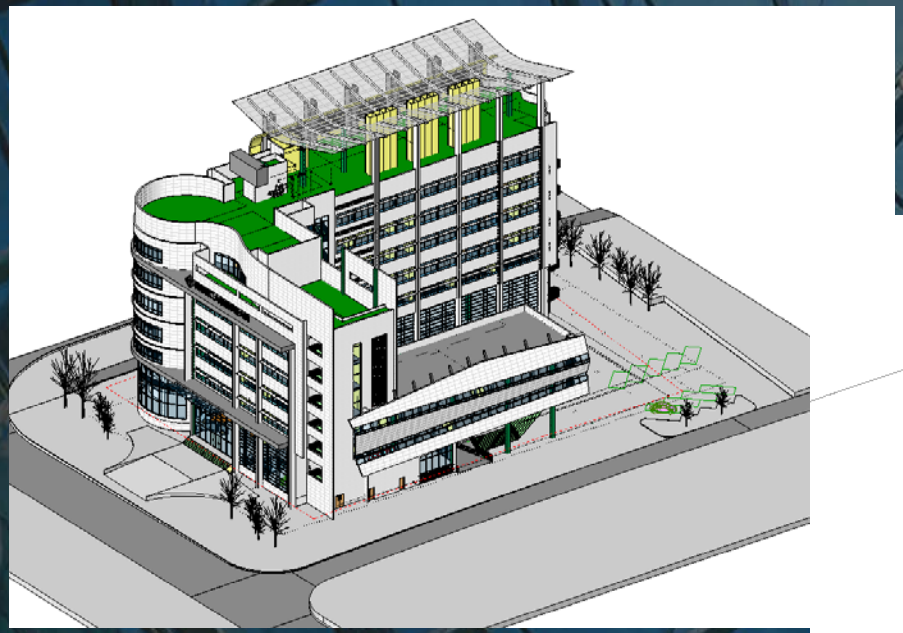
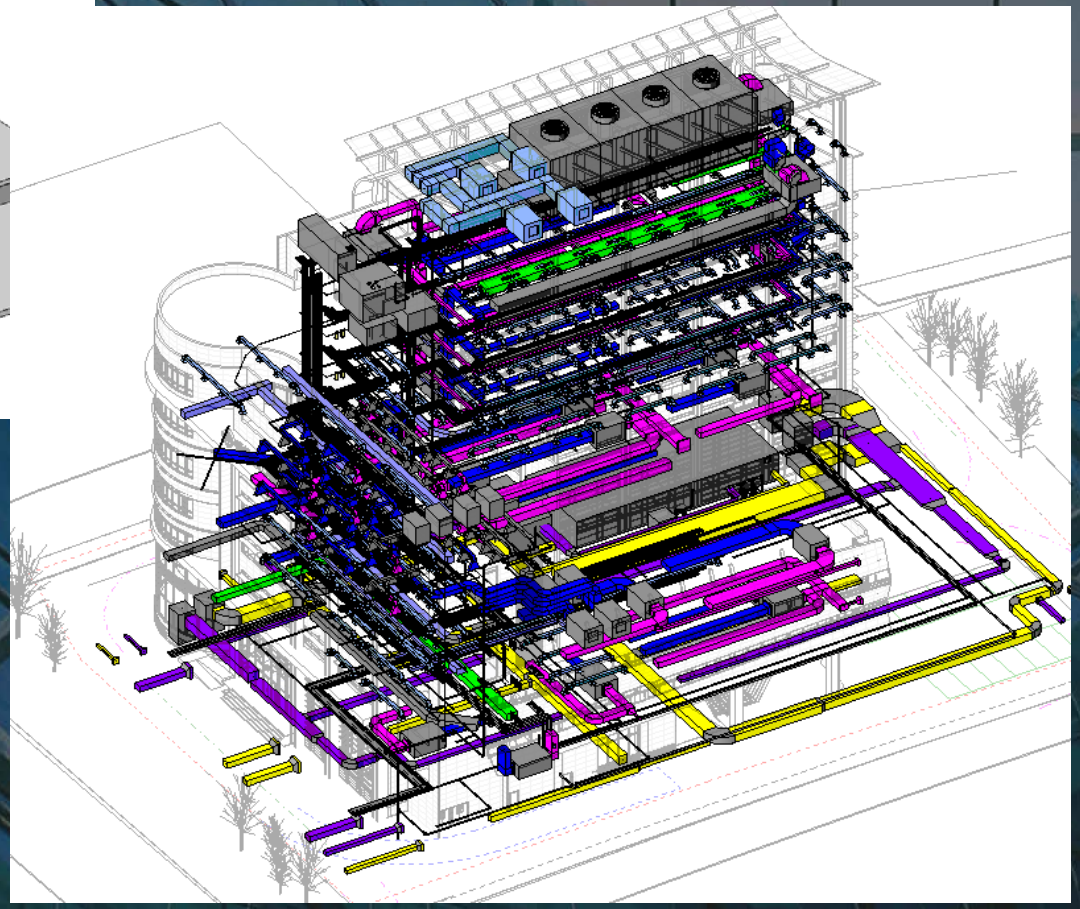
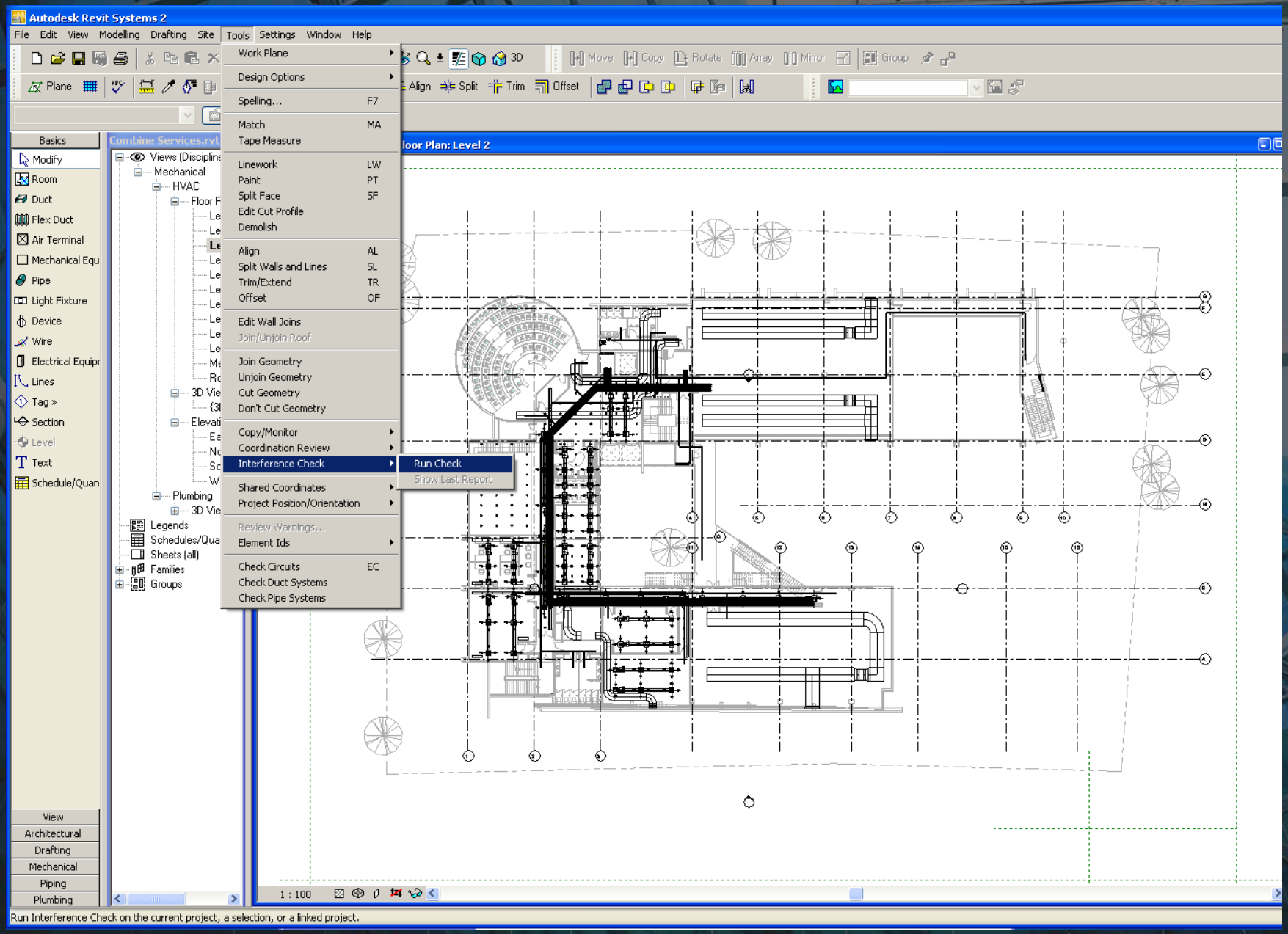
CO-ORDINATION / COLLABORATION

Work Flow – Establish BIM Models



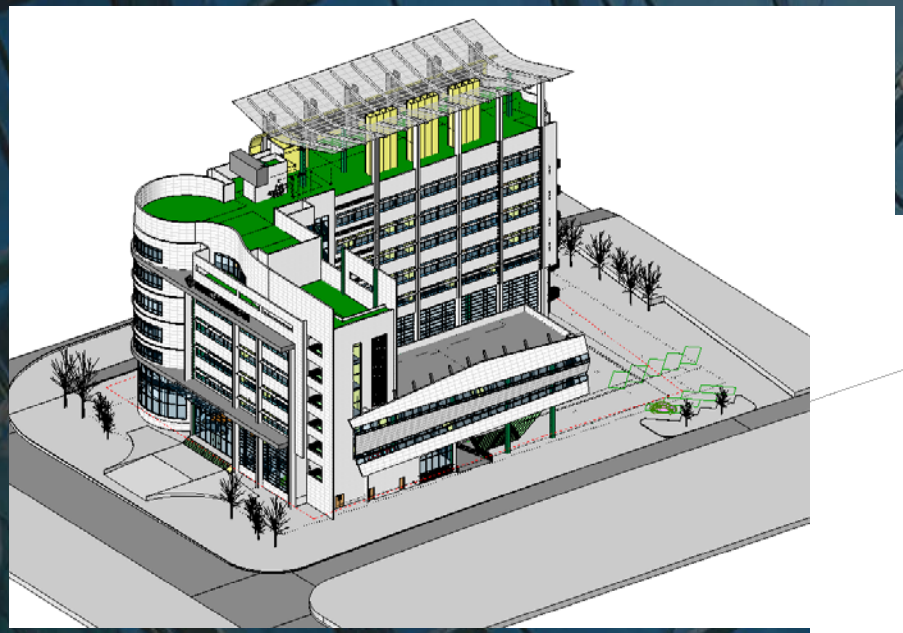


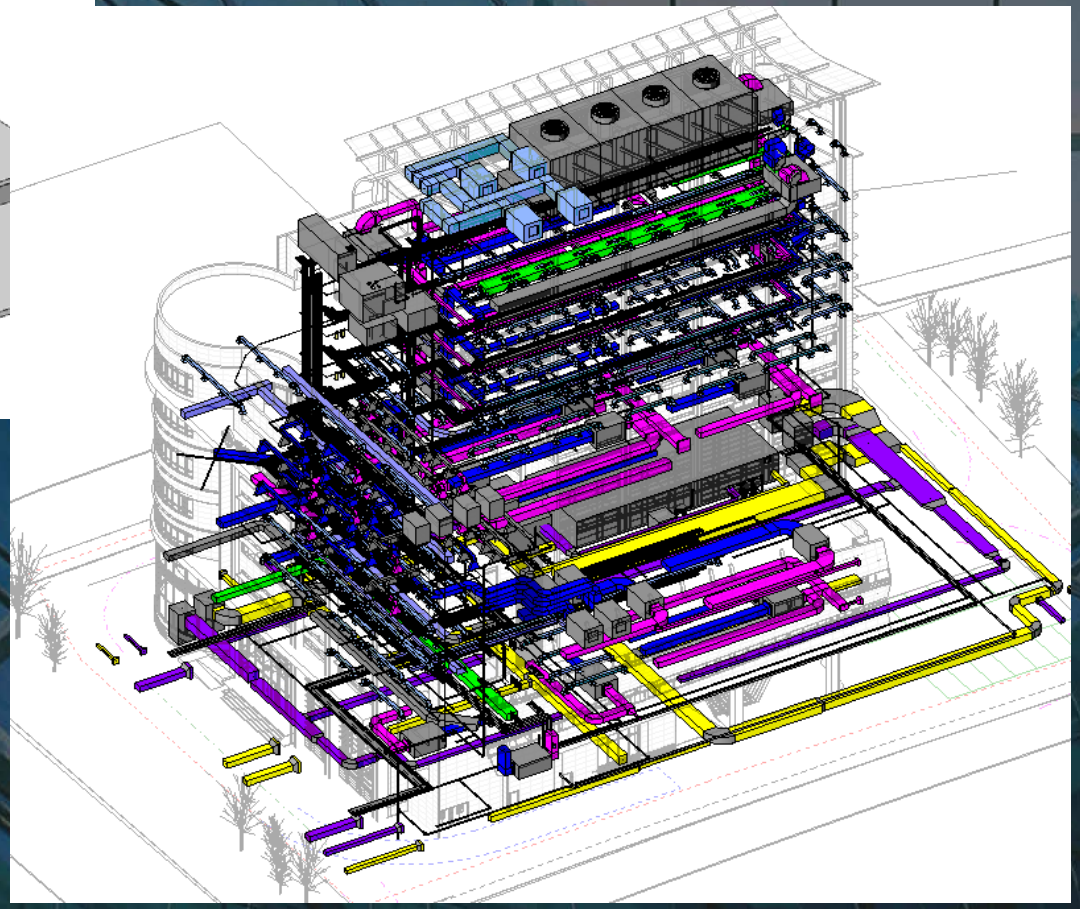
Work Flow – Clashes Report

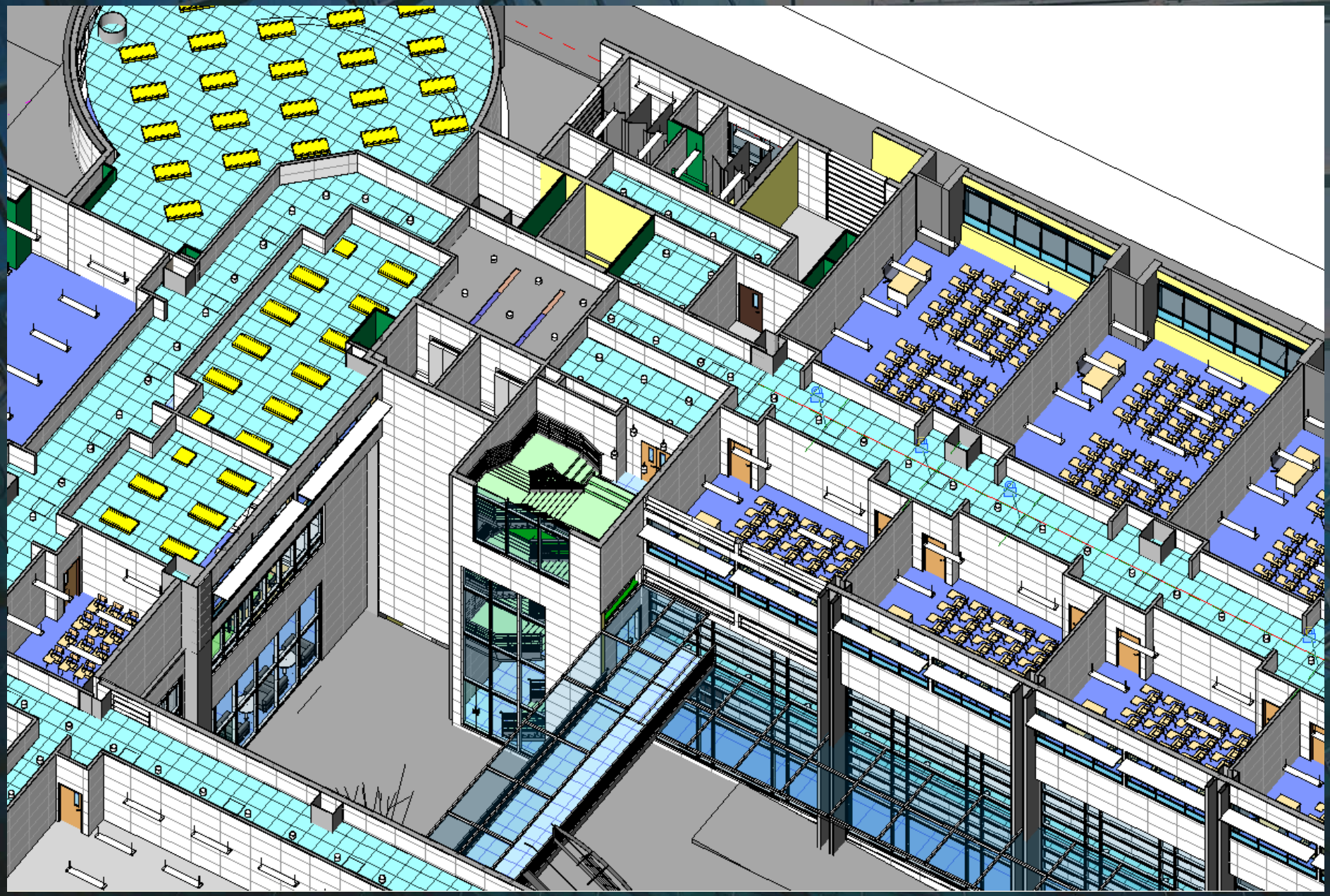


CO-ORDINATION / COLLABORATION

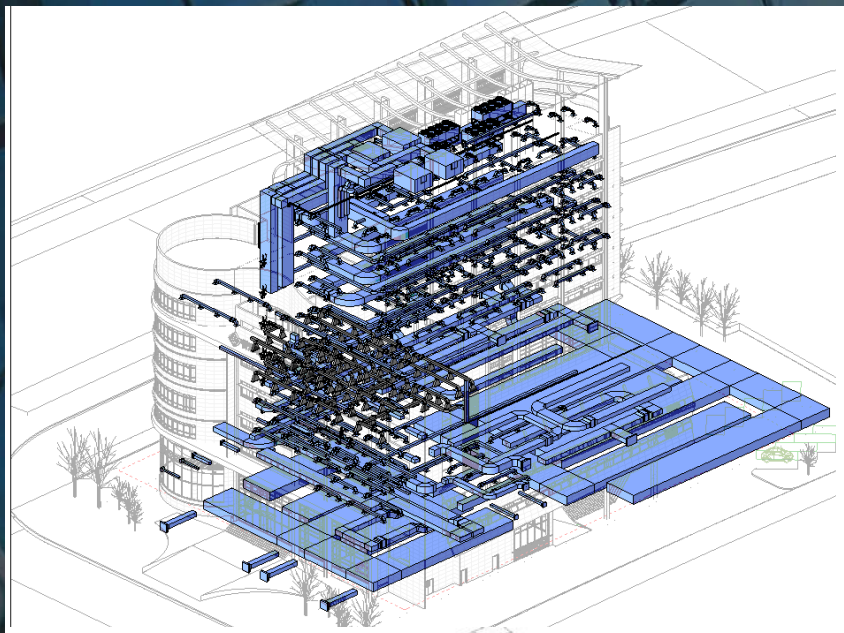
Work Flow – Establish BIM Models



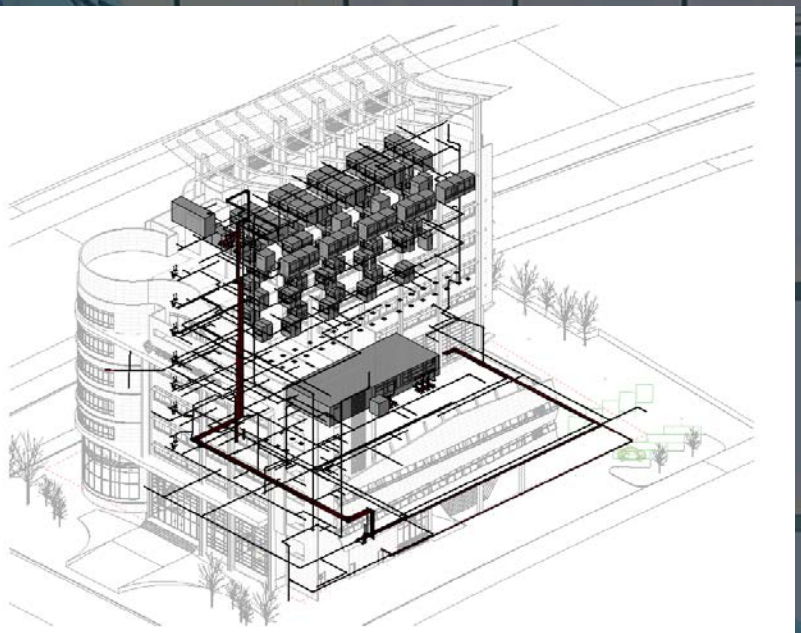


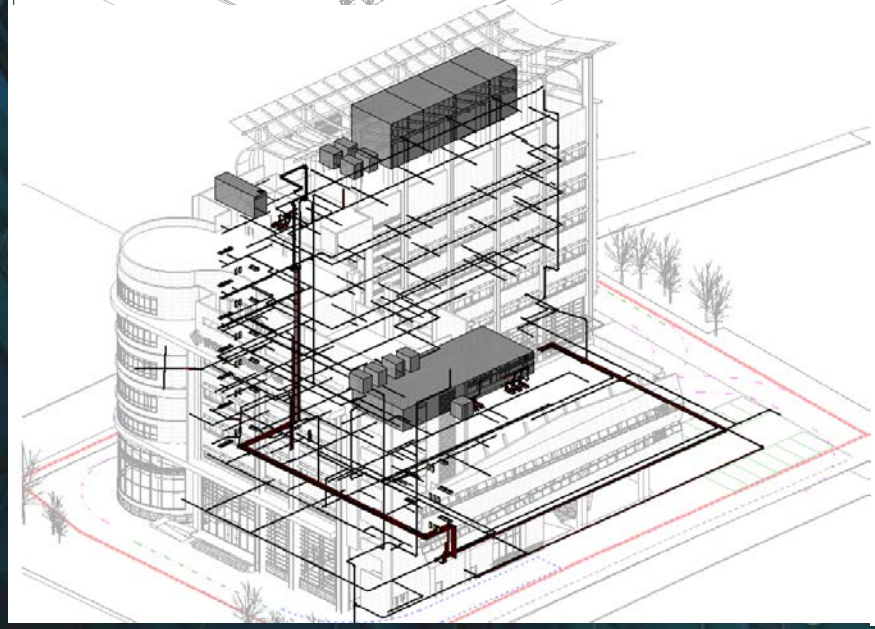


HVAC Installation



Fire Services Installation

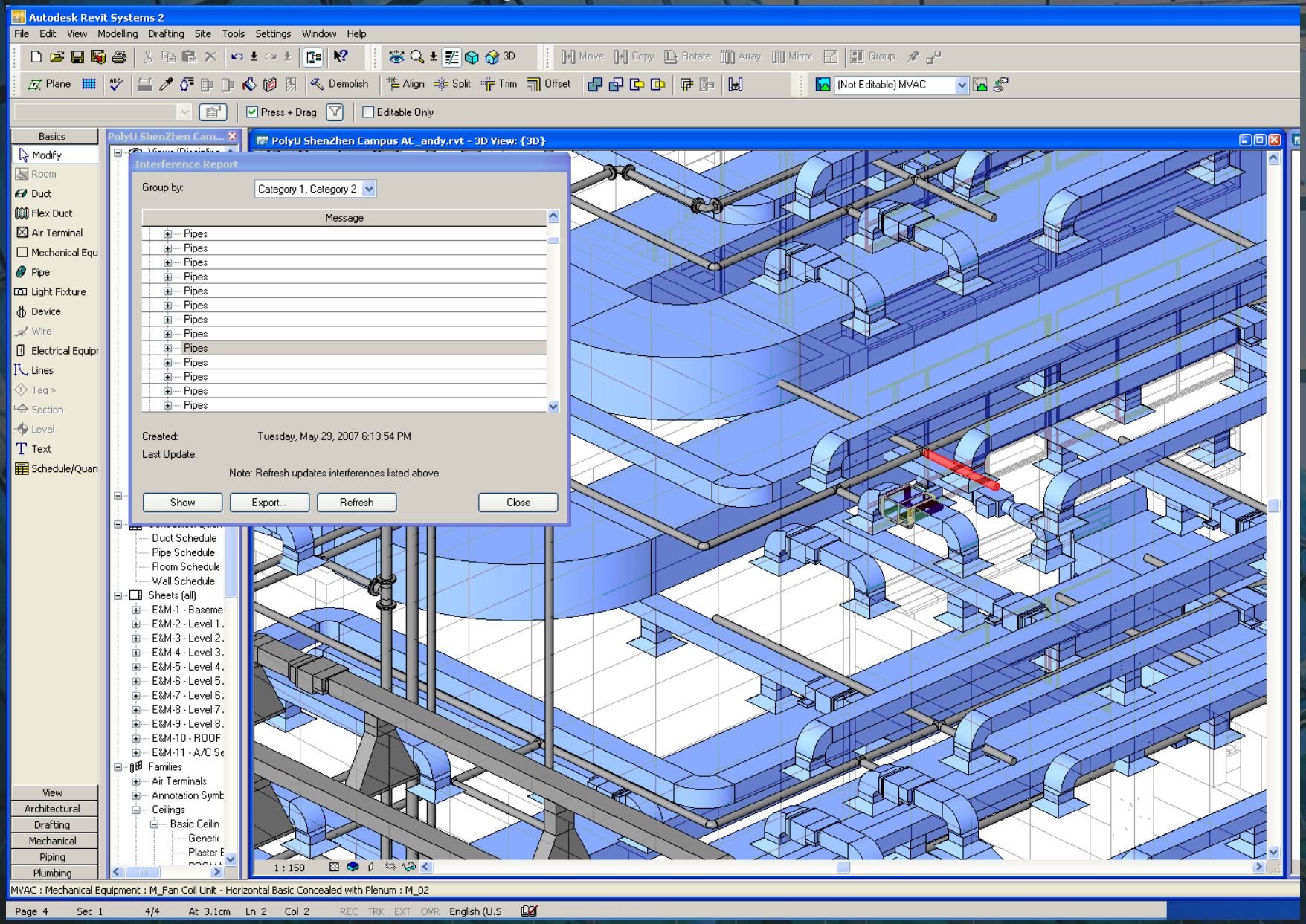




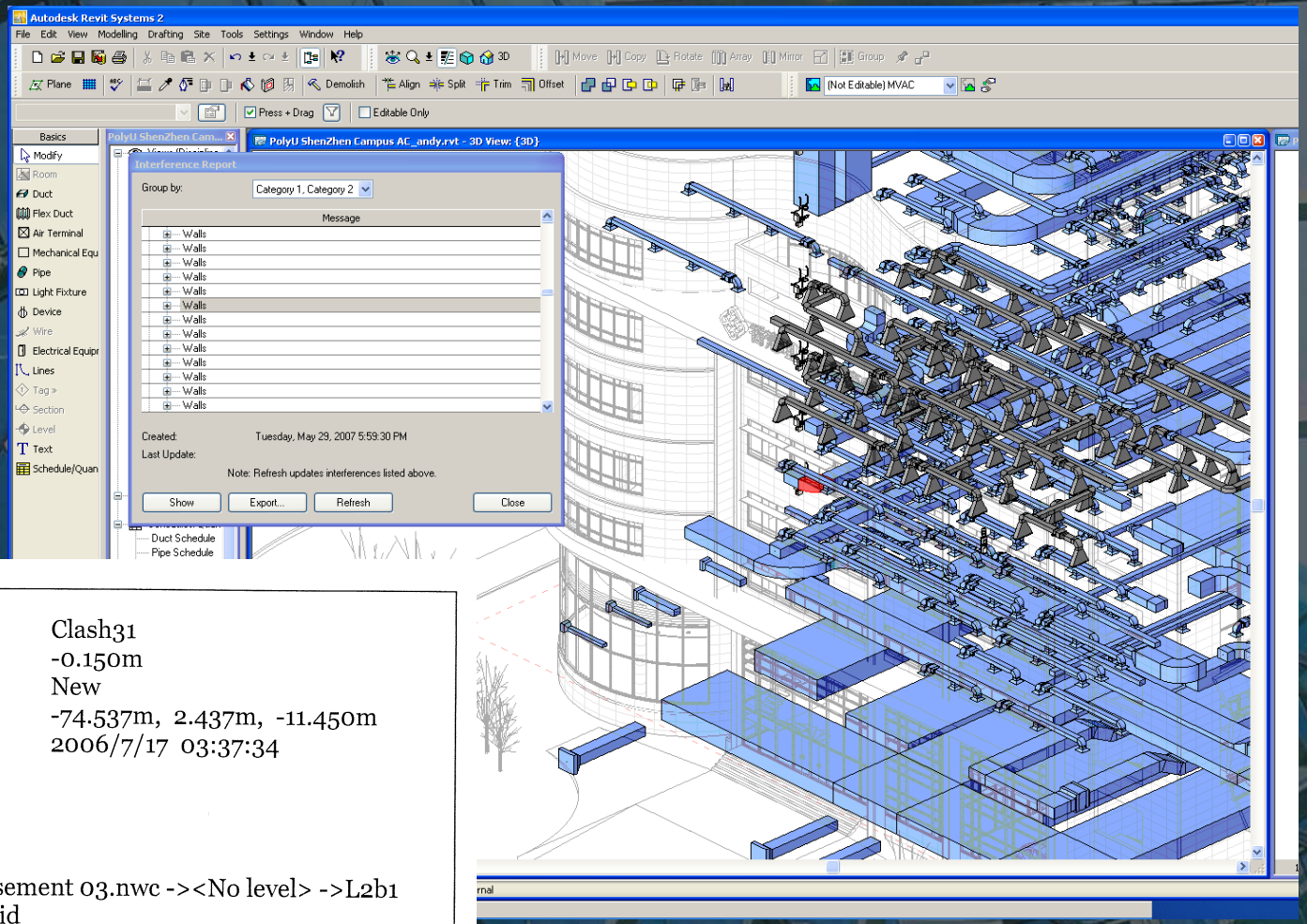
P/D Installation

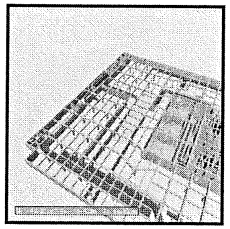
Electricity Installation

Work Flow – Clashes Report



Work Flow – Clashes Report





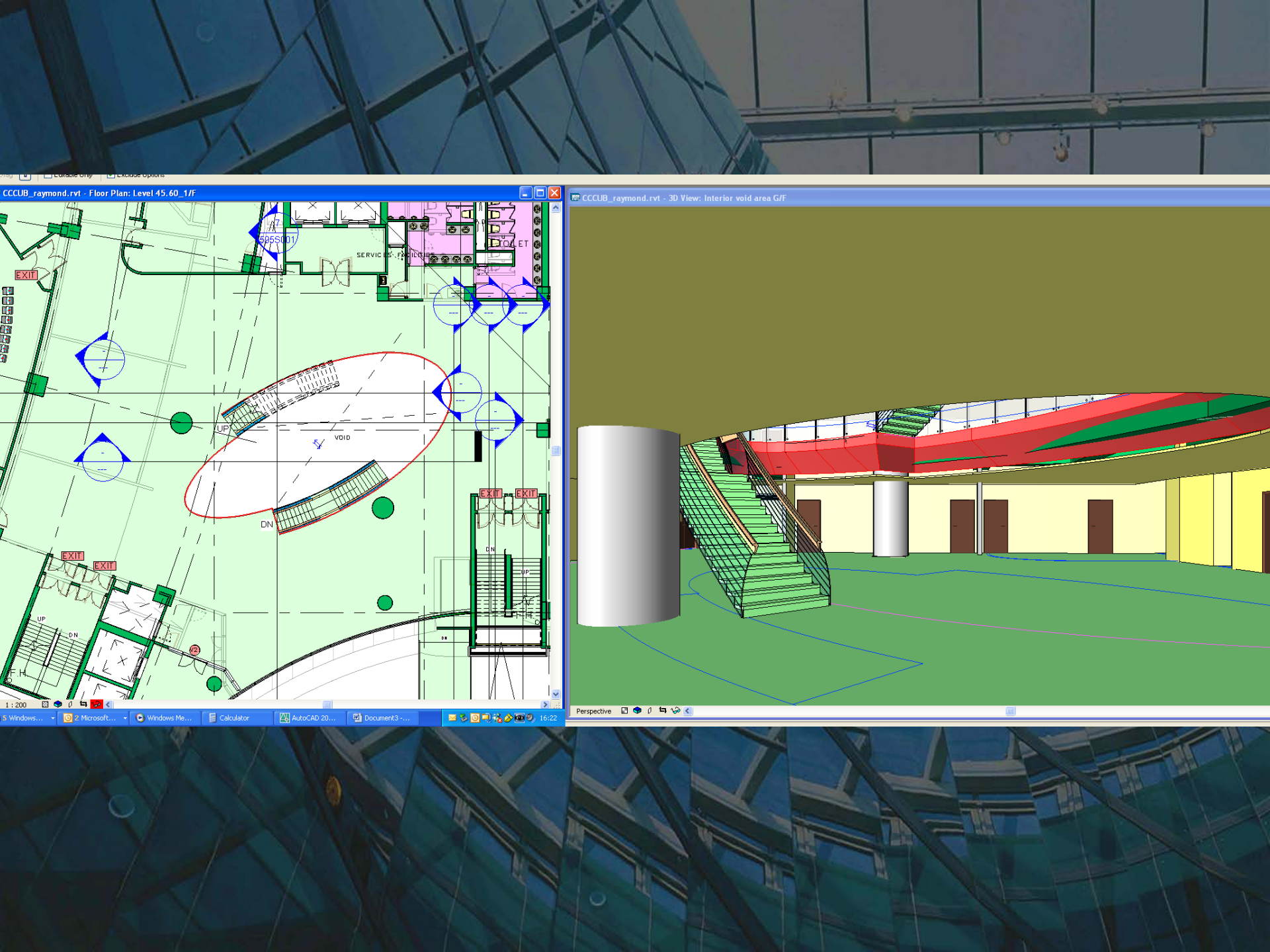
Name	Clash31
Distance	-0.150m
Status	New
Clash Point	-74.537m, 2.437m, -11.450m
Date Created	2006/7/17 03:37:34
Approved By	

Item 1

Path File ->File ->Basement 03.nwc -><No level> ->L2b1 500 x 700 ->L2b1 500 x 700 ->Solid

Item 2

Entity Handle 2AD6
Path File ->File ->B3HVAC_Duct.nwd ->H-Ductwork-G ->Duct


CCCUB_raymond.rvt - Floor Plan: Level 45.60_1/F
CCCUB_raymond.rvt - 3D View: Interior void area G/F
EXIT
SERVICES FACILITIES
TOILET
UP
VOID
DN
1 : 200
Perspective

Use of Building Information Modeling (BIM)

1. Design visualization
2. Drawing Productions
3. Services Co-ordination and Clash detection with other disciplines
4. **Quantity taking and preparation of Tender Document** 数量拾い及び入札書類の作成
5. Automated Statutory Submission
6. Scientific analysis of different environmental aspects
7. Supply Chain Integration with the manufacturing and production
8. Complex Geometry

Autodesk Revit Building 9 - [Swimming Pool 11 Oct 06.rvt - 3D View: 1. Rock Profile]

File Edit View Modelling Drafting Site Tools Settings Window Help

Move Copy Rotate Array Mirror Group

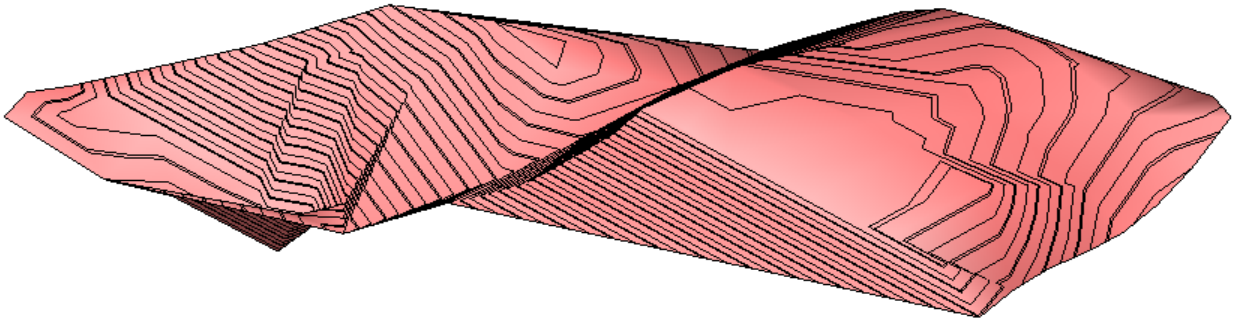
Plane Demolish Align Split Trim Offset

Press + Drag

Basics
- Modify
- Wall
- Door
- Window
- Component
- Room
- Roof »
- Floor
- Grid
- Lines
- Ref Plane
- Dimension
- Section
- Level
- Text

Swimming Pool 11 Oct 0...

- Views (all)
  - Floor Plans
    - Cap Level 63.5
    - G/F
    - New Cover for Flat R
    - New Flat Roof
    - R/F
    - Site
    - Top of Fencing
    - U/G Floor
    - Upper Roof
  - 3D Views
    - **1. Rock Profile**
    - 2. Mini-piles
    - 3. Pile Caps & Footing
    - 4. Tie Beams
    - 5. Columns & Walls (
    - 6. Slabs & Gd. Beams
    - 7. G/F
    - 8. UG/F & New Flat R
    - 9. Roof
    - 10. NW Exterior
    - 11. Pool Interior
    - {3D}
  - Elevations (Building Eleva
  - Sections (Building Section
- Legends
- Schedules/Quantities
  - 2. Mini-Piles
  - 3. Pile Caps & Footings
  - 4. Tie Beams
  - 5a. Columns (Substructure
  - 5b. Bearing/Screen Walls
  - 6. Ground Beams
  - 7. Floor Material Takeoff
  - 8a. Beams (Superstructure
  - 8b. Columns (Superstructu
  - 9. Walls (Superstructure)
  - 10. Roof Material Takeof
  - 11. Ramp Schedule
  - 12. Stairs Material Takeof
- Sheets (all)
- Families
- Groups



1 : 100

View
Modelling
Drafting
Rendering
Site

Click to select, TAB for alternates, CTRL adds, SHIFT unselects.

NUM

Autodesk Revit Building 9 - [Swimming Pool 11 Oct 06.rvt - 3D View: 2. Mini-piles]

File Edit View Modelling Drafting Site Tools Settings Window Help

Plane Demolish Align Split Trim Offset Press + Drag

Basics
Modify
Wall
Door
Window
Component
Room
Roof »
Floor
Grid
Lines
Ref Plane
Dimension
Section
Level
Text

Swimming Pool 11 Oct 0...
- Views (all)
  - Floor Plans
    - Cap Level 63.5
    - G/F
    - New Cover for Flat R
    - New Flat Roof
    - R/F
    - Site
    - Top of Fencing
    - U/G Floor
    - Upper Roof
  - 3D Views
    - 1. Rock Profile
    - **2. Mini-piles**
    - 3. Pile Caps & Footing
    - 4. Tie Beams
    - 5. Columns & Walls (
    - 6. Slabs & Gd. Beams
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    - 11. Pool Interior
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- Legends
- Schedules/Quantities
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  - 3. Pile Caps & Footings
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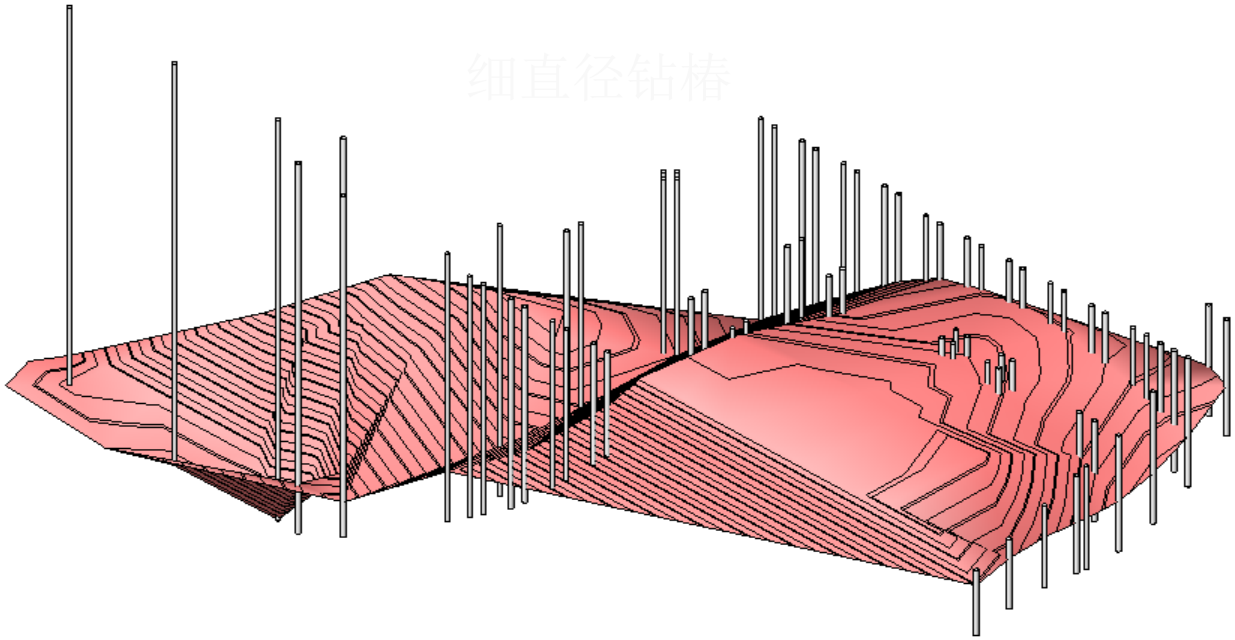
  - 6. Ground Beams
  - 7. Floor Material Takeoff
  - 8a. Beams (Superstructure
  - 8b. Columns (Superstructu
  - 9. Walls (Superstructure)
  - 10. Roof Material Takeof
  - 11. Ramp Schedule
  - 12. Stairs Material Takeof
- Sheets (all)
- Families
- Groups



1 : 100

View
Modelling
Drafting
Rendering
Site

Click to select, TAB for alternates, CTRL adds, SHIFT unselects.

NUM

Autodesk Revit Building 9 - [Swimming Pool 11 Oct 06.rvt - 3D View: 3. Pile Caps & Footings]

File Edit View Modelling Drafting Site Tools Settings Window Help

Plane Demolish Align Split Trim Offset Press + Drag

Basics
- Modify
- Wall
- Door
- Window
- Component
- Room
- Roof »
- Floor
- Grid
- Lines
- Ref Plane
- Dimension
- Section
- Level
- Text

Swimming Pool 11 Oct 0...

- Views (all)
  - Floor Plans
    - Cap Level 63.5
    - G/F
    - New Cover for Flat R
    - New Flat Roof
    - R/F
    - Site
    - Top of Fencing
    - U/G Floor
    - Upper Roof
  - 3D Views
    - 1. Rock Profile
    - 2. Mini-piles
    - **3. Pile Caps & Foo**
    - 4. Tie Beams
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    - 6. Slabs & Gd. Beams
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    - 11. Pool Interior
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- Legends
- Schedules/Quantities
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  - 3. Pile Caps & Footings
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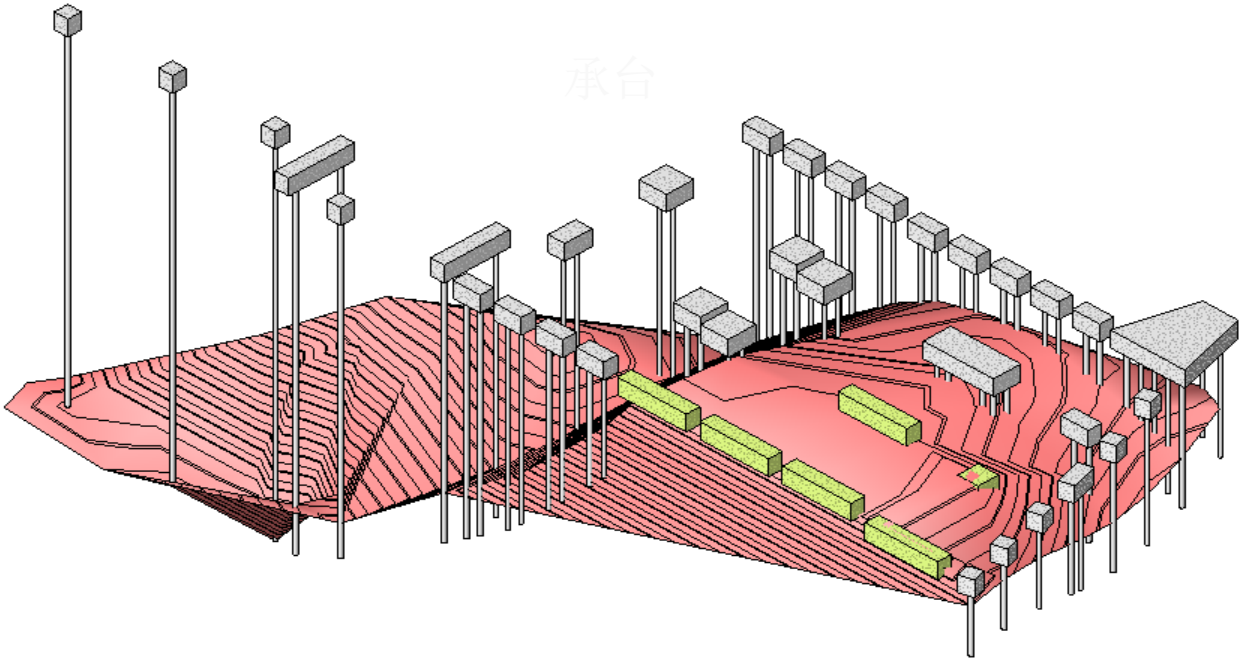
  - 5b. Bearing/Screen Walls
  - 6. Ground Beams
  - 7. Floor Material Takeoff
  - 8a. Beams (Superstructure
  - 8b. Columns (Superstructu
  - 9. Walls (Superstructure)
  - 10. Roof Material Takeof
  - 11. Ramp Schedule
  - 12. Stairs Material Takeof
- Sheets (all)
- Families
- Groups



1 : 100

View
Modelling
Drafting
Rendering
Site

Click to select, TAB for alternates, CTRL adds, SHIFT unselects.

NUM

Autodesk Revit Building 9 - [Swimming Pool 11 Oct 06.rvt - 3D View: 4. Tie Beams]

File Edit View Modelling Drafting Site Tools Settings Window Help

Move Copy Rotate Array Mirror Group

Plane Demolish Align Split Trim Offset

Press + Drag

Basics
- Modify
- Wall
- Door
- Window
- Component
- Room
- Roof »
- Floor
- Grid
- Lines
- Ref Plane
- Dimension
- Section
- Level
- Text

Swimming Pool 11 Oct 0...
- Views (all)
  - Floor Plans
    - Cap Level 63.5
    - G/F
    - New Cover for Flat R
    - New Flat Roof
    - R/F
    - Site
    - Top of Fencing
    - U/G Floor
    - Upper Roof
  - 3D Views
    - 1. Rock Profile
    - 2. Mini-piles
    - 3. Pile Caps & Footing
    - **4. Tie Beams**
    - 5. Columns & Walls (
    - 6. Slabs & Gd. Beams
    - 7. G/F
    - 8. UG/F & New Flat R
    - 9. Roof
    - 10. NW Exterior
    - 11. Pool Interior
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  - Sections (Building Section
- Legends
- Schedules/Quantities
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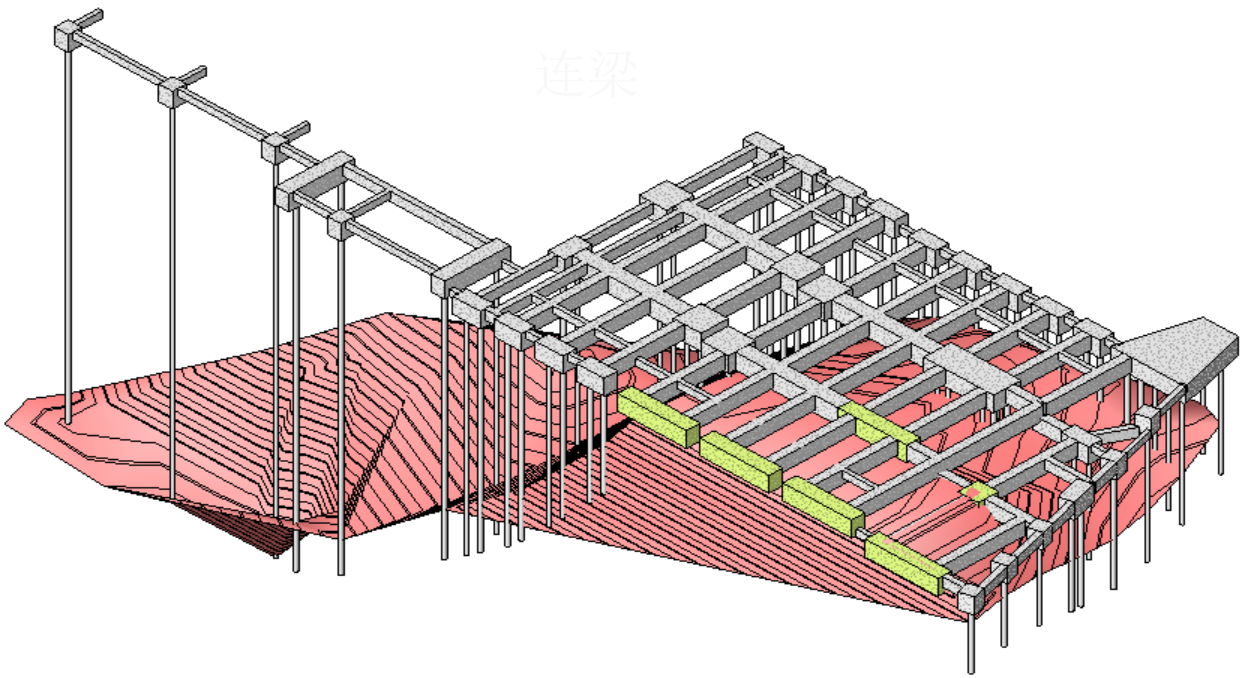
  - 5b. Bearing/Screen Walls
  - 6. Ground Beams
  - 7. Floor Material Takeoff
  - 8a. Beams (Superstructure
  - 8b. Columns (Superstructu
  - 9. Walls (Superstructure)
  - 10. Roof Material Takeof
  - 11. Ramp Schedule
  - 12. Stairs Material Takeof
- Sheets (all)
- Families
- Groups



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View
Modelling
Drafting
Rendering
Site

Click to select, TAB for alternates, CTRL adds, SHIFT unselects.

NUM

Autodesk Revit Building 9 - [Swimming Pool 11 Oct 06.rvt - 3D View: 5. Columns & Walls (Sub-structure)]

File Edit View Modelling Drafting Site Tools Settings Window Help

Plane Demolish Align Split Trim Offset Press + Drag

Basics
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Floor
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Ref Plane
Dimension
Section
Level
Text

Swimming Pool 11 Oct 0...
- Views (all)
  - Floor Plans
    - Cap Level 63.5
    - G/F
    - New Cover for Flat R
    - New Flat Roof
    - R/F
    - Site
    - Top of Fencing
    - U/G Floor
    - Upper Roof
  - 3D Views
    - 1. Rock Profile
    - 2. Mini-piles
    - 3. Pile Caps & Footing
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  - 3. Pile Caps & Footings
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  - 5b. Bearing/Screen Walls
  - 6. Ground Beams
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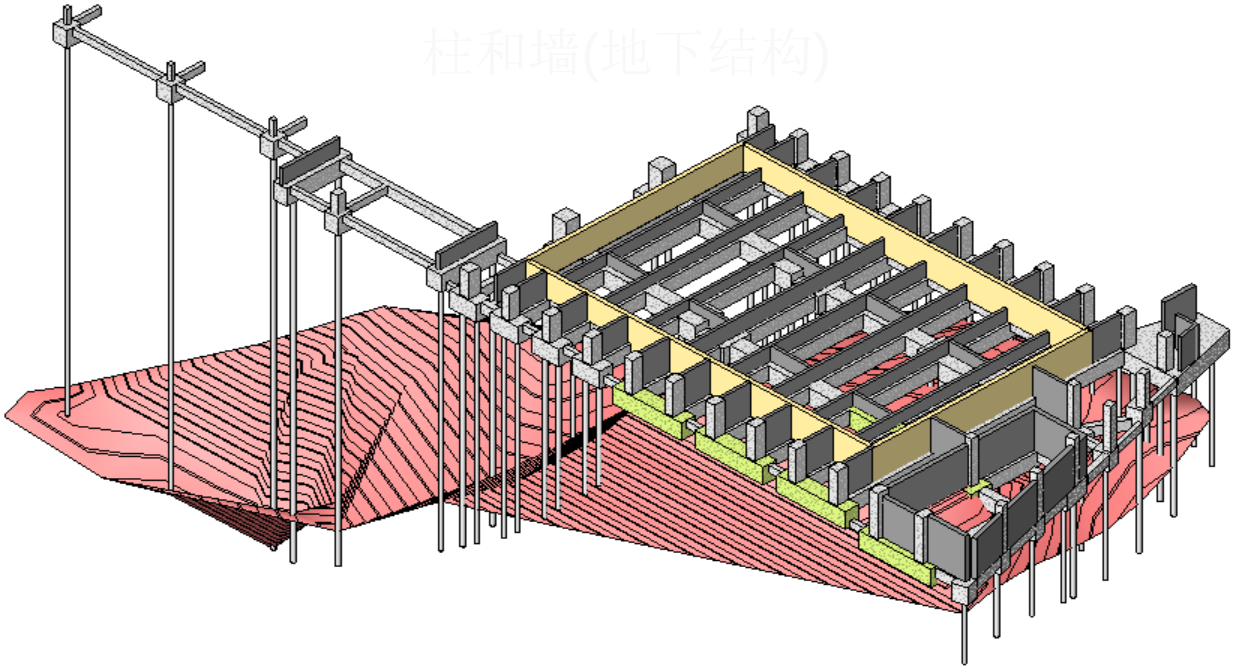
  - 8a. Beams (Superstructure
  - 8b. Columns (Superstructu
  - 9. Walls (Superstructure)
  - 10. Roof Material Takeof
  - 11. Ramp Schedule
  - 12. Stairs Material Takeof
- Sheets (all)
- Families
- Groups



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View
Modelling
Drafting
Rendering
Site

Click to select, TAB for alternates, CTRL adds, SHIFT unselects.

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Autodesk Revit Building 9 - [Swimming Pool 11 Oct 06.rvt - 3D View: 6. Slabs & Gd. Beams (Sub-structure)]

File Edit View Modelling Drafting Site Tools Settings Window Help

Plane Demolish Align Split Trim Offset Press + Drag

Basics
- Modify
- Wall
- Door
- Window
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- Roof »
- Floor
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- Lines
- Ref Plane
- Dimension
- Section
- Level
- Text

Swimming Pool 11 Oct 0...
- Views (all)
  - Floor Plans
    - Cap Level 63.5
    - G/F
    - New Cover for Flat R
    - New Flat Roof
    - R/F
    - Site
    - Top of Fencing
    - U/G Floor
    - Upper Roof
  - 3D Views
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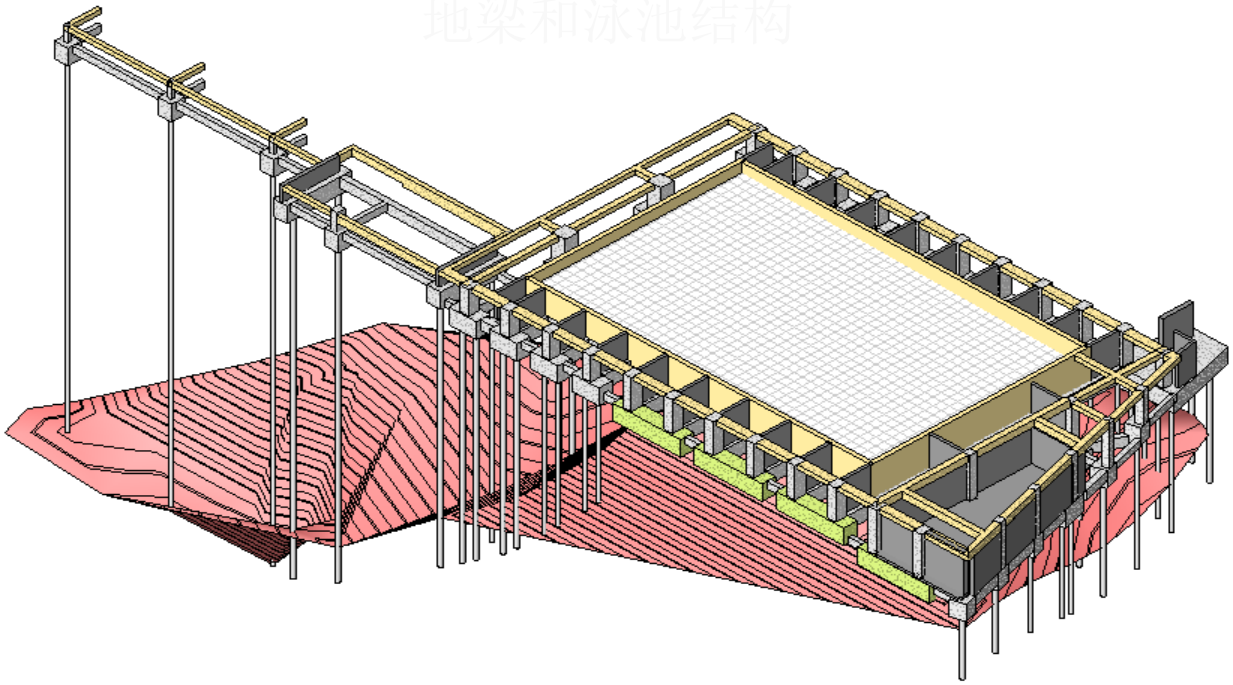
  - 11. Ramp Schedule
  - 12. Stairs Material Takeof
- Sheets (all)
- Families
- Groups



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View
Modelling
Drafting
Rendering
Site

Click to select, TAB for alternates, CTRL adds, SHIFT unselects.

NUM

Autodesk Revit Building 9 - [Swimming Pool 11 Oct 06.rvt - 3D View: 7. G/F]

File Edit View Modelling Drafting Site Tools Settings Window Help

Plane Demolish Align Split Trim Offset Press + Drag

Basics
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Floor
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Lines
Ref Plane
Dimension
Section
Level
Text

Swimming Pool 11 Oct 0...

- Views (all)
  - Floor Plans
    - Cap Level 63.5
    - G/F
    - New Cover for Flat R
    - New Flat Roof
    - R/F
    - Site
    - Top of Fencing
    - U/G Floor
    - Upper Roof
  - 3D Views
    - 1. Rock Profile
    - 2. Mini-piles
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- Legends
- Schedules/Quantities
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  - 3. Pile Caps & Footings
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  - 5a. Columns (Substructure
  - 5b. Bearing/Screen Walls
  - 6. Ground Beams
  - 7. Floor Material Takeoff
  - 8a. Beams (Superstructure
  - 8b. Columns (Superstructu
  - 9. Walls (Superstructure)
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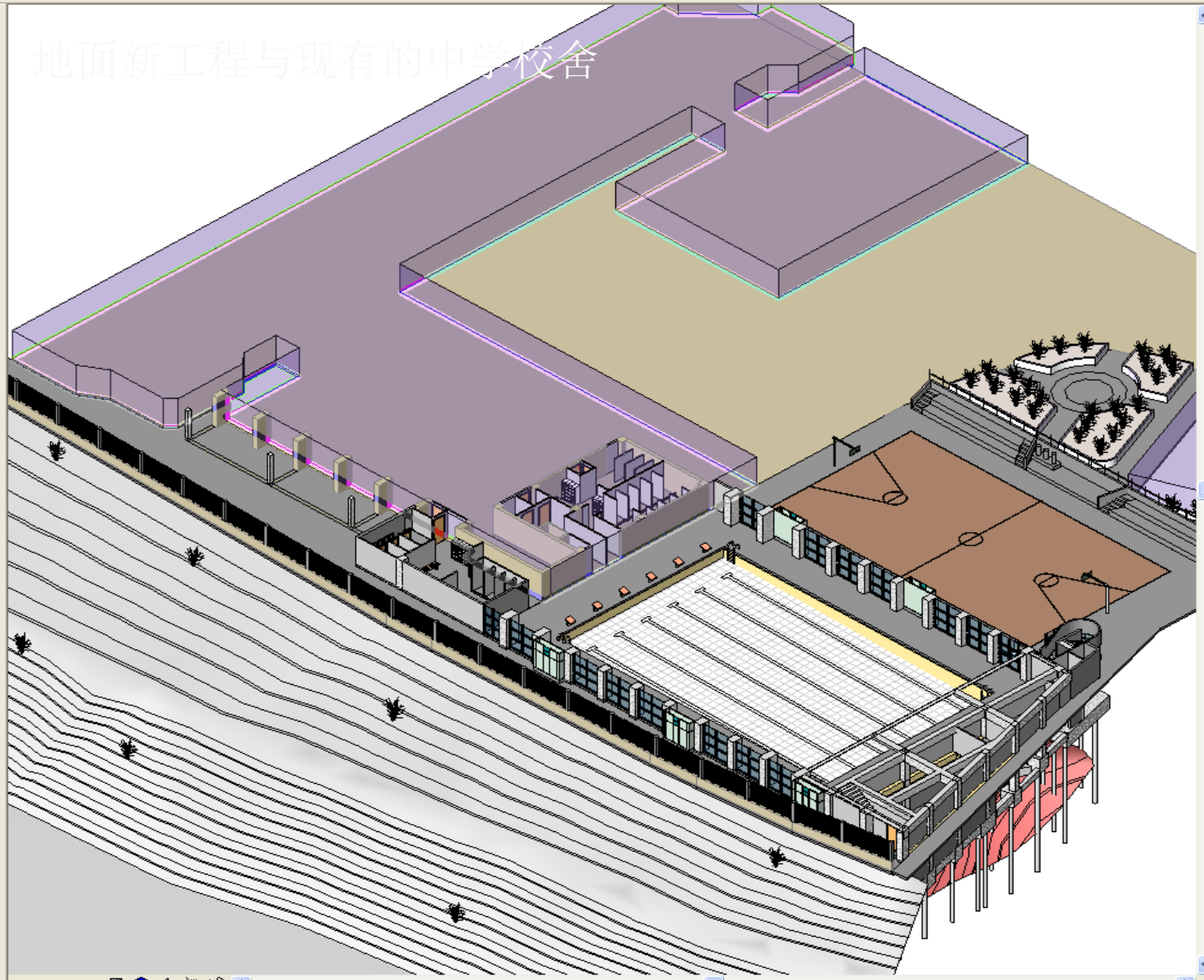
  - 11. Ramp Schedule
  - 12. Stairs Material Takeof
- Sheets (all)
- Families
- Groups



1 : 100

View
Modelling
Drafting
Rendering
Site

Floors : Floor : R.C. Slab on Grade - 175mm

NUM

Autodesk Revit Building 9 - [Swimming Pool 11 Oct 06.rvt - 3D View: 8. UG/F & New Flat Roof]

File Edit View Modelling Drafting Site Tools Settings Window Help

Plane Demolish Align Split Trim Offset Press + Drag

Basics
Modify
Wall
Door
Window
Component
Room
Roof »
Floor
Grid
Lines
Ref Plane
Dimension
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Text

Swimming Pool 11 Oct 0...

- Views (all)
  - Floor Plans
    - Cap Level 63.5
    - G/F
    - New Cover for Flat R
    - New Flat Roof
    - R/F
    - Site
    - Top of Fencing
    - U/G Floor
    - Upper Roof
  - 3D Views
    - 1. Rock Profile
    - 2. Mini-piles
    - 3. Pile Caps & Footing
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- Legends
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  - 5b. Bearing/Screen Walls
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  - 7. Floor Material Takeoff
  - 8a. Beams (Superstructure
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  - 11. Ramp Schedule
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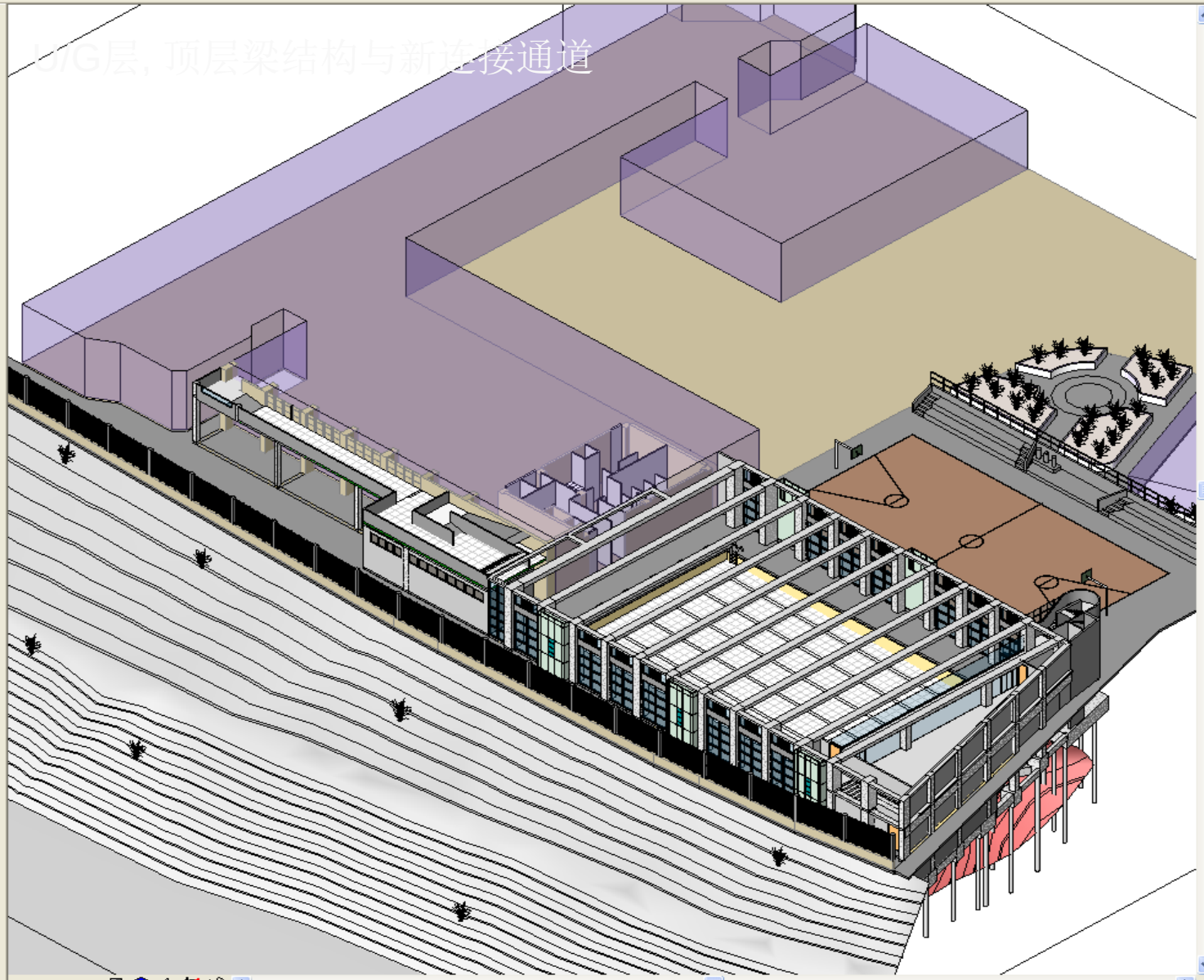
- Sheets (all)
- Families
- Groups



View
Modelling
Drafting
Rendering
Site

Click to select, TAB for alternates, CTRL adds, SHIFT unselects.

NUM

Autodesk Revit Building 9 - [Swimming Pool 11 Oct 06.rvt - 3D View: 9. Roof]

File Edit View Modelling Drafting Site Tools Settings Window Help

Plane Demolish Align Split Trim Offset Press + Drag

Basics
- Modify
- Wall
- Door
- Window
- Component
- Room
- Roof »
- Floor
- Grid
- Lines
- Ref Plane
- Dimension
- Section
- Level
- Text

Swimming Pool 11 Oct 0...
- Views (all)
  - Floor Plans
    - Cap Level 63.5
    - G/F
    - New Cover for Flat R
    - New Flat Roof
    - R/F
    - Site
    - Top of Fencing
    - U/G Floor
    - Upper Roof
  - 3D Views
    - 1. Rock Profile
    - 2. Mini-piles
    - 3. Pile Caps & Footing
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- Legends
- Schedules/Quantities
  - 2. Mini-Piles
  - 3. Pile Caps & Footings
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  - 6. Ground Beams
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  - 8a. Beams (Superstructure
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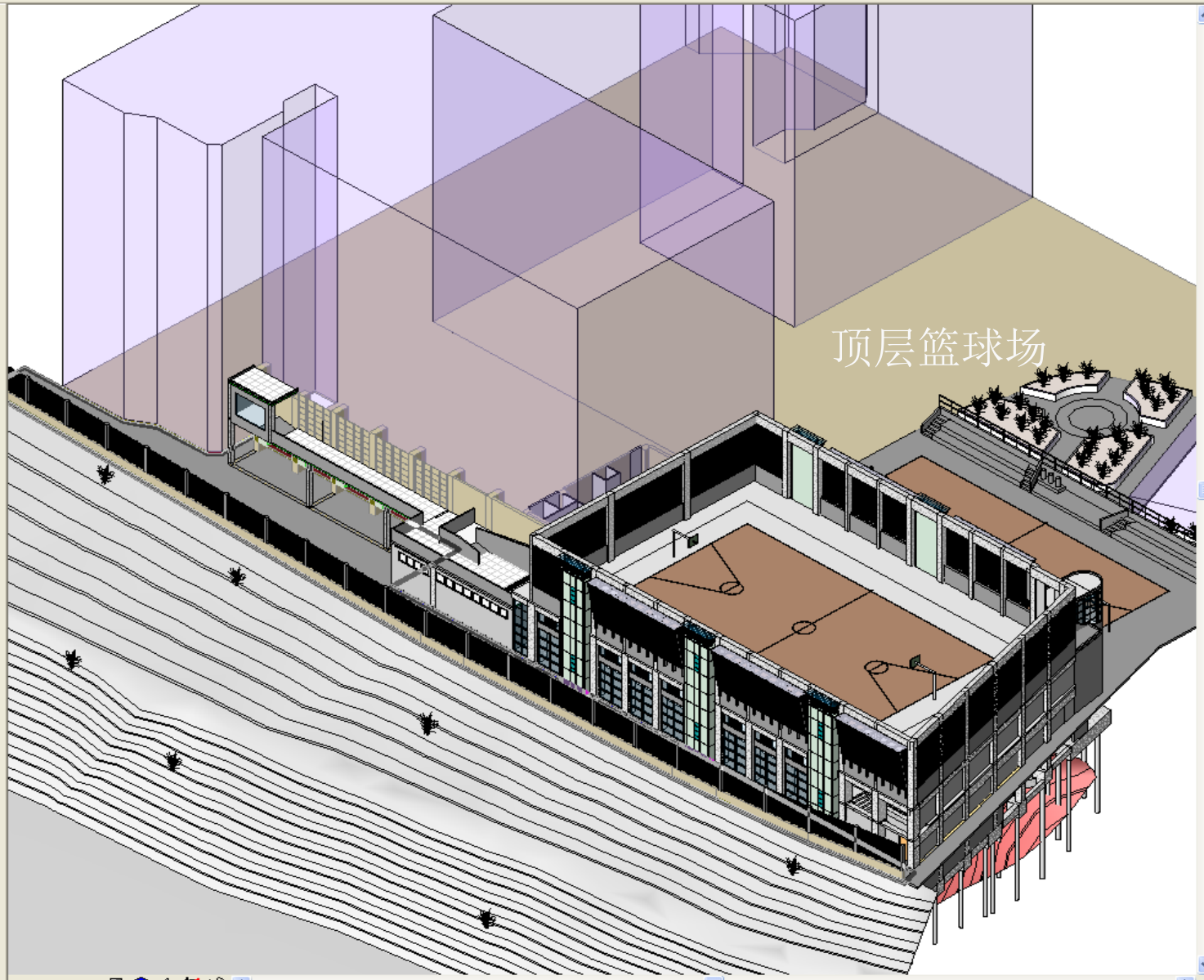
  - 11. Ramp Schedule
  - 12. Stairs Material Takeof
- Sheets (all)
- Families
- Groups



1 : 100

View
Modelling
Drafting
Rendering
Site

Floors : Floor : R.C. Slab on Grade - 175mm

NUM

Autodesk Revit Building 9 - [Swimming Pool 11 Oct 06.rvt - 3D View: 10. NW Exterior]

File Edit View Modelling Drafting Site Tools Settings Window Help

Basics
Modify
Wall
Door
Window
Component
Room
Roof »
Floor
Grid
Lines
Ref Plane
Dimension
Section
Level
Text

Swimming Pool 11 Oct 0...

- Views (all)
  - Floor Plans
    - Cap Level 63.5
    - G/F
    - New Cover for Flat R
    - New Flat Roof
    - R/F
    - Site
    - Top of Fencing
    - U/G Floor
    - Upper Roof
  - 3D Views
    - 1. Rock Profile
    - 2. Mini-piles
    - 3. Pile Caps & Footing
    - 4. Tie Beams
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    - 6. Slabs & Gd. Beams
    - 7. G/F
    - 8. UG/F & New Flat R
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    - 11. Pool Interior
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- Legends
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  - 6. Ground Beams
  - 7. Floor Material Takeoff
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  - 9. Walls (Superstructure)
  - 10. Roof Material Takeof
  - 11. Ramp Schedule
  - 12. Stairs Material Takeof
- Sheets (all)
- Families
- Groups

View
Modelling
Drafting
Rendering
Site

Perspective

Click to select, TAB for alternates, CTRL adds, SHIFT unselects.

Autodesk Revit Building 9 - [Swimming Pool 11 Oct 06.rvt - 3D View: 11. Pool Interior]

File Edit View Modelling Drafting Site Tools Settings Window Help

Move Copy Rotate Array Mirror Group

Plane Demolish Align Split Trim Offset

Press + Drag

Basics

Modify

Wall

Door

Window

Component

Room

Roof »

Floor

Grid

Lines

Ref Plane

Dimension

Section

Level

Text

Swimming Pool 11 Oct 0...

- Views (all)
  - Floor Plans
    - Cap Level 63.5
    - G/F
    - New Cover for Flat R
    - New Flat Roof
    - R/F
    - Site
    - Top of Fencing
    - U/G Floor
    - Upper Roof
  - 3D Views
    - 1. Rock Profile
    - 2. Mini-piles
    - 3. Pile Caps & Footing
    - 4. Tie Beams
    - 5. Columns & Walls (
    - 6. Slabs & Gd. Beams
    - 7. G/F
    - 8. UG/F & New Flat R
    - 9. Roof
    - 10. N W Exterior
    - **11. Pool Interior**
    - {3D}
  - Elevations (Building Eleva
  - Sections (Building Section
- Legends
- Schedules/Quantities
  - 2. Mini-Piles
  - 3. Pile Caps & Footings
  - 4. Tie Beams
  - 5a. Columns (Substructure
  - 5b. Bearing/Screen Walls
  - 6. Ground Beams
  - 7. Floor Material Takeoff
  - 8a. Beams (Superstructure
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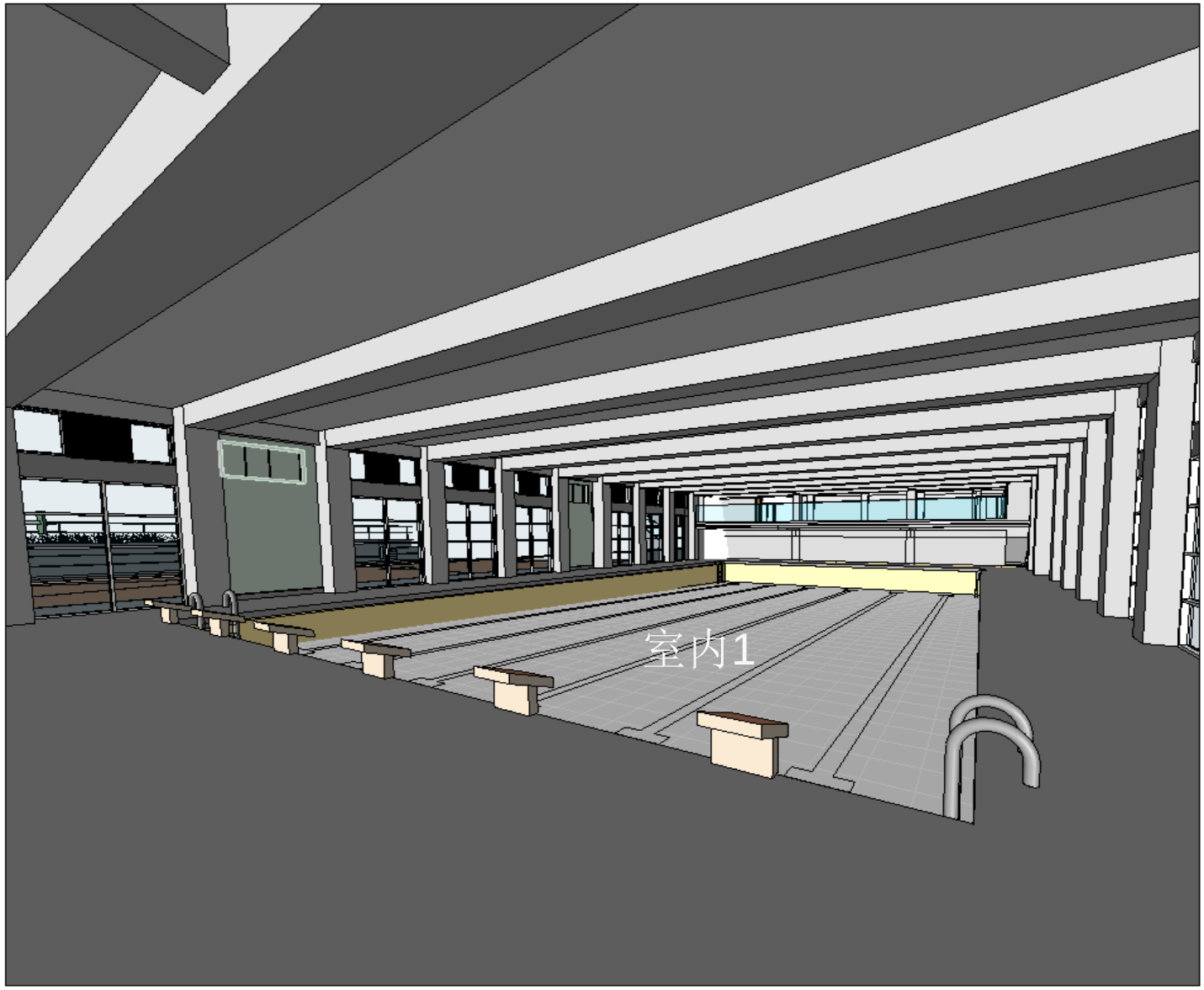
- Sheets (all)
- Families
- Groups



Perspective

View

Modelling

Drafting

Rendering

Site

Rectangular Straight Wall Opening : Rectangular Straight Wall Opening

Autodesk Revit Building 9 - [Swimming Pool 11 Oct 06.rvt - 3D View: {3D}]

File Edit View Modelling Drafting Site Tools Settings Window Help

New
Zoom
View Properties... VP
Dynamically Modify View F8
Orient
Visibility/Graphics... VG
Category Invisible VH
Other Categories Invisible VI
Temporary Hide/Isolate
Apply View Template...
Create View Template from View...
Activate View
Deactivate View
Wireframe WF
Hidden Line HL
Shading
Shading with Edges SD
Advanced Model Graphics... AG
Thin Lines TL
Show Mass
Rendering
Refresh F5

Floor Plan...
Ceiling Plan...
Plan Region
Elevation
Framing Elevation
Section
Default 3D View
Callout
Drafting View...
Area Plan...
Camera
Walkthrough
Legend
Schedule/Quantities...
Material Takeoff...
View List...
Drawing List...
Note Block...
Keynote Legend...
Revision Schedule...
Sheet...
Add View...
Place Titleblock...

Legends
Schedules/Quantities
2. Mini-Piles
3. Pile Caps & Footings
4. Tie Beams
5a. Columns (Substructure
5b. Bearing/Screen Walls
6. Ground Beams
7. Floor Material Takeoff
8a. Beams (Superstructure
8b. Columns (Superstructu
9. Walls (Superstructure)
10. Roof Material Takeof
11. Ramp Schedule
12. Stairs Material Takeof
Sheets (all)
Families
Groups

Basics
Modify
Wall
Door
Window
Component
Room
Roof »
Floor
Grid
Lines
Ref Plane
Dimension
Section
Level
Text

View
Modelling
Drafting
Rendering
Site

1 : 100

Create a material takeoff

NUM

Autodesk Revit Building 9 - [Swimming Pool 11 Oct 06.rvt - 3D View: {3D}]

File Edit View Modelling Drafting Site Tools Settings Window Help

Basics
Modify
Wall
Door
Window
Component
Room
Roof »
Floor
Grid
Lines
Ref Plane
Dimension
Section
Level
Text

Swimming Pool 11 Oct 0...

- Views (all)
  - Floor Plans
    - Cap Level 63.5
    - G/F
    - New Cover for Flat R
    - New Flat Roof
    - R/F
    - Site
    - Top of Fencing
    - U/G Floor
    - Upper Roof
  - 3D Views
    - 1. Rock Profile
    - 2. Mini-piles
    - 3. Pile Caps & Footing
    - 4. Tie Beams
    - 5. Columns & Walls (
    - 6. Slabs & Gd. Beams
    - 7. G/F
    - 8. UG/F & New Flat R
    - 9. Roof
    - 10. NW Exterior
    - 11. Pool Interior
    - **{3D}**
  - Elevations (Building Eleve
  - Sections (Building Section
- Legends
- Schedules/Quantities
  - 2. Mini-Piles
  - 3. Pile Caps & Footings
  - 4. Tie Beams
  - 5a. Columns (Substructure
  - 5b. Bearing/Screen Walls
  - 6. Ground Beams
  - 7. Floor Material Takeoff
  - 8a. Beams (Superstructure
  - 8b. Columns (Superstructu
  - 9. Walls (Superstructure)
  - 10. Roof Material Takeof
  - 11. Ramp Schedule
  - 12. Stairs Material Takeof
- Sheets (all)
- Families
- Groups

View
Modelling
Drafting
Rendering
Site

New Material Takeoff

Category:
- <Multi-Category>
- Casework
- Ceilings
- Columns
- Curtain Panels
- Doors
- Electrical Equipment
- Electrical Fixtures
- Floors
- Furniture
- Furniture Systems
- Generic Models
- Lighting Fixtures
- Mechanical Equipment
- Plumbing Fixtures
- Roofs

Name: Column Material Takeoff

Phase: New Construction

☐ Show categories from all disciplines

OK Cancel Help

1 : 100

Ready NUM

Autodesk Revit Building 9 - [Swimming Pool 11 Oct 06.rvt - 3D View: {3D}]

File Edit View Modelling Drafting Site Tools Settings Window Help

Plane Demolish Align Split Trim Offset

Basics
Modify
Wall
Door
Window
Component
Room
Roof »
Floor
Grid
Lines
Ref Plane
Dimension
Section
Level
Text

Swimming Pool 11 Oct 0...

- Views (all)
  - Floor Plans
    - Cap Level 63.5
    - G/F
    - New Cover for Flat R
    - New Flat Roof
    - R/F
    - Site
    - Top of Fencing
    - U/G Floor
    - Upper Roof
  - 3D Views
    - 1. Rock Profile
    - 2. Mini-piles
    - 3. Pile Caps & Footing
    - 4. Tie Beams
    - 5. Columns & Walls (
    - 6. Slabs & Gd. Beams
    - 7. G/F
    - 8. UG/F & New Flat R
    - 9. Roof
    - 10. N W Exterior
    - 11. Pool Interior
    - {3D}
  - Elevations (Building Eleva
  - Sections (Building Section
- Legends
- Schedules/Quantities
  - 2. Mini-Piles
  - 3. Pile Caps & Footings
  - 4. Tie Beams
  - 5a. Columns (Substructure
  - 5b. Bearing/Screen Walls
  - 6. Ground Beams
  - 7. Floor Material Takeoff
  - 8a. Beams (Superstructure
  - 8b. Columns (Superstructu
  - 9. Walls (Superstructure)
  - 10. Roof Material Takeof
  - 11. Ramp Schedule
  - 12. Stairs Material Takeof
- Sheets (all)
- Families
- Groups

View
Modelling
Drafting
Rendering
Site

Material Takeoff Properties

Fields | Filter | Sorting/Grouping | Formatting | Appearance

Available fields:

Length
Manufacturer
Mark
Material: Comments
Material: Cost
Material: Description
Material: Keynote
Material: Manufacturer
Material: Mark
Material: Model
Material: Name
Material: URL

Add -->
<-- Remove
Add Parameter...
Calculated Value...

Scheduled fields (in order):

Family
Type
Material: Area

Edit... Delete
Edit... Delete

Select available fields from:
Walls

Move Up Move Down

Include elements in linked files

確定 取消 說明

1 : 100

Ready NUM

Autodesk Revit Building 9 - [Swimming Pool 11 Oct 06.rvt - Schedule: 8b. Columns (Superstructure)]

File Edit View Modelling Drafting Site Tools Settings Window Help

Headers Group Ungroup Rows: New Delete Show

Basics

Modify
Wall
Door
Window
Component
Room
Roof »
Floor
Grid
Lines
Ref Plane
Dimension
Section
Level
Text

Swimming Pool 11 Oct 0...

- Views (all)
  - Floor Plans
    - Cap Level 63.5
    - G/F
    - New Cover for Flat R
    - New Flat Roof
    - R/F
    - Site
    - Top of Fencing
    - U/G Floor
    - Upper Roof
  - 3D Views
    - 1. Rock Profile
    - 2. Mini-piles
    - 3. Pile Caps & Footing
    - 4. Tie Beams
    - 5. Columns & Walls (
    - 6. Slabs & Gd. Beams
    - 7. G/F
    - 8. UG/F & New Flat R
    - 9. Roof
    - 10. NW Exterior
    - 11. Pool Interior
    - {3D}
  - Elevations (Building Eleva
  - Sections (Building Section
- Legends
- Schedules/Quantities
  - 2. Mini-Piles
  - 3. Pile Caps & Footings
  - 4. Tie Beams
  - 5a. Columns (Substructure
  - 5b. Bearing/Screen Walls
  - 6. Ground Beams
  - 7. Floor Material Takeoff
  - 8a. Beams (Superstructure
  - **8b. Columns (Superst**
  - 9. Walls (Superstructure)
  - 10. Roof Material Takeof
  - 11. Ramp Schedule
  - 12. Stairs Material Takeof
- Sheets (all)
- Families
- Groups

8b. Columns (Superstructure)

Family	Type	Material: Name	Mark	Length	Base Level	Base Offset	Top Level	Top Offset	Material: Area	Concrete: Volume	Location
R.C. Column (Superstructure)	400 x 850m	R.C. Grade 40/20 (Superstructure)	C24G	2550	G/F	0	U/G Floor	-150	7.055 m²	0.87 m³	
R.C. Column (Superstructure)	400 x 500m	R.C. Grade 40/20 (Superstructure)	C35G	2700	G/F	0	U/G Floor	0	5.260 m²	0.54 m³	
R.C. Column (Superstructure)	400 x 500m	R.C. Grade 40/20 (Superstructure)	C37G	2700	G/F	0	U/G Floor	0	5.260 m²	0.54 m³	
R.C. Column (Superstructure)	400 x 500m	R.C. Grade 40/20 (Superstructure)	C25G	2700	G/F	0	U/G Floor	0	5.260 m²	0.54 m³	
R.C. Column (Superstructure)	400 x 500m	R.C. Grade 40/20 (Superstructure)	C36G	2700	G/F	0	U/G Floor	0	5.260 m²	0.54 m³	
R.C. Column (Superstructure)	400 x 500m	R.C. Grade 40/20 (Superstructure)	C26G	2700	G/F	0	U/G Floor	0	5.260 m²	0.54 m³	
R.C. Column (Superstructure)	600 x 600m	R.C. Grade 40/20 (Superstructure)	C22G	5350	G/F	0	R/F	-150	13.560 m²	1.93 m³	
R.C. Column (Superstructure)	500 x 500m	R.C. Grade 40/20 (Superstructure)	C34G	2550	G/F	0	U/G Floor	-150	5.600 m²	0.64 m³	
R.C. Column (Superstructure)	500 x 500m	R.C. Grade 40/20 (Superstructure)	C33G	2550	G/F	0	U/G Floor	-150	5.600 m²	0.64 m³	
R.C. Column (Superstructure)	800 x 600m	R.C. Grade 40/20 (Superstructure)	C21G	2550	G/F	0	U/G Floor	-150	8.100 m²	1.22 m³	
R.C. Column (Superstructure)	800 x 600m	R.C. Grade 40/20 (Superstructure)	C23G	2550	G/F	0	U/G Floor	-150	8.100 m²	1.22 m³	
R.C. Column (Superstructure)	1150 x 600	R.C. Grade 40/20 (Superstructure)	C17G	5350	G/F	0	R/F	-150	20.105 m²	3.69 m³	
R.C. Column (Superstructure)	1150 x 600	R.C. Grade 40/20 (Superstructure)	C19G	5350	G/F	0	R/F	-150	20.105 m²	3.69 m³	
R.C. Column (Superstructure)	800 x 600m	R.C. Grade 40/20 (Superstructure)	C6G	5350	G/F	0	R/F	-150	15.940 m²	2.57 m³	
R.C. Column (Superstructure)	800 x 600m	R.C. Grade 40/20 (Superstructure)	C5G	5350	G/F	0	R/F	-150	15.940 m²	2.57 m³	
R.C. Column (Superstructure)	800 x 600m	R.C. Grade 40/20 (Superstructure)	C7G	5350	G/F	0	R/F	-150	15.940 m²	2.57 m³	
R.C. Column (Superstructure)	800 x 600m	R.C. Grade 40/20 (Superstructure)	C9G	5350	G/F	0	R/F	-150	15.940 m²	2.57 m³	
R.C. Column (Superstructure)	800 x 600m	R.C. Grade 40/20 (Superstructure)	C11G	5350	G/F	0	R/F	-150	15.940 m²	2.57 m³	
R.C. Column (Superstructure)	800 x 600m	R.C. Grade 40/20 (Superstructure)	C13G	5350	G/F	0	R/F	-150	15.940 m²	2.57 m³	
R.C. Column (Superstructure)	800 x 600m	R.C. Grade 40/20 (Superstructure)	C15G	5350	G/F	0	R/F	-150	15.940 m²	2.57 m³	
R.C. Column (Superstructure)	800 x 600m	R.C. Grade 40/20 (Superstructure)	C8G	5350	G/F	0	R/F	-150	15.940 m²	2.57 m³	
R.C. Column (Superstructure)	800 x 600m	R.C. Grade 40/20 (Superstructure)	C10G	5350	G/F	0	R/F	-150	15.940 m²	2.57 m³	
R.C. Column (Superstructure)	800 x 600m	R.C. Grade 40/20 (Superstructure)	C12G	5350	G/F	0	R/F	-150	15.940 m²	2.57 m³	
R.C. Column (Superstructure)	800 x 600m	R.C. Grade 40/20 (Superstructure)	C14G	5350	G/F	0	R/F	-150	15.940 m²	2.57 m³	
R.C. Column (Superstructure)	800 x 600m	R.C. Grade 40/20 (Superstructure)	C16G	5350	G/F	0	R/F	-150	15.940 m²	2.57 m³	
R.C. Column (Superstructure)	800 x 600m	R.C. Grade 40/20 (Superstructure)	C18G	5350	G/F	0	R/F	-150	15.940 m²	2.57 m³	
R.C. Column (Superstructure)	1150 x 700	R.C. Grade 40/20 (Superstructure)	C2G	5350	G/F	0	R/F	-150	21.405 m²	4.31 m³	
R.C. Column (Superstructure)	1150 x 700	R.C. Grade 40/20 (Superstructure)	C1G	5350	G/F	0	R/F	-150	21.405 m²	4.31 m³	
R.C. Column (Superstructure)	1150 x 600	R.C. Grade 40/20 (Superstructure)	C3G	5350	G/F	0	R/F	-150	20.105 m²	3.69 m³	
R.C. Column (Superstructure)	1150 x 600	R.C. Grade 40/20 (Superstructure)	C4G	5350	G/F	0	R/F	-150	20.105 m²	3.69 m³	
R.C. Column (Superstructure)	800 x 600m	R.C. Grade 40/20 (Superstructure)	C20G	5350	G/F	0	R/F	-150	15.940 m²	2.57 m³	
R.C. Column (Superstructure)	500 x 600m	R.C. Grade 40/20 (Superstructure)	C38G	3600	G/F	0	New Flat R	-150	8.520 m²	1.08 m³	
: 32									429.225 m²	69.63 m³	
R.C. Column (Superstructure)	300 x 300m	R.C. Grade 40/20 (Superstructure)	C39G	3750	G/F	0	New Flat R	0	4.680 m²	0.34 m³	New flat roof
R.C. Column (Superstructure)	300 x 300m	R.C. Grade 40/20 (Superstructure)	C40G	3750	G/F	0	New Flat R	0	4.680 m²	0.34 m³	New flat roof
R.C. Column (Superstructure)	300 x 300m	R.C. Grade 40/20 (Superstructure)	C41G	3900	G/F	0	New Flat R	150	4.860 m²	0.35 m³	New flat roof
New flat roof: 3									14.220 m²	1.08 m³	
R.C. Column (Superstructure)	400 x 500m	R.C. Grade 40/20 (Superstructure)	C35U	2650	U/G Floo	0	R/F	-150	5.170 m²	0.53 m³	
R.C. Column (Superstructure)	400 x 500m	R.C. Grade 40/20 (Superstructure)	C37U	2650	U/G Floo	0	R/F	-150	5.170 m²	0.53 m³	
R.C. Column (Superstructure)	400 x 500m	R.C. Grade 40/20 (Superstructure)	C25U	2650	U/G Floo	0	R/F	-150	5.170 m²	0.53 m³	
R.C. Column (Superstructure)	400 x 500m	R.C. Grade 40/20 (Superstructure)	C36U	2650	U/G Floo	0	R/F	-150	5.170 m²	0.53 m³	
R.C. Column (Superstructure)	400 x 500m	R.C. Grade 40/20 (Superstructure)	C26U	2650	U/G Floo	0	R/F	-150	5.170 m²	0.53 m³	
R.C. Column (Superstructure)	500 x 500m	R.C. Grade 40/20 (Superstructure)	C34U	2200	U/G Floo	0	R/F	-600	4.900 m²	0.55 m³	
R.C. Column (Superstructure)	500 x 500m	R.C. Grade 40/20 (Superstructure)	C33U	2200	U/G Floo	0	R/F	-600	4.900 m²	0.55 m³	
R.C. Column (Superstructure)	800 x 600m	R.C. Grade 40/20 (Superstructure)	C21U	2650	U/G Floo	0	R/F	-150	8.380 m²	1.27 m³	
R.C. Column (Superstructure)	800 x 600m	R.C. Grade 40/20 (Superstructure)	C23U	2650	U/G Floo	0	R/F	-150	8.380 m²	1.27 m³	
R.C. Column (Superstructure)	400 x 850m	R.C. Grade 40/20 (Superstructure)	C24U	2800	U/G Floo	0	R/F	0	7.680 m²	0.95 m³	
: 10									60.090 m²	7.25 m³	
R.C. Column (Substructure)	300 x 300m	R.C. Grade 40/20 (Superstructure)	P3F	3400	New Flat	0	New Cover f	0	4.260 m²	0.31 m³	New flat roof
R.C. Column (Substructure)	300 x 300m	R.C. Grade 40/20 (Superstructure)	C41F	3100	New Flat	300	New Cover f	0	3.900 m²	0.28 m³	New flat roof
New flat roof: 2									8.160 m²	0.59 m³	

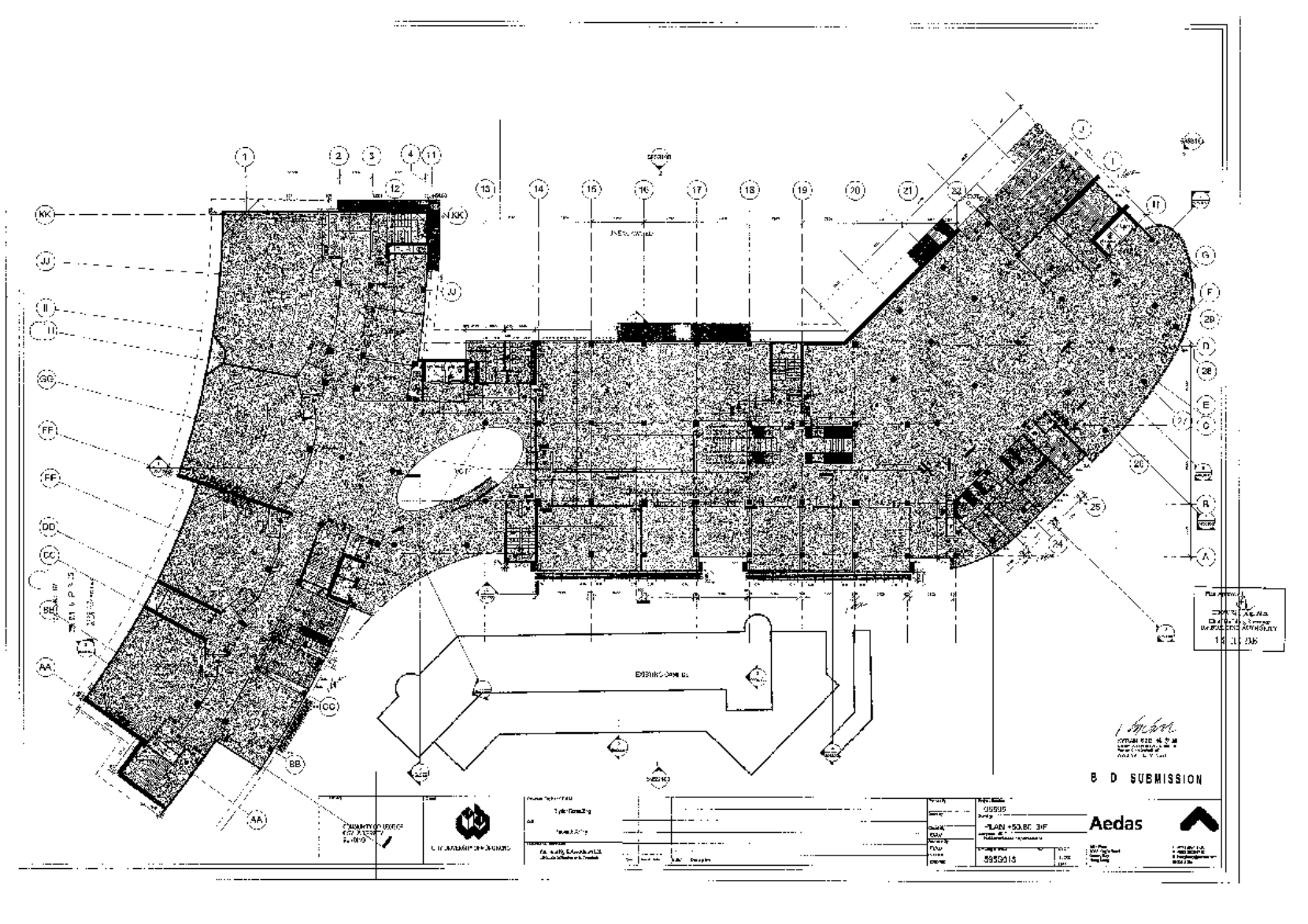
View
Modelling
Drafting
Rendering
Site

Ready NUM

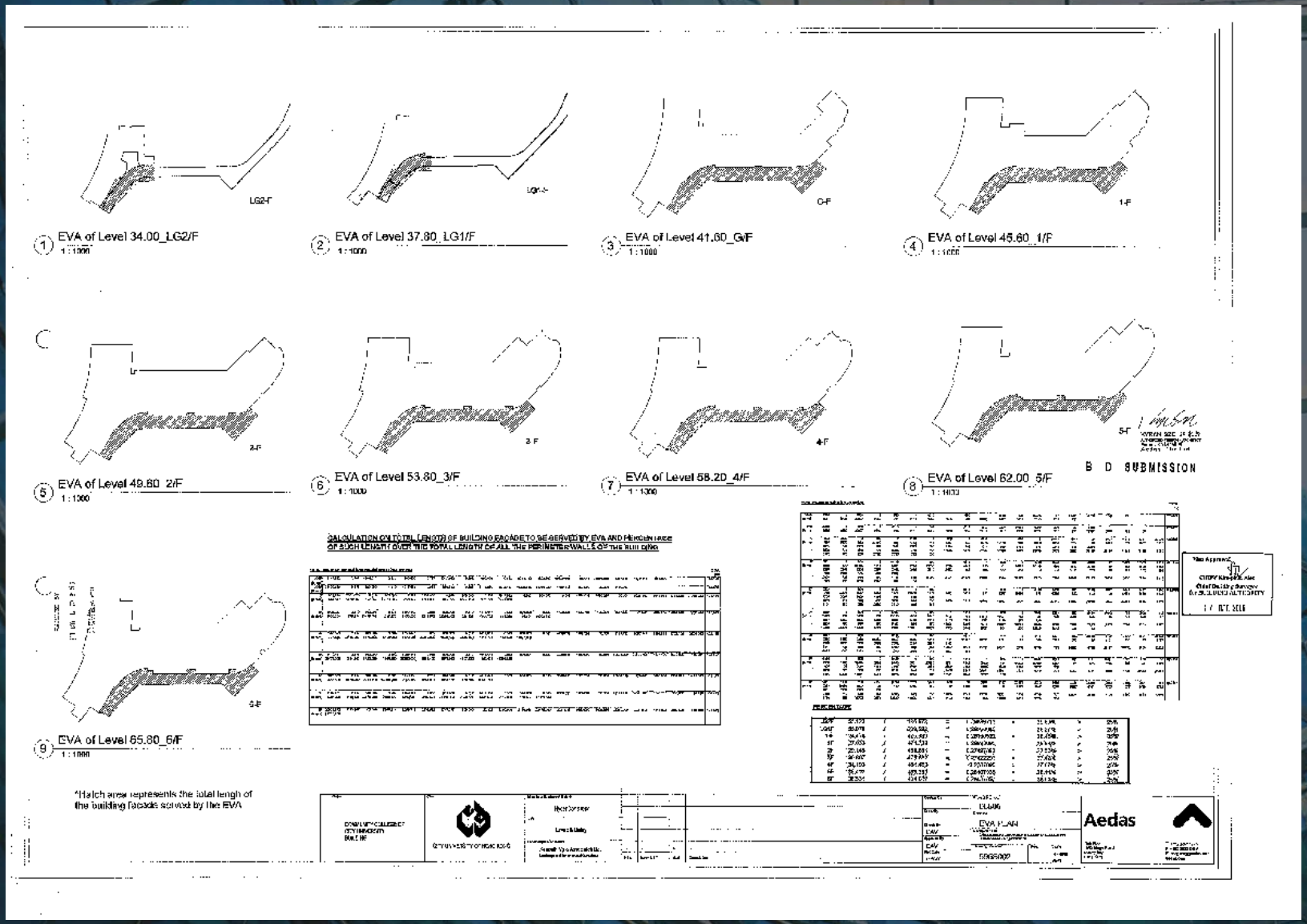
Use of Building Information Modeling (BIM)

1. Design visualization
2. Drawing Productions
3. Services Co-ordination and Clash detection with other disciplines
4. Quantity taking and preparation of Tender Document
5. **Automated Statutory Submission** 確認申請図書作成の自動化
6. Scientific analysis of different environmental aspects
7. Supply Chain Integration with the manufacturing and production
8. Complex Geometry

STATUTORY SUBMISSION



STATUTORY SUBMISSION



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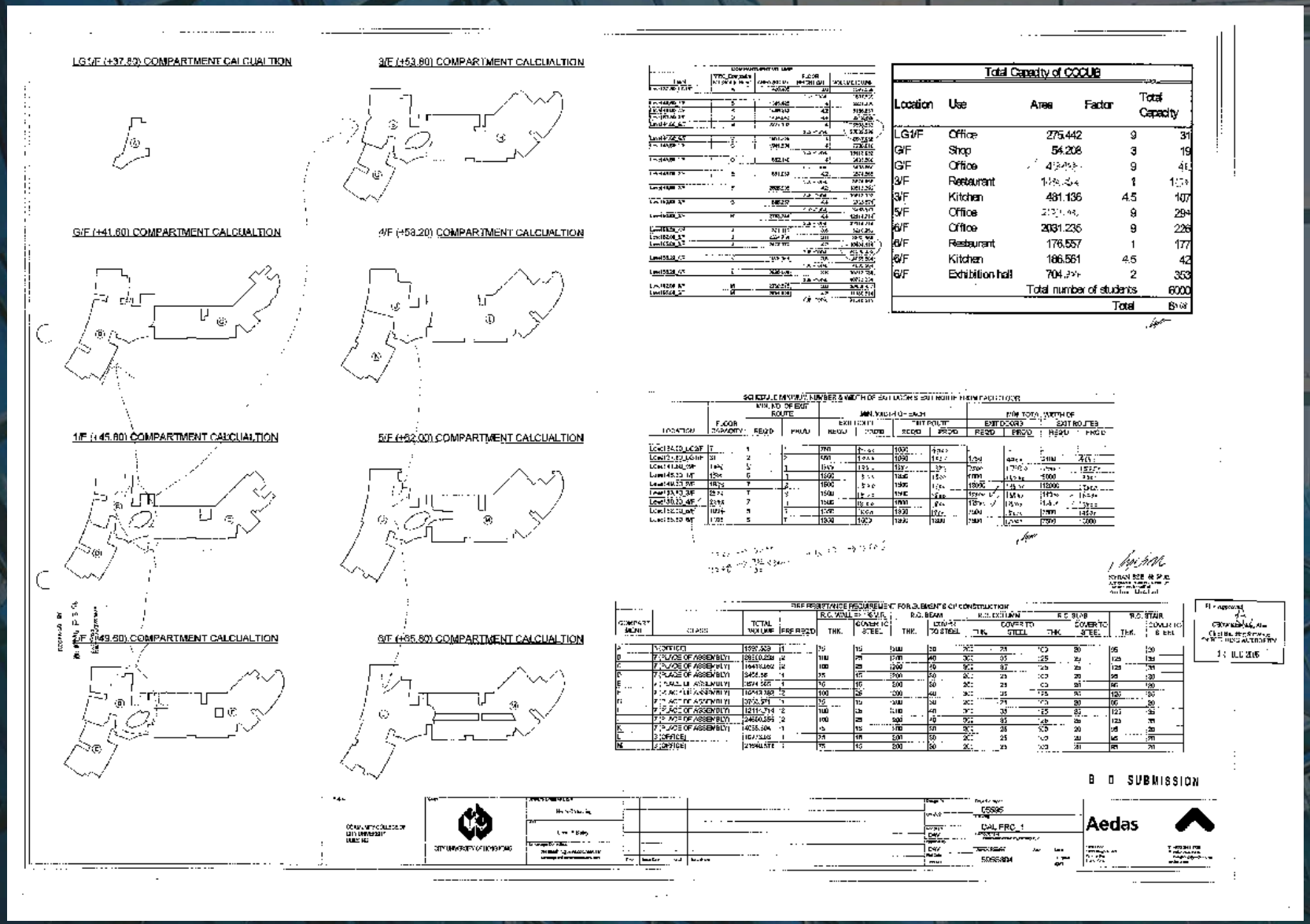
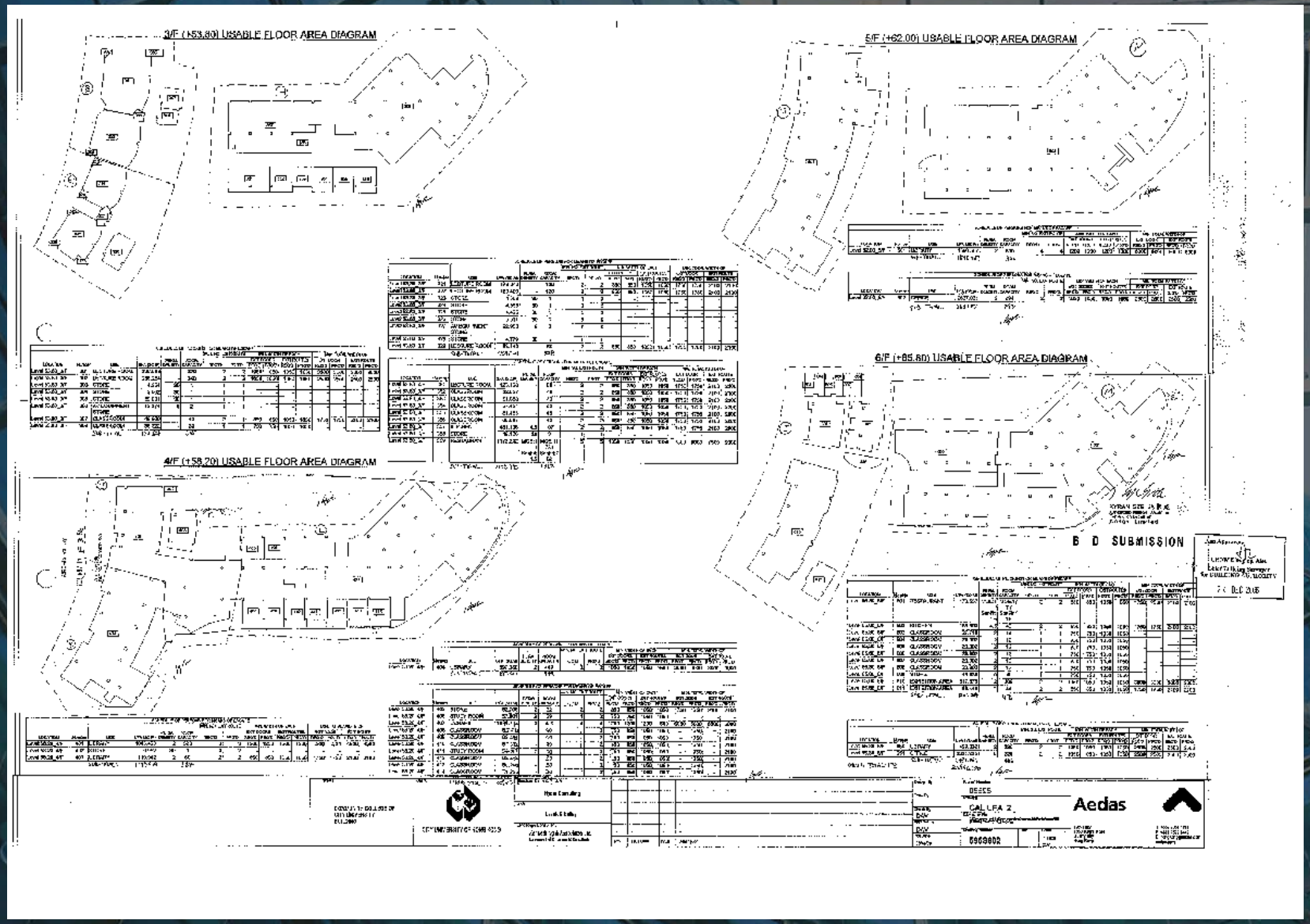
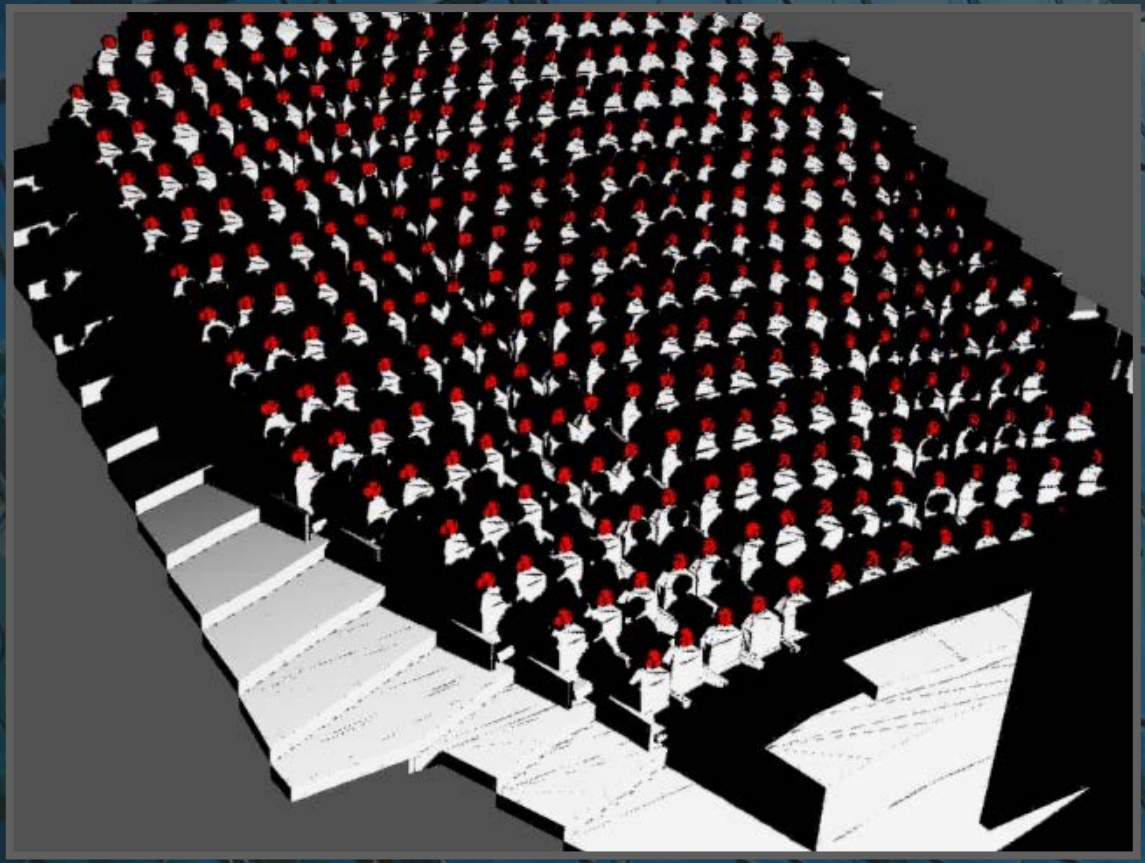


STATUTORY SUBMISSION

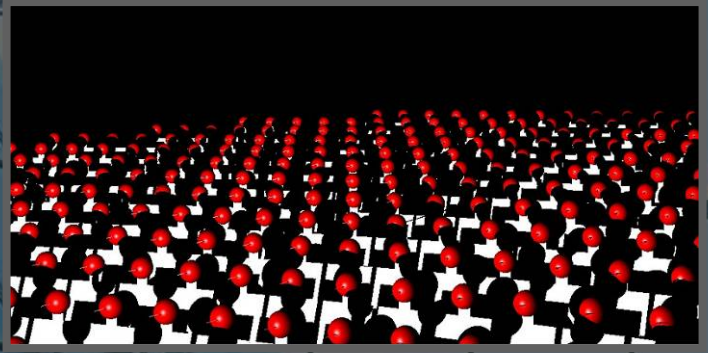


Use of Building Information Modeling (BIM)

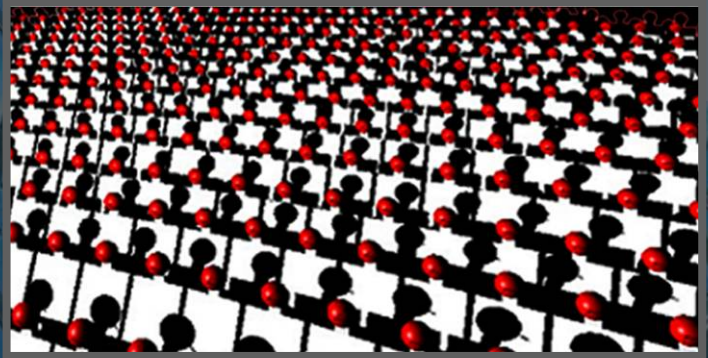
1. Design visualization
2. Drawing Productions
3. Services Co-ordination and Clash detection with other disciplines
4. Quantity taking and preparation of Tender Document
5. Automated Statutory Submission
6. **Scientific analysis of different environmental aspects** 様々な環境解析
7. Supply Chain Integration with the manufacturing and production
8. Complex Geometry



Radiating Light Method



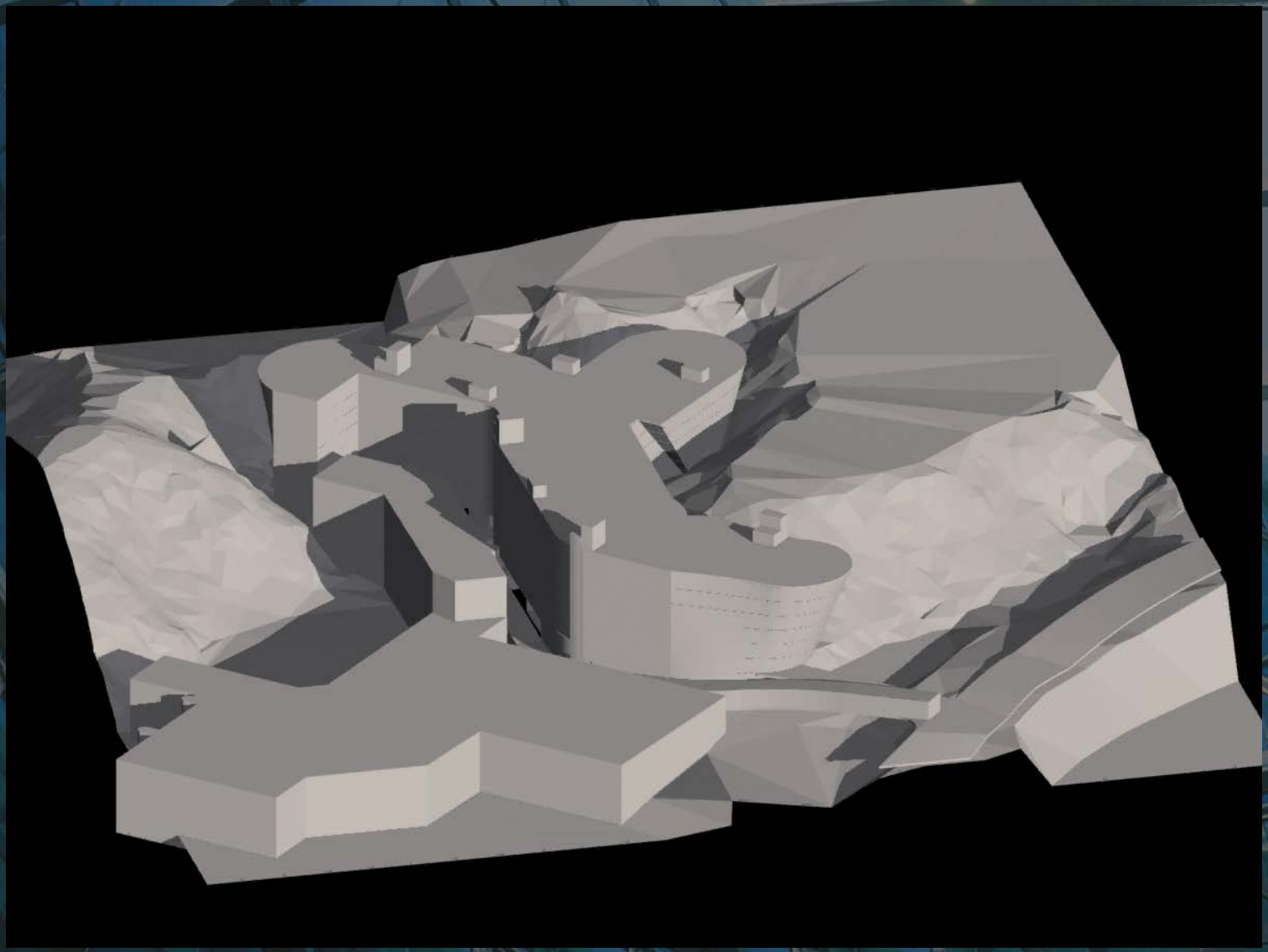
Unsatisfactory sightlines



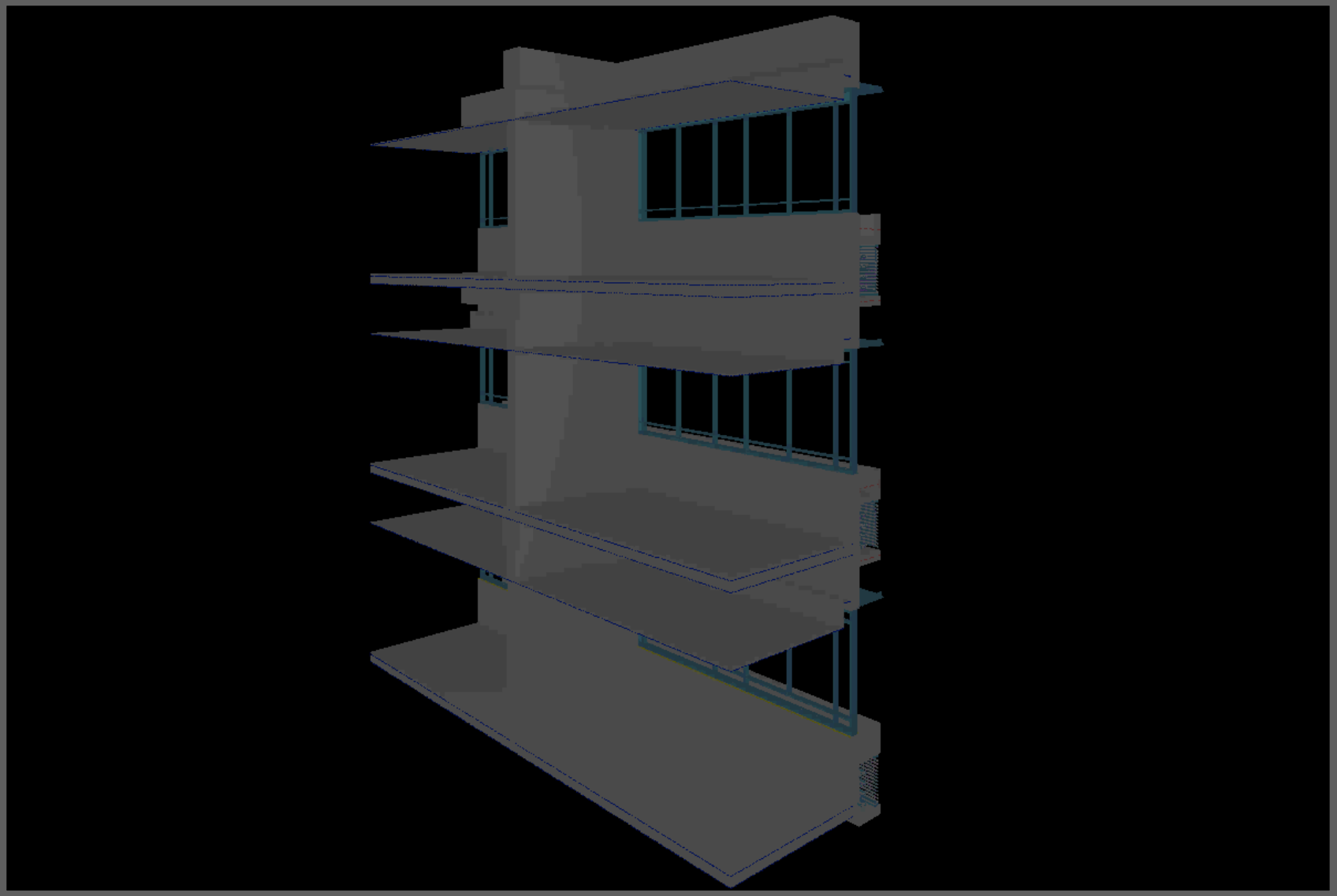
Satisfactory sightlines

SIGHTLINE STUDIES

ANALYSIS



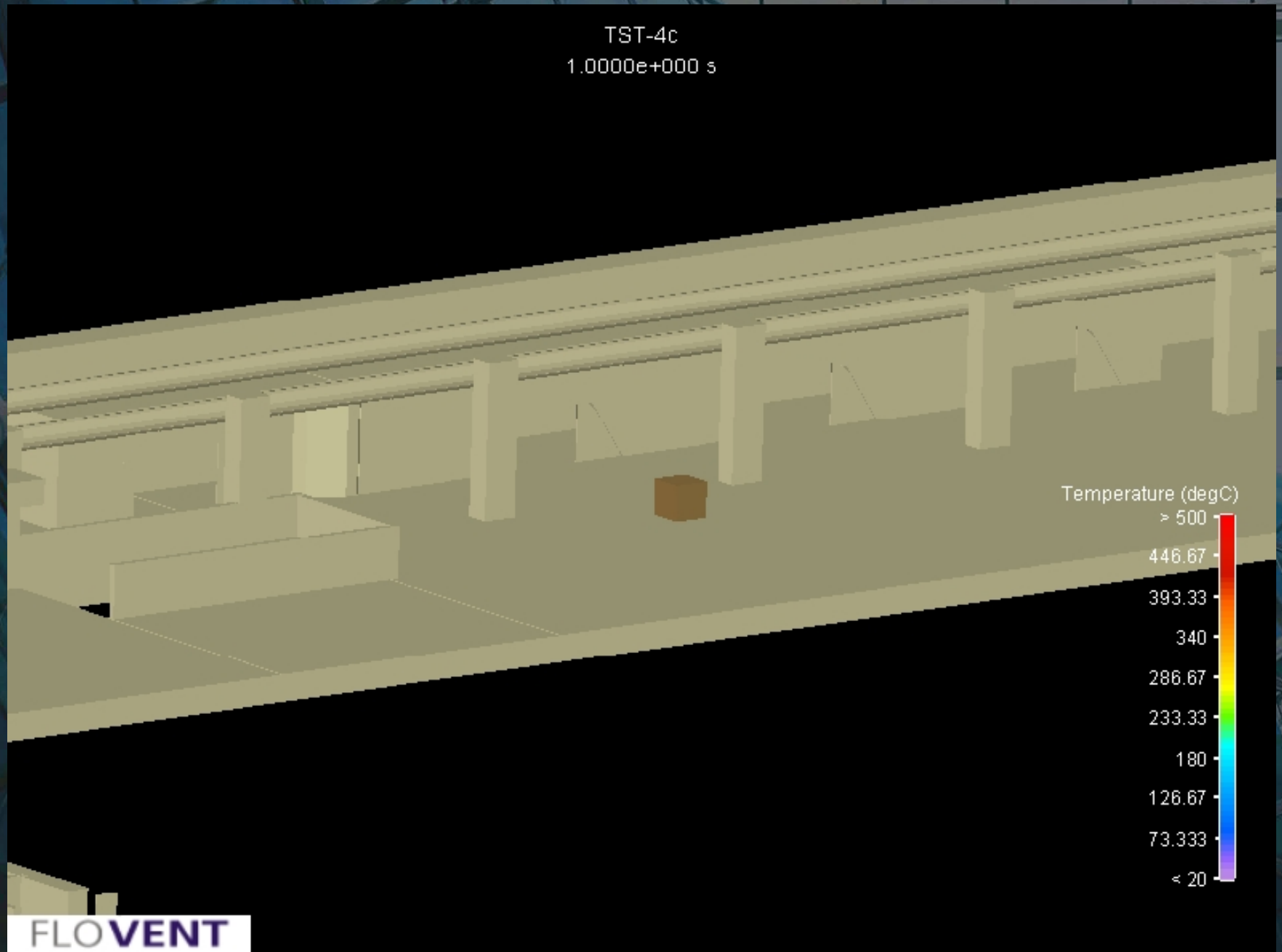
SUN STUDY



FAÇADE SOLAR STUDY

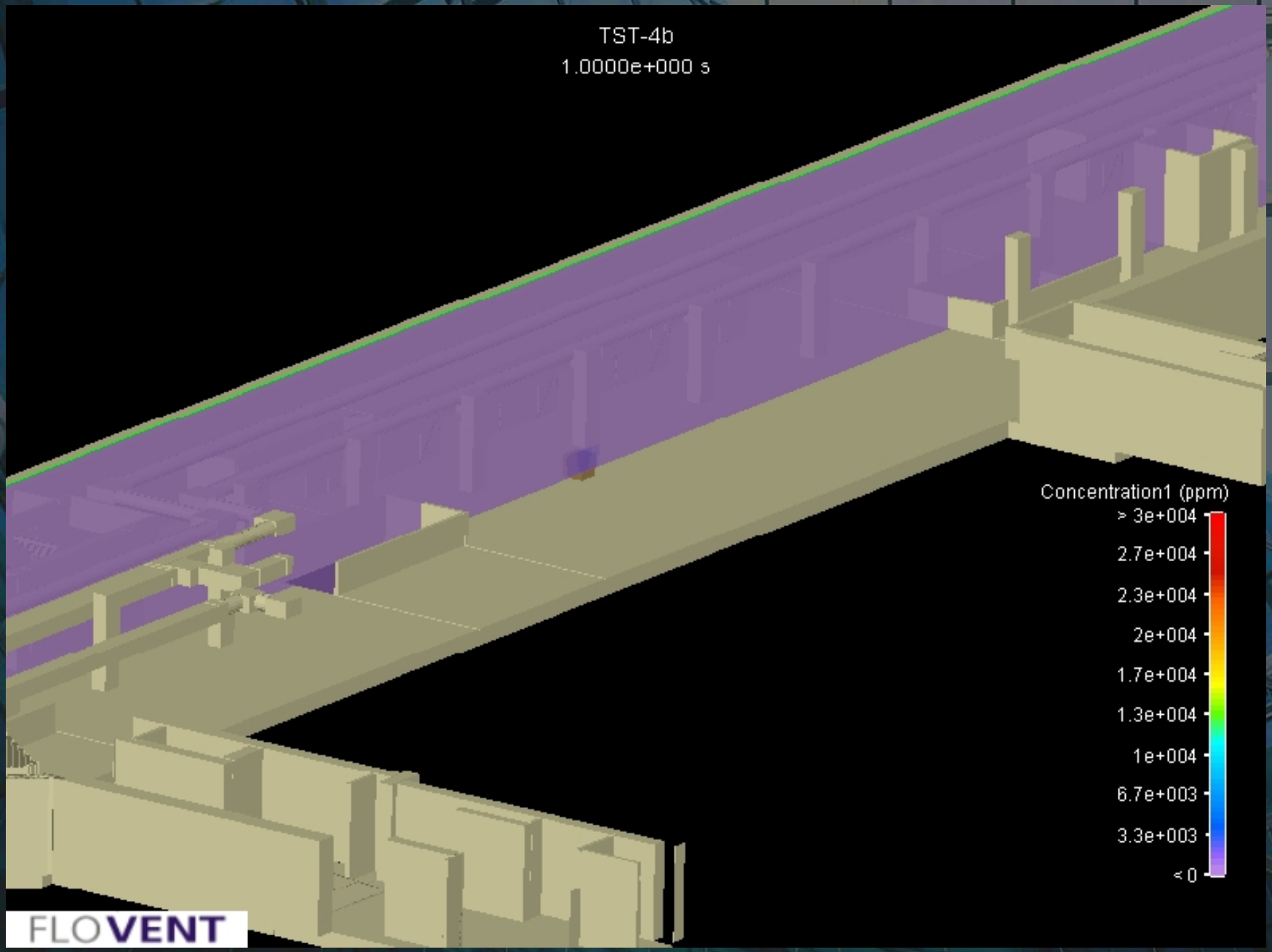
21/12/2006 7:00am – 6:00pm

ANALYSIS

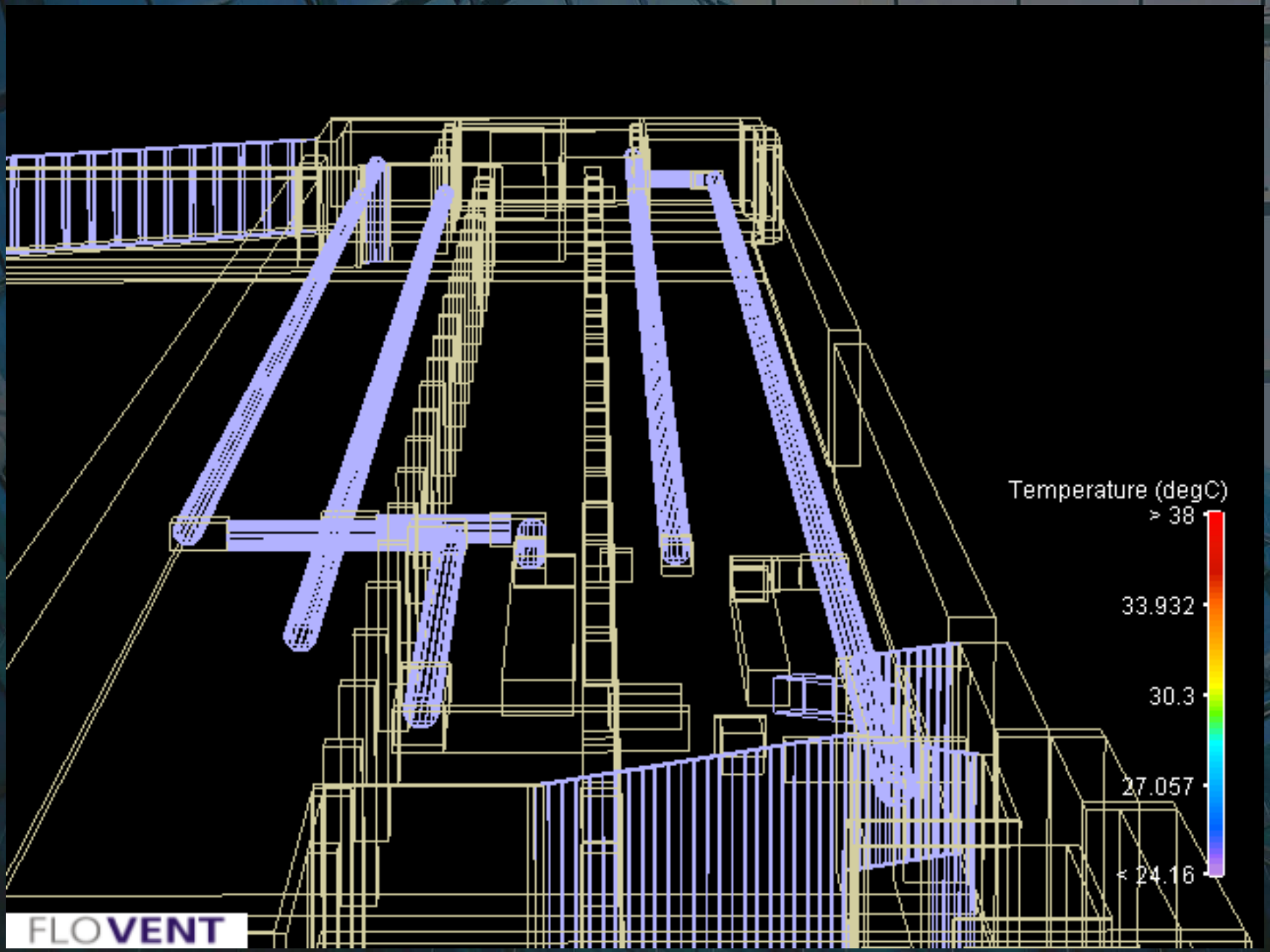


FLOVENT

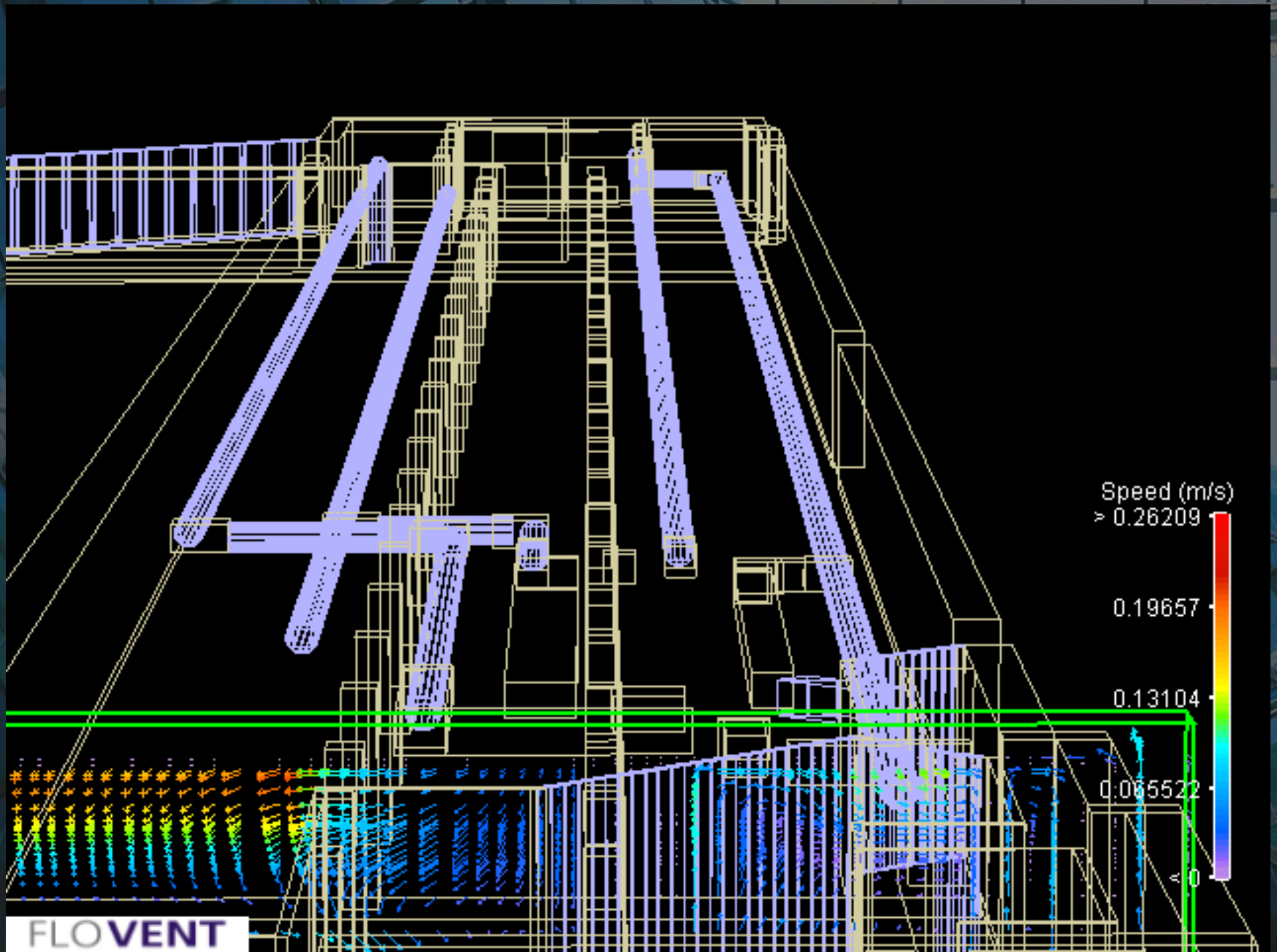
ANALYSIS


TST-4b
1.0000e+000 s
Concentration1 (ppm)
> 3e+004
2.7e+004
2.3e+004
2e+004
1.7e+004
1.3e+004
1e+004
6.7e+003
3.3e+003
< 0
FLOVENT

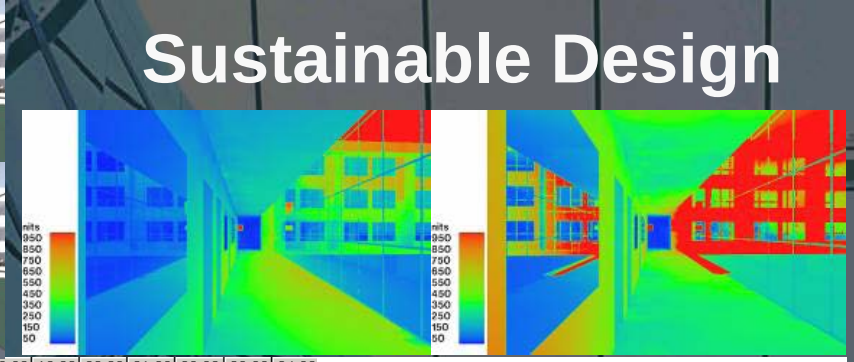
ANALYSIS



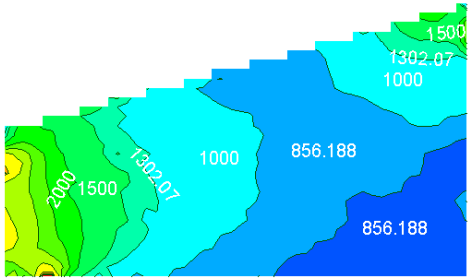
ANALYSIS

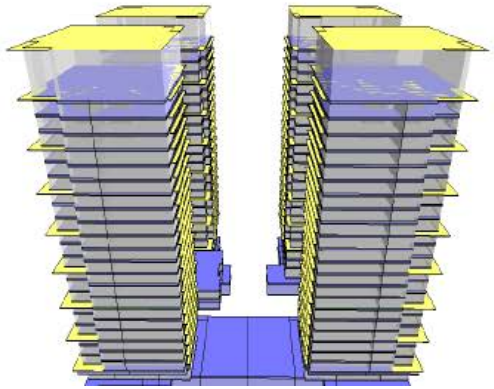


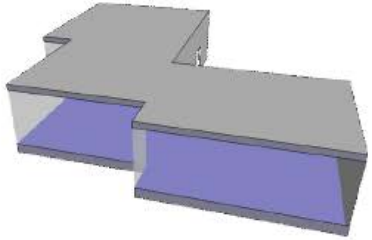
Sustainable Design

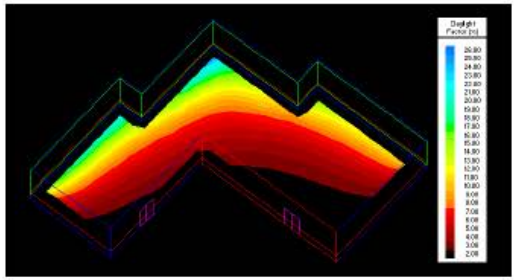


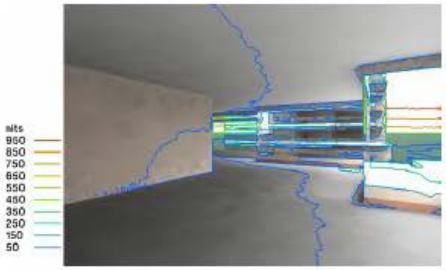
Month	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00
Jan									100.0	99.7	100.0	100.0	100.0	84.6	38.8	5.2								
Feb								100.0	100.0	100.0	100.0	100.0	100.0	98.7	73.9	32.7	3.0							
Mar							100.0	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	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	96.5	0.0	0.0	0.0	0.0				
Jul					0.0	0.0	0.0	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				
Aug					0.0	0.0	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	92.2	64.0	30.8	0.0						
Oct							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	77.0	31.7	1.8								
Dec									100.0	95.1	93.6	100.0	93.0	67.6	22.2									71.82

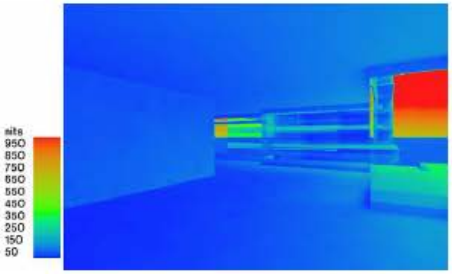


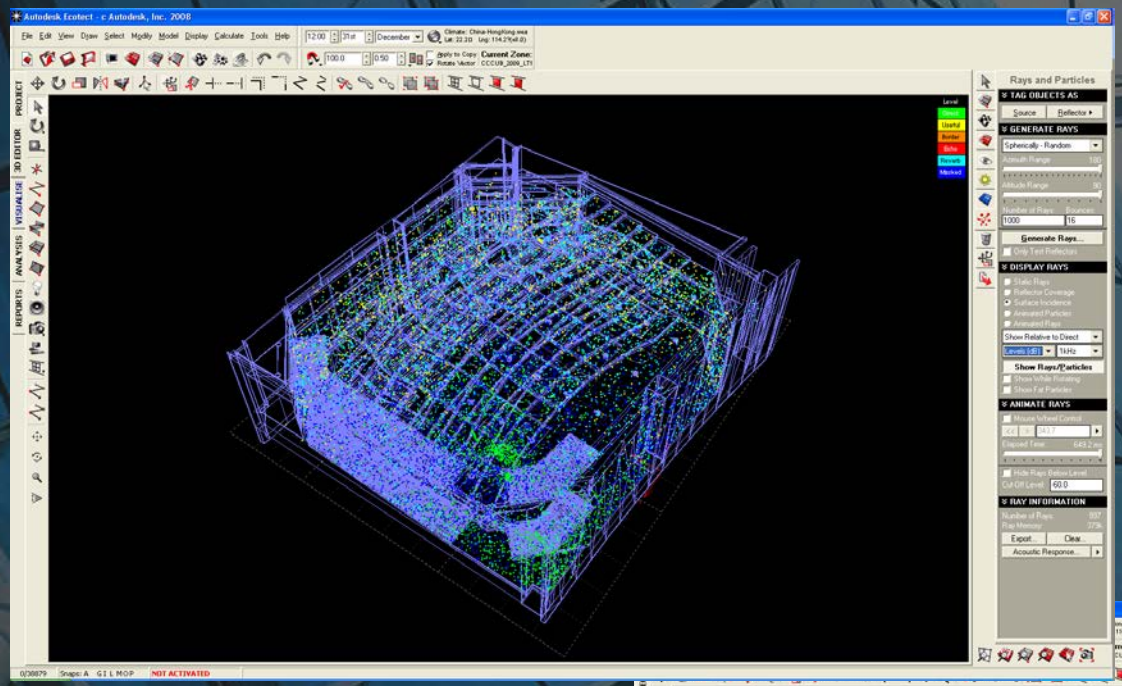


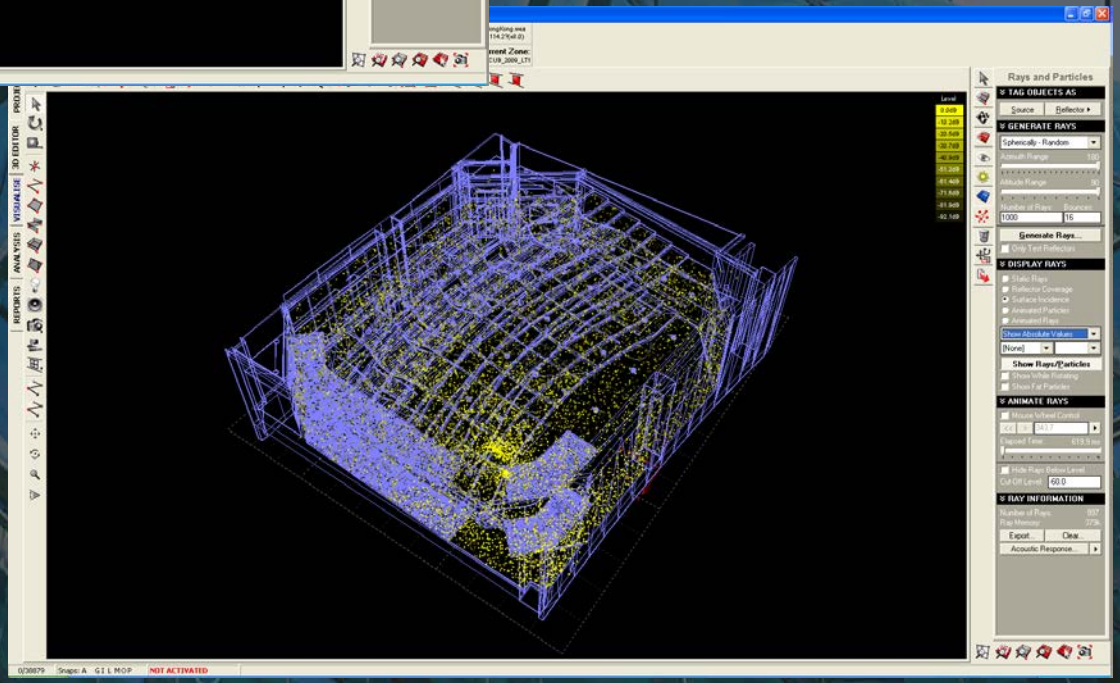









Autodesk Ecotect - © Autodesk, Inc. 2008
Rays and Particles
TAG OBJECTS AS
GENERATE RAYS
DISPLAY RAYS
ANIMATE RAYS
RAY INFORMATION
NOT ACTIVATED


Rays and Particles
TAG OBJECTS AS
GENERATE RAYS
DISPLAY RAYS
ANIMATE RAYS
RAY INFORMATION
NOT ACTIVATED

Use of Building Information Modeling (BIM)

1. Design visualization
2. Drawing Productions
3. Services Co-ordination and Clash detection with other disciplines
4. Quantity taking and preparation of Tender Document
5. Automated Statutory Submission
6. Scientific analysis of different environmental aspects
7. **Supply Chain Integration with the manufacturing and production**
   サプライヤとの連携
8. Complex Geometry

Use of Building Information Modeling (BIM)

1. Design visualization
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4. Quantity taking and preparation of Tender Document
5. Automated Statutory Submission
6. Scientific analysis of different environmental aspects
7. Supply Chain Integration with the manufacturing and production
8. **Complex Geometry** 複雑な形状を実現可能

Autodesk Revit Building 9.1 - [Round tube.rvt - 3D View: {3D}]

File Edit View Modelling Drafting Site Tools Settings Window Help

Move Copy Rotate Array Mirror Group

Plane Demolish Align Split Trim Offset

ElvisBlend | Moves With Nearby Elements | Pick Host | Related Hosts | Edit Family | Activate Dimensions | Press + Drag

Basics
- Modify
- Wall
- Door
- Window
- Component
- Room
- Roof »
- Floor
- Grid
- Lines
- Ref Plane
- Dimension
- Section
- Level
- Text

Round tube.rvt...
- Views (all)
  - Floor Plans
    - Level 1
    - Level 2
    - Level 3
    - Level 4
    - Level 5
    - Level 6
    - Level 7
    - Level 8
    - Level 9
    - Level 10
    - Level 11
    - Level 12
    - Level 13
    - Level 14
    - Level 15
    - Level 16
    - Level 17
    - Level 18
    - Level 19
    - Level 20
    - Level 21
    - Level 22
    - Level 23
    - Level 24
    - Level 25
    - Level 26
    - Level 27
    - Level 28
    - Level 29
    - Level 30
    - Site
  - Ceiling Plans
    - Level 1
    - Level 2
  - 3D Views
    - 3D View 1
    - 3D View 2
    - {3D}
  - Elevations (Build
    - East
    - North
    - South
    - West

Element Properties

Family: ElvisBlend | Load...

Type: ElvisBlend | Edit / New...

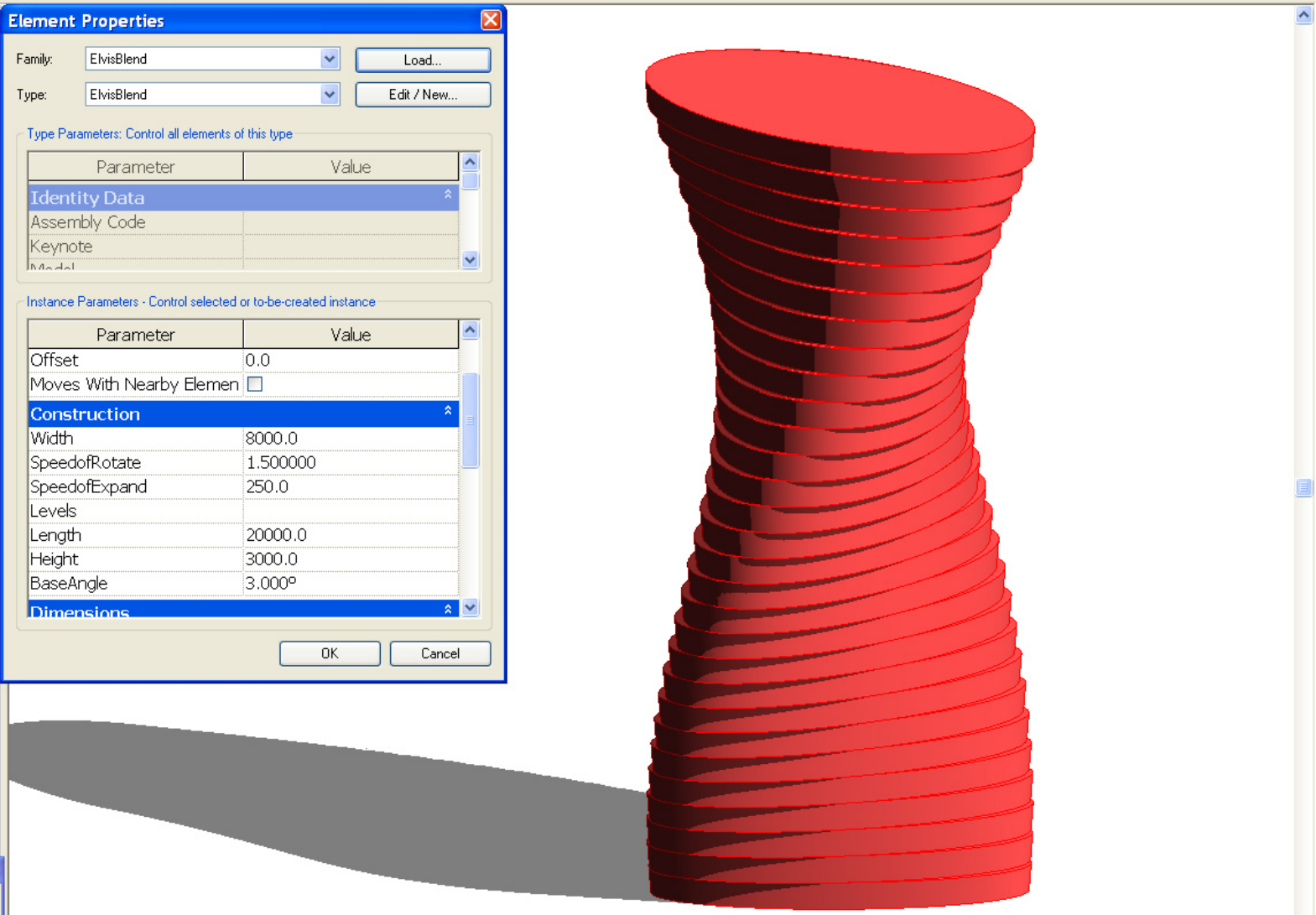
Type Parameters: Control all elements of this type

Parameter	Value
Identity Data	
Assembly Code	
Keynote	
Model	

Instance Parameters - Control selected or to-be-created instance

Parameter	Value
Offset	0.0
Moves With Nearby Elemen	☐
Construction	
Width	8000.0
SpeedofRotate	1.500000
SpeedofExpand	250.0
Levels	
Length	20000.0
Height	3000.0
BaseAngle	3.000°
Dimensions	

OK | Cancel



Dynamic View

Drag mouse to change view via indicated mode.

Scroll | Zoom (Ctrl) | Spin (Shift)

Wheel zooms. Without dialog use middle button.

Examine

1 : 100

Hold button and move mouse to Scroll the view. Hold Ctrl key to Zoom. Hold Shift key to Spin.

start | Control Panel | 20070107 Shunde Re... | Autodesk Revit Buildi... | Adobe Photoshop | EN | 69% | 9:49 AM

Autodesk Revit Building 9.1 - [Round tube.rvt - 3D View: {3D}]

File Edit View Modelling Drafting Site Tools Settings Window Help

Move Copy Rotate Array Mirror Group

Plane Demolish Align Split Trim Offset

ElvisBlend | Moves With Nearby Elements | Pick Host | Related Hosts | Edit Family | Activate Dimensions | Press + Drag

Basics
- Modify
- Wall
- Door
- Window
- Component
- Room
- Roof »
- Floor
- Grid
- Lines
- Ref Plane
- Dimension
- Section
- Level
- Text

View
Modelling
Drafting
Rendering
Site

Round tube.rvt...
- Views (all)
  - Floor Plans
    - Level 1
    - Level 2
    - Level 3
    - Level 4
    - Level 5
    - Level 6
    - Level 7
    - Level 8
    - Level 9
    - Level 10
    - Level 11
    - Level 12
    - Level 13
    - Level 14
    - Level 15
    - Level 16
    - Level 17
    - Level 18
    - Level 19
    - Level 20
    - Level 21
    - Level 22
    - Level 23
    - Level 24
    - Level 25
    - Level 26
    - Level 27
    - Level 28
    - Level 29
    - Level 30
    - Site
  - Ceiling Plans
    - Level 1
    - Level 2
  - 3D Views
    - 3D View 1
    - 3D View 2
    - {3D}
  - Elevations (Build
    - East
    - North
    - South
    - West
- Legends
- Schedules/Quan
  - Mass Schedule
  - Mass Schedule
  - Multi-Category S
  - Multi-Category S

Element Properties

Family: ElvisBlend | Load...

Type: ElvisBlend | Edit / New...

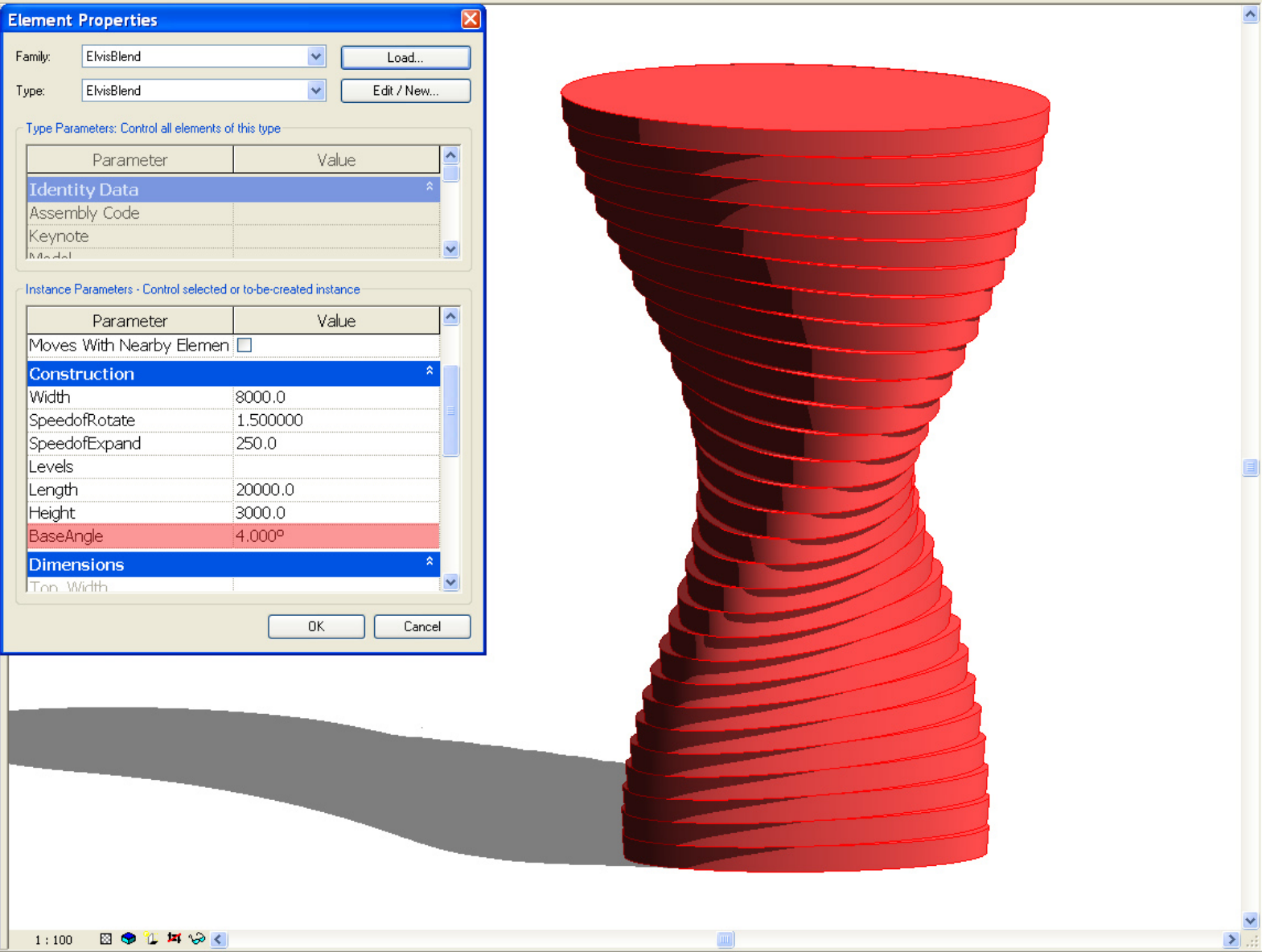
Type Parameters: Control all elements of this type

Parameter	Value
Identity Data	
Assembly Code	
Keynote	
Model	

Instance Parameters - Control selected or to-be-created instance

Parameter	Value
Moves With Nearby Elemen	☐
Construction	
Width	8000.0
SpeedofRotate	1.500000
SpeedofExpand	250.0
Levels	
Length	20000.0
Height	3000.0
BaseAngle	4.000°
Dimensions	
Top Width	

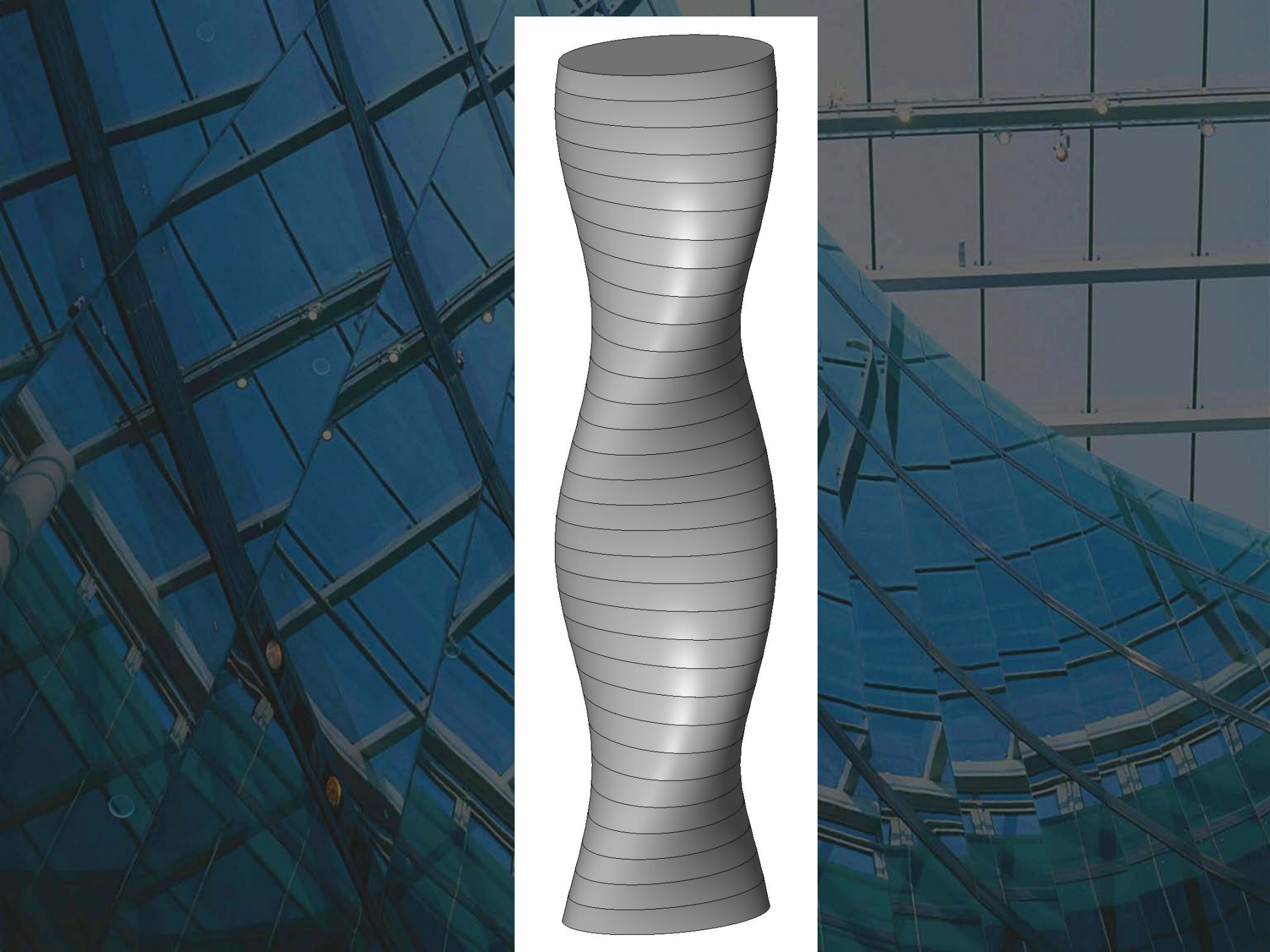
OK | Cancel



1 : 100

Click to select, TAB for alternates, CTRL adds, SHIFT unselects.

start | Control Panel | 20070107 Shunde Re... | Autodesk Revit Buildi... | Adobe Photoshop | EN | 74% | 9:55 AM



absoluteworld
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.

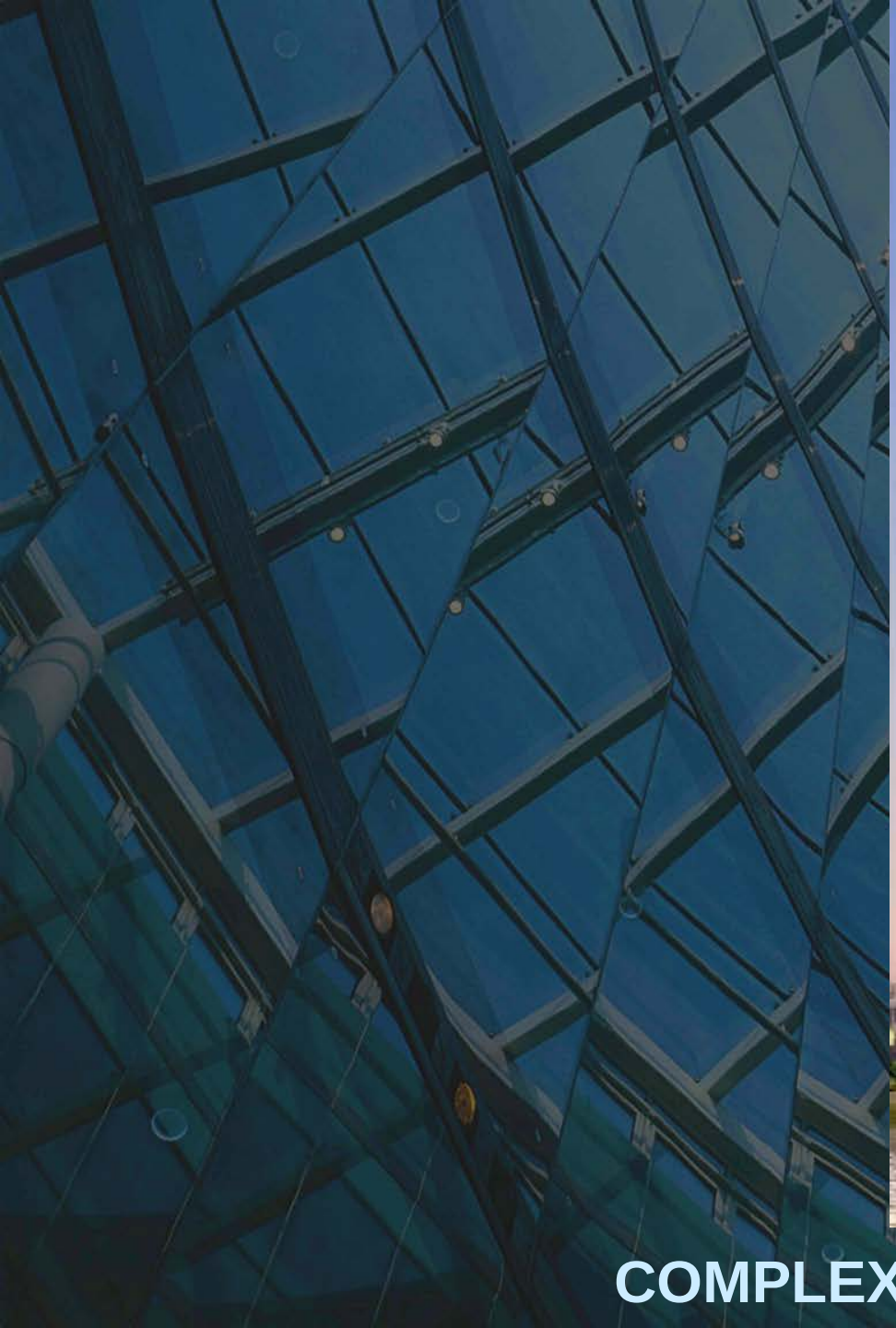
Commenting on the design, Ma says: "they talk to each other and harmonize with each other. There is a synergy between them, an aura which transcends each of the individual buildings to create a totally unique and original urban space."

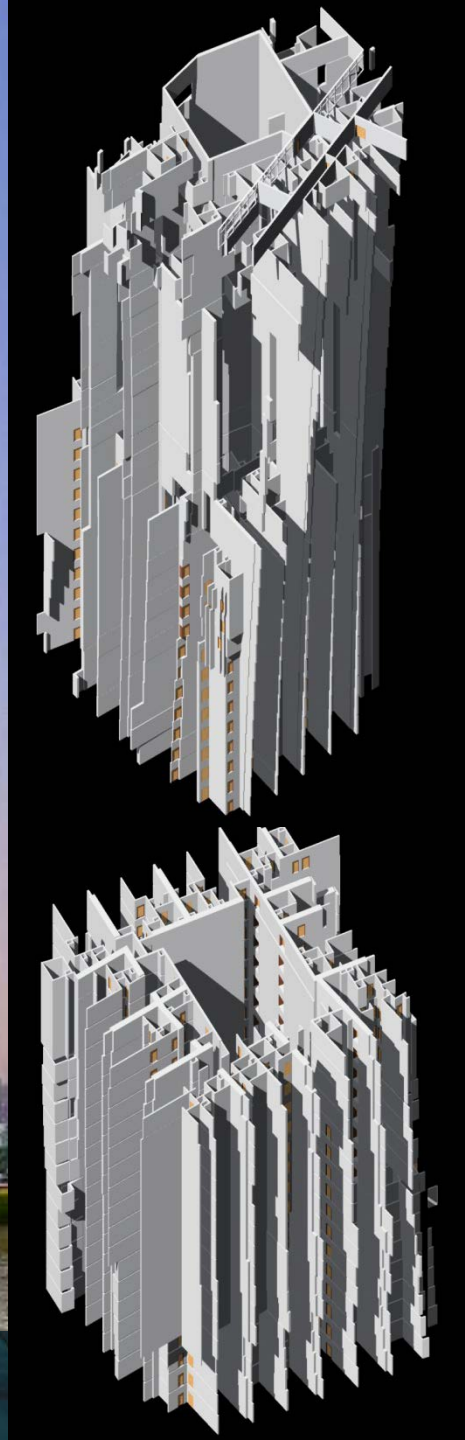
absoluteworld
BUILDING 1

MON. - THURS.: 12 P.M. - 7 P.M.
SAT. & SUN.: 11 A.M. - 6 P.M.
FRI.: CLOSED

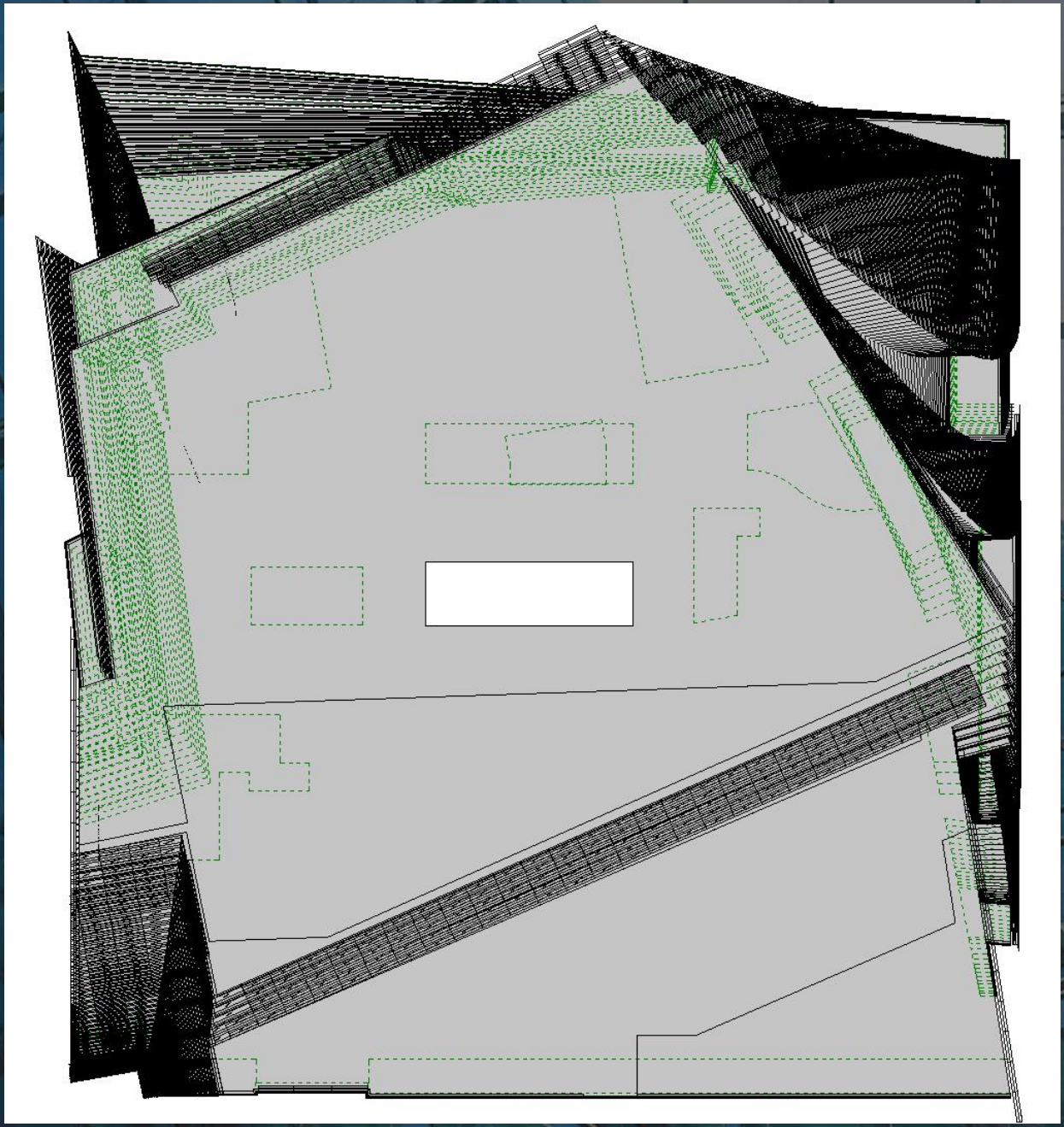
Program **Residential** Site Area **3,746 sqm**
Floor Area 858,855 sqm Building Height **304 m**

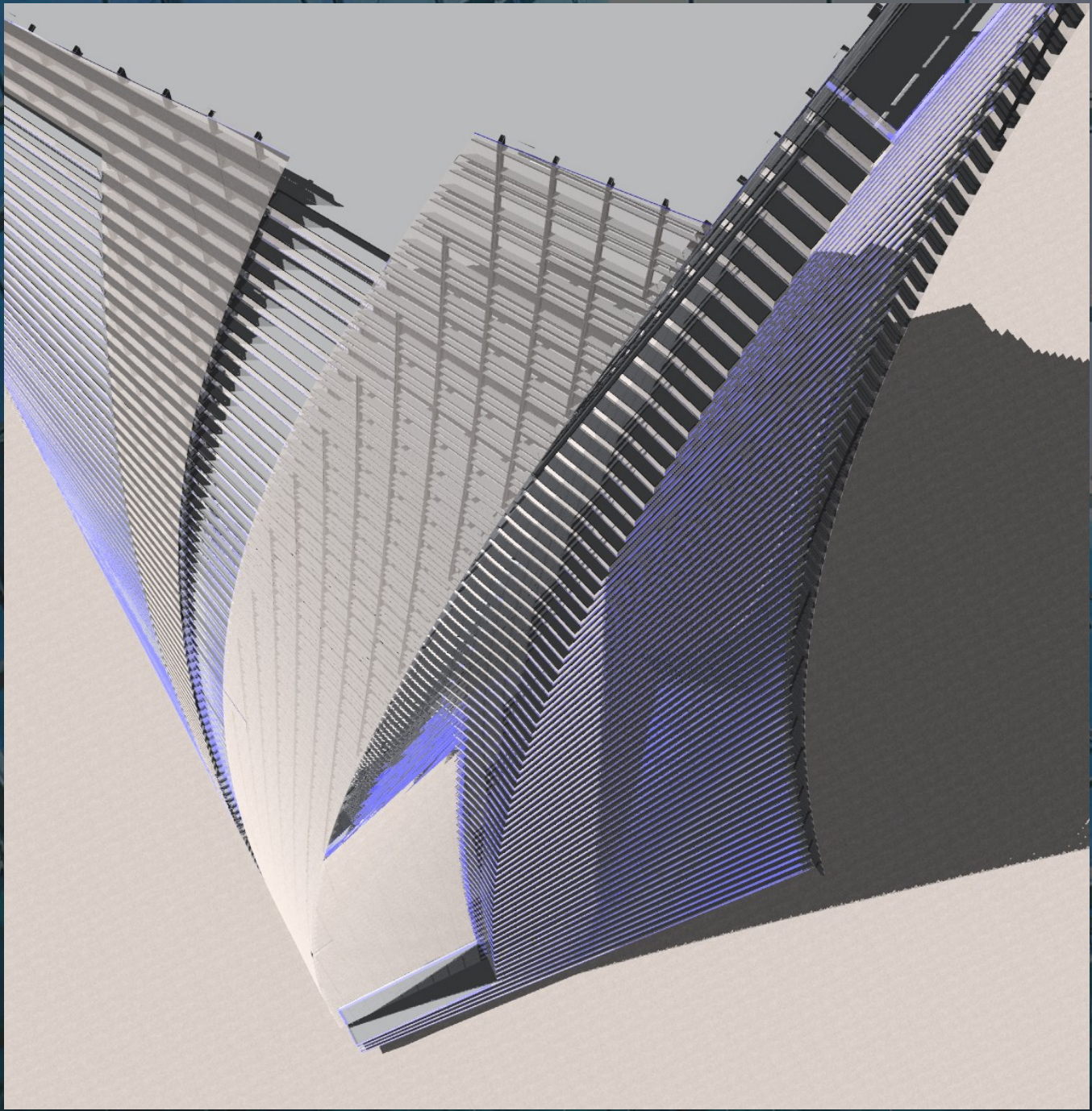
Dubai **Ocean Heights One**

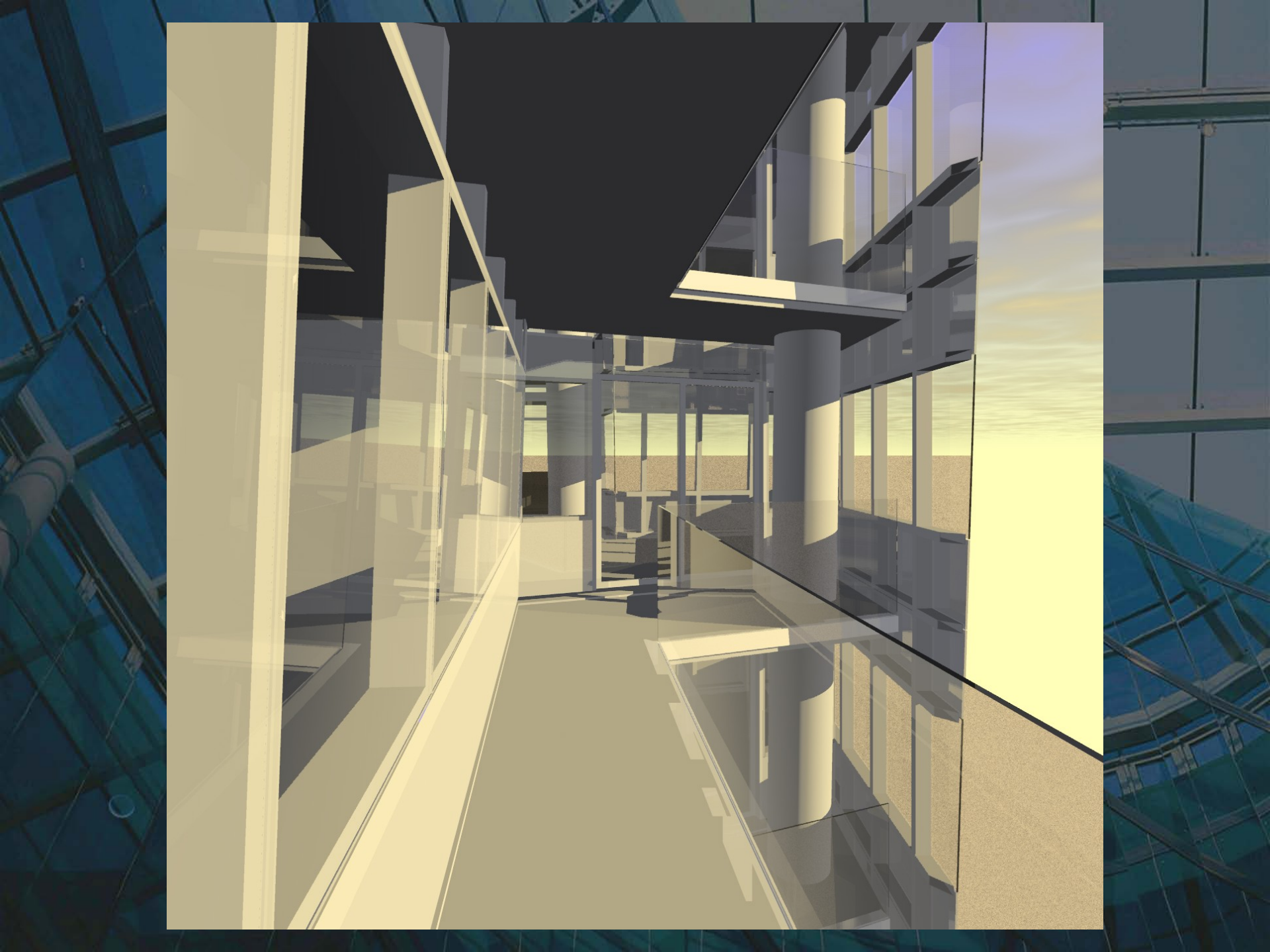


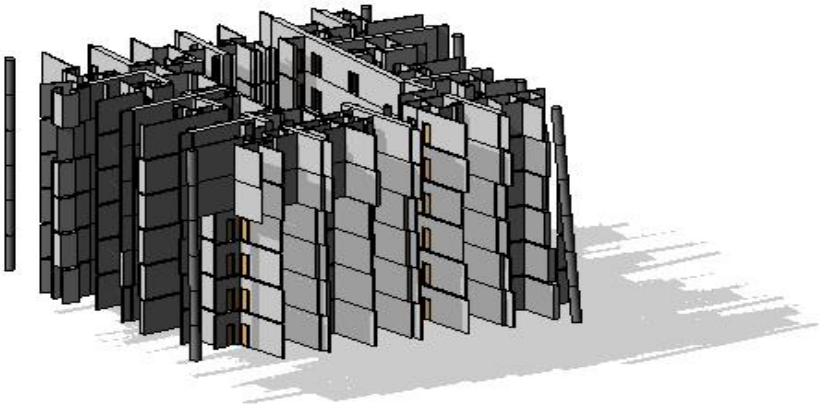


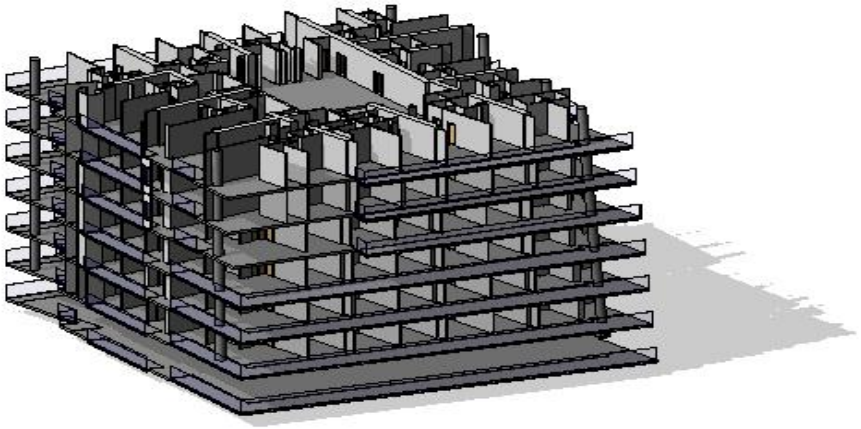
COMPLEX GEOMETRY

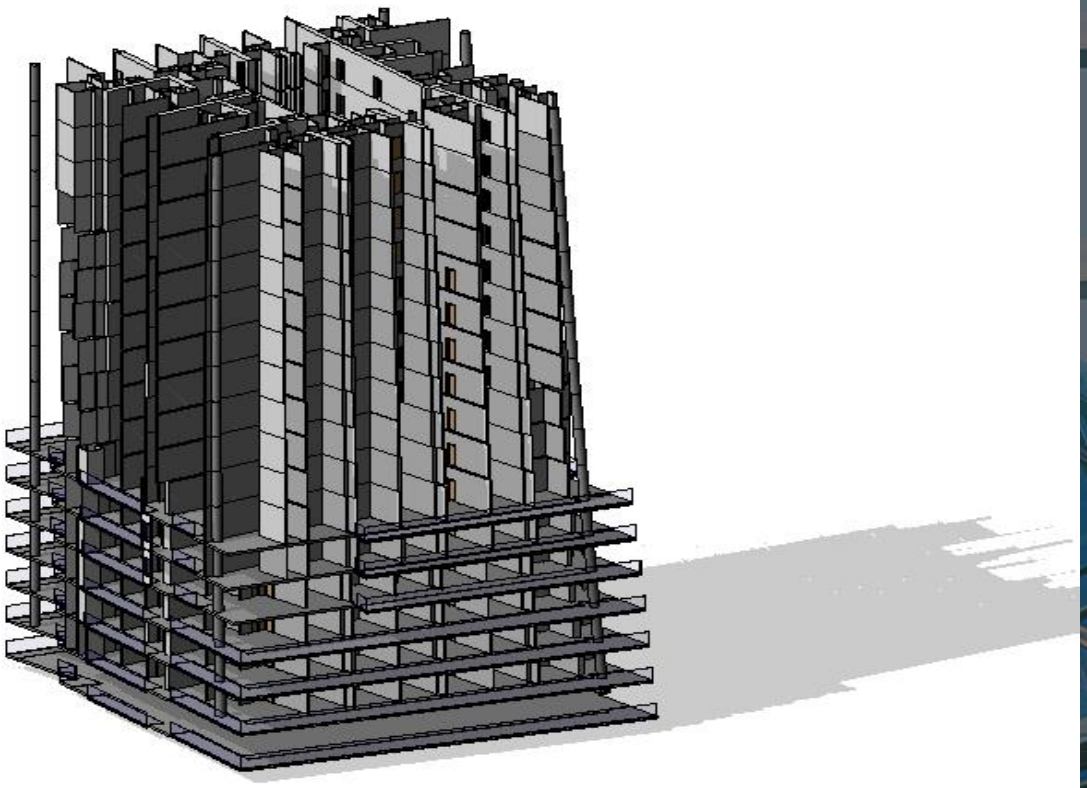


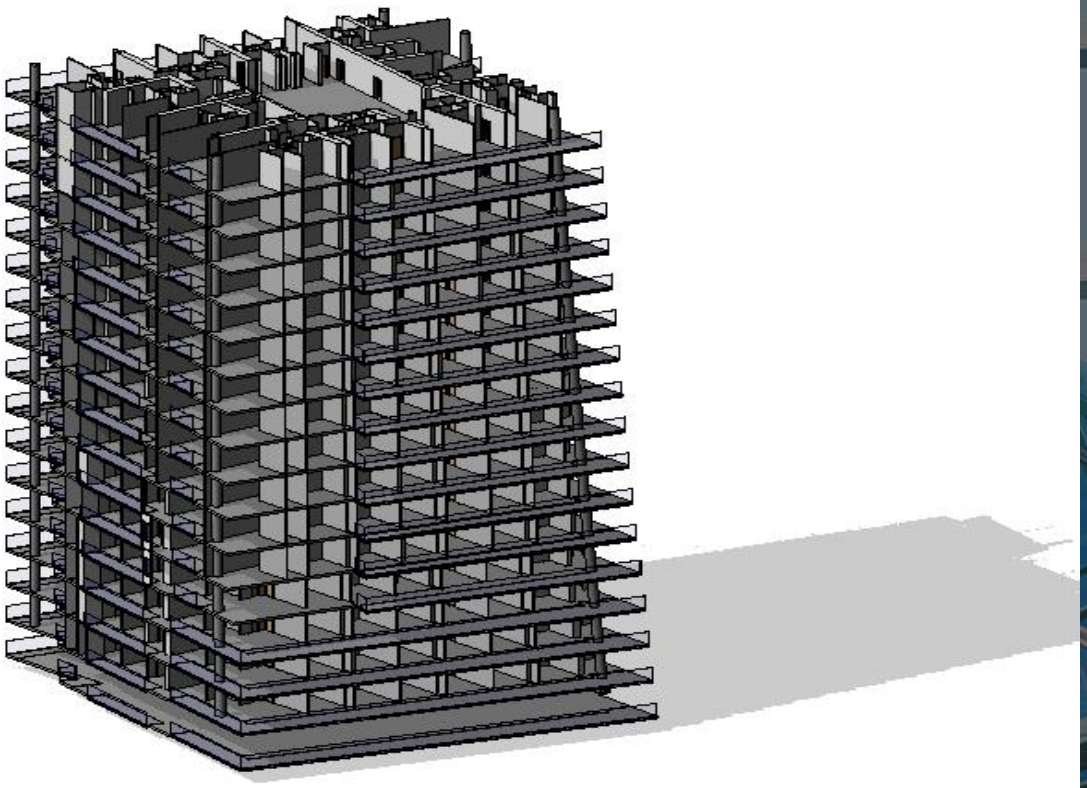


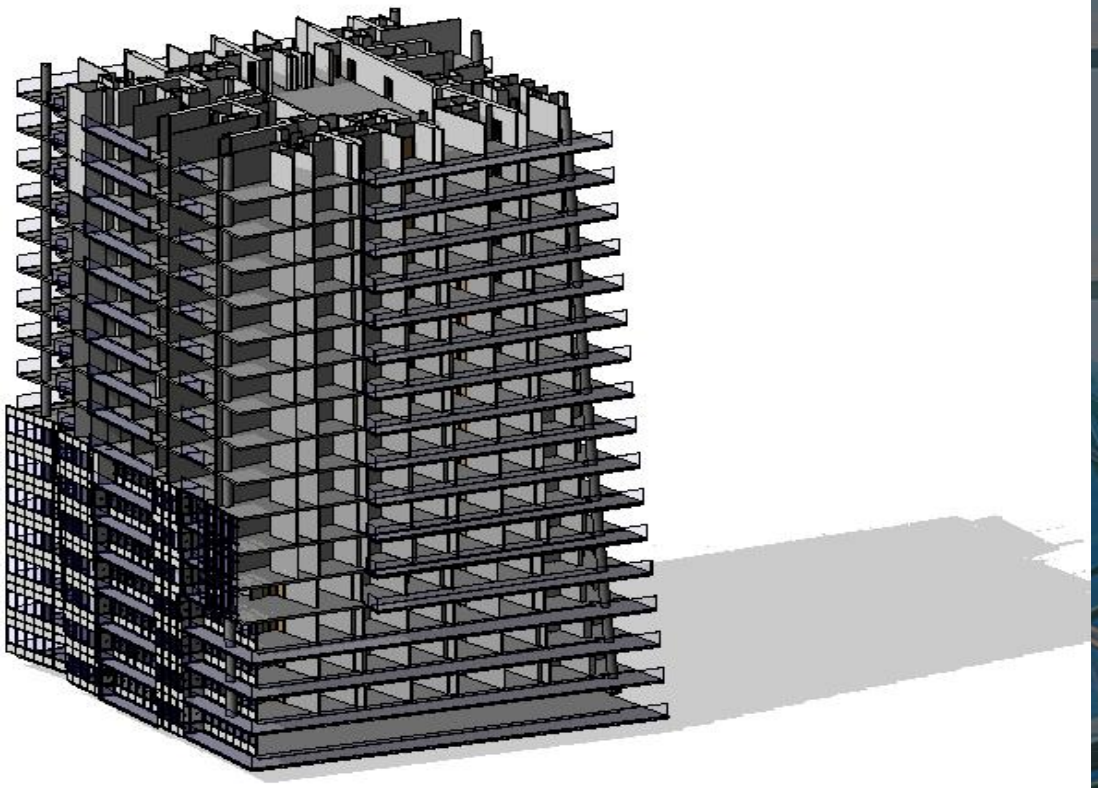


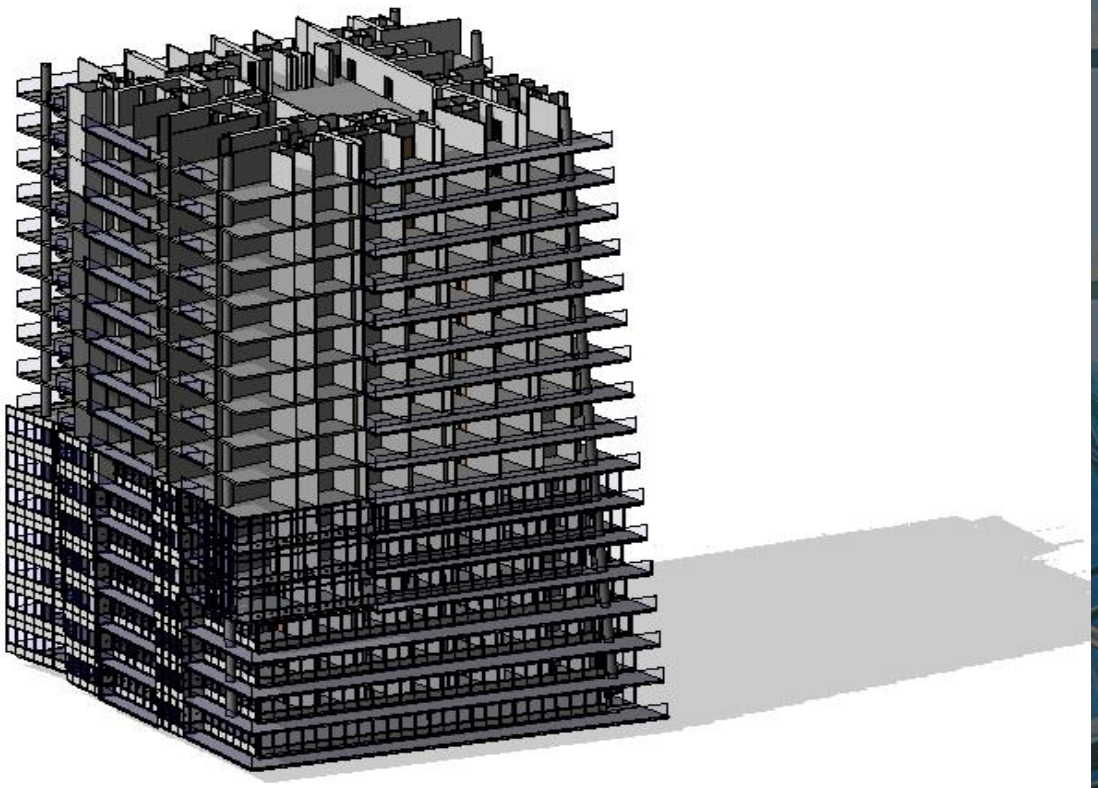


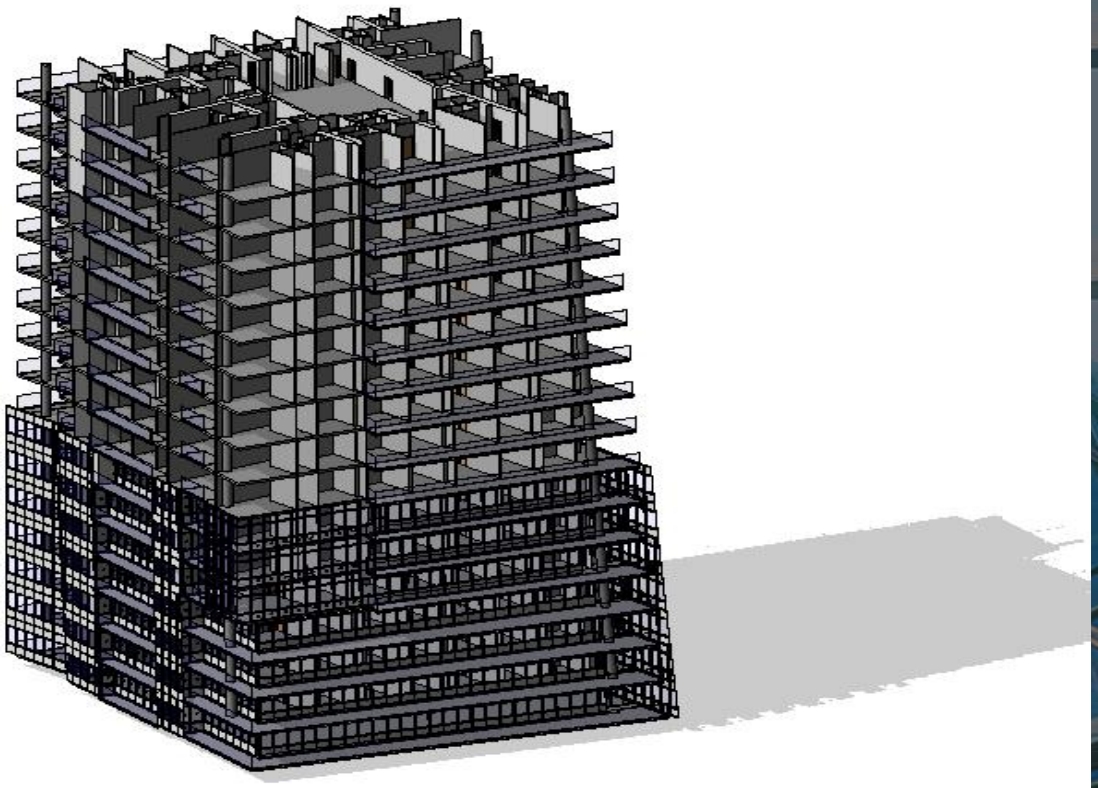


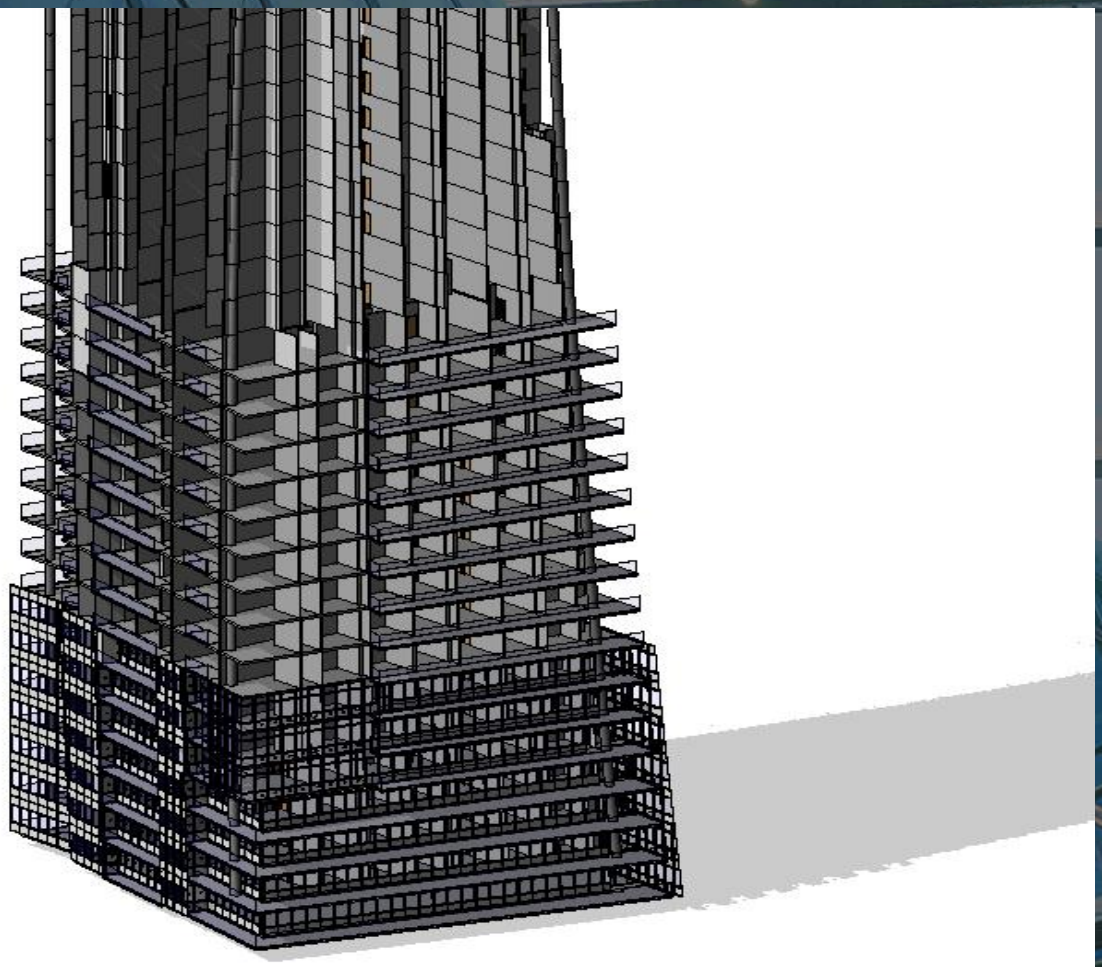


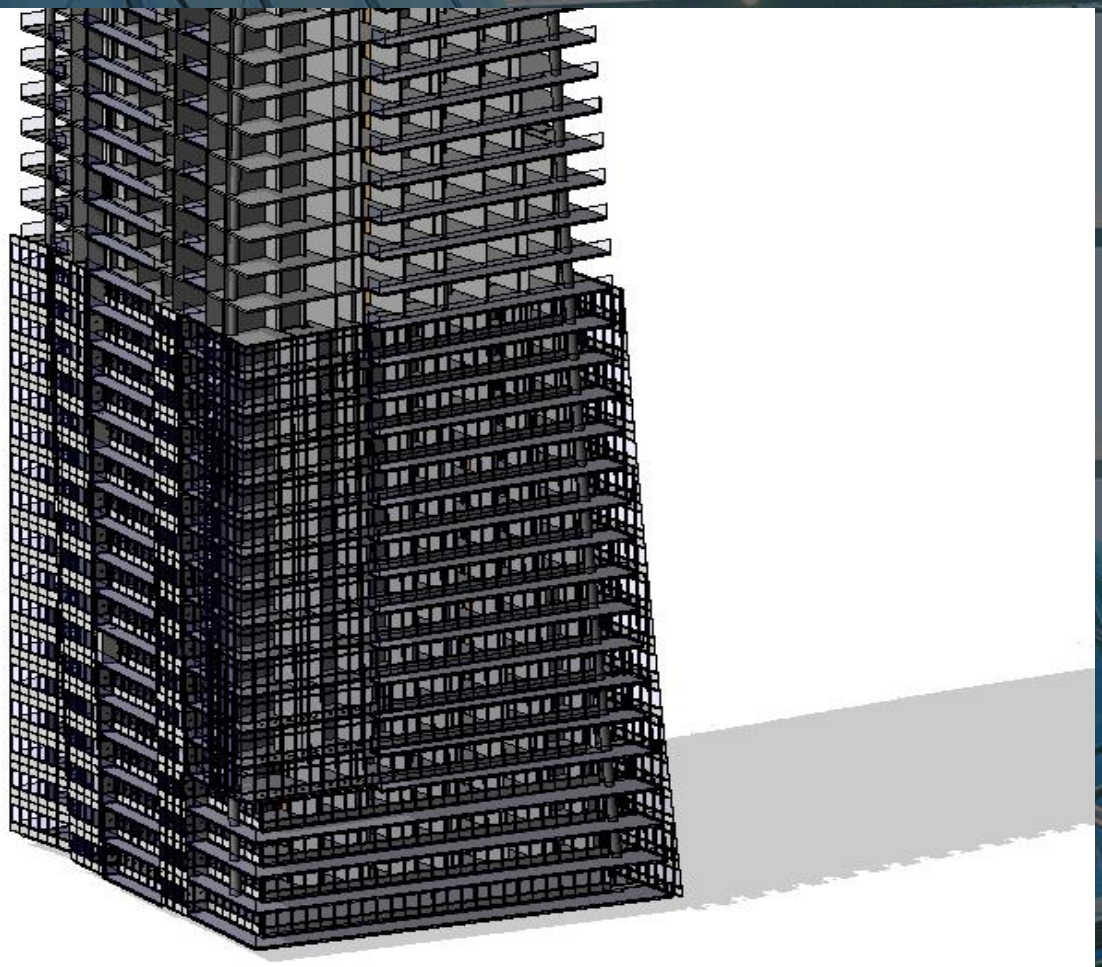


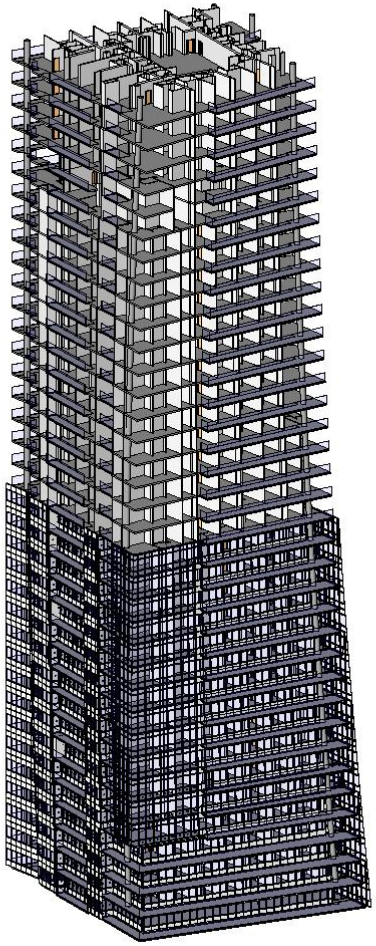


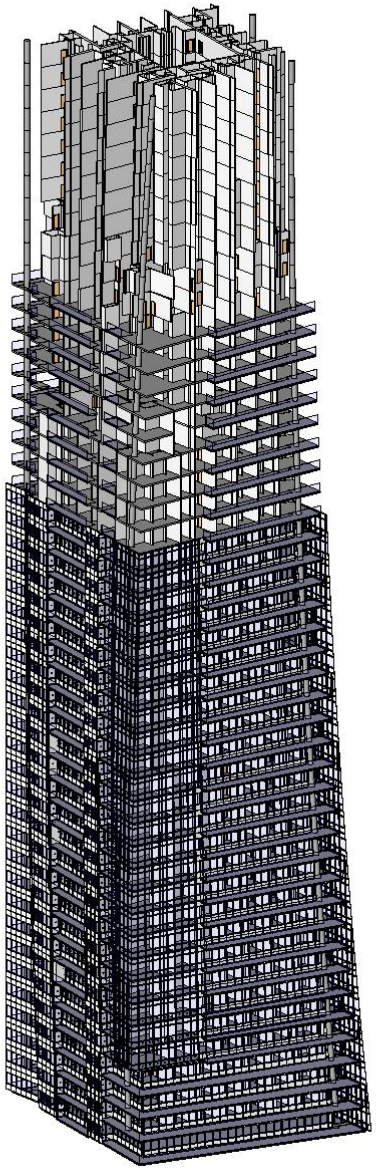


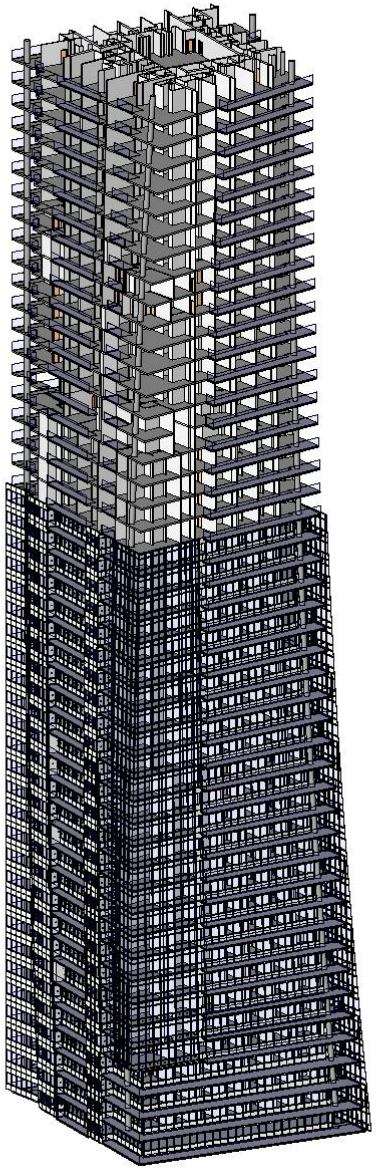


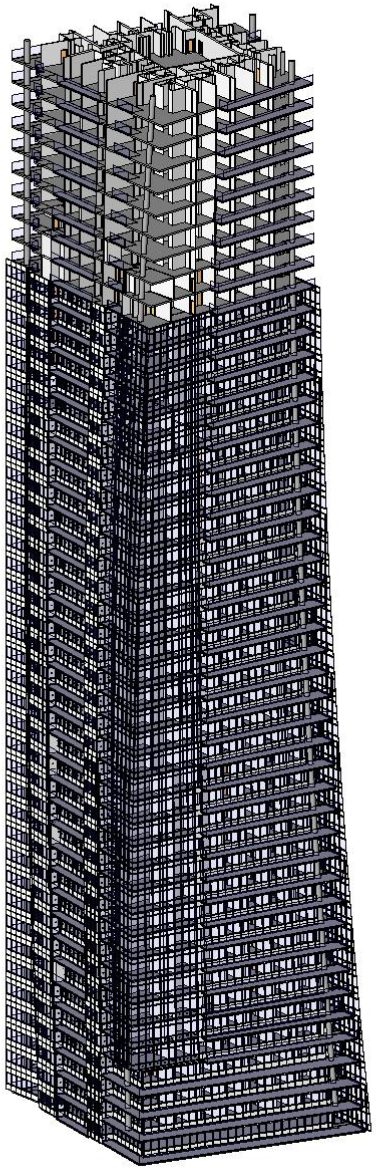


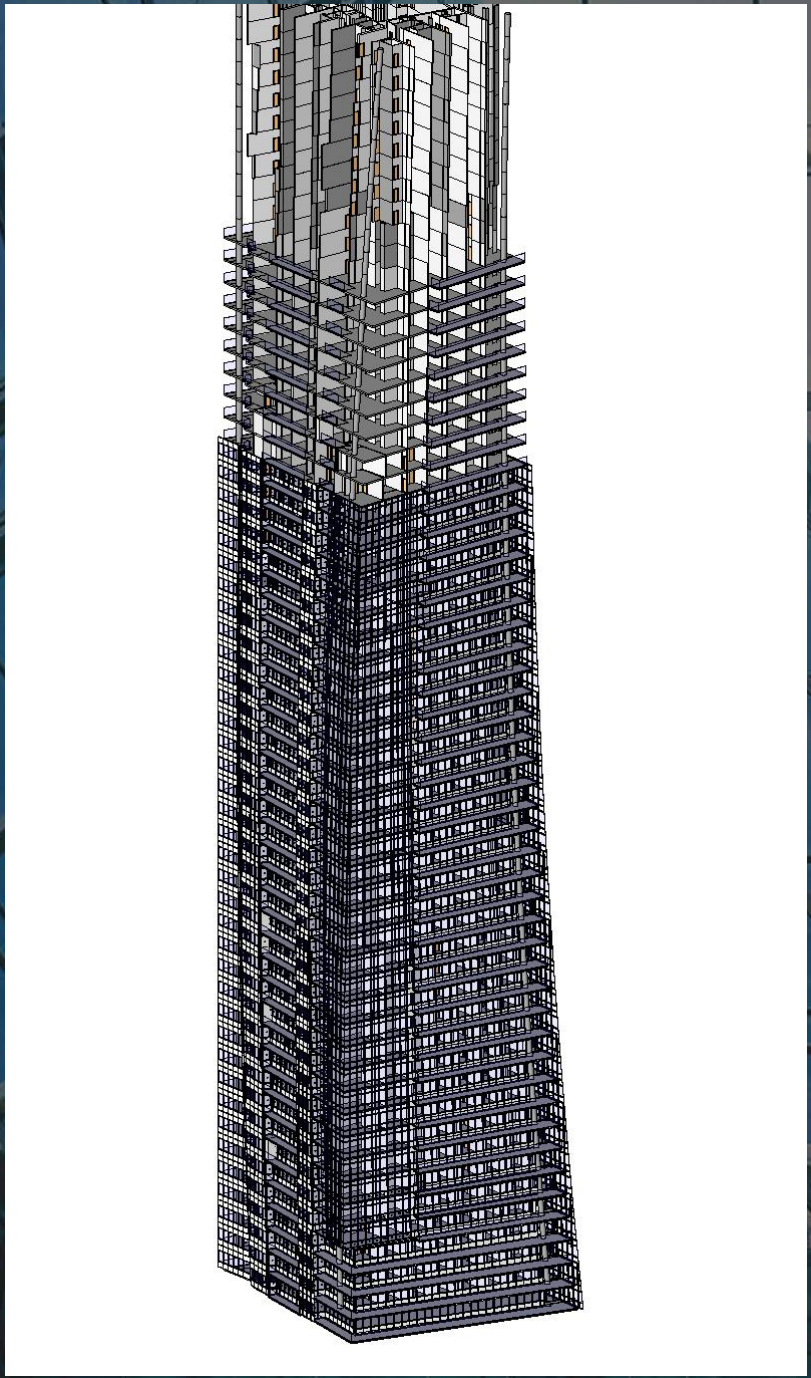


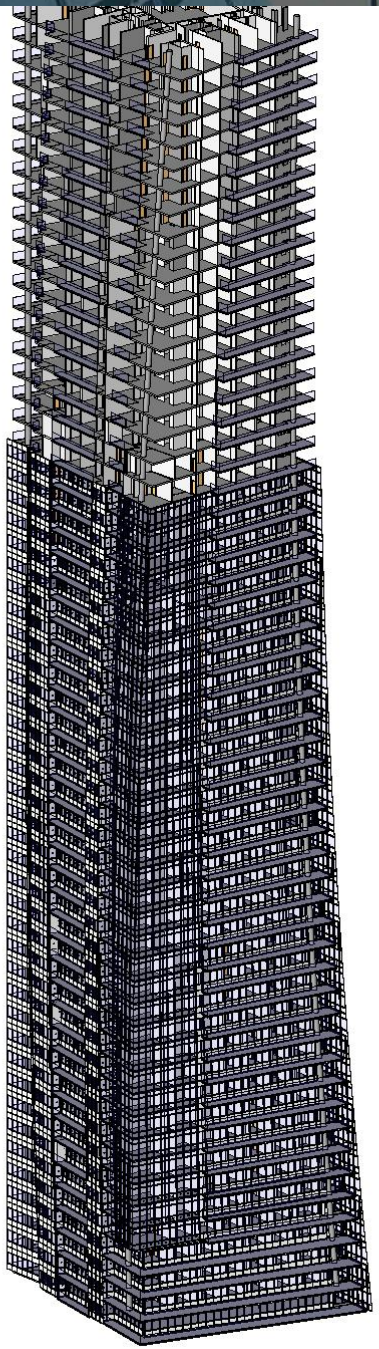


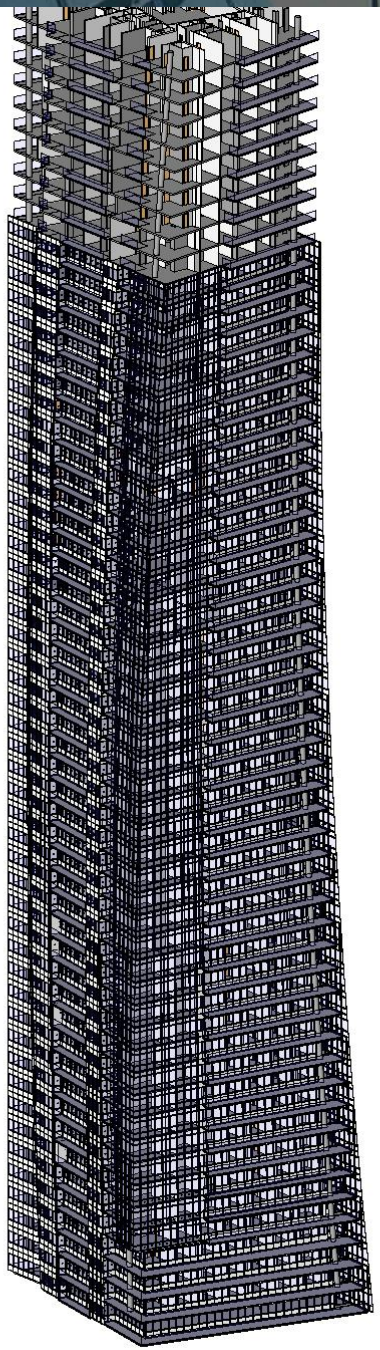


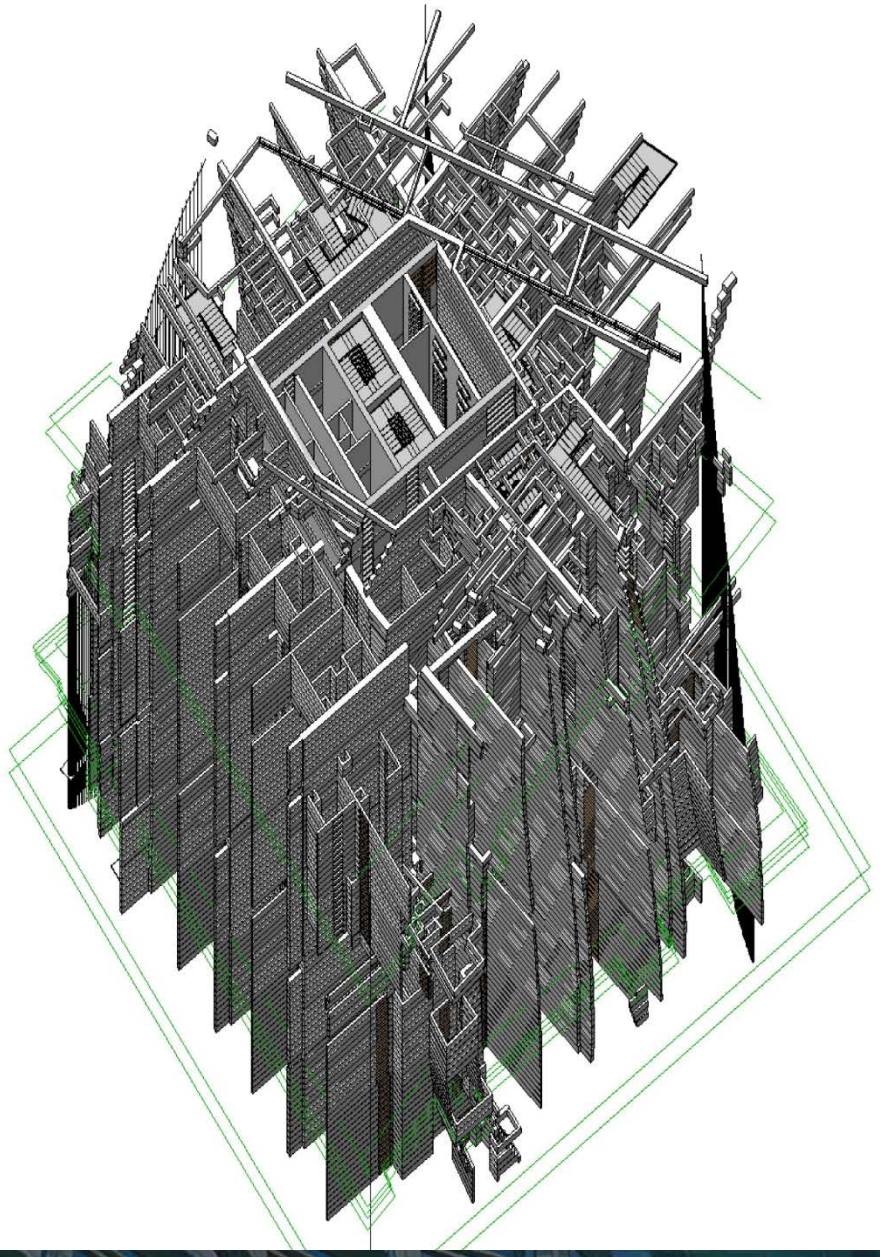




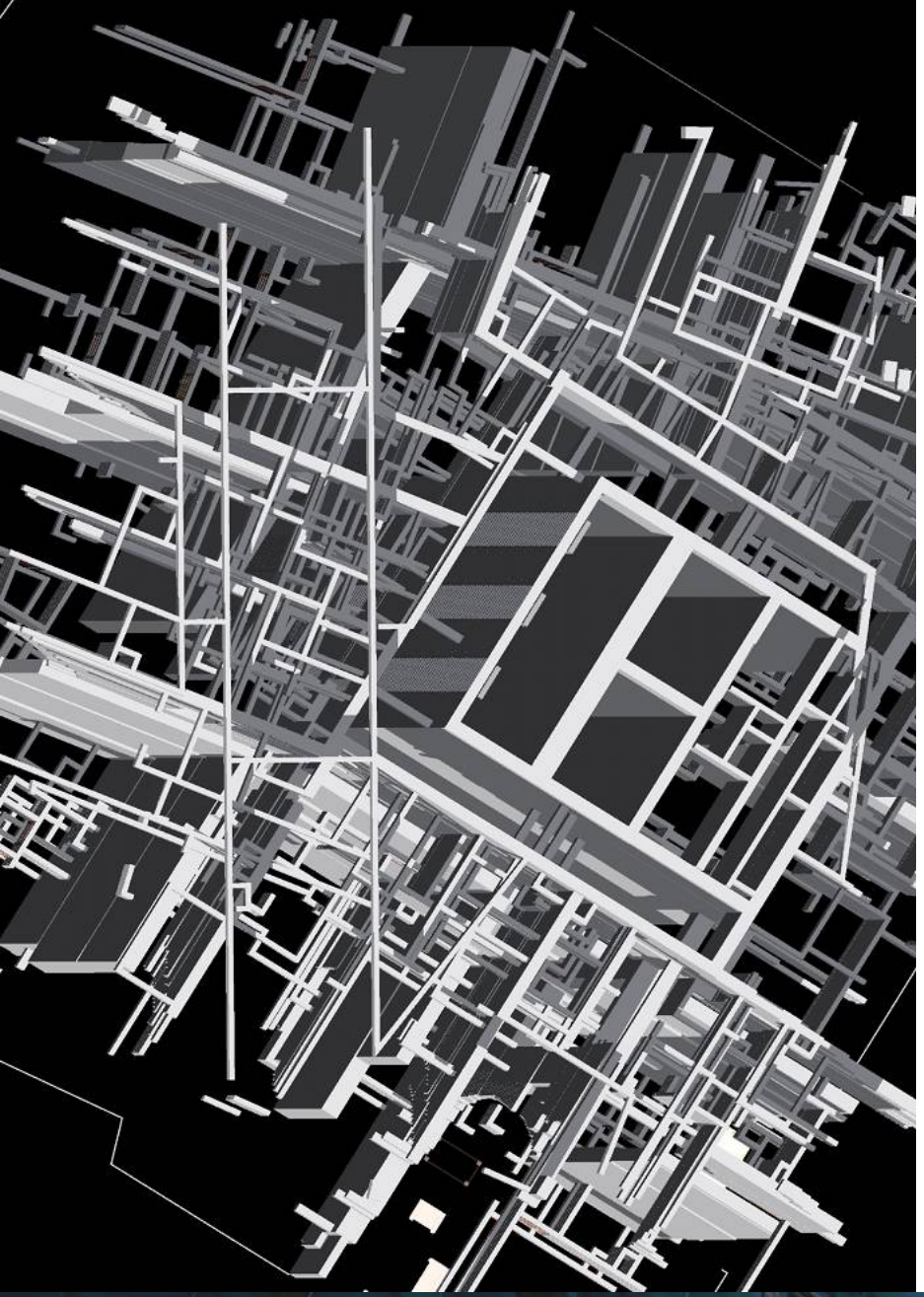


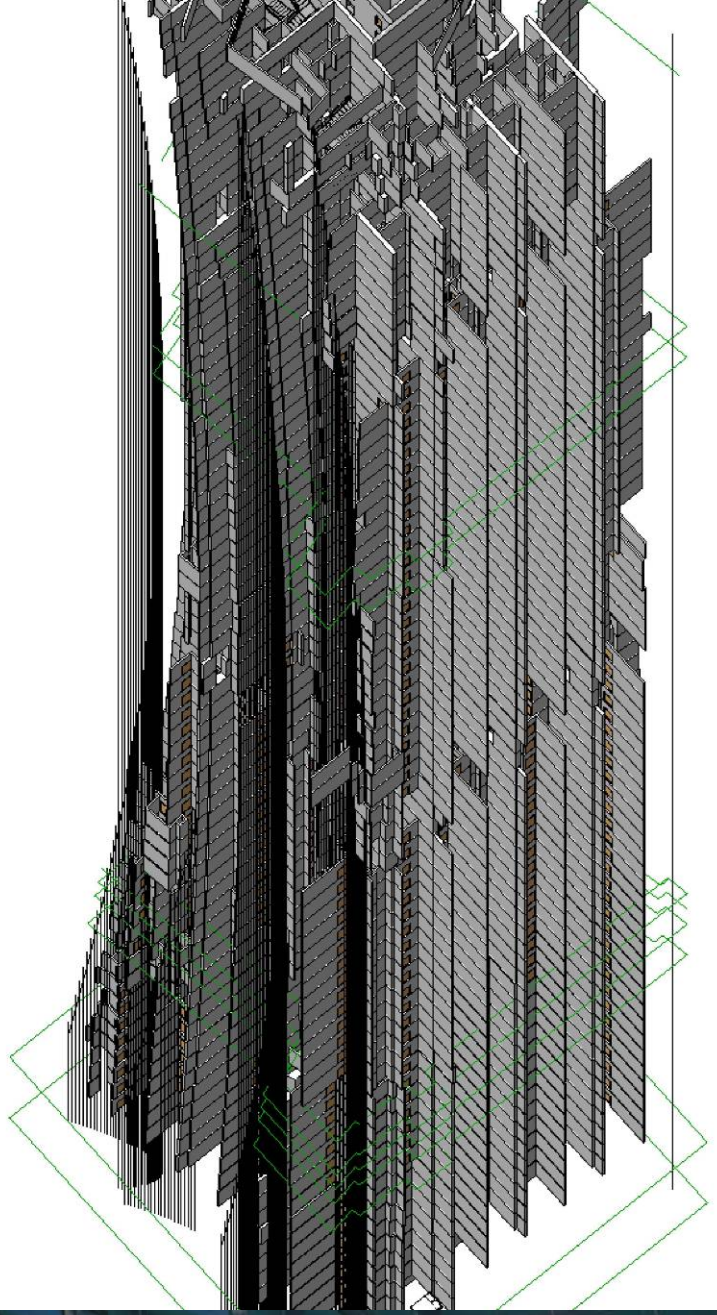




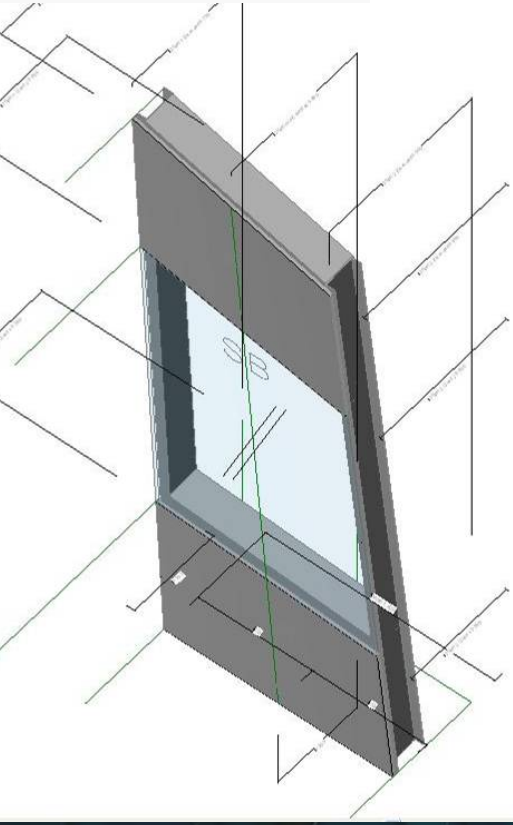


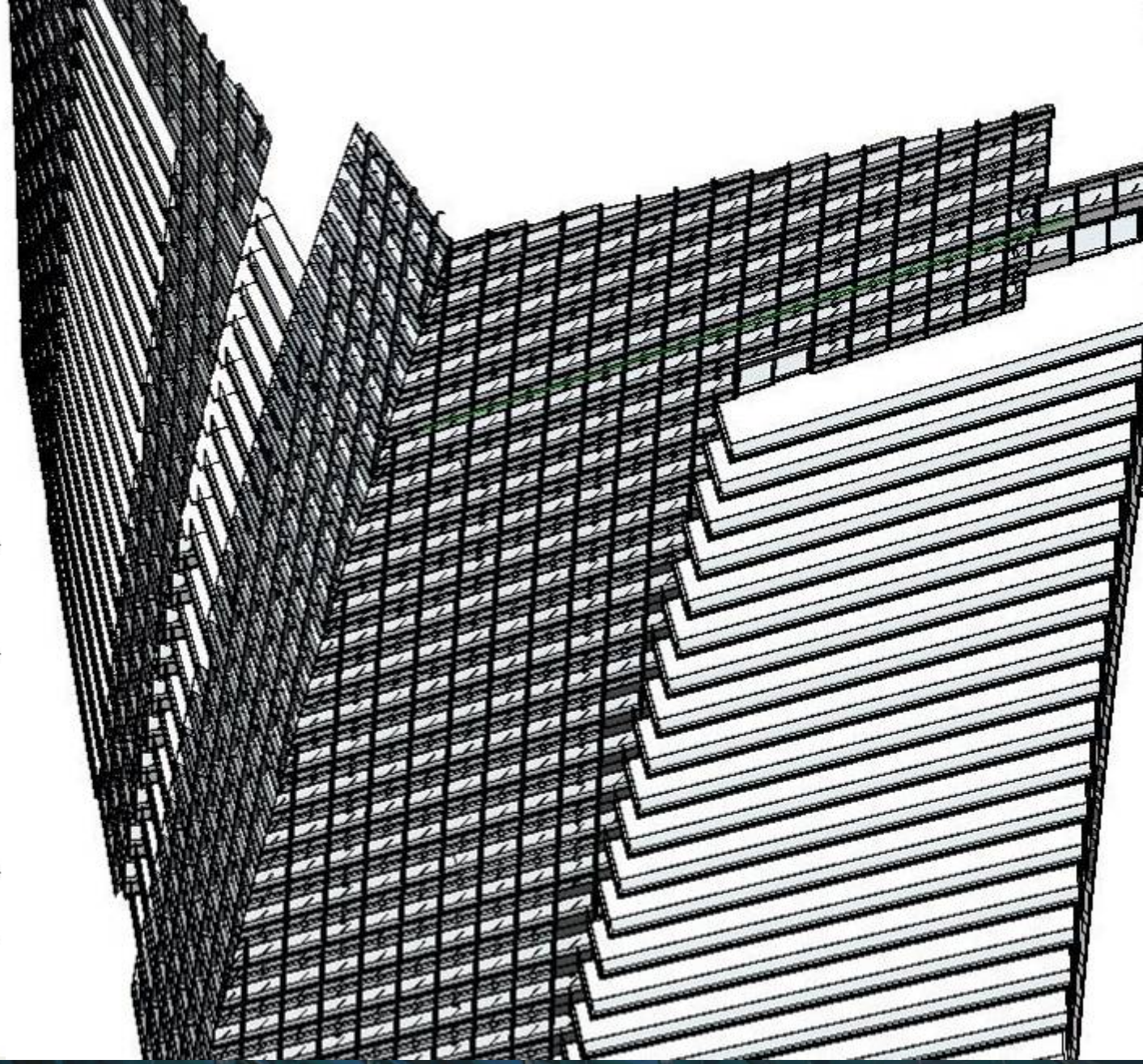
VERTICAL CO-ORDINATION



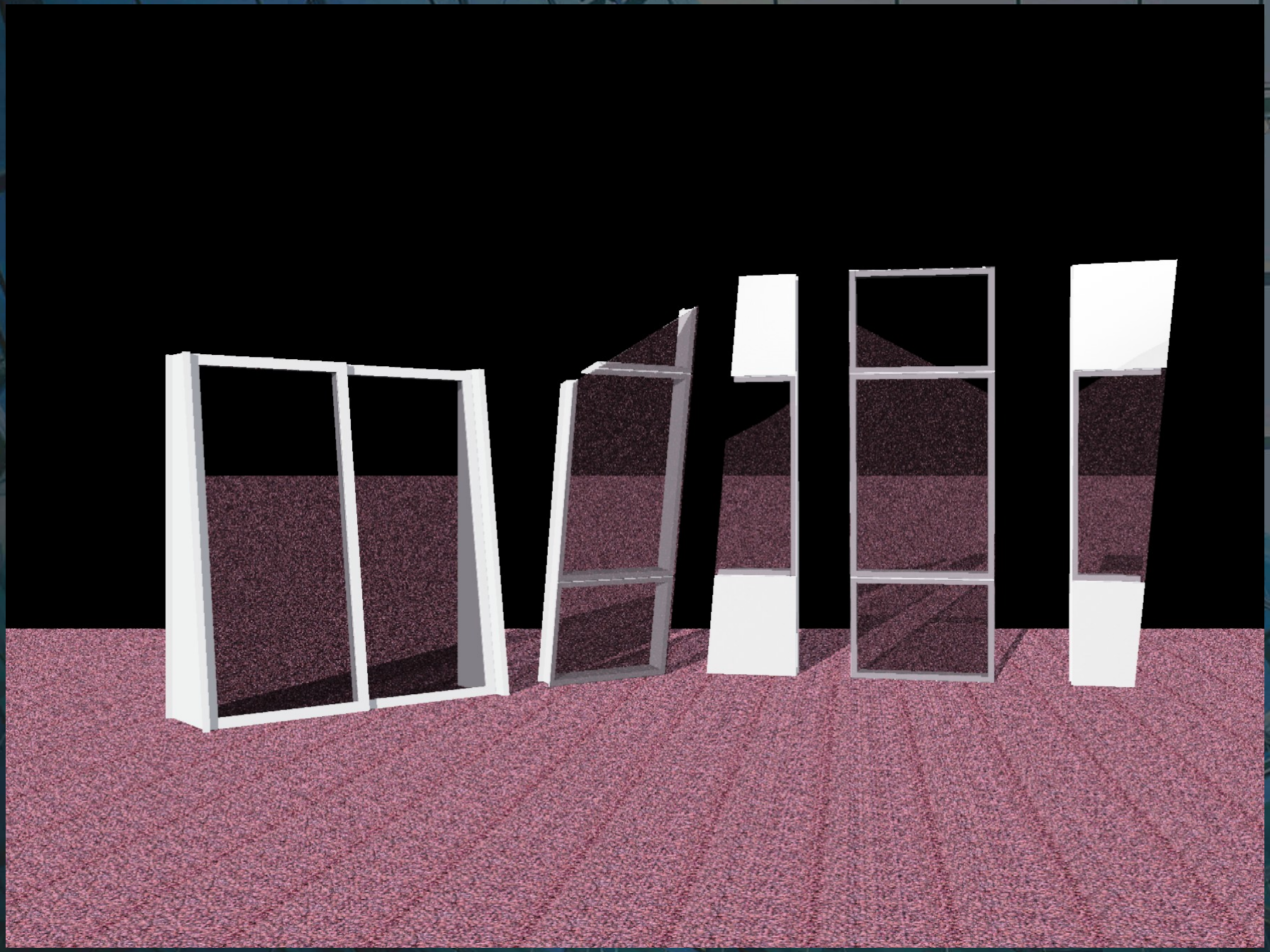


INTERNAL vs EXTERNAL





COMPLICATED CURTAIN WALL



Autodesk Revit Structure 4 - [Ocean Heights 1 R4 Local 2.rvt - Schedule: Multi-Category Schedule]

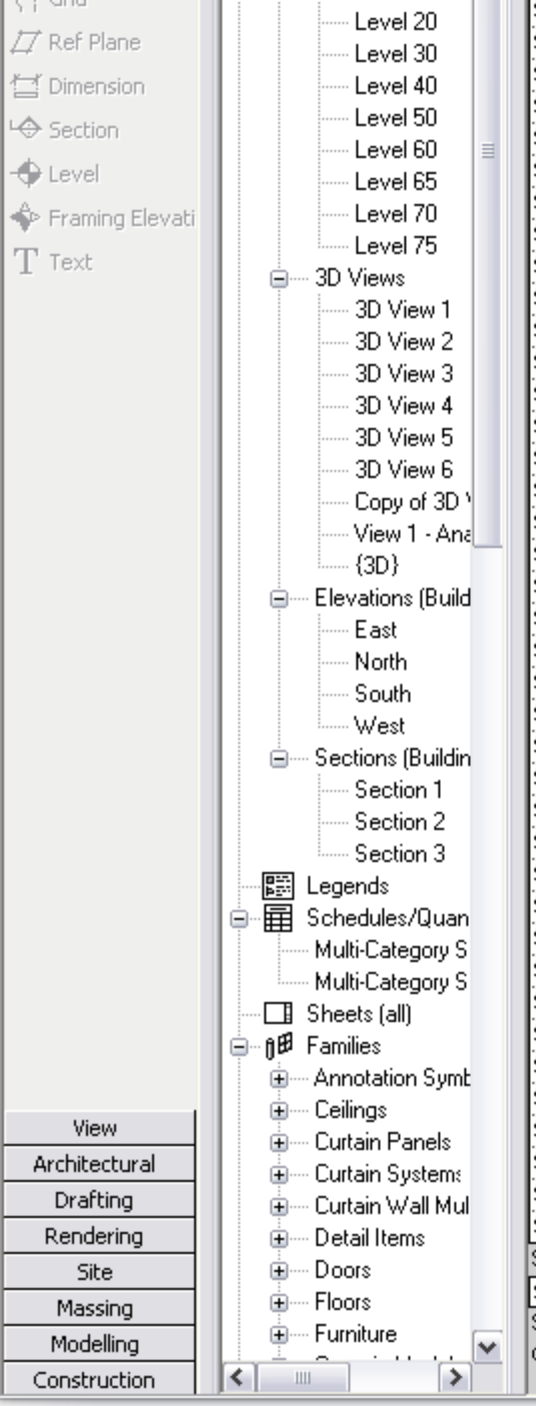
File Edit View Modelling Drafting Site Tools Settings Window Help

Headers: Group Ungroup Rows: New Delete Show

Multi-Category Schedule

Family	Mark	Level	Width	Width Left	Width Right	Offset 1	Offset 2
Curtain Wall Panel 2	L08F01N01	Level 8	1255.67			-31.08	-41.89
Curtain Wall Panel 2	L08F01N02	Level 8	1255.67			-41.89	-52.71
Curtain Wall Panel 2	L08F01N03	Level 8	1255.67			-52.71	-63.53
Curtain Wall Panel 2	L08F01N04	Level 8	1255.67			-63.53	-74.34
Curtain Wall Panel 2	L08F01N05	Level 8	1255.67			-74.34	-85.16
Curtain Wall Panel 2	L08F01N06	Level 8	1255.67			-85.16	-95.97
Curtain Wall Panel 2	L08F01N07	Level 8	1255.67			-95.97	-106.79
Curtain Wall Panel 2	L08F01N08	Level 8	1255.67			-106.79	-117.60
Curtain Wall Panel 2	L08F01N09	Level 8	1255.67			-117.60	-117.60
Curtain Wall Panel 2	L08F03N09	Level 8	1224.13			5.31	5.66
Curtain Wall Panel 2	L08F03N10	Level 8	1224.13			5.66	6.01
Curtain Wall Panel 2	L08F03N11	Level 8	1224.13			6.01	6.36
Curtain Wall Panel 2	L09F01N01	Level 9	1255.72			-29.00	-39.77
Curtain Wall Panel 2	L09F01N02	Level 9	1255.72			-39.77	-50.54
Curtain Wall Panel 2	L09F01N03	Level 9	1255.72			-50.54	-61.31
Curtain Wall Panel 2	L09F01N04	Level 9	1255.72			-61.31	-72.07
Curtain Wall Panel 2	L09F01N05	Level 9	1255.72			-72.07	-82.84
Curtain Wall Panel 2	L09F01N06	Level 9	1255.72			-82.84	-93.61
Curtain Wall Panel 2	L09F01N07	Level 9	1255.72			-93.61	-104.38
Curtain Wall Panel 2	L09F01N08	Level 9	1255.72			-104.38	-115.15
Curtain Wall Panel 2	L09F03N09	Level 9	1224.13			0.64	0.74
Curtain Wall Panel 2	L09F03N10	Level 9	1224.13			0.74	0.84
Curtain Wall Panel 2	L09F03N11	Level 9	1224.13			0.84	0.94
Curtain Wall Panel 2	L10F01N01	Level 10	1255.77			-26.77	-37.49
Curtain Wall Panel 2	L10F01N02	Level 10	1255.77			-37.49	-48.21
Curtain Wall Panel 2	L10F01N03	Level 10	1255.77			-48.21	-58.93
Curtain Wall Panel 2	L10F01N04	Level 10	1255.77			-58.93	-69.64
Curtain Wall Panel 2	L10F01N05	Level 10	1255.77			-69.64	-80.36
Curtain Wall Panel 2	L10F01N06	Level 10	1255.77			-80.36	-91.08
Curtain Wall Panel 2	L10F01N07	Level 10	1255.77			-91.08	-101.80
Curtain Wall Panel 2	L10F01N08	Level 10	1255.77			-101.80	-112.52
Curtain Wall Panel 2	L10F03N09	Level 10	1224.13			-4.06	-4.21
Curtain Wall Panel 2	L10F03N10	Level 10	1224.13			-4.21	-4.35
Curtain Wall Panel 2	L10F03N11	Level 10	1224.13			-4.35	-4.50
Curtain Wall Panel 2	L81B1RN01	Level 81	1224.10			0.00	0.00
Curtain Wall Panel 2	L82B1RN01	Level 82	1224.10			0.00	0.00
Curtain Wall Panel 2	L83B1RN01	Level 83	1224.10			0.00	0.00
Curtain Wall Panel 2	L84B1RN01	Level 84	1224.10			0.00	0.00
Curtain Wall Panel 2: 38							
Curtain Wall Panel 3	L04F03N01	Level 4	1224.13			-1.53	-0.38
Curtain Wall Panel 3	L04F03N02	Level 4	1224.13			-0.38	0.76
Curtain Wall Panel 3	L04F03N03	Level 4	1224.13			0.76	1.91
Curtain Wall Panel 3	L04F03N05	Level 4	1224.13			12.20	13.34
Curtain Wall Panel 3	L04F03N06	Level 4	1224.13			12.20	13.34
Curtain Wall Panel 3	L04F04N01	Level 4	1200.00			-137.36	-137.36
Curtain Wall Panel 3	L04F04N02	Level 4	1200.00			-137.36	-137.38
Curtain Wall Panel 3	L04F04N03	Level 4	1200.00			-137.38	-137.40
Curtain Wall Panel 3	L04F04N04	Level 4	1200.00			-137.40	-137.42
Curtain Wall Panel 3	L04F04N05	Level 4	1200.00			-137.42	-137.45
Curtain Wall Panel 3	L04F04N06	Level 4	1200.00			-137.45	-137.47
Curtain Wall Panel 3	L04F04N07	Level 4	1200.00			-137.47	-137.49

Ready



Sliding Door	L71B05D12	Level 71	2550.00			0.00
Sliding Door	L71B05D15	Level 71	2550.00			0.00
Sliding Door	L72B01D02	Level 72	2400.00			0.00
Sliding Door	L72B02D02	Level 72	2500.00			0.00
Sliding Door	L72B04D01	Level 72	1800.00			0.00
Sliding Door	L72B05D03	Level 72	2550.00			0.00
Sliding Door	L72B05D05	Level 72	2550.00			0.00
Sliding Door	L72B05D08	Level 72	2550.00			0.00
Sliding Door	L72B05D10	Level 72	2550.00			0.00
Sliding Door	L72B05D12	Level 72	2550.00			0.00
Sliding Door	L72B05D15	Level 72	2550.00			0.00
Sliding Door	L73B01D02	Level 73	2400.00			0.00
Sliding Door	L73B02D02	Level 73	2500.00			0.00
Sliding Door	L73B04D01	Level 73	1700.00			0.00
Sliding Door	L73B05D03	Level 73	2550.00			0.00
Sliding Door	L73B05D05	Level 73	2550.00			0.00
Sliding Door	L73B05D08	Level 73	2550.00			0.00
Sliding Door	L73B05D10	Level 73	2550.00			0.00
Sliding Door	L73B05D12	Level 73	2550.00			0.00
Sliding Door	L73B05D15	Level 73	2550.00			0.00
Sliding Door	L74B01D02	Level 74	2400.00			0.00
Sliding Door	L74B02D02	Level 74	2500.00			0.00
Sliding Door	L74B04D01	Level 74	1600.00			0.00
Sliding Door	L74B05D03	Level 74	2550.00			0.00
Sliding Door	L74B05D05	Level 74	2550.00			0.00
Sliding Door	L74B05D08	Level 74	2550.00			0.00
Sliding Door	L74B05D10	Level 74	2550.00			0.00
Sliding Door	L74B05D12	Level 74	2550.00			0.00
Sliding Door	L74B05D15	Level 74	2550.00			0.00
Sliding Door	L75B01D02	Level 75	2400.00			0.00
Sliding Door	L75B02D02	Level 75	2500.00			0.00
Sliding Door	L76B01D02	Level 76	2400.00			0.00
Sliding Door	L76B02D02	Level 76	2500.00			0.00
Sliding Door	L77B01D02	Level 77	2400.00			0.00
Sliding Door	L77B02D01	Level 77	2426.17			0.00
Sliding Door	L78B01D02	Level 78	2400.00			0.00
Sliding Door	L78B02D01	Level 78	2203.01			0.00
Sliding Door	L79B01D02	Level 79	2400.00			0.00
Sliding Door	L79B02D01	Level 79	1974.15			0.00
Sliding Door: 649						
Sliding Door to Replace CW Pan	L10F01N10	Level 10	1255.77			-123.24
Sliding Door to Replace CW Panel: 1						
Grand total: 9740						

Ready

Autodesk Revit Building 9 - [Curtain Wall Panel Left 100 - 3D View: {3D}]

File Edit View Modelling Drafting Site Tools Settings Window Help

- External Tools
  1. Relocate Mullion by IP Ele
  2. Relocate Mullion by IP and Level
  3. Relocate Mullion by RA
  4. Relocate Mullion by IP
  5. Extract Revit Elements
  6. Check Insertion Point
  7. Move Curtain Panel
  8. Move Corner Curtain Panel
  9. Move Column
- Work Plane
- Design Options
- Spelling... F7
- Match MA
- Tape Measure
- Linework LW
- Show Hidden Lines
- Remove Hidden Lines
- Paint PT
- Split Face SF
- Edit Cut Profile
- Demolish
- Align AL
- Split Walls and Lines SL
- Trim/Extend TR
- Offset OF
- Edit Wall Joins
- Join/Unjoin Roof
- Join Geometry
- Unjoin Geometry
- Cut Geometry
- Don't Cut Geometry
- Copy/Monitor
- Coordination Review
- Interference Check
- Shared Coordinates
- Project Position/Orientation
- Review Warnings...
- Element Ids

Plane

Basics: Modify, Wall, Door, Window, Component, Room, Roof », Floor, Grid, Lines, Ref Plane, Dimension, Section, Level, Text

View, Modelling, Drafting, Rendering, Site

Curtain Wall Panel Le...

- Views (all)
  - Structural Plans
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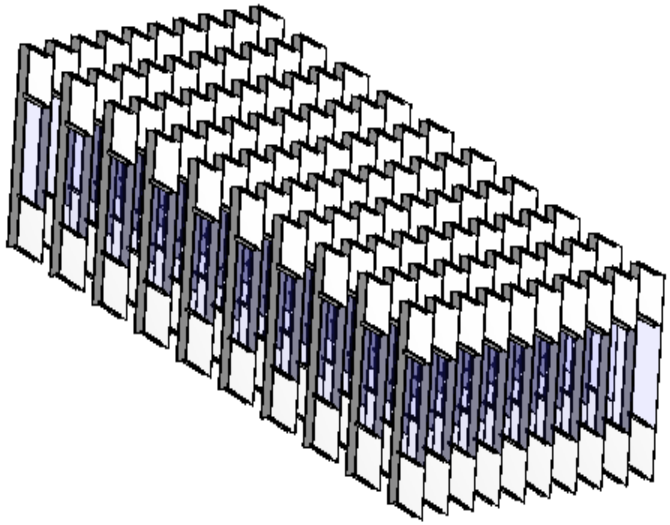
    - Level 2
    - Level 2 - Analyt
  - 3D Views
    - View 1 - Analyti
    - {3D}
  - Elevations (Building
    - East
    - North
    - South
    - West
- Legends
- Schedules/Quantitie
- Sheets (all)
- Families
- Groups



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Copy Rotate Array Mirror Group

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Autodesk Revit Building 9 - [Curtain Wall Panel Left 100 - 3D View: {3D}]

Microsoft Excel - CornerCurtainPanel

A13 | y

	A	B	C	D	E	F	G	H
1		Mark	Base Level	Base Offse	X	Y	Base Angl	Offset 1
2	y	L09F01C01	Level 9	0.246063	-35.4161	153.6226	1.555931	0.095146
3	y	L10F01C01	Level 10	0.246063	-35.4175	153.5274	1.564507	0.087825
4	y	L11F01C01	Level 11	0.246063	-35.4181	153.4396	1.573042	0.080009
5	y	L12F01C01	Level 12	0.246063	-35.4179	153.3596	1.581537	0.071708
6	y	L13F01C01	Level 13	0.246063	-35.4171	153.2879	1.589988	0.06293
7	y	L14F01C01	Level 14	0.246063	-35.4159	153.225	1.598395	0.053684
8	y	L15F01C01	Level 15	0.246063	-35.4144	153.1713	1.606755	0.043978
9	y	L16F01C01	Level 16	0.246063	-35.4129	153.1274	1.615068	0.033821
10	y	L17F01C01	Level 17	0.246063	-35.4114	153.0936	1.623331	0.023224
11	y	L18F01C01	Level 18	0.246063	-35.4101	153.0704	1.631544	0.012195
12	y	L19F01C01	Level 19	0.246063	-35.4094	153.0582	1.639704	0.000745
13	y	L20F01C01	Level 20	0.246063	-35.4093	153.0575	1.64781	0.011115
14	y	L21F01C01	Level 21	0.246063	-35.4102	153.0685	1.655861	0.023377
15	n	L22F01C01	Level 22	0.246063	-35.4122	153.0918	1.663855	0.036028
16	n	L23F01C01	Level 23	0.246063	-35.4155	153.1277	1.671791	0.049059
17	n	L24F01C01	Level 24	0.246063	-35.4205	153.1765	1.679668	0.062458
18	n	L25F01C01	Level 25	0.246063	-35.4273	153.2386	1.687484	0.076215
19	n	L26F01C01	Level 26	0.246063	-35.4361	153.3143	1.695239	0.090318
20	n	L27F01C01	Level 27	0.246063	-35.4474	153.4039	1.702931	0.104757
21	n	L28F01C01	Level 28	0.246063	-35.4612	153.5078	1.710558	0.11952
22								

Sheet1 / Sheet2 / Sheet3

Ready

Autodesk Revit Building 9 - [Curtain Wall Panel Left 100 - 3D View: {3D}]

File Edit View Modelling Drafting Site Tools Settings Window Help

Basics
Modify
Wall
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Window
Component
Room
Roof »
Floor
Grid
Lines
Ref Plane
Dimension
Section
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Text

View
Modelling
Drafting
Rendering
Site

Curtain Wall Panel Le...
- Views (all)
  - Structural Plans
    - Level 1
    - Level 1 - Analyti
    - Level 2
    - Level 2 - Analyti
  - 3D Views
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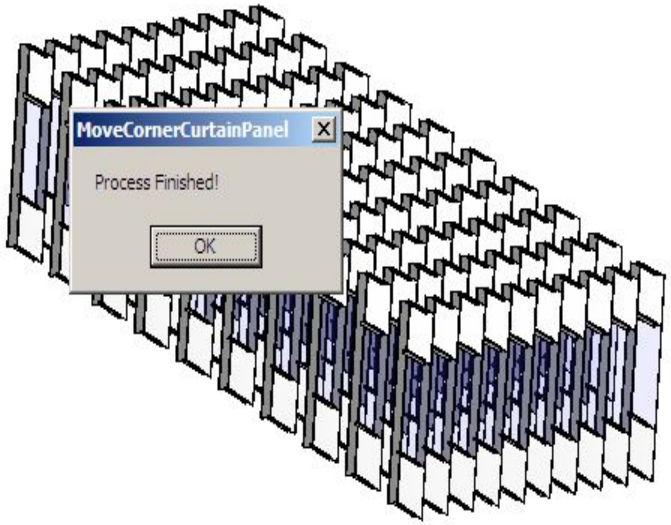
    - {3D}
  - Elevations (Building
    - East
    - North
    - South
    - West
- Legends
- Schedules/Quantitie
- Sheets (all)
- Families
- Groups



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For Help, click Help Topics on the Help Menu.

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Autodesk Revit Structure 3 - [Ocean Heights 1 Curtain Wall Panels.rvt - 3D View: {3D}]

File Edit View Modelling Drafting Site Tools Settings Window Help

3D Move Copy Rotate Array Mirror Group

Plane Demolish Align Split Trim Offset

Press + Drag

Basics

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Ocean Heights 1 Curt...

Views (all)
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3D Views
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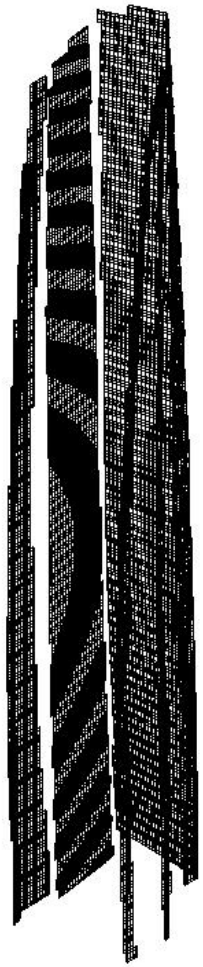
Sheets (all)
Families
Groups



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Construction

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Abu Dhabi **Dancing Towers**

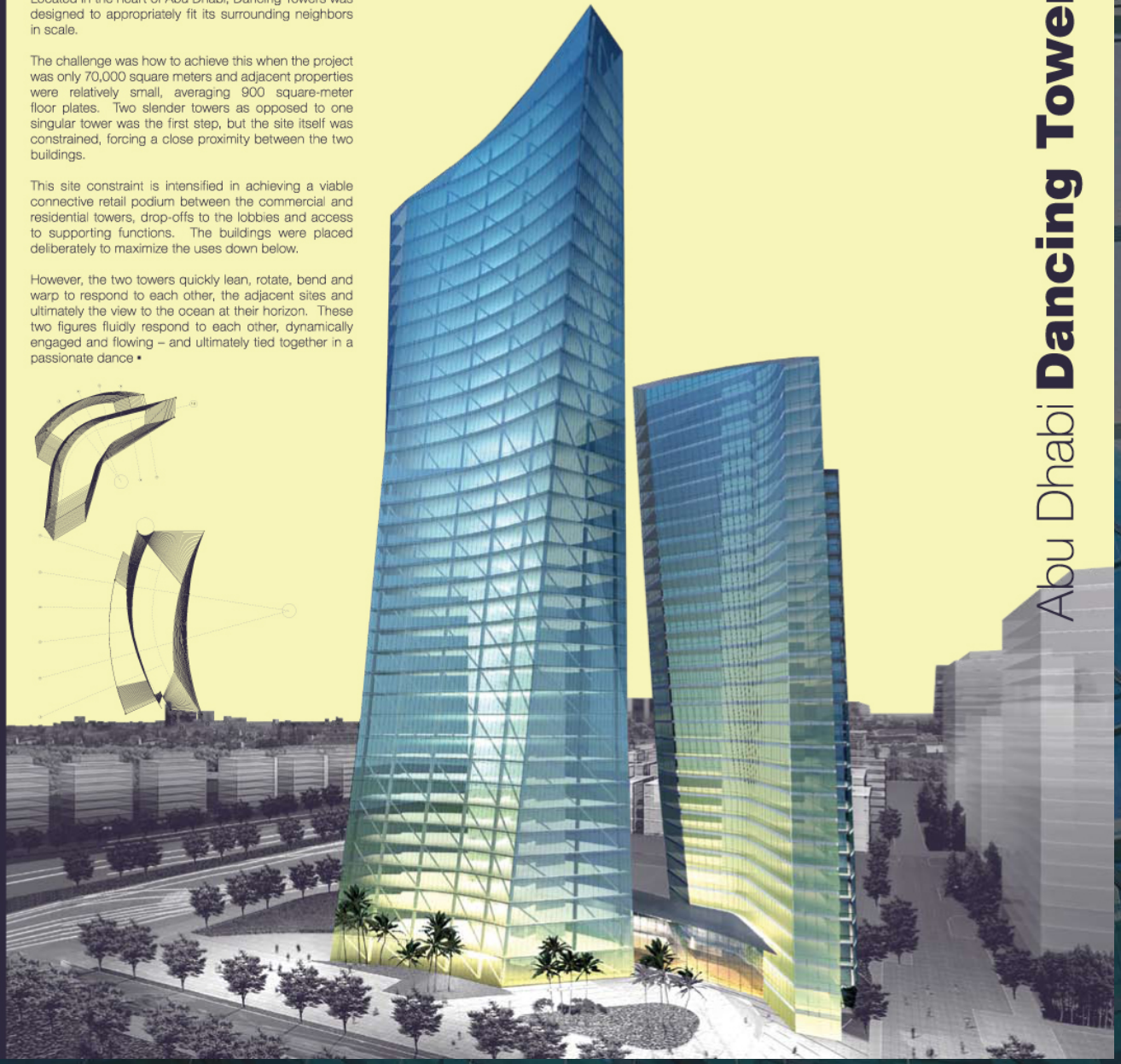
Abu Dhabi **Dancing Towers**

Located in the heart of Abu Dhabi, Dancing Towers was designed to appropriately fit its surrounding neighbors in scale.

The challenge was how to achieve this when the project was only 70,000 square meters and adjacent properties were relatively small, averaging 900 square-meter floor plates. Two slender towers as opposed to one singular tower was the first step, but the site itself was constrained, forcing a close proximity between the two buildings.

This site constraint is intensified in achieving a viable connective retail podium between the commercial and residential towers, drop-offs to the lobbies and access to supporting functions. The buildings were placed deliberately to maximize the uses down below.

However, the two towers quickly lean, rotate, bend and warp to respond to each other, the adjacent sites and ultimately the view to the ocean at their horizon. These two figures fluidly respond to each other, dynamically engaged and flowing – and ultimately tied together in a passionate dance •



Program Mixed Use Site Area **4,180 sqm**
Floor Area **44,235 sqm** Building Height **160 m**

Autodesk Revit Structure 4 - [Dancing Tower Master R4.rvt - 3D View: {3D}]

File Edit View Modelling Drafting Site Tools Settings Window Help

3D Move Copy Rotate Array Mirror Group

Plane Demolish Align Split Trim Offset

Tower 1 Mass : T1L20 | Floor Area Faces | Related Hosts | Edit Work Plane... | Rehost | Edit Family | Press + Drag

Basics
- Modify
- Structural Colur
- Structural Wall
- Beam
- Component
- Slab
- Grid
- Ref Plane
- Dimension
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View
Architectural
Drafting
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Construction

Dancing Tower Mast...

Views (all)
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  - Level 1
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  - Level 2 - An
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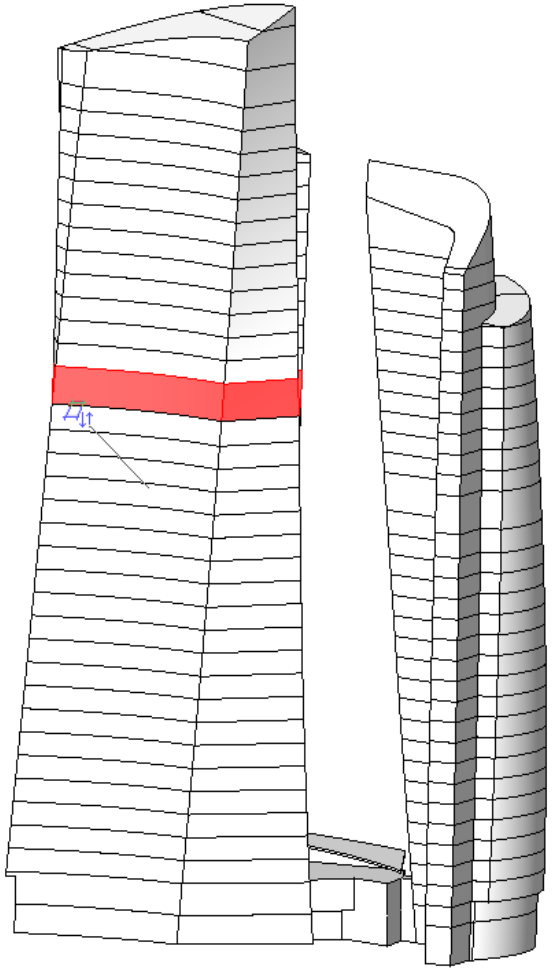

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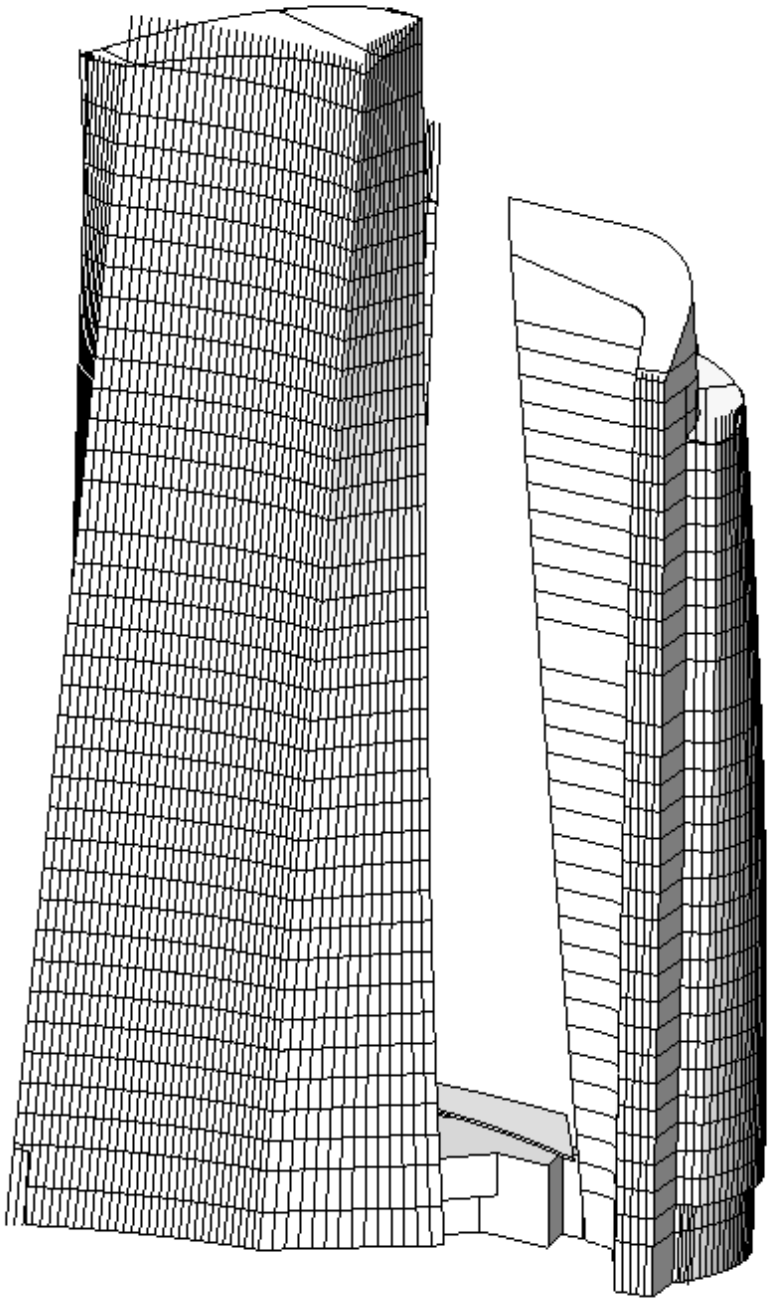


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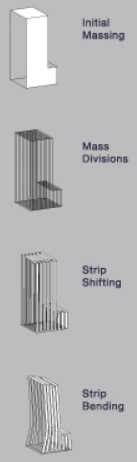
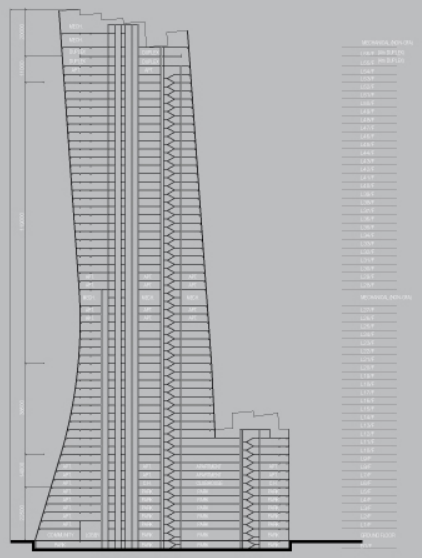
Abu Dhabi **Empire Tower**

Abu Dhabi **Empire Tower**

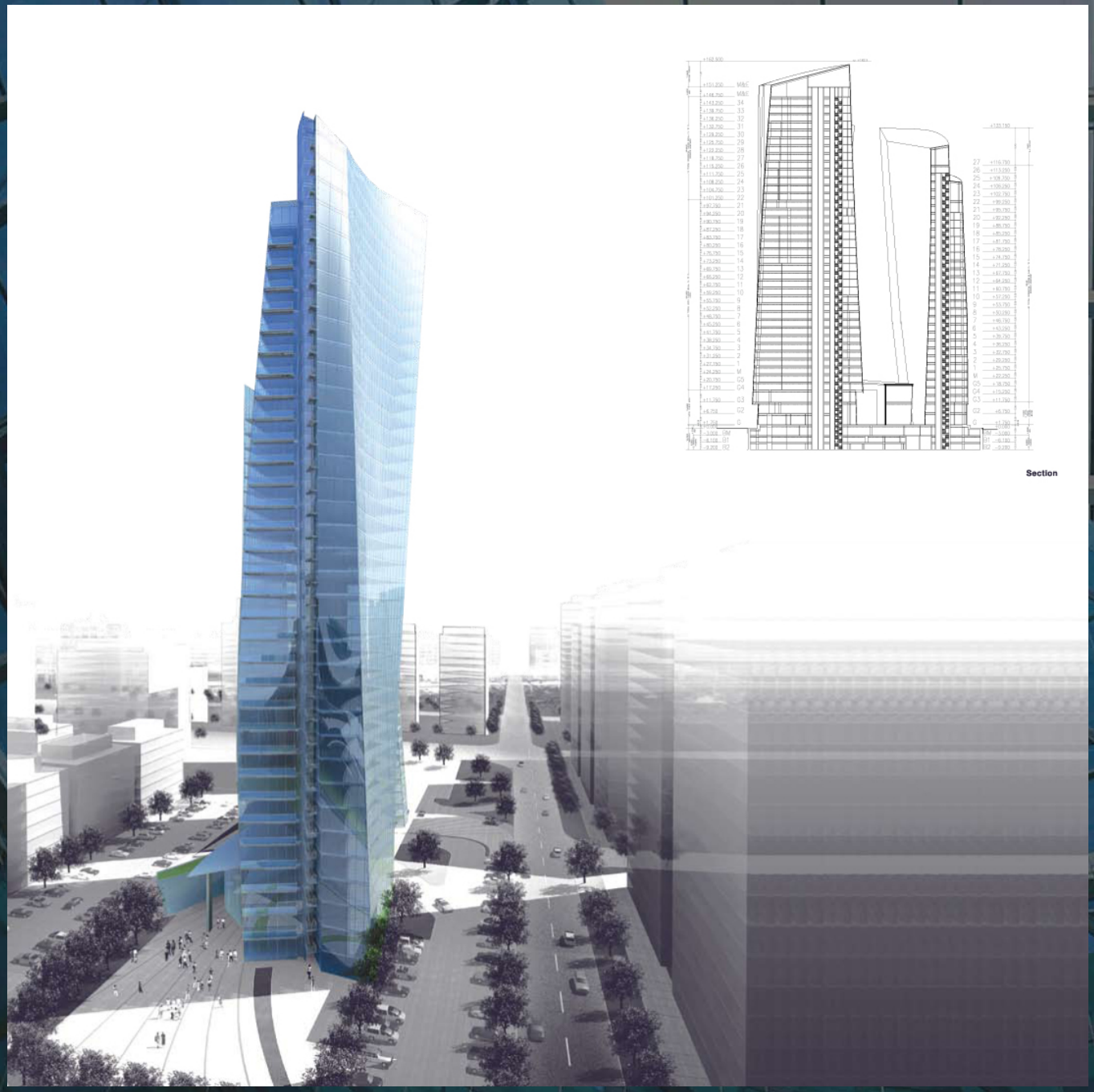
Empire Tower was challenged through a client request of not "pushing the limits" too far. The concern is that the residential project was located in the middle of a master plan filled with potential icons. The design standardizes the units to accommodate the client request but manipulates the section 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 ▪





Program **Residential** Site Area **7,007 sqm**
Floor Area **90,206 sqm** Building Height **225 m**



Section

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 modulized 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 ▪

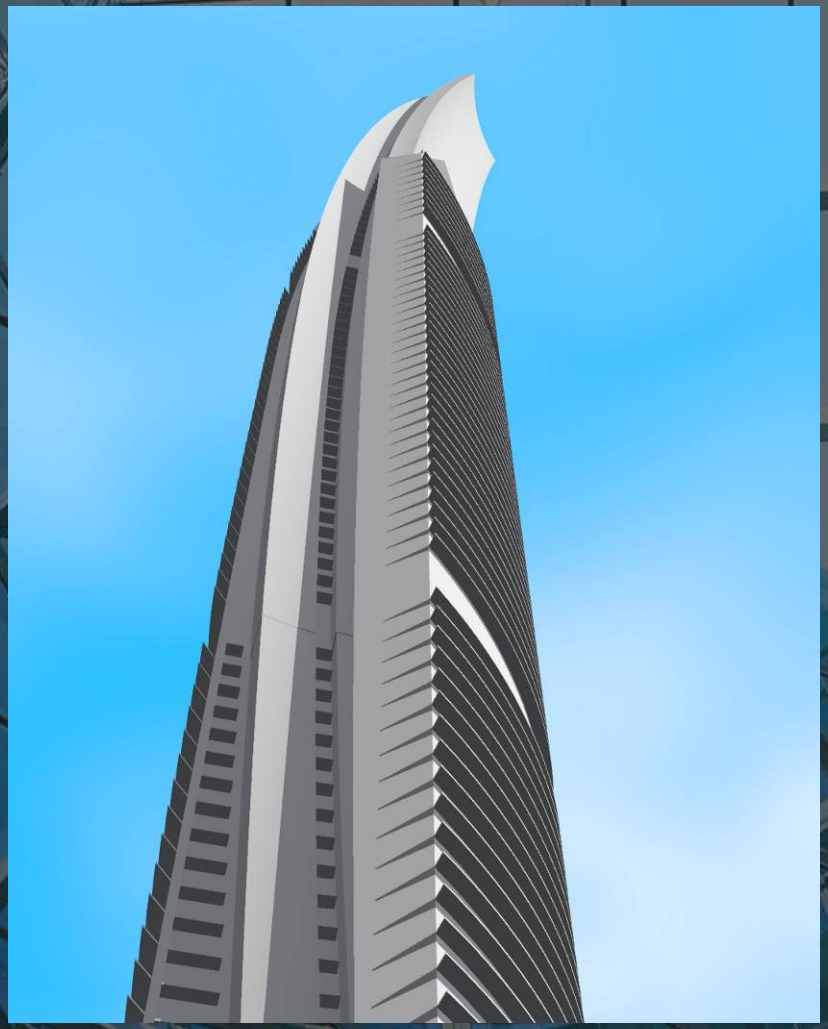
View Diagram

Program **Residential**, Site Area **3,435sqm**
Floor Area **197,375 sqm**, Building Height **460 m**

Dubai **Ocean Heights Two**

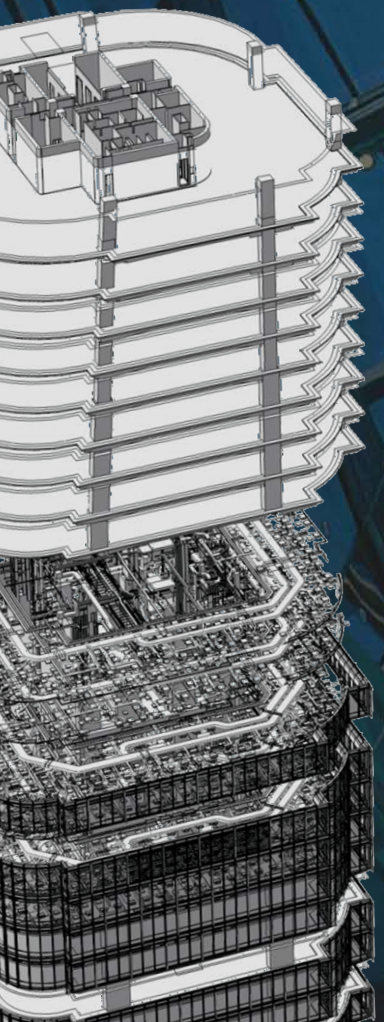

1st Floor
2nd-3rd Floors
4th Floor
7th Floor
37th Floor
69th Floor
79th Floor
90th Floor
100th Floor
101th Floor

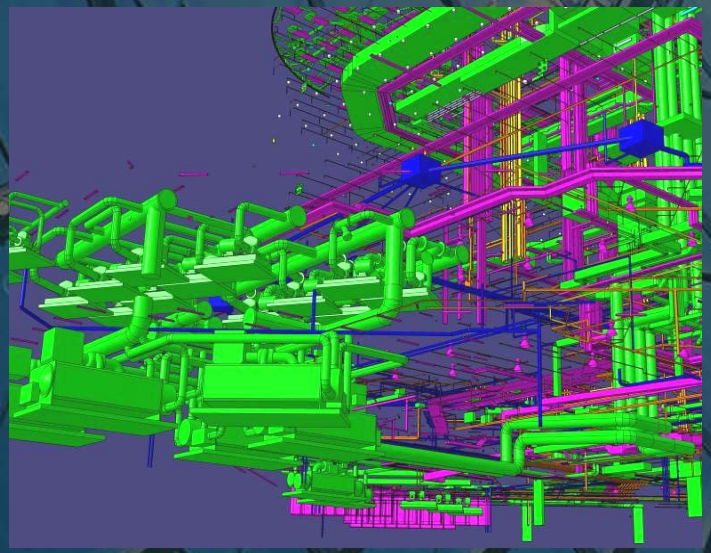
Ocean Heights II

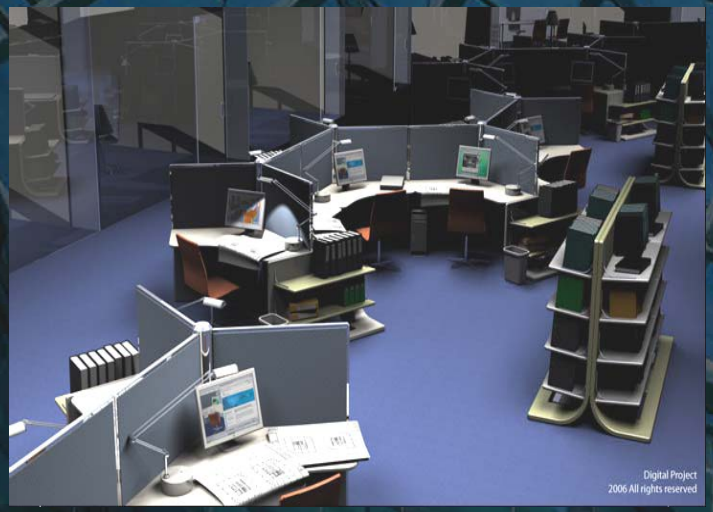


Construction

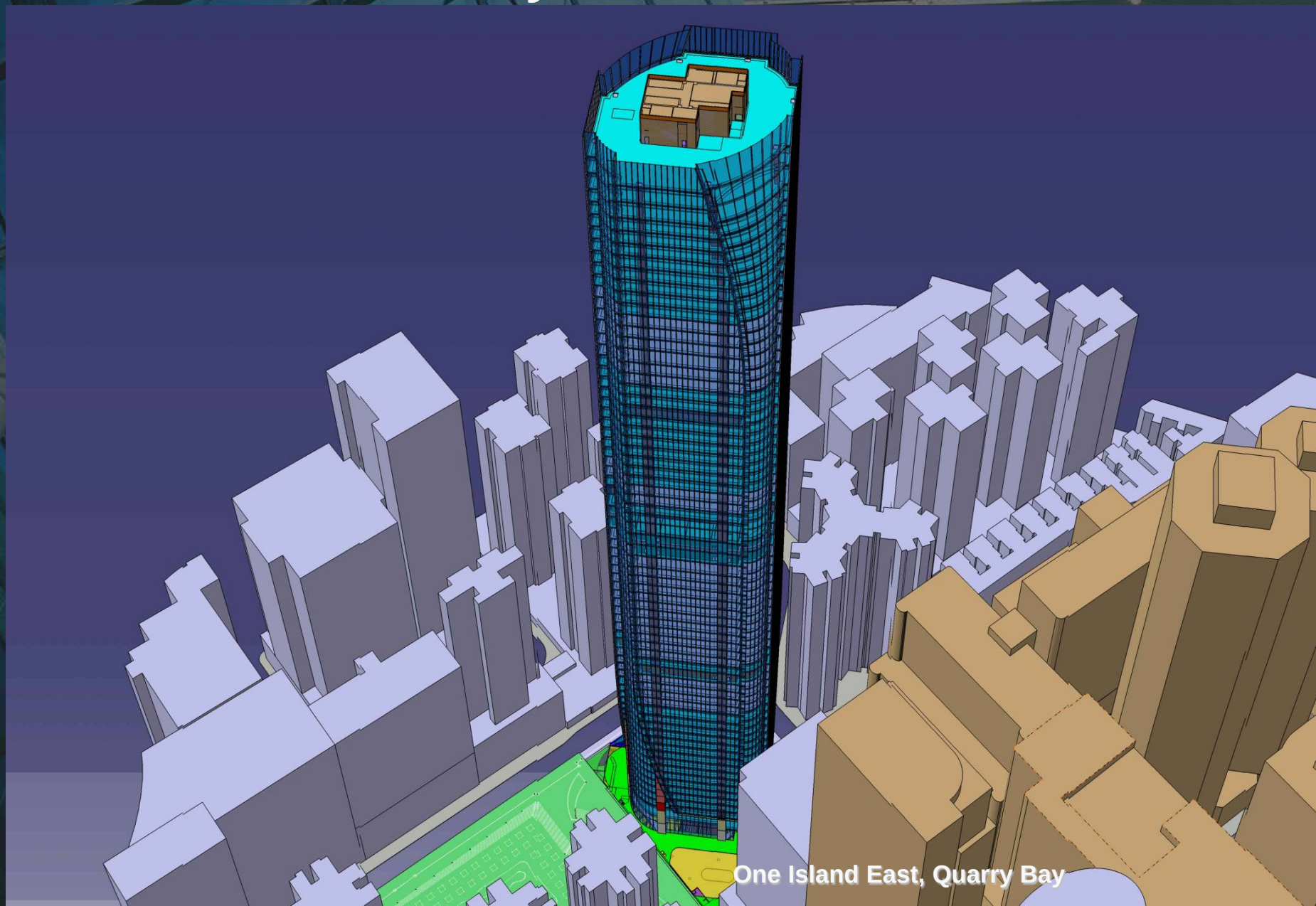
- One Island East







Tender Model by Consultants



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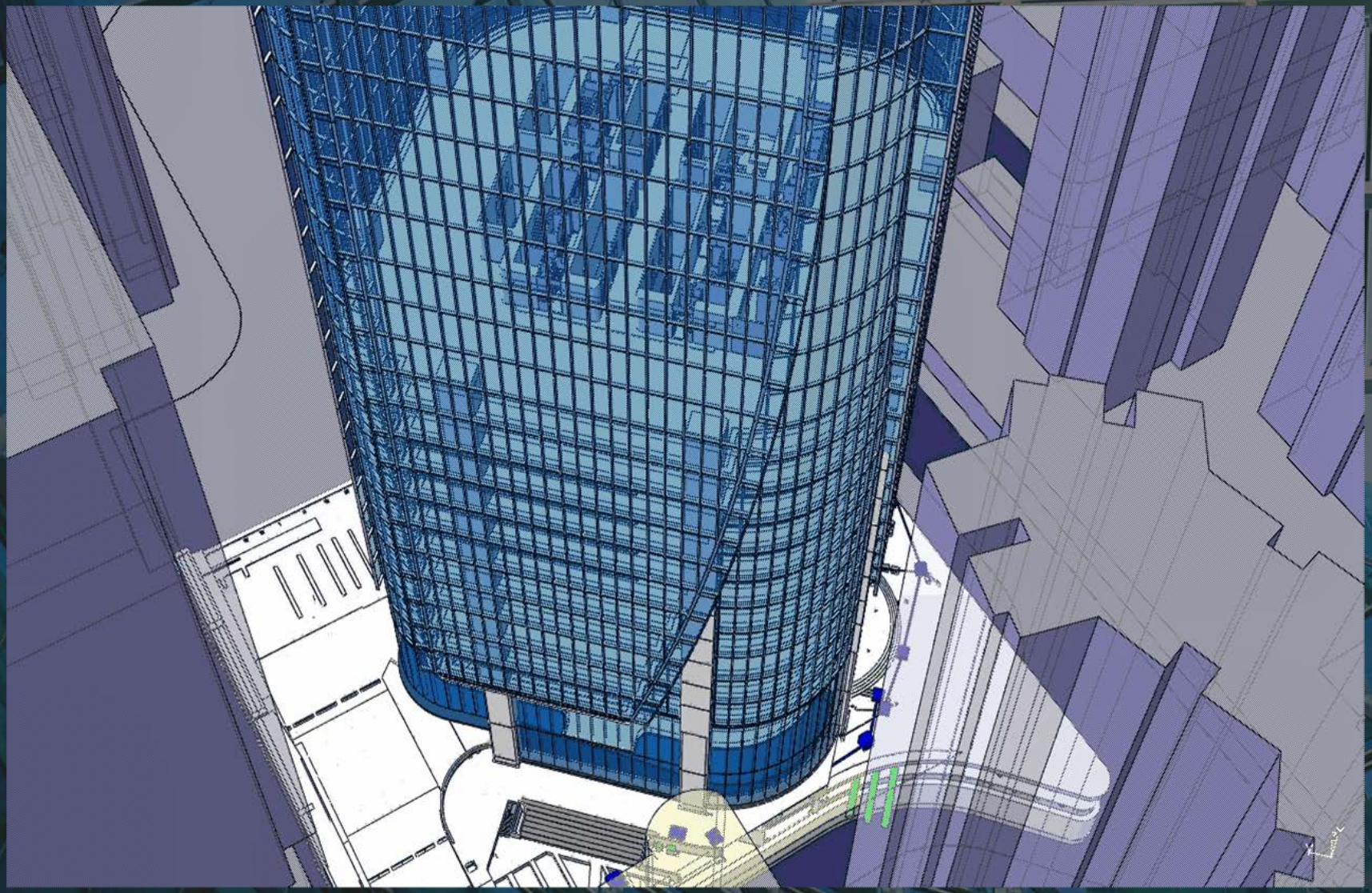
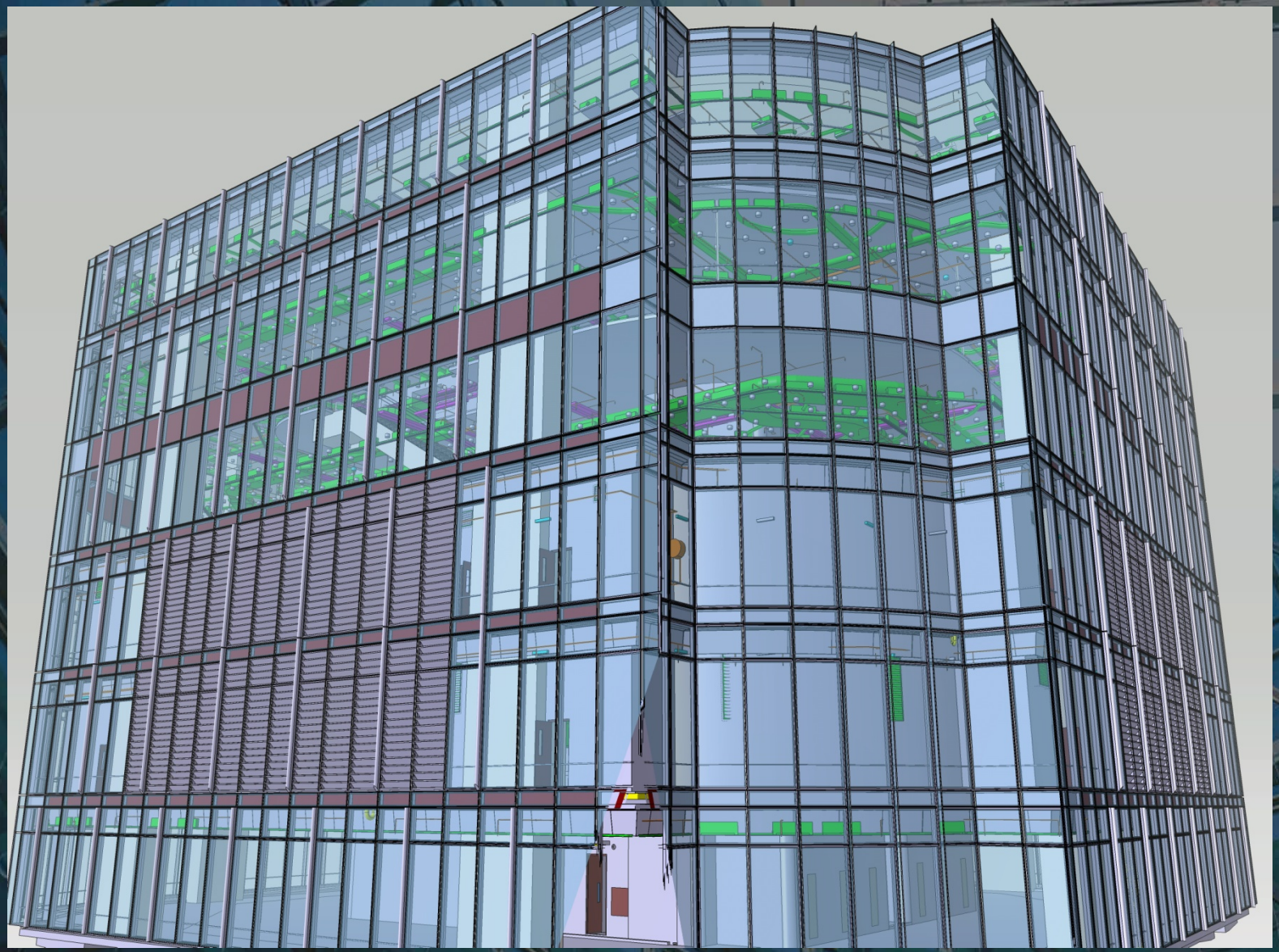


BIM Architectural Configuration

One Island East



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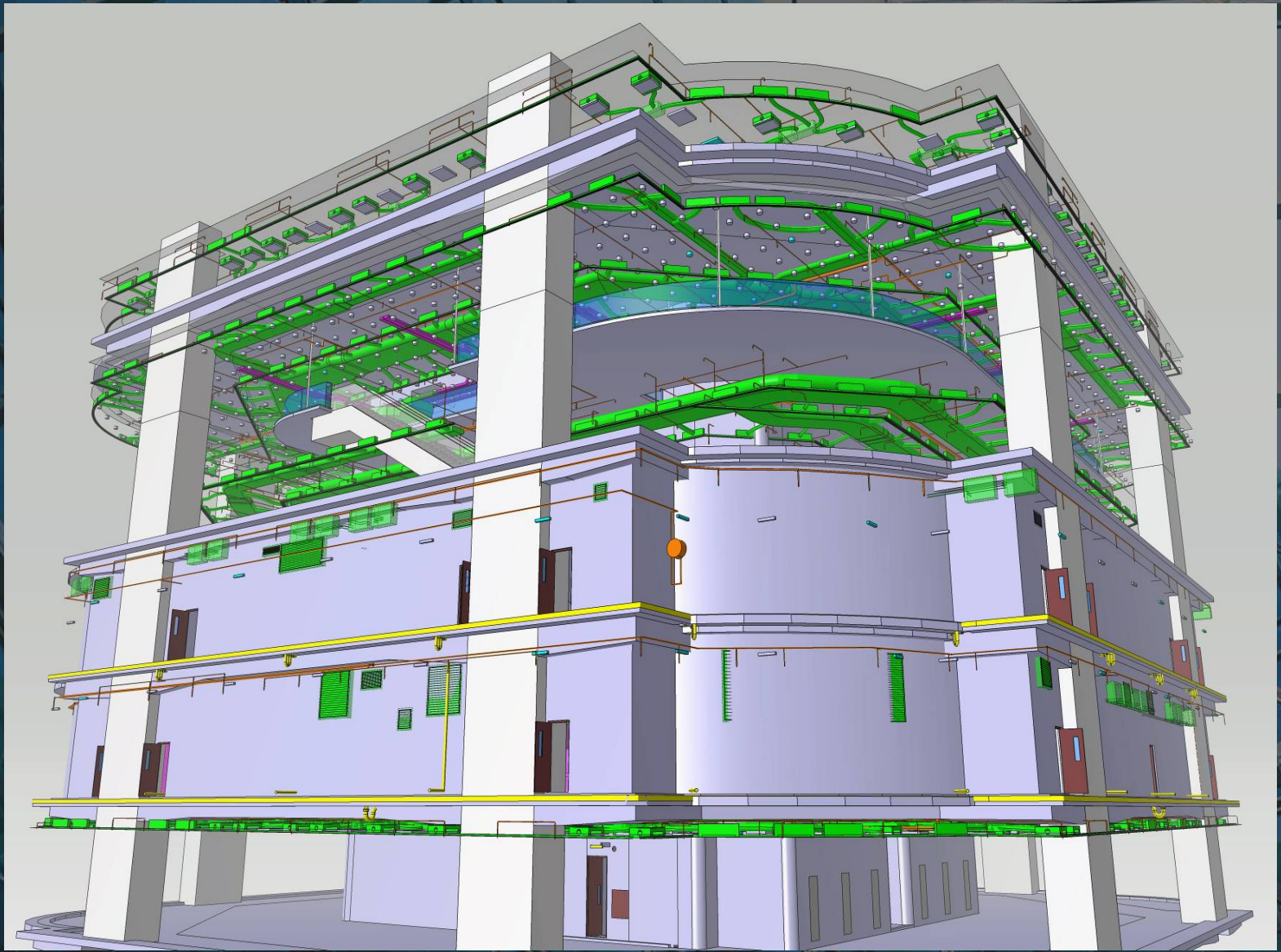
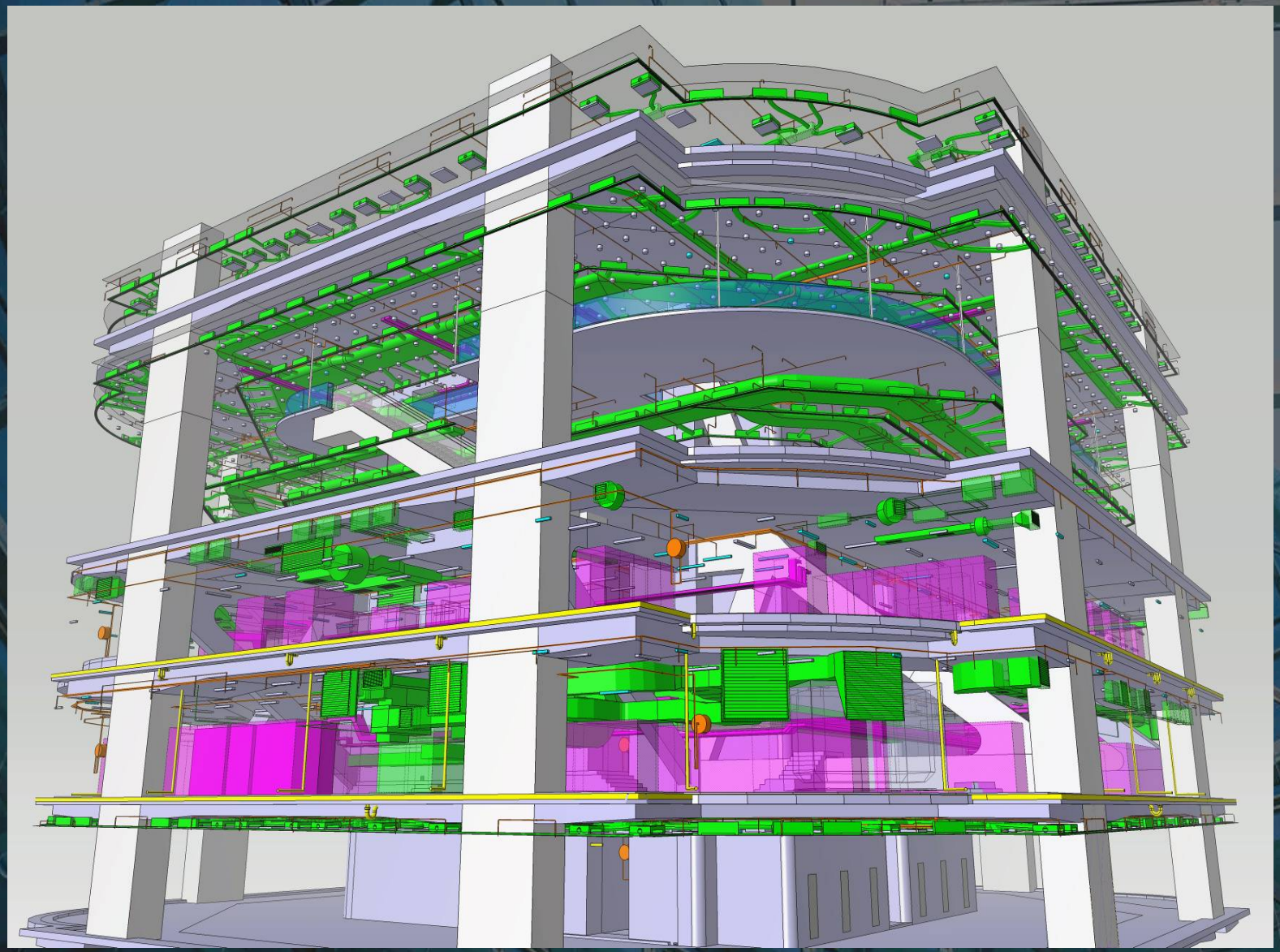


One Island East



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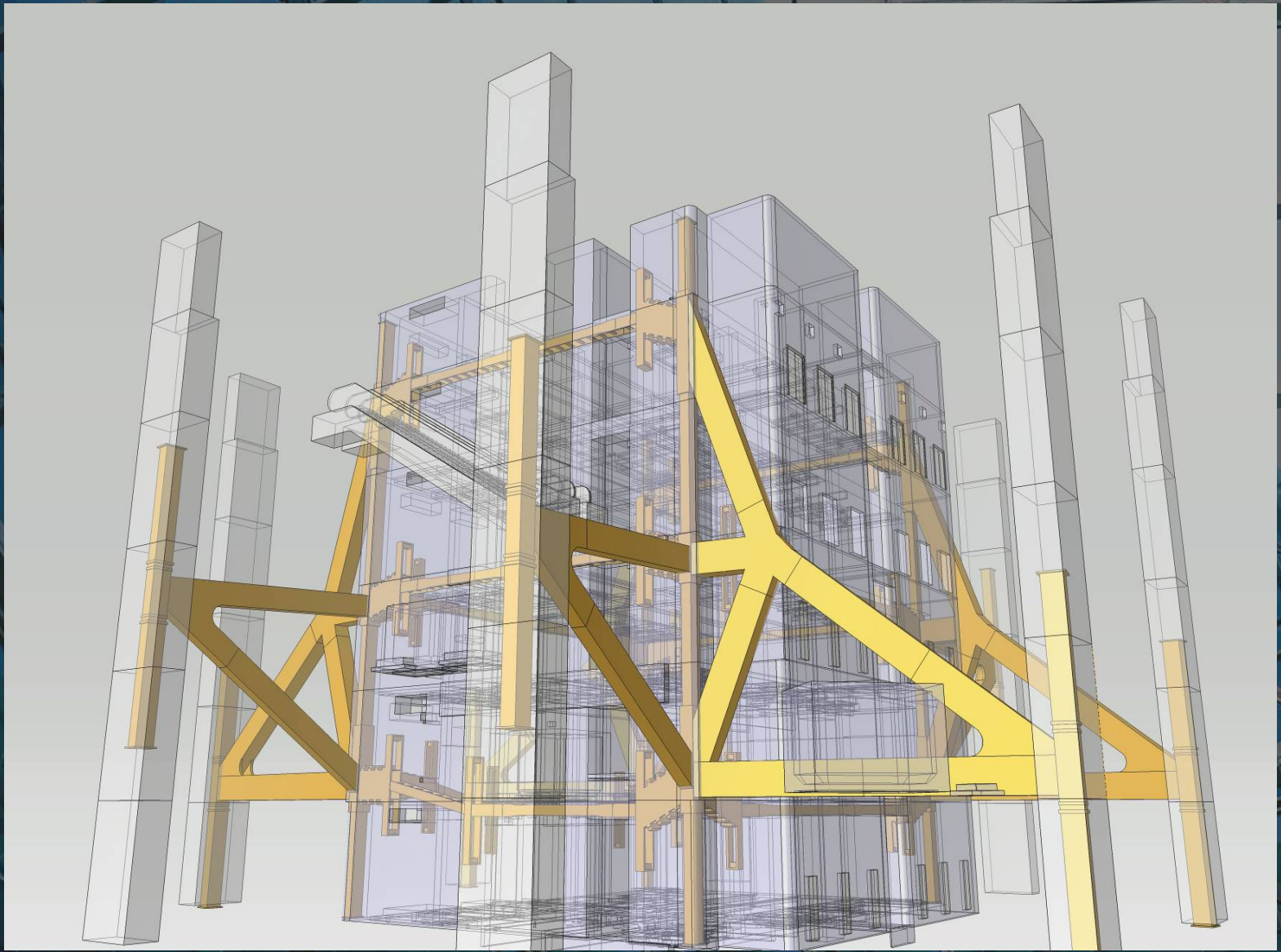
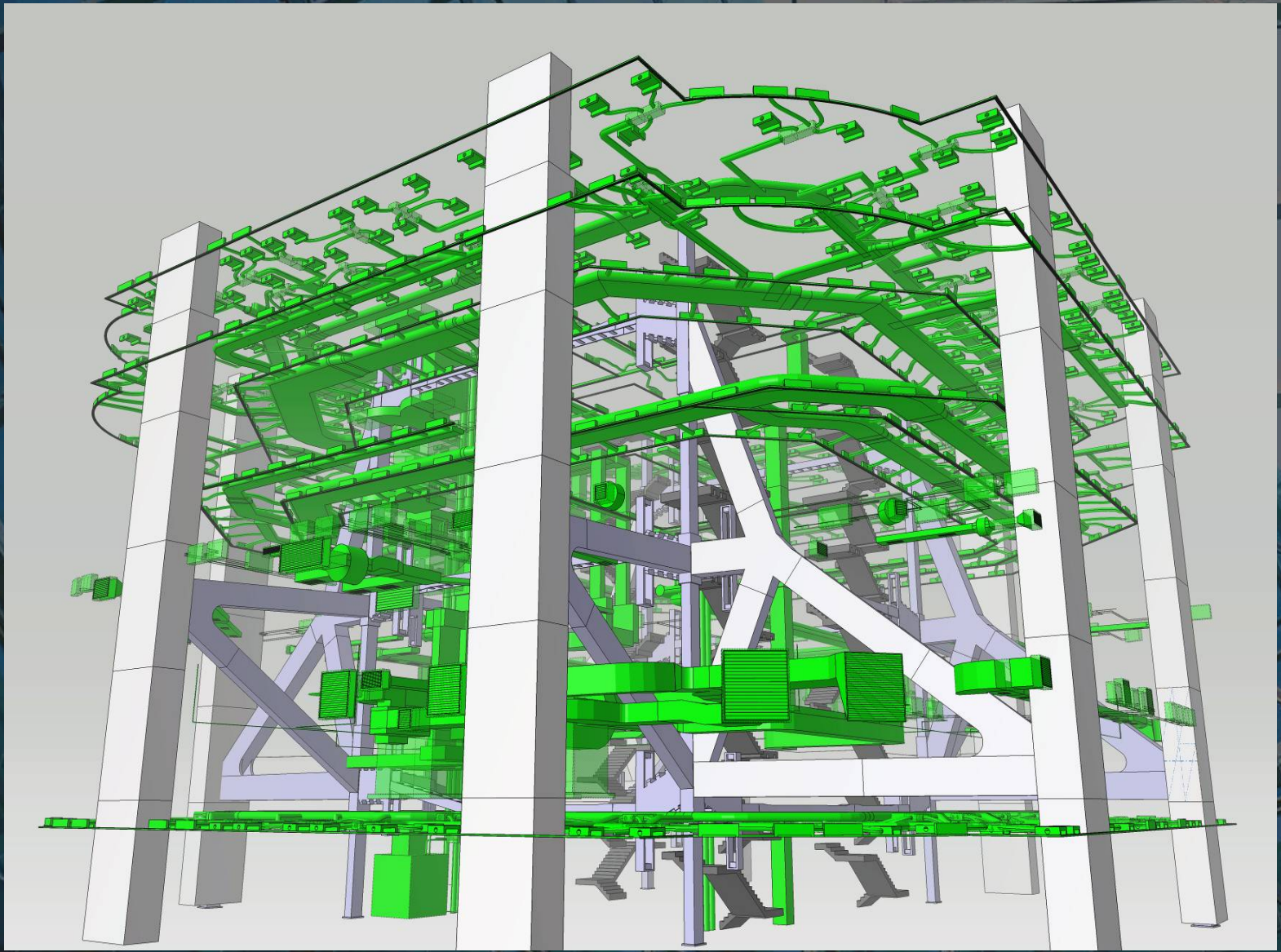
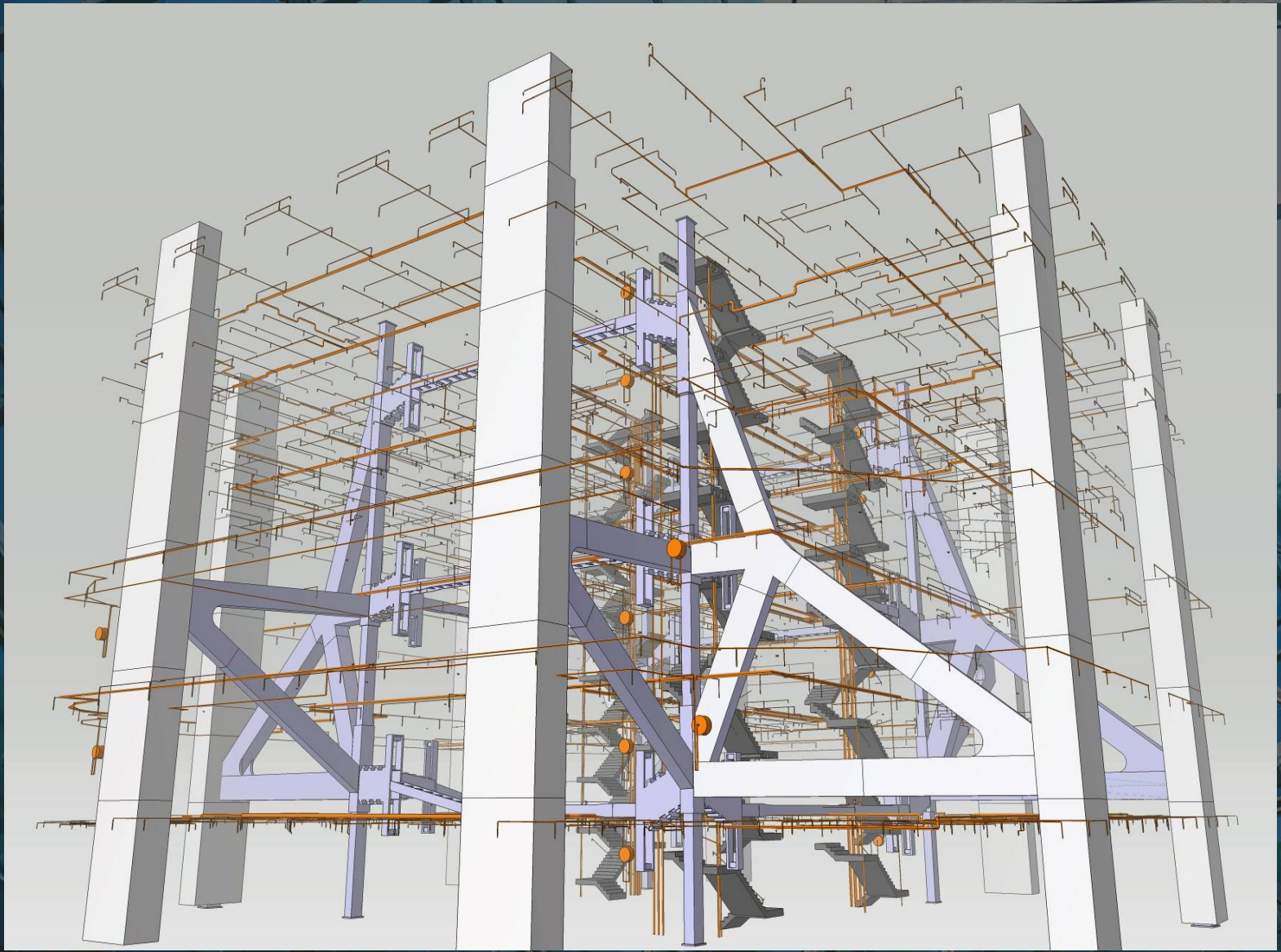


One Island East



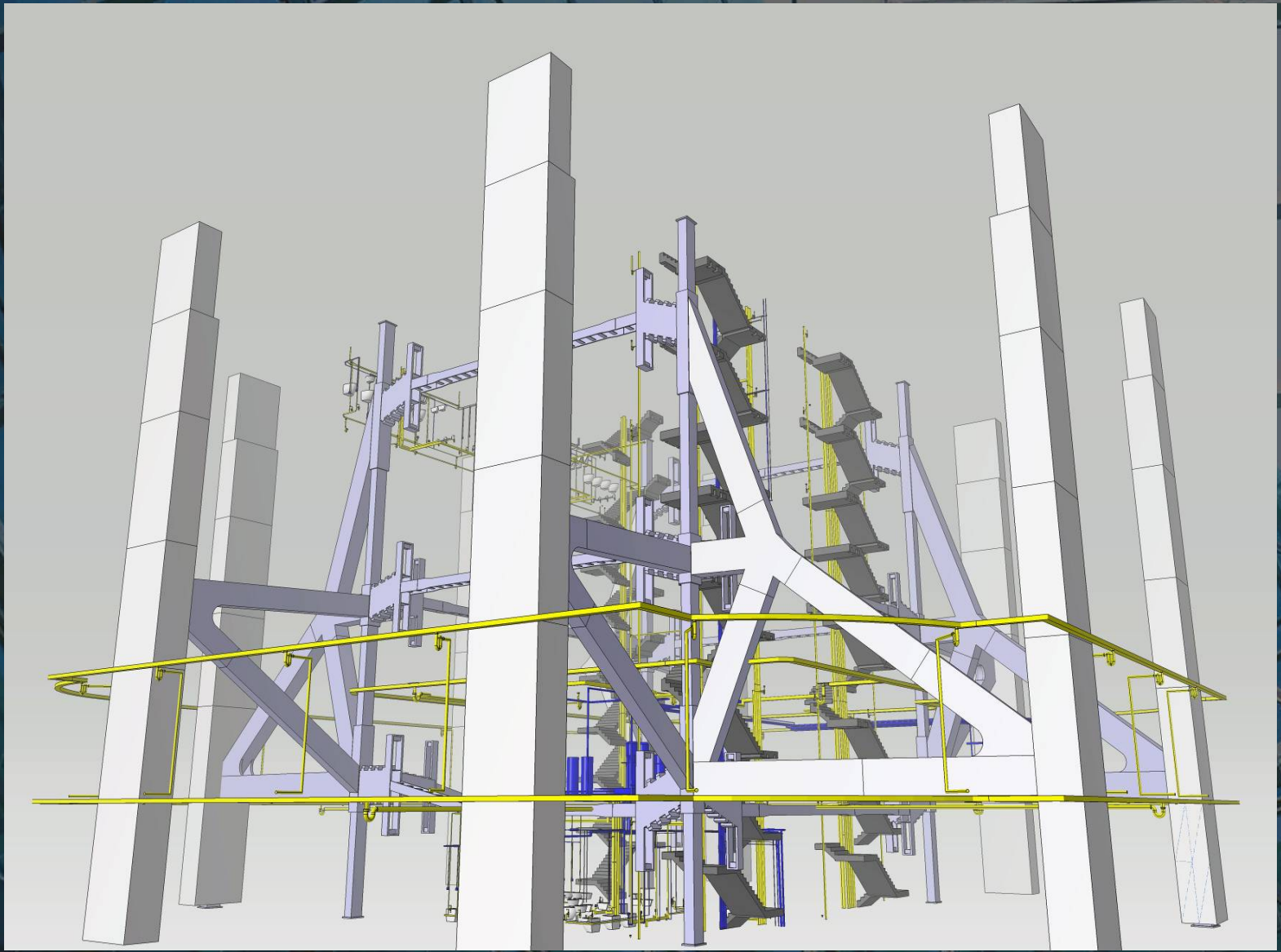
BIM HVAC Configuration

One Island East



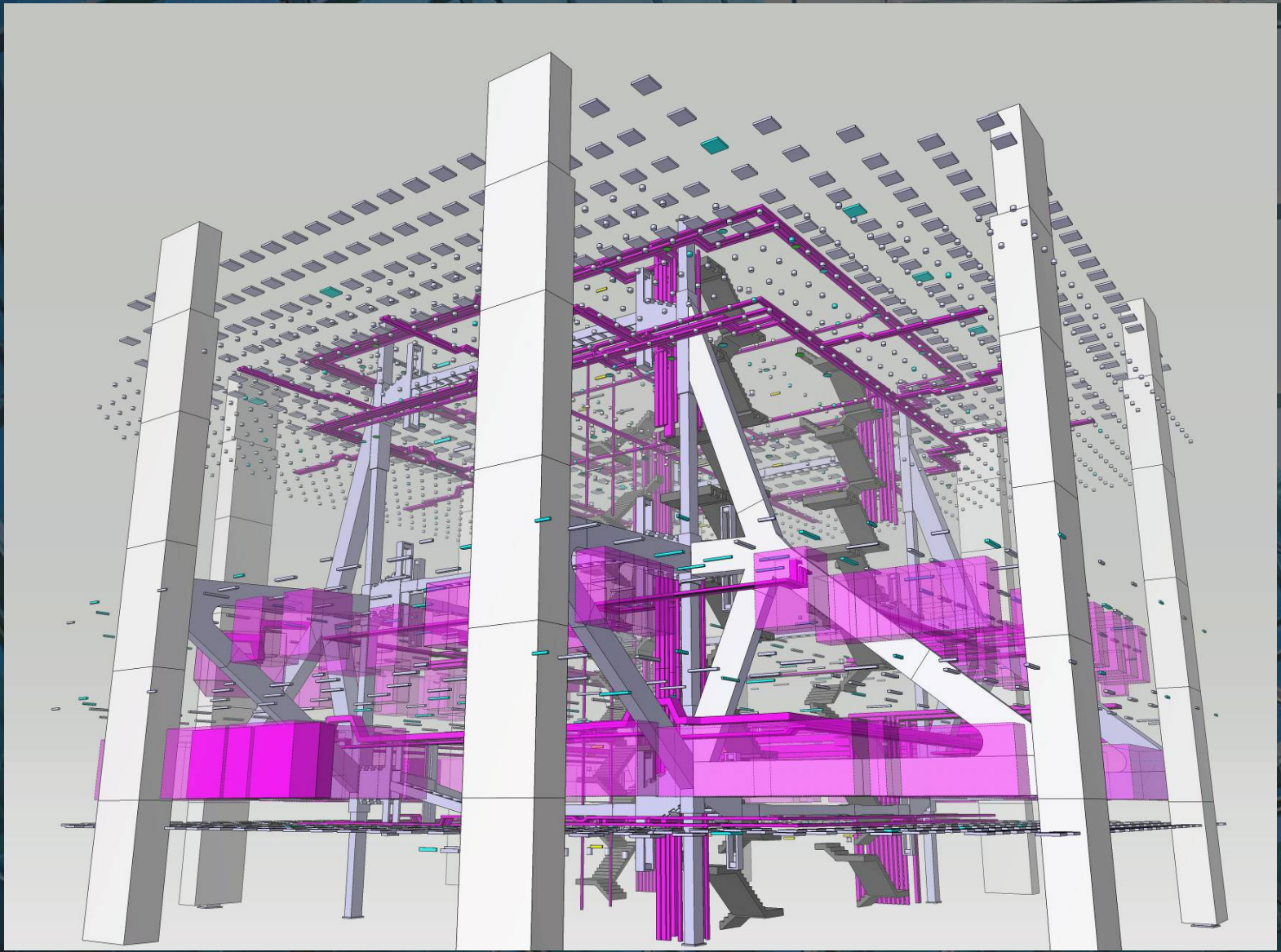
BIM FS Configuration

One Island East



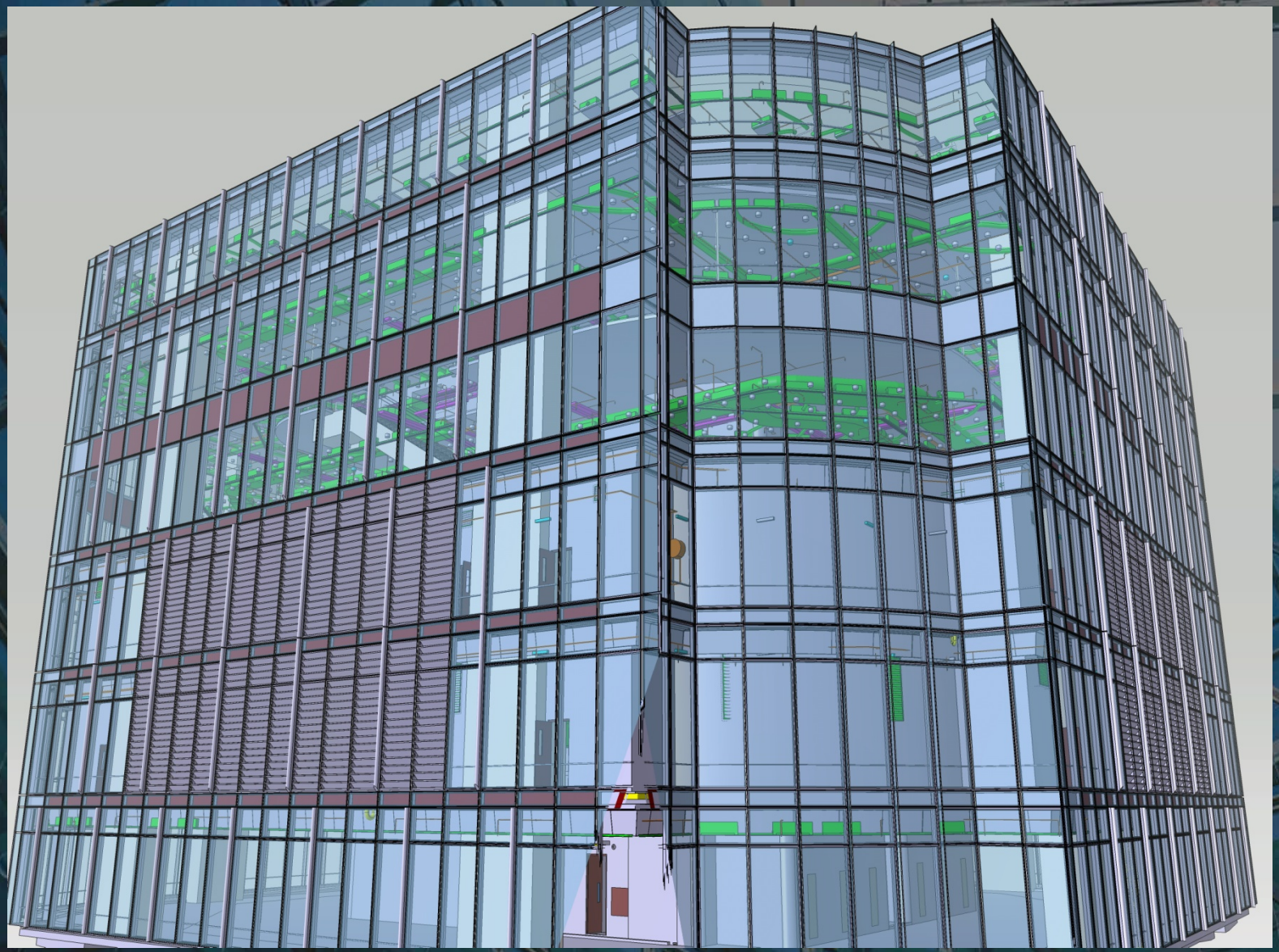
BIM Plumb & Drainage Configuration

One Island East

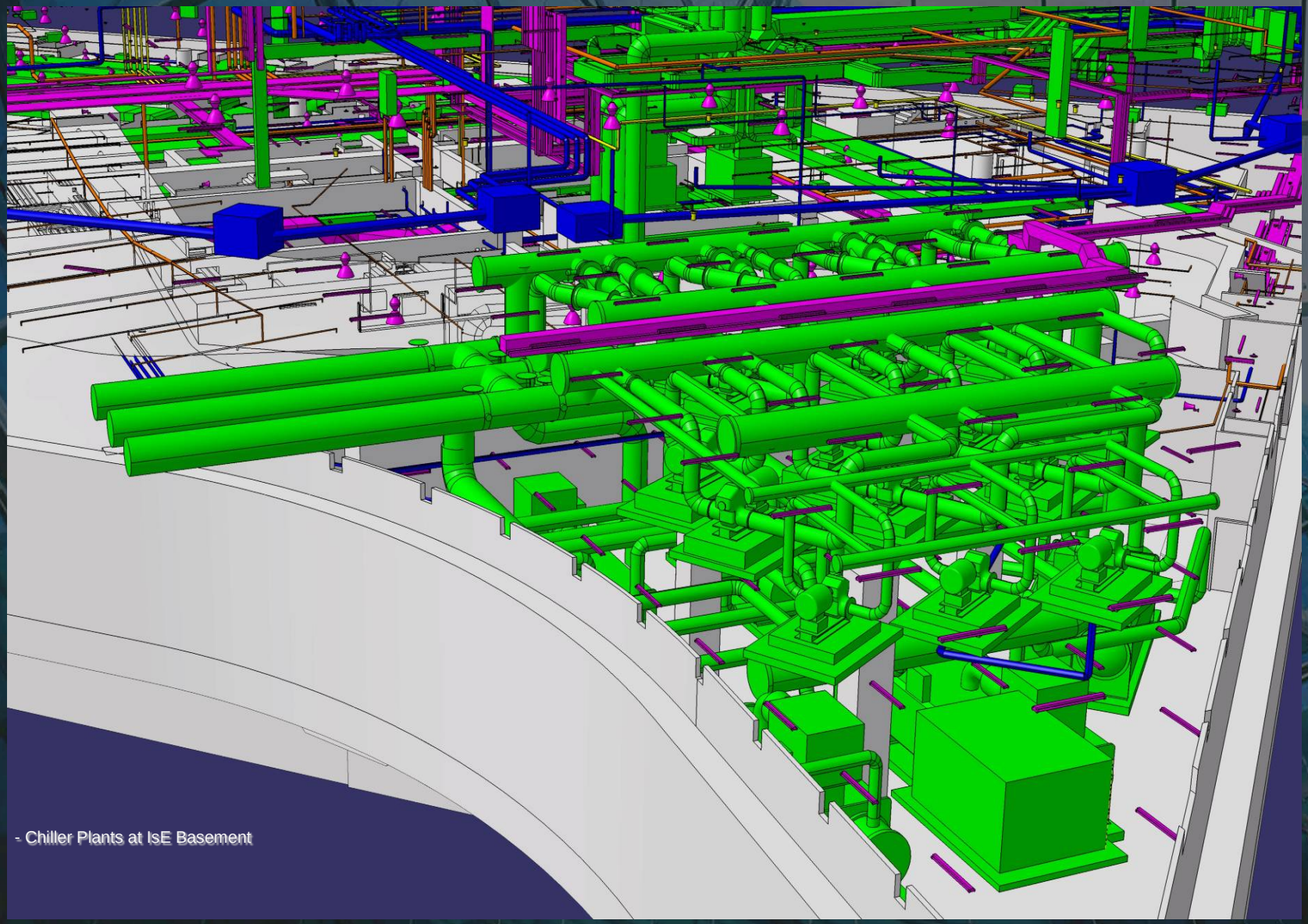


BIM ELEC Configuration

One Island East

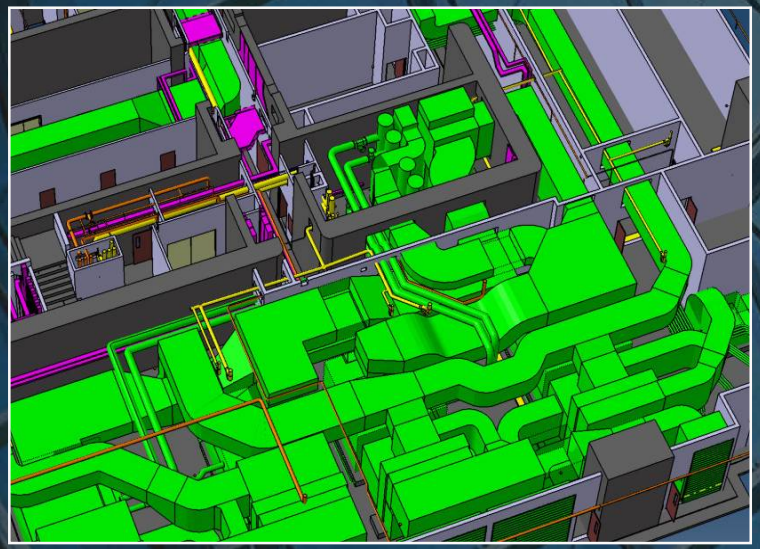


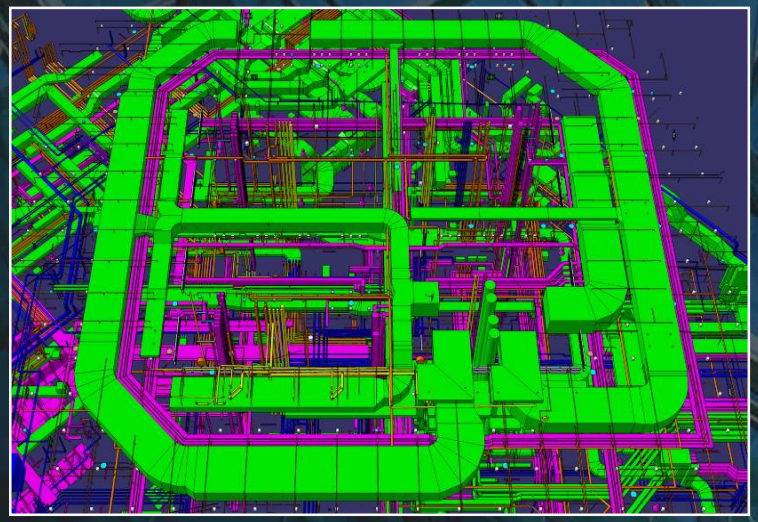
Detail Design and Coordination

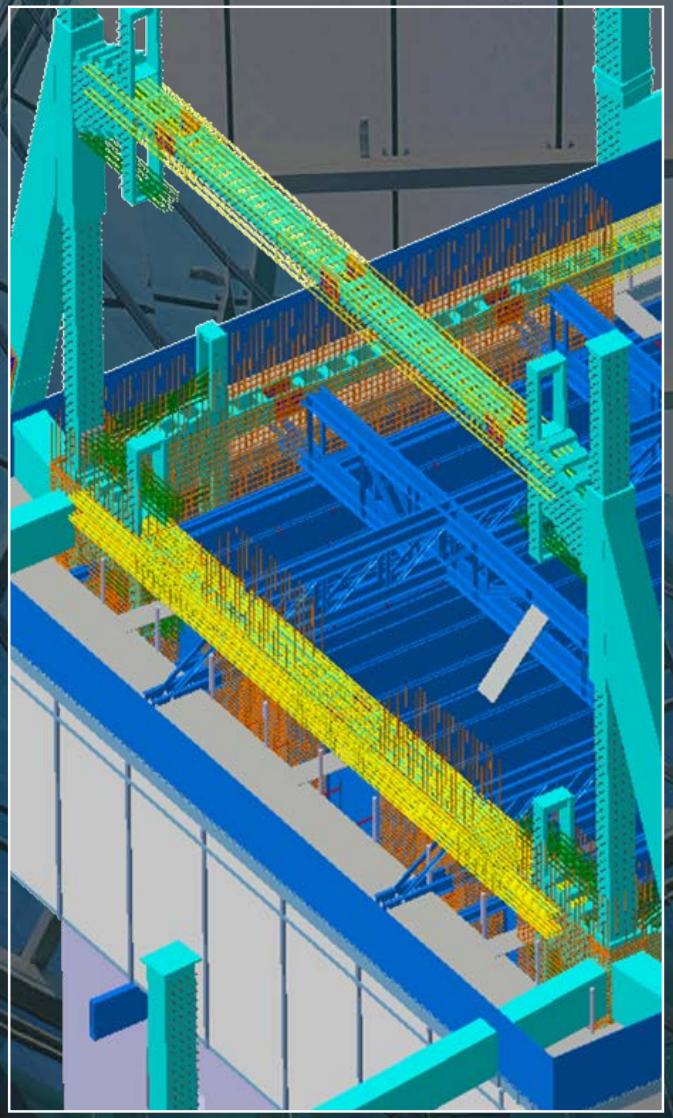


- Chiller Plants at IsE Basement

Detail Design and Coordination

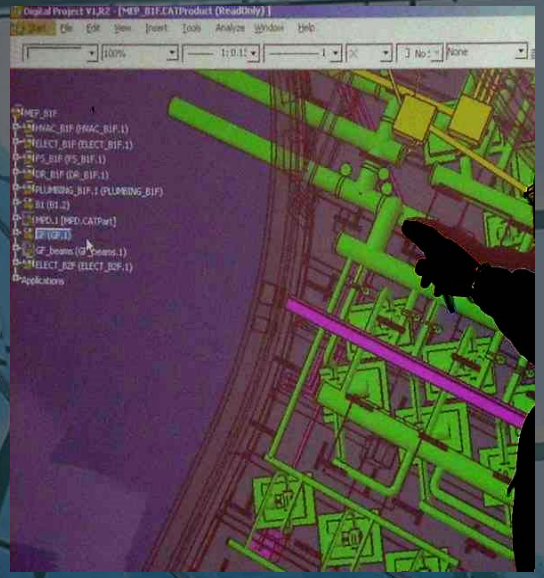






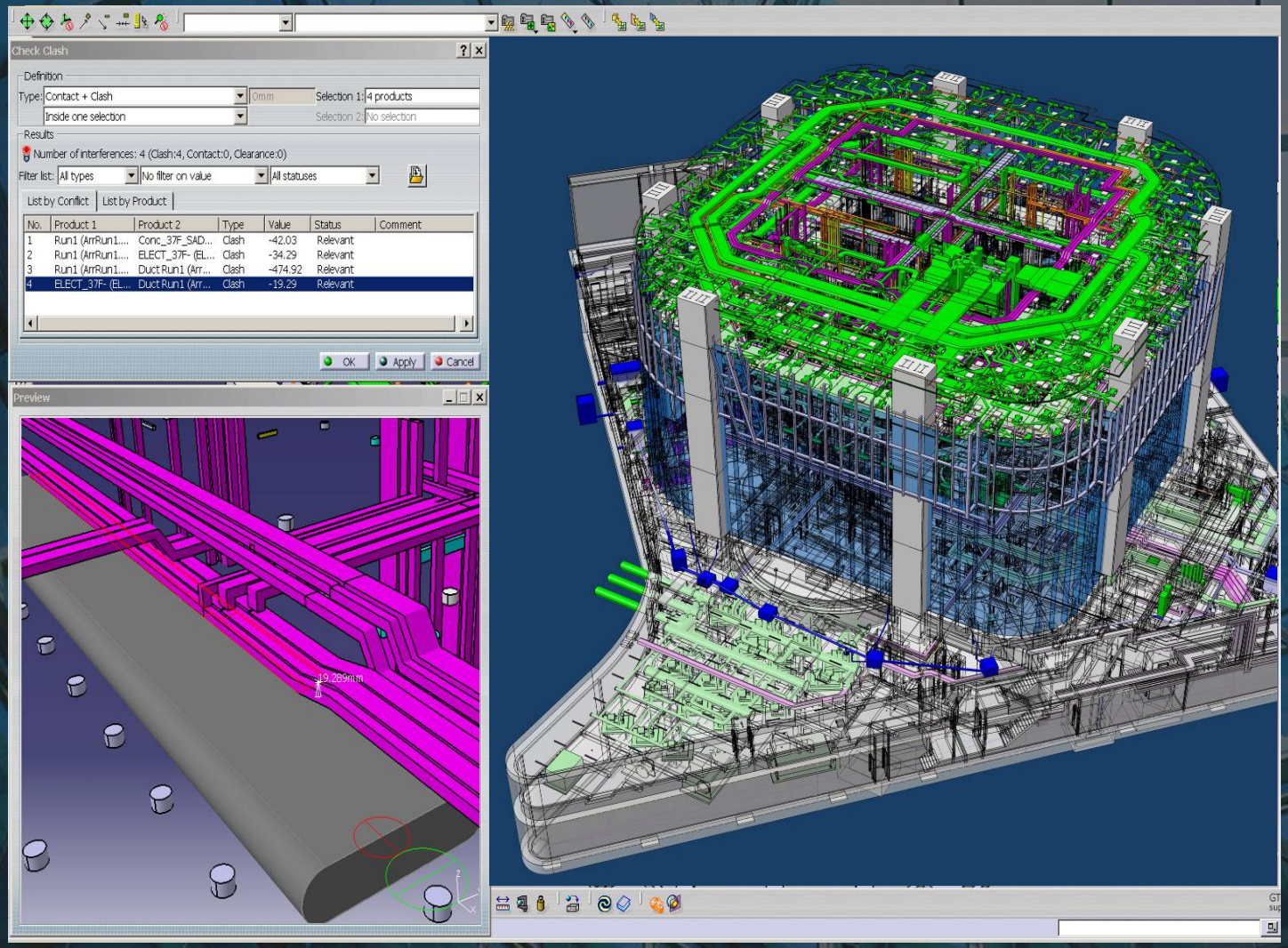
Project-wide multi-discipline design coordination

Detail Design and Coordination



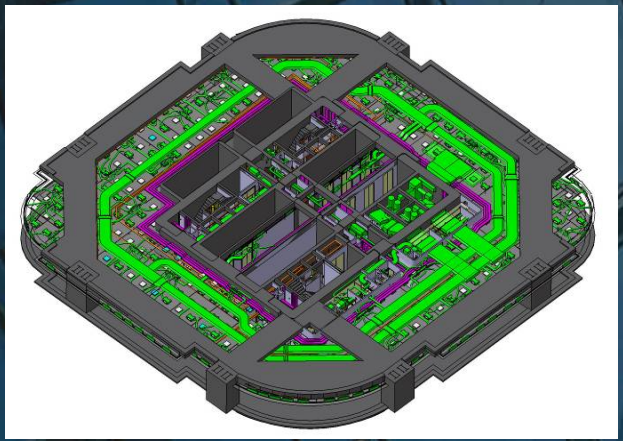
Owner, Architect, Structural, MEP, QS working in the same room on the same Contract 3D Building Information Model

Detail Design and Coordination

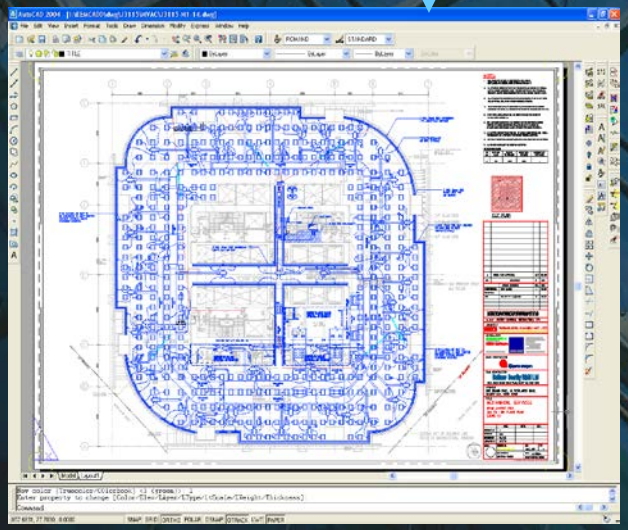


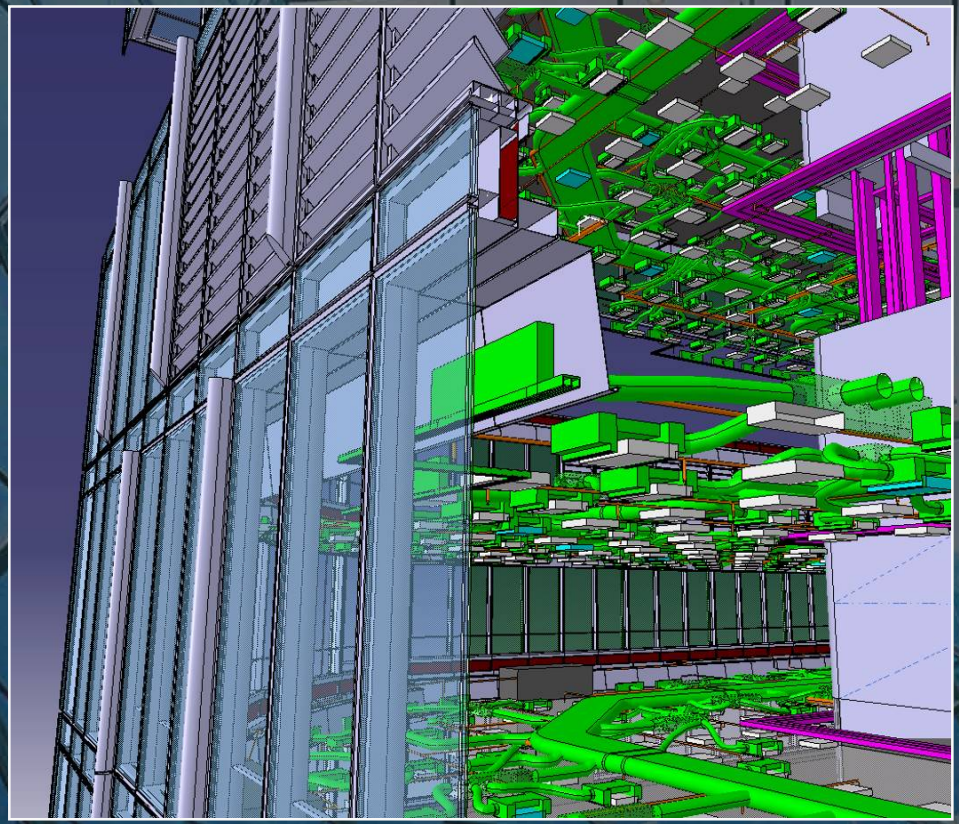
Automatic Clash Identification and Management

Work Document Coordination



Coordinated 3D geometries

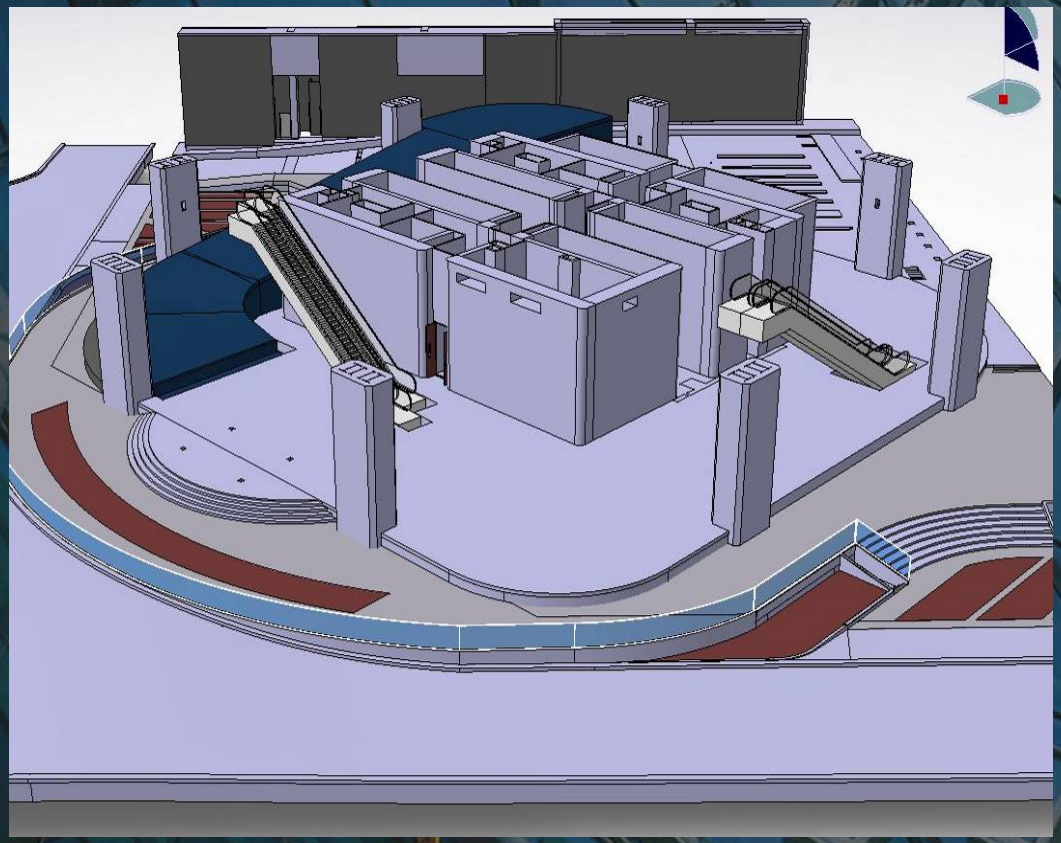




Live Sectioning

2D geometries output to ACAD for further coordination

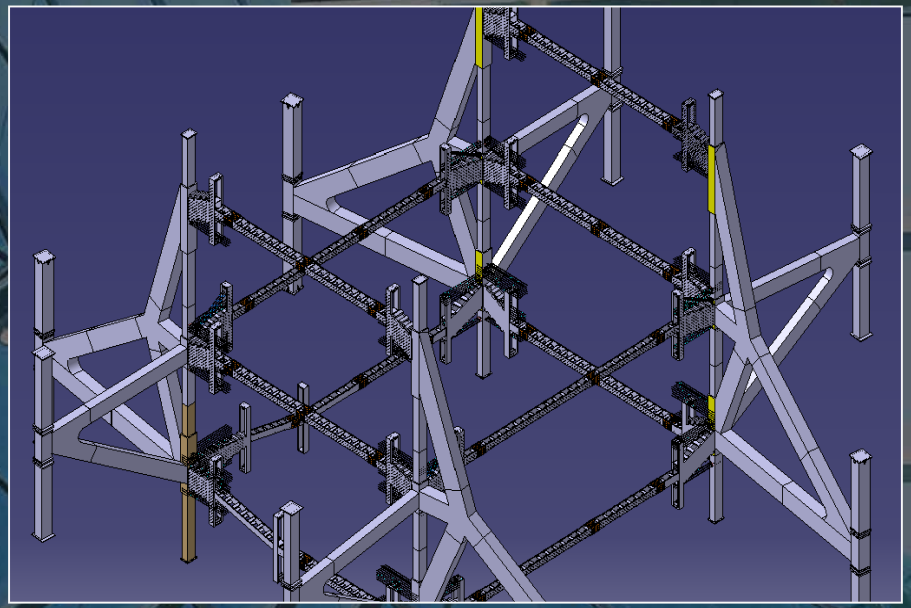
Facilitate Design Development

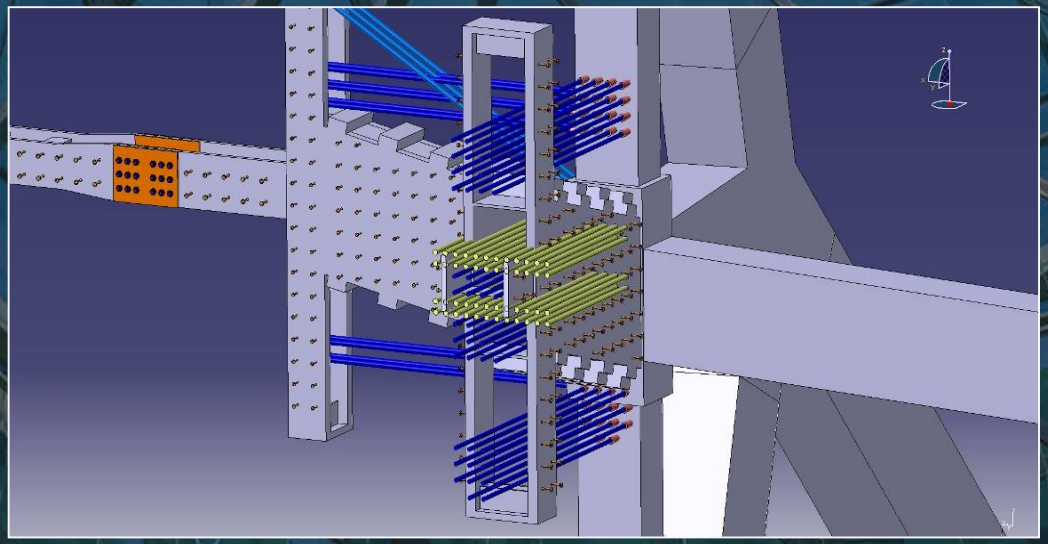


Road Curb Design Review

Car-ramp Design Review

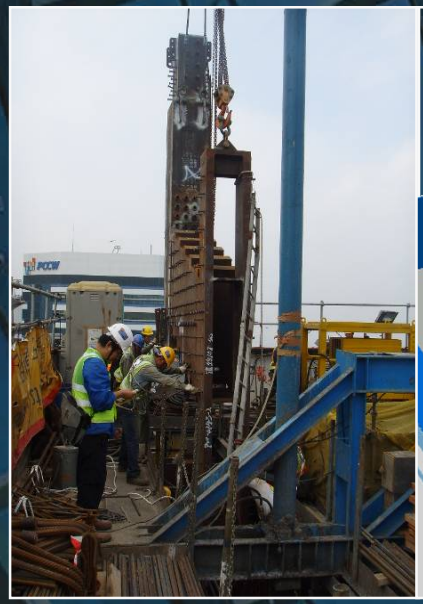
Critical Structural Detail Checking

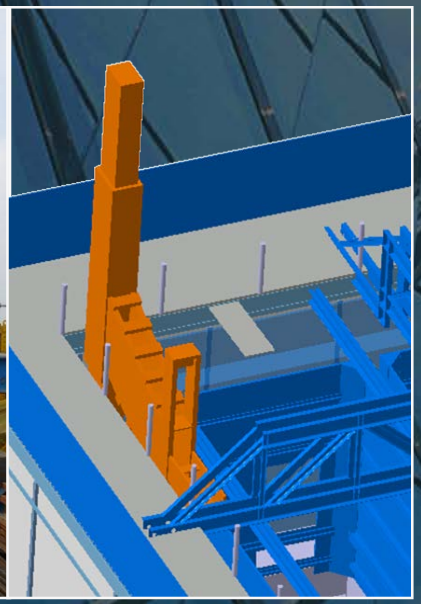


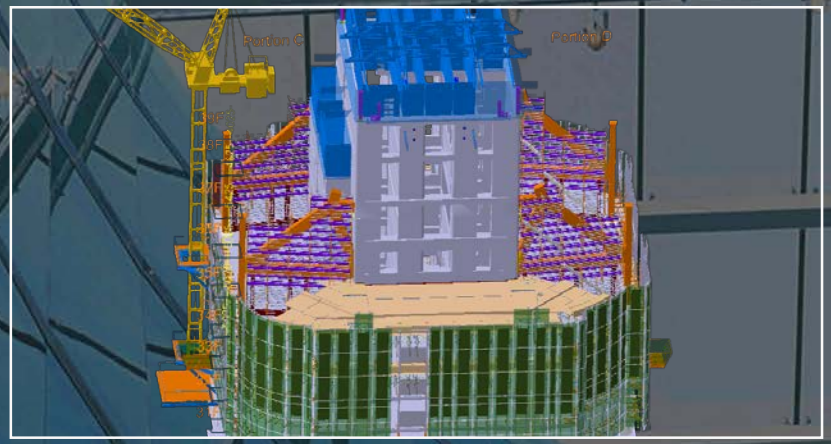


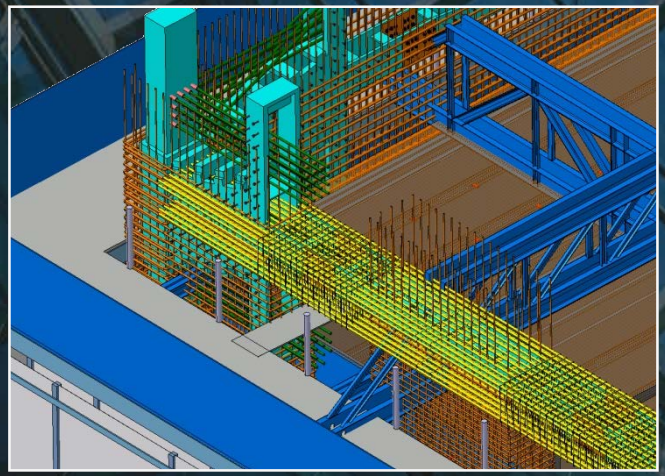
Steel Outrigger and Rebars

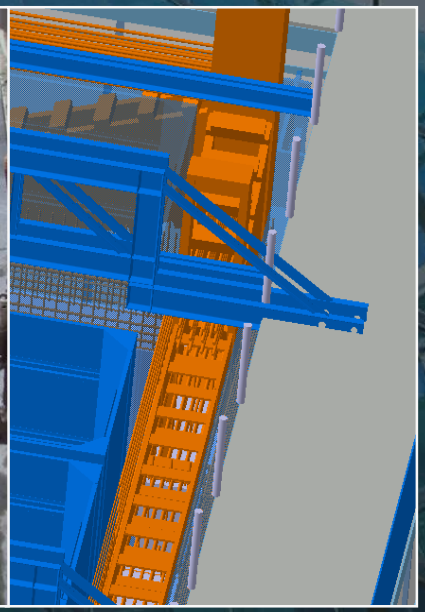
Critical Structural Detail Checking







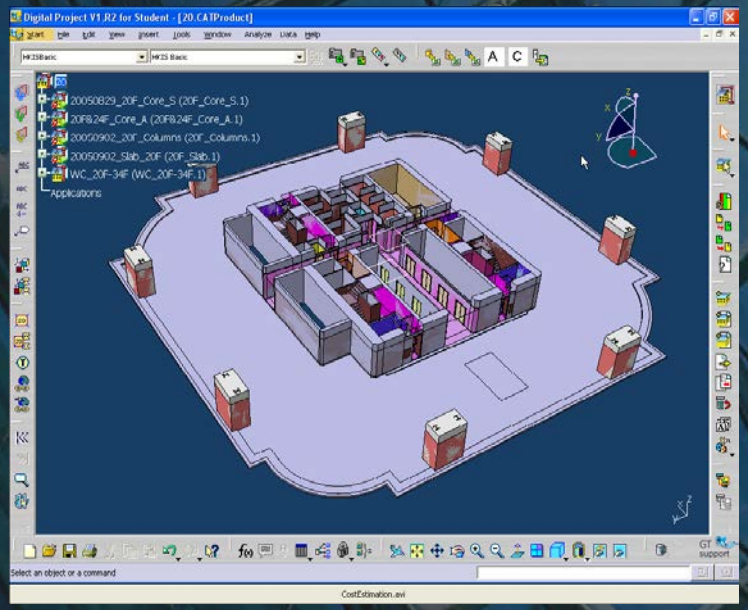


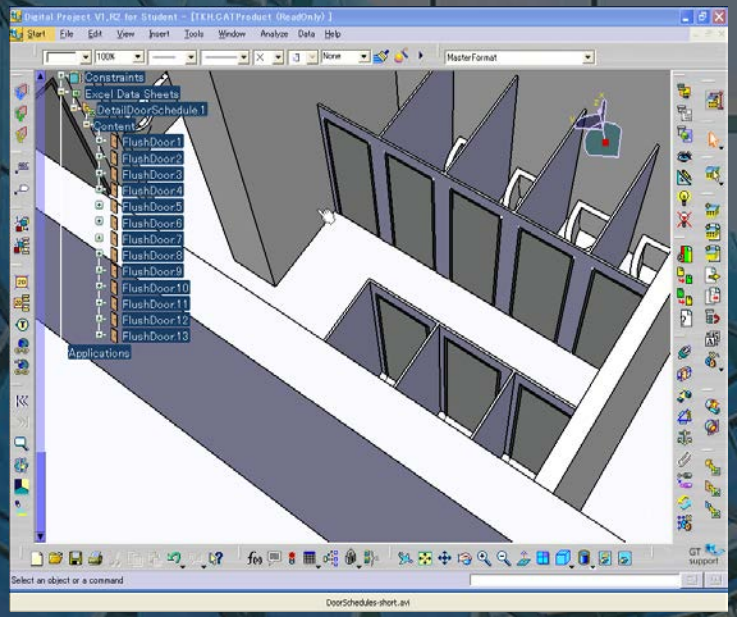


Steel Outrigger

Scheduling and Data Extraction

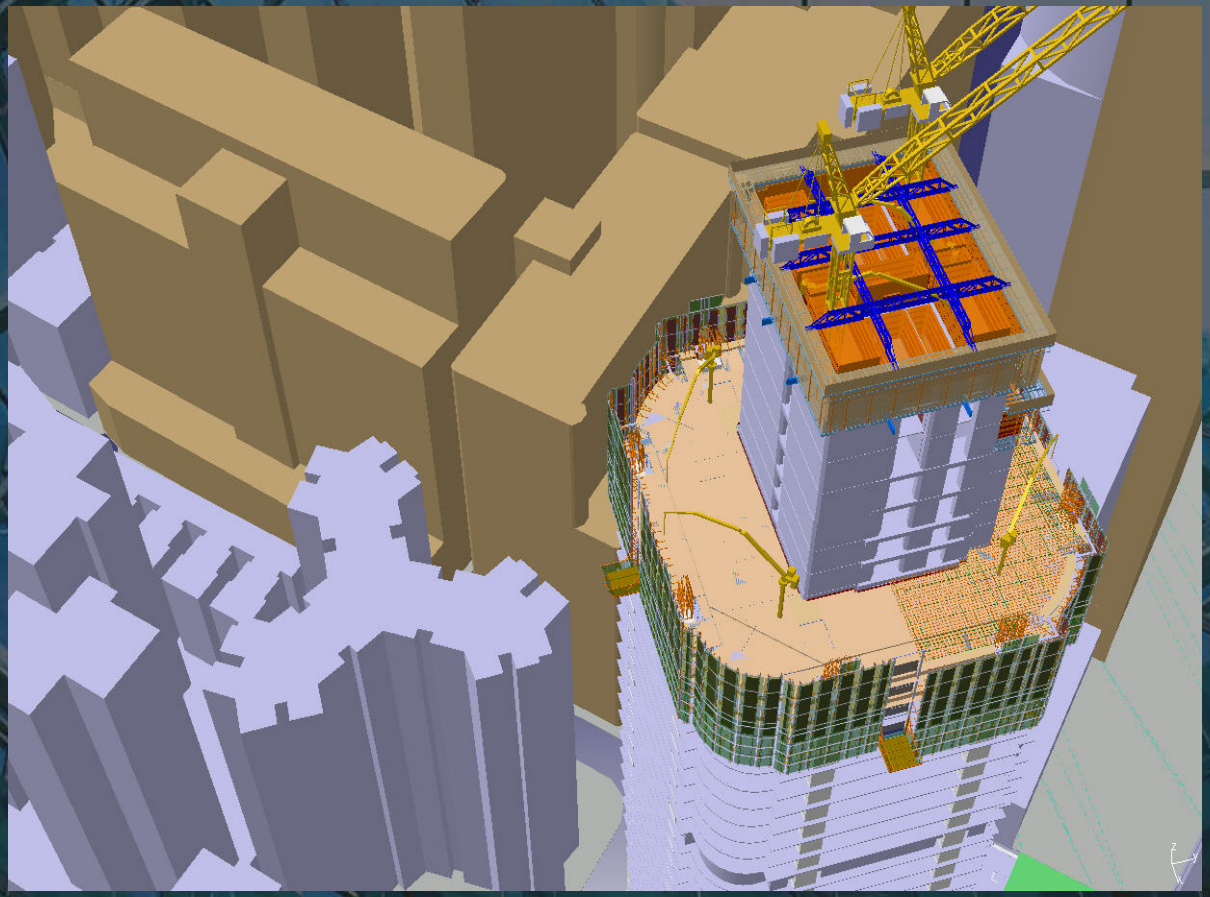
- Quantity Extraction from BIM
- Work Scheduling utilizing BIM





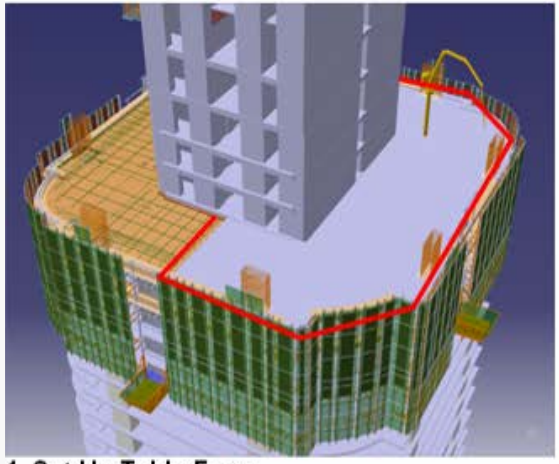
Virtual Prototyping (4D Model)

- Detail study on the critical process
  - 4-day floor cycle

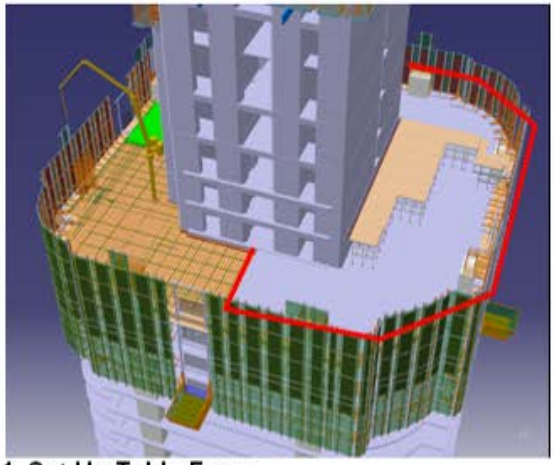


Virtual Prototyping

4 Day Cycle Simulation (Day 1)



1. Set Up Table Form
2. Lift Safety Screen
3. Fixing Column Form



1. Set Up Table Form
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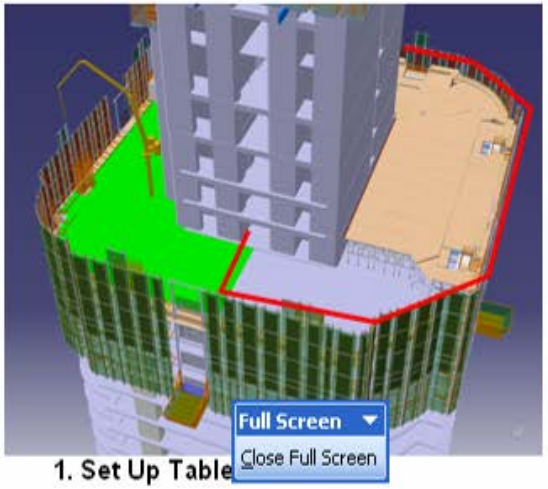
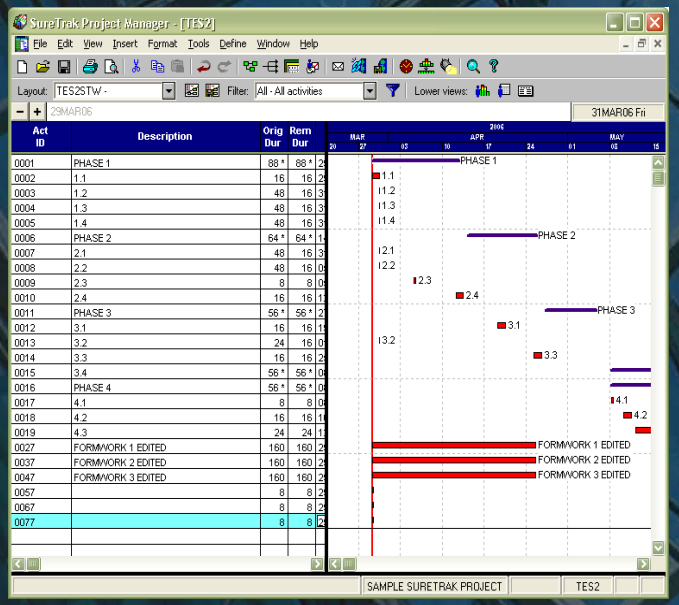
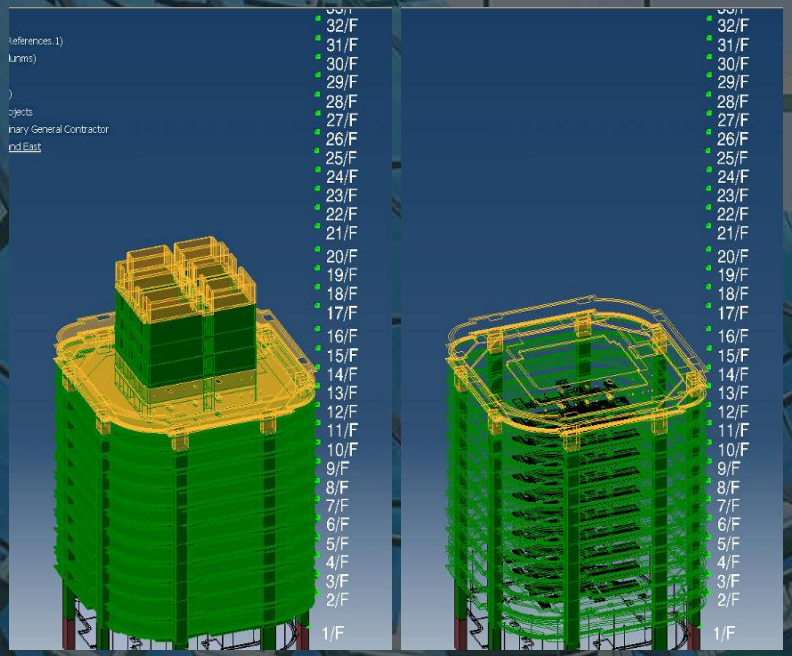


1. Set Up Table

Visualize Master Progress with 4D Model

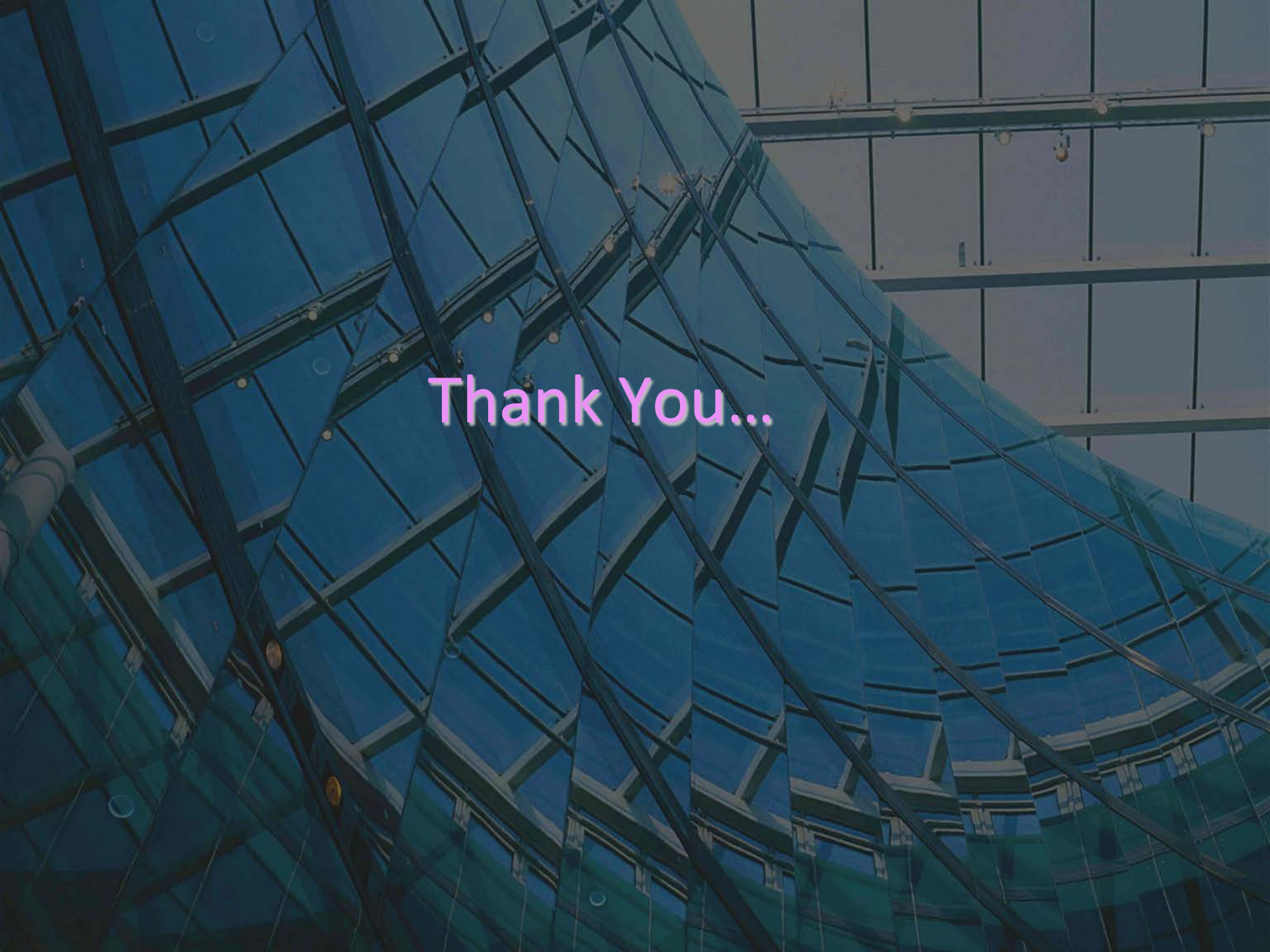
Data exchanging between Primavera and Digital Project





Primavera

Digital Project



Thank You…