

Revit 2021

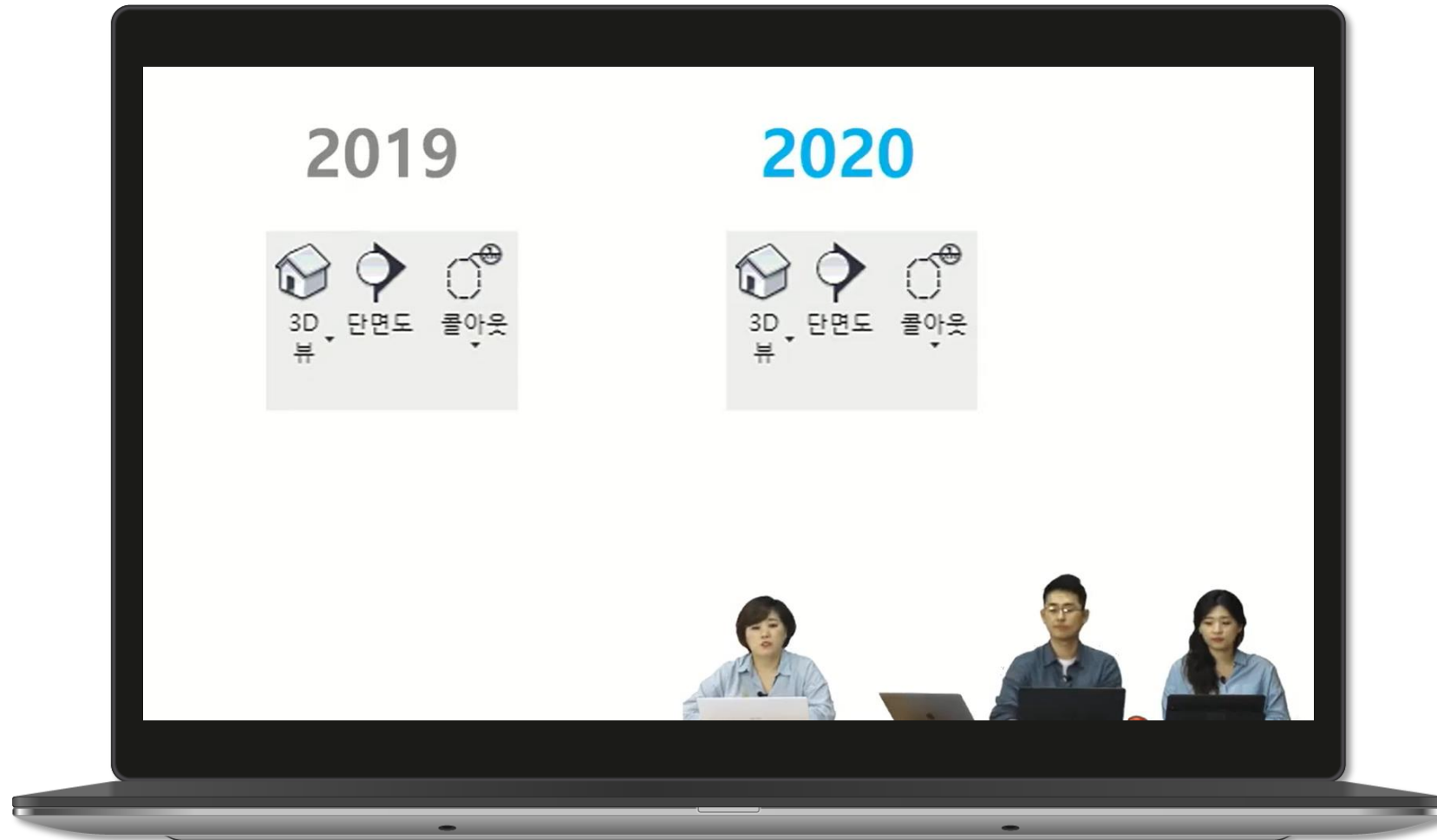
What's New?

SCK 이경미, 하늘새라

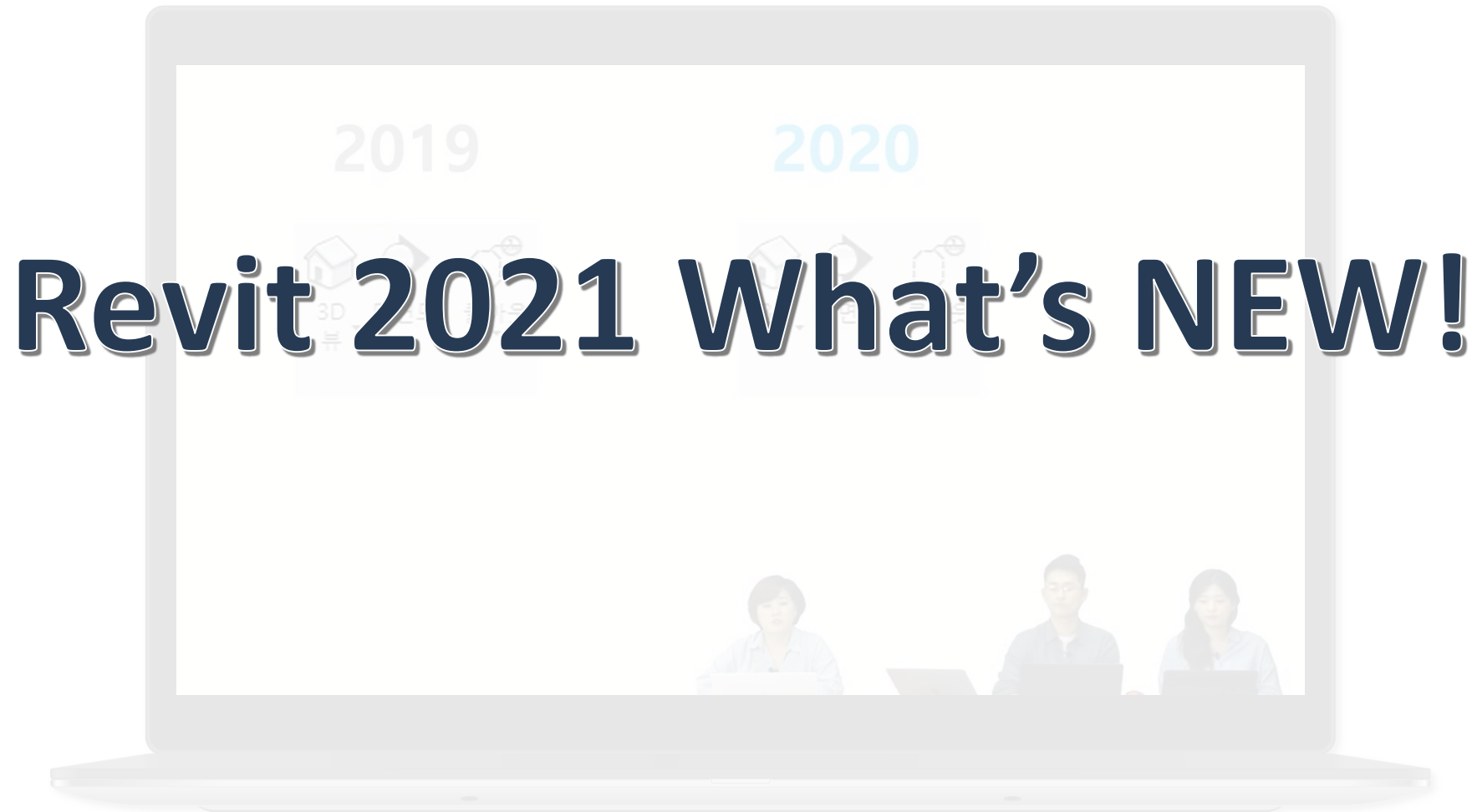
Autodesk 최용성



Revit 2020 What's NEW!



Revit 2020 What's NEW!



C O N T E N T

01. Revit 2019,2020

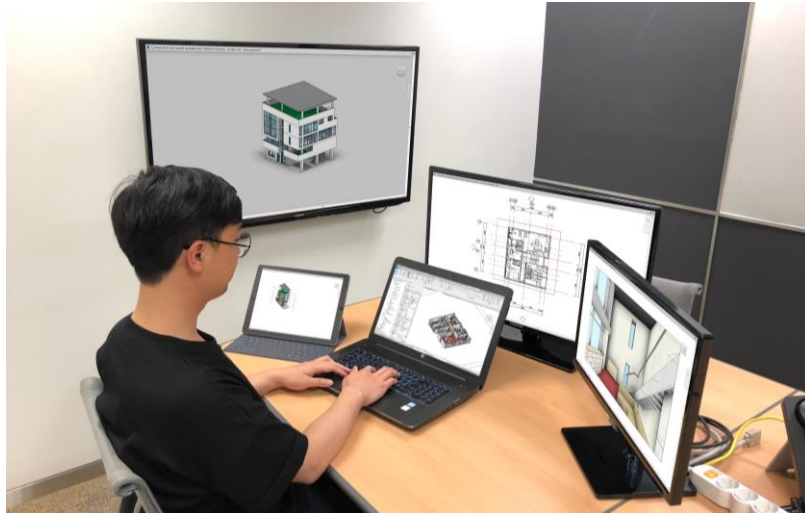
02. Revit 2021

03. Q&A

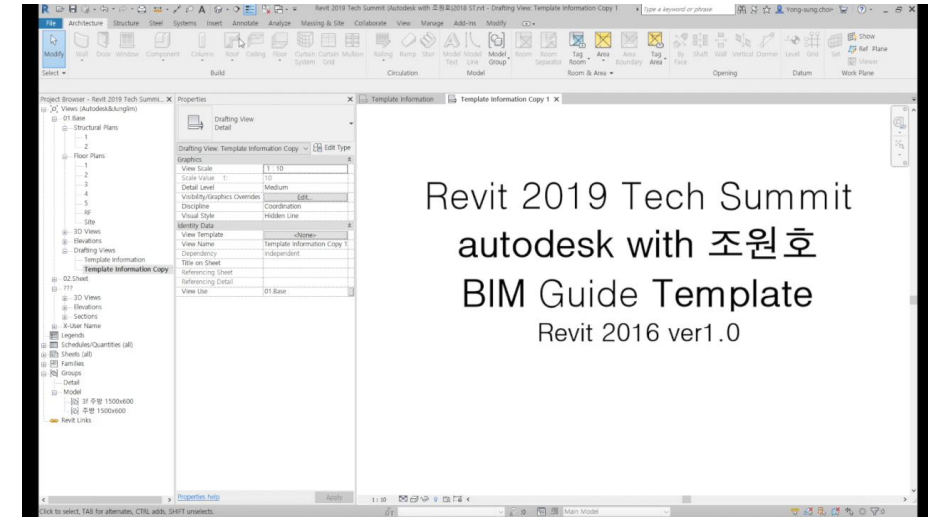
Revit 2021
What's New?

01. 2019 & 2020

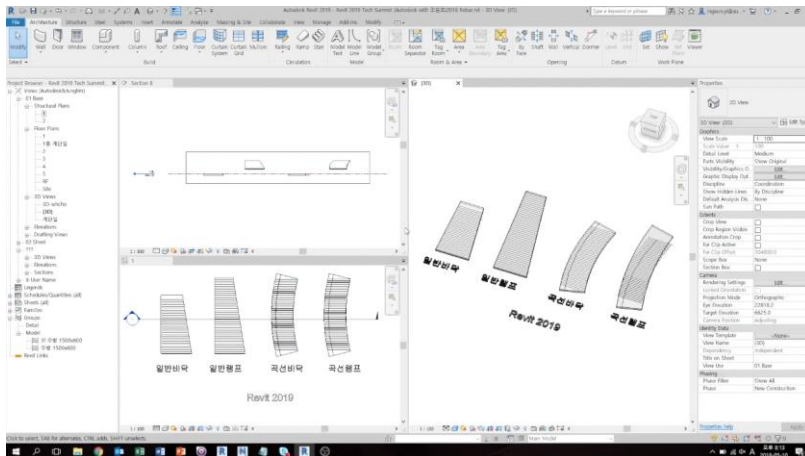
Revit 2019 Keyword



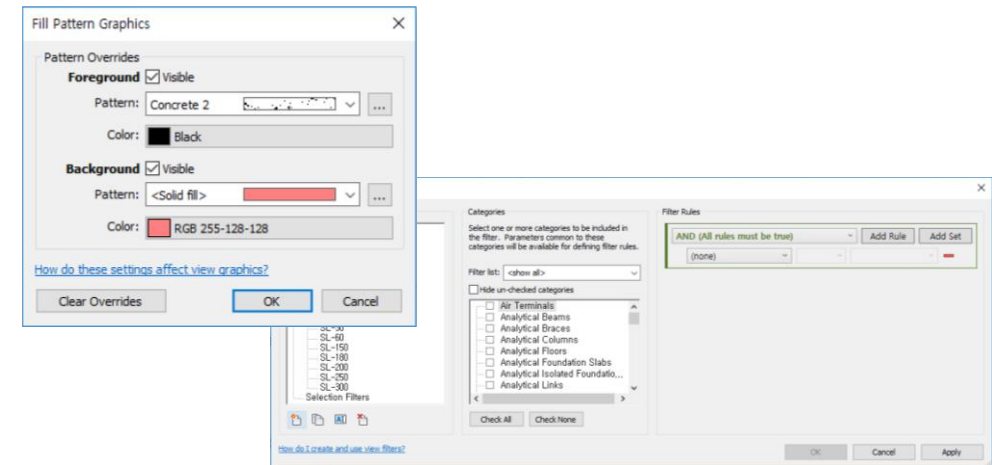
Multi-monitor View tab



Steel connection & modeling

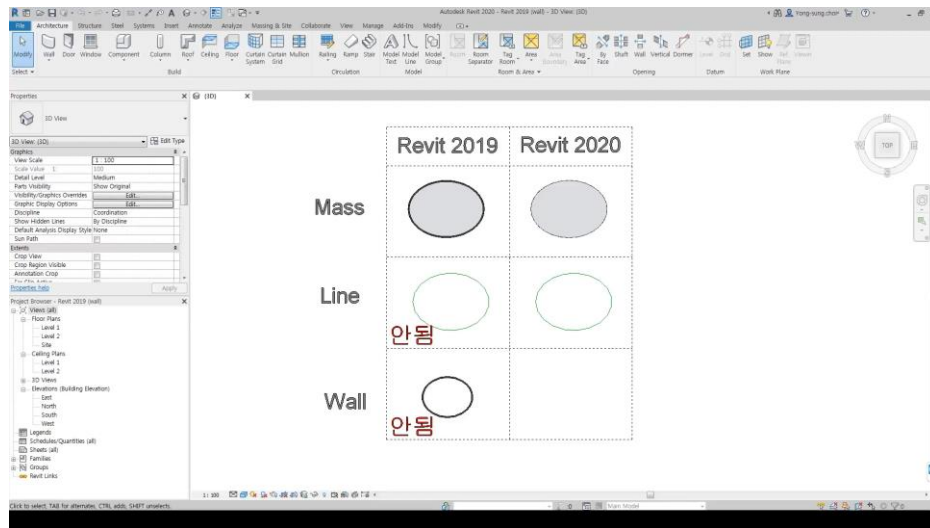


Freeform Rebar Modeling

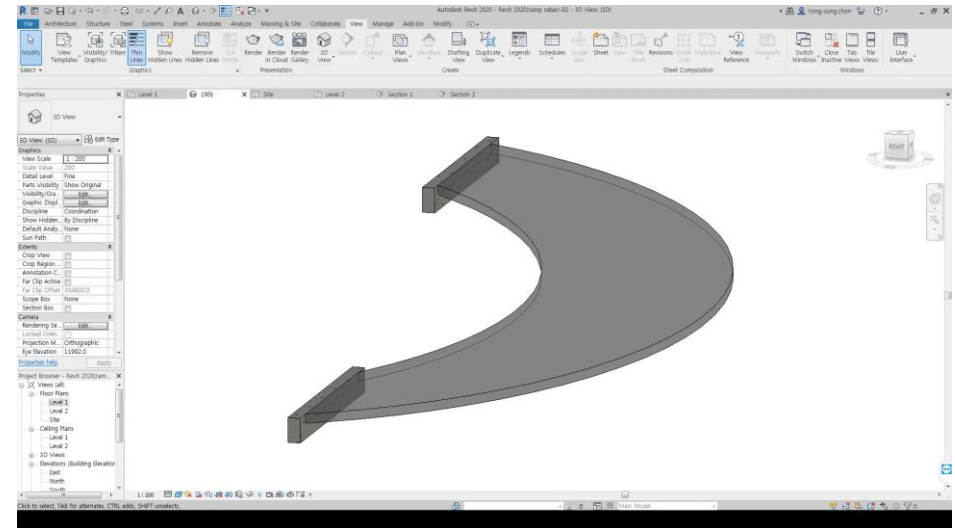


Fill pattern & Filter

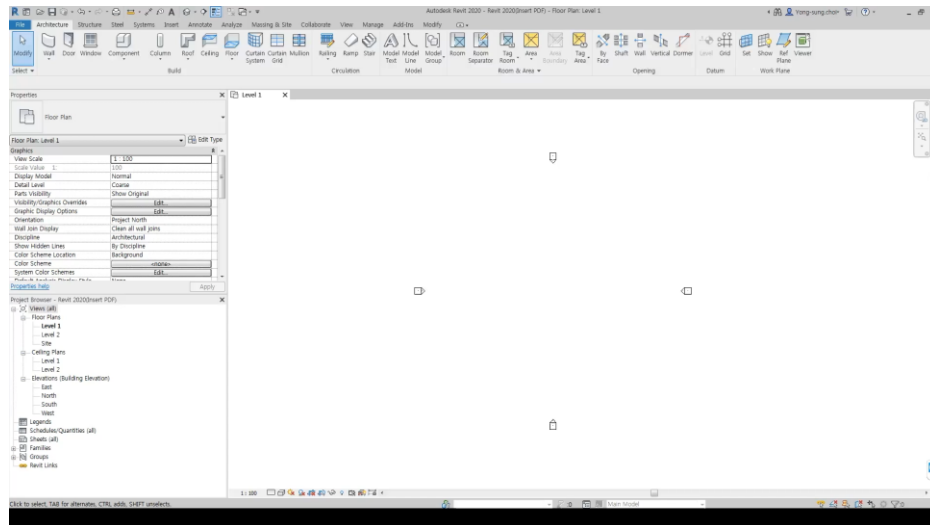
Revit 2020 Keyword



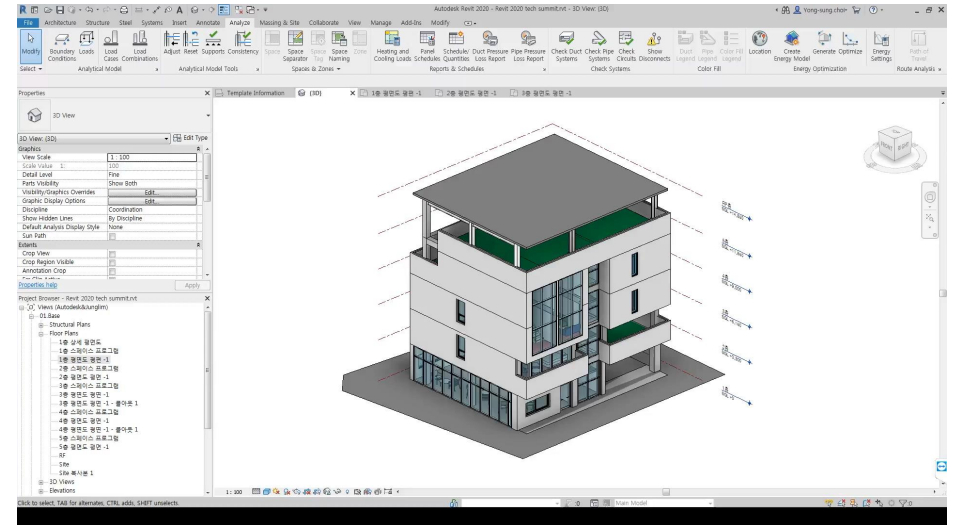
Elliptical Walls



Rebar Modeling



Import PDF



Route Analysis

Revit 2021
What's New?

01. Revit 2021

01.GENERAL

02.MODELING

03.2D&3D Document

04.SIMULATION

05.ETC

01. GENERAL

Revit 2021

The image shows the Autodesk Revit 2021 Home screen. The left sidebar contains navigation links: [What's new](#), [Online help](#), [Community forum](#), and [Customer support](#). The main area displays 'Recent Files' with thumbnails for 'AutoZoning Test(CHOI)' and 'Sample Architecture Proj...', and 'FAMILIES' with thumbnails for 'Sample Architecture Fami...' and 'Sample Structure Family'. Two dialog boxes are overlaid on the screen, connected by a blue arrow pointing from left to right.

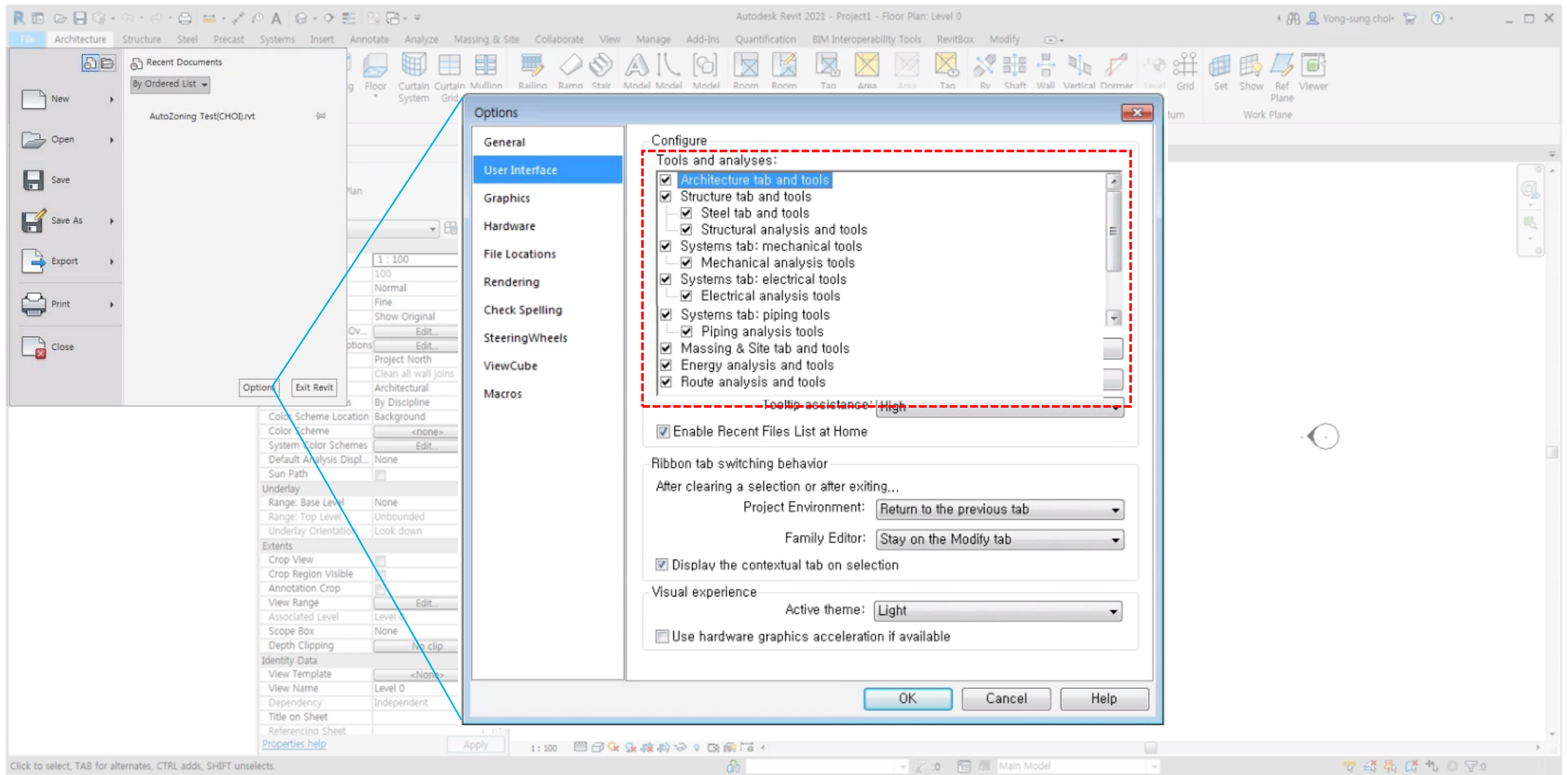
Dialog Box 1: Select all disciplines that apply to the work you do.

This dialog box contains a grid of icons representing different disciplines. The icons for **Structure**, **Mechanical**, **Electrical**, **Plumbing**, and **Infrastructure** are highlighted with a red dashed border. Below the grid, the text 'Which of the following best describes your job role?' is followed by a dropdown menu labeled 'Job Role' with the selection 'Detailer/Technician'. A blue button labeled 'View suggestion' is at the bottom.

Dialog Box 2: Your workspace has been customized.

This dialog box features an illustration of a drafting table. Below the illustration, the text reads: 'You can always display the hidden ribbon tabs and tools later from File > Options > User Interface.' At the bottom, there are two buttons: 'Restore' and 'Start working', both of which are highlighted with a red dashed border. A link at the very bottom says 'How do I hide or display ribbon tabs and tools?'.

Revit 2021



Revit 2021

Basic Tab



Architecture Tab



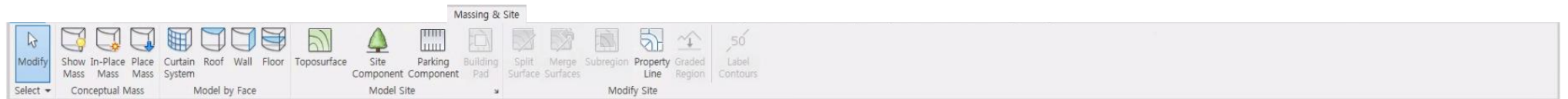
Structure Tab



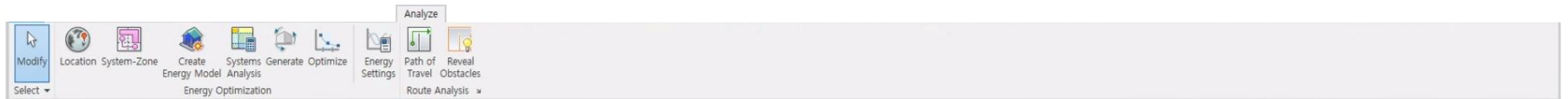
System Tab



Massing & Site Tab

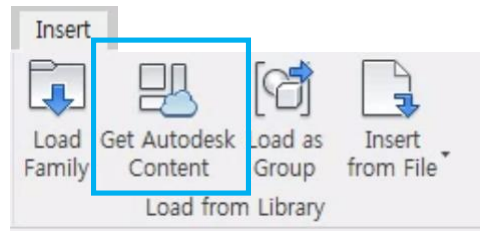
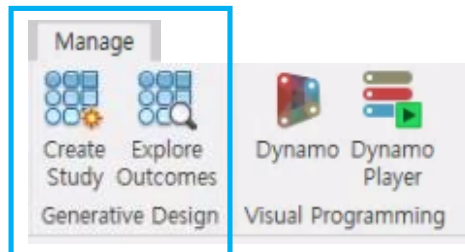
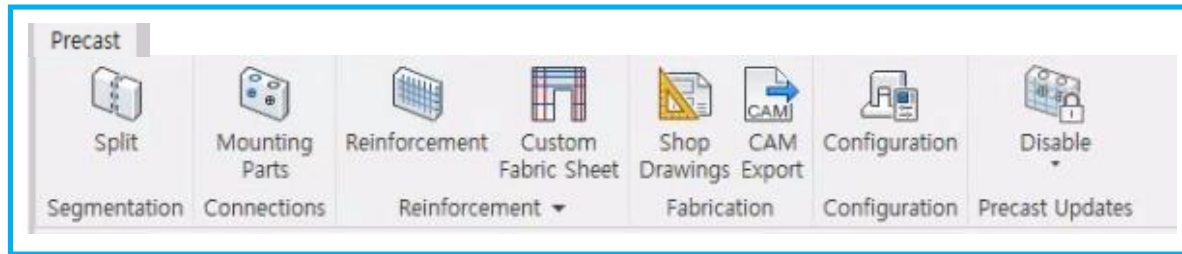


Analyze Tab



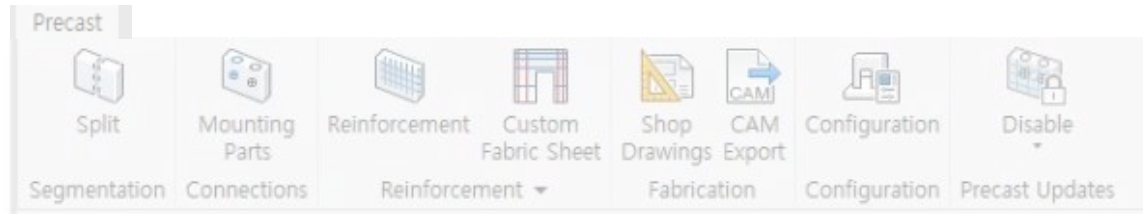
사용자 Tool Tab

Revit 2021

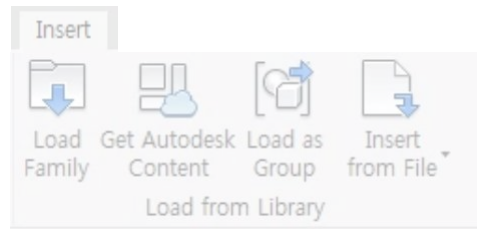


New icon & tool tab

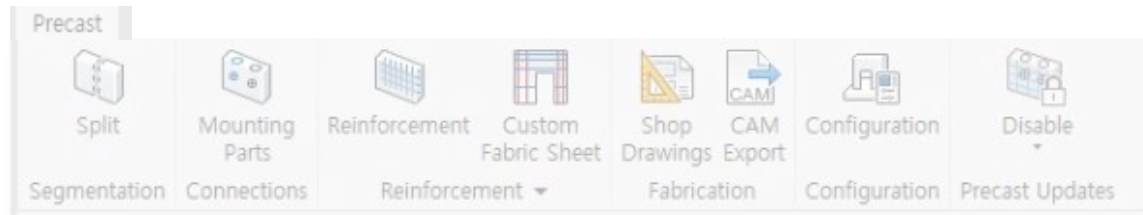
Revit 2021



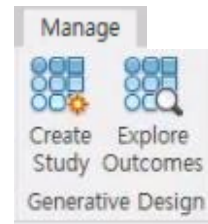
Refinery



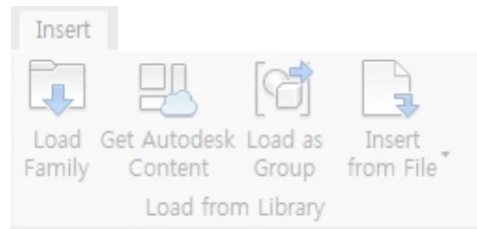
Revit 2021



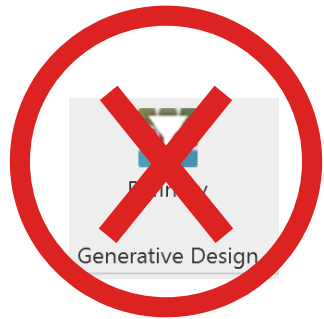
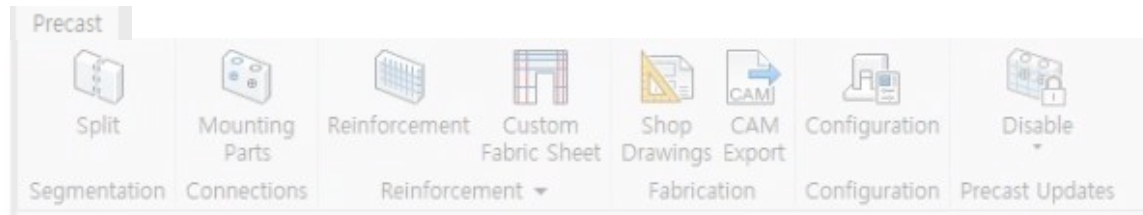
Refinery



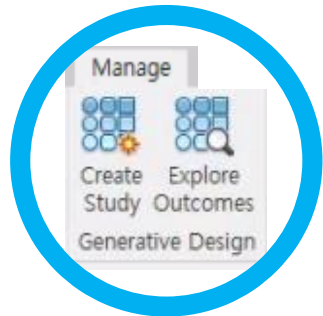
Generative Design



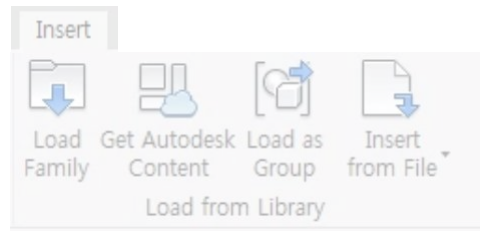
Revit 2021



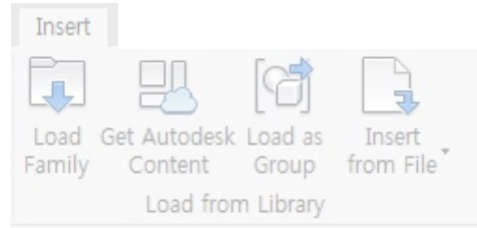
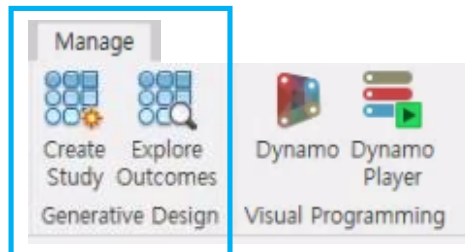
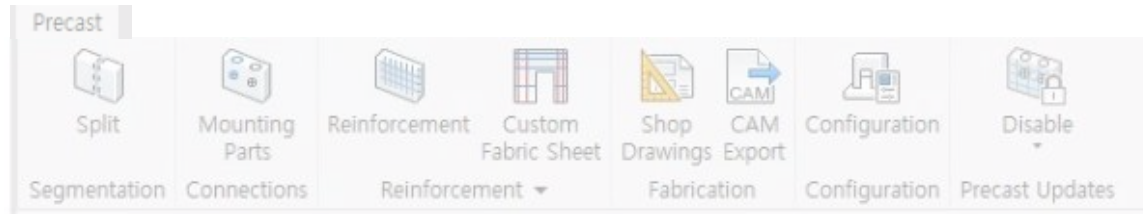
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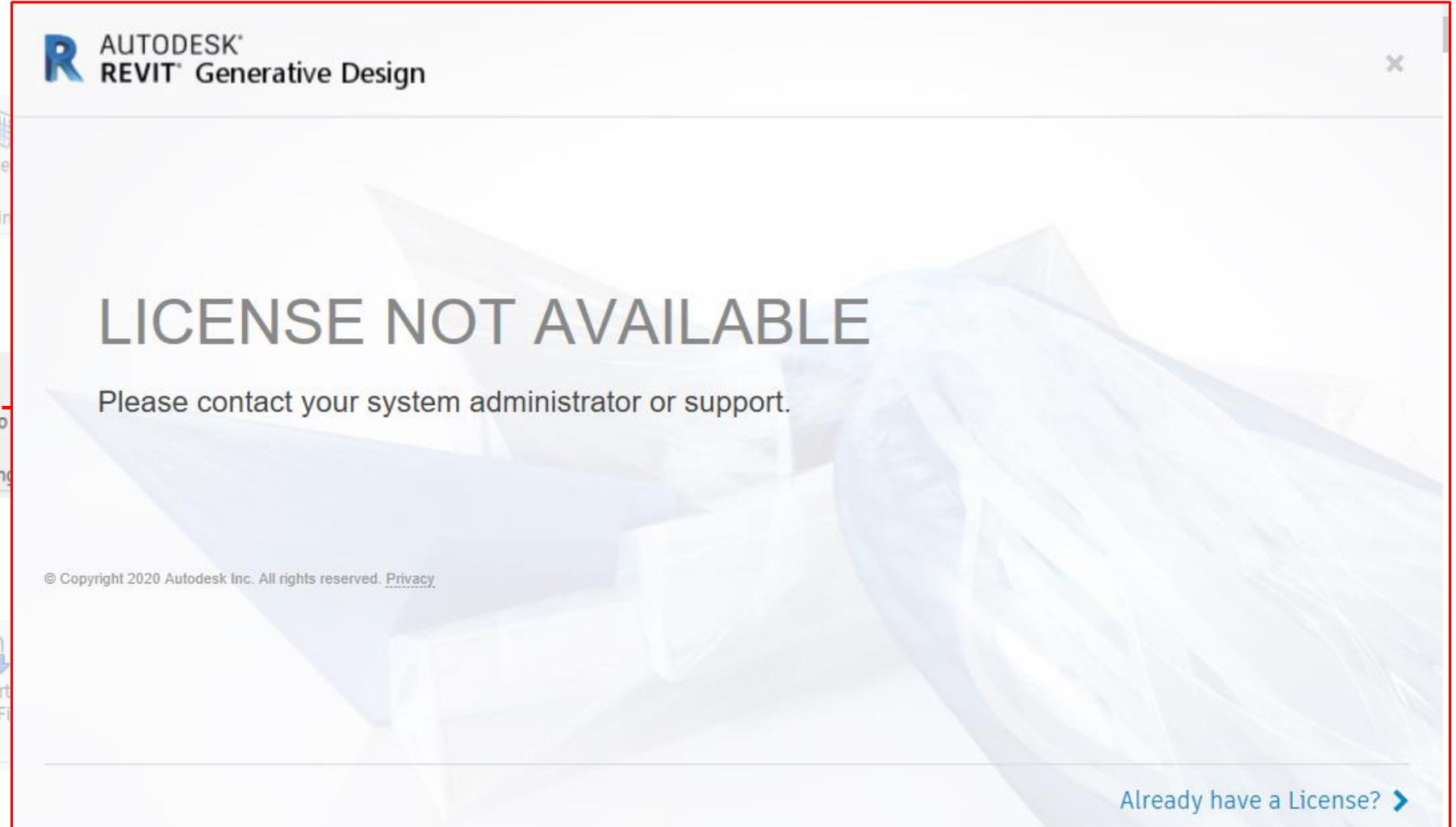
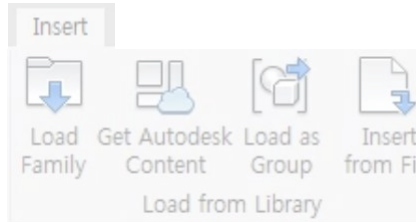
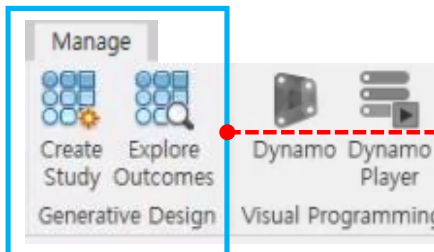
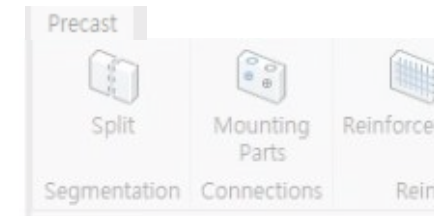
Generative Design



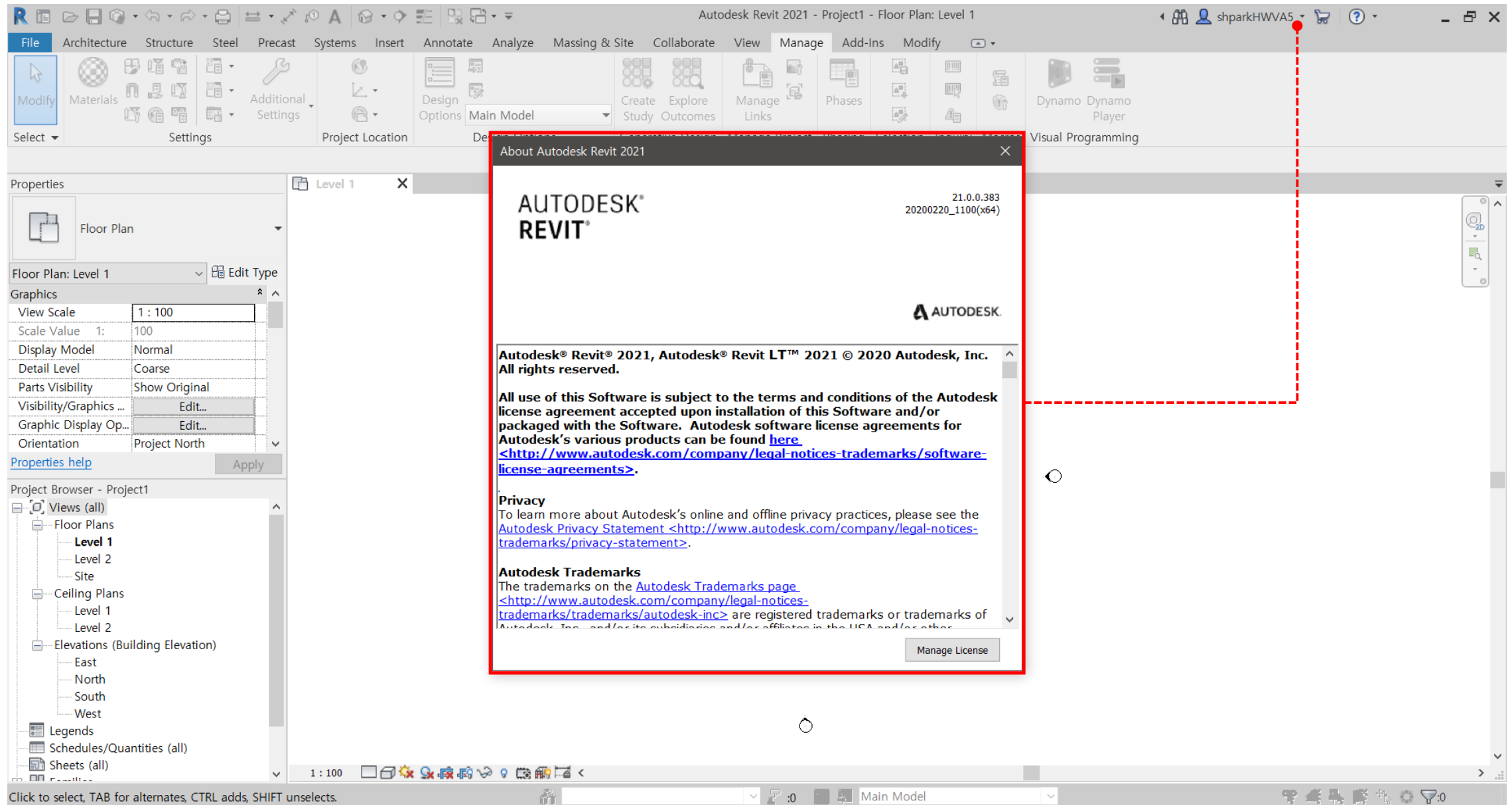
Revit 2021



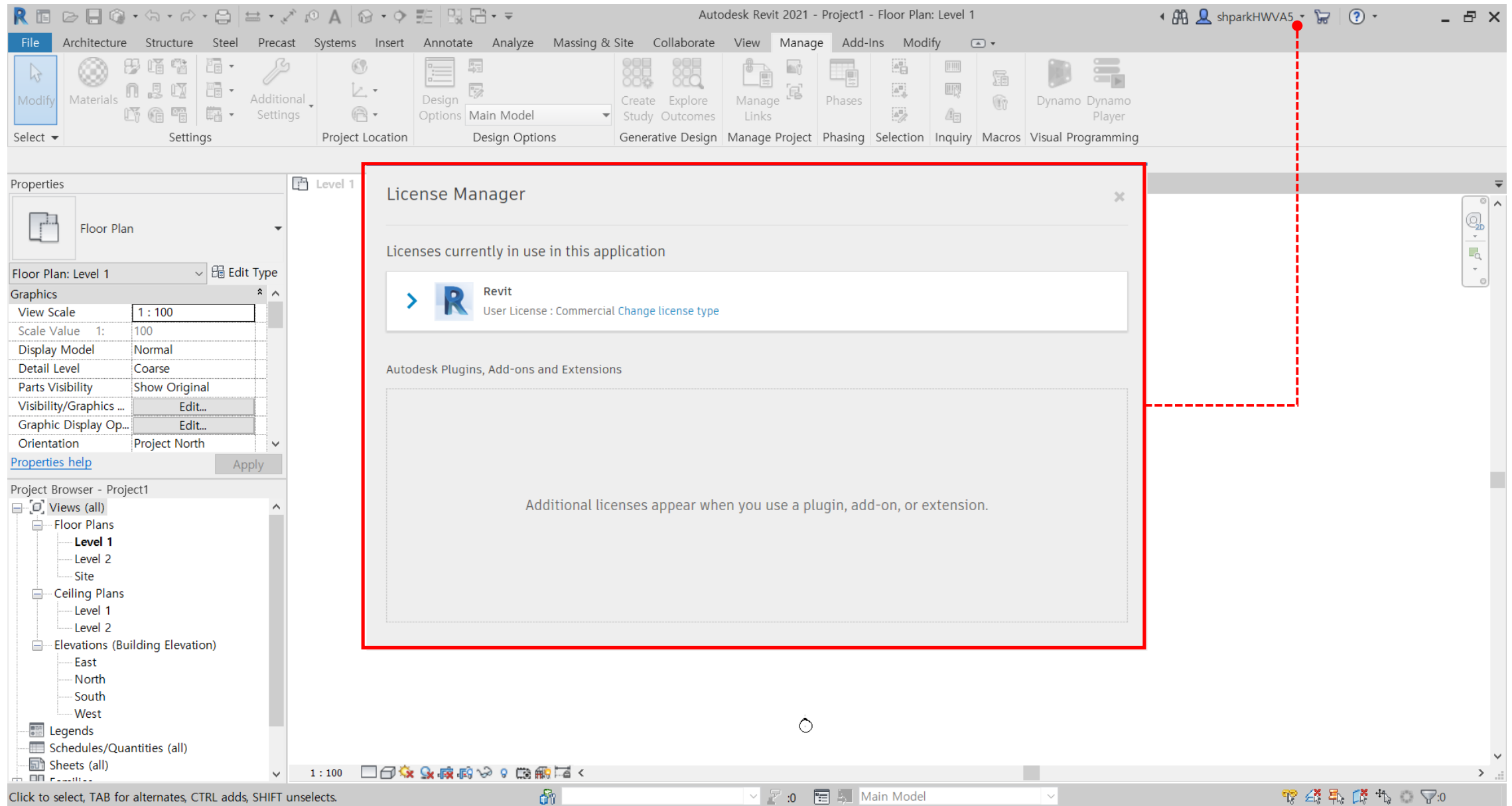
Revit 2021



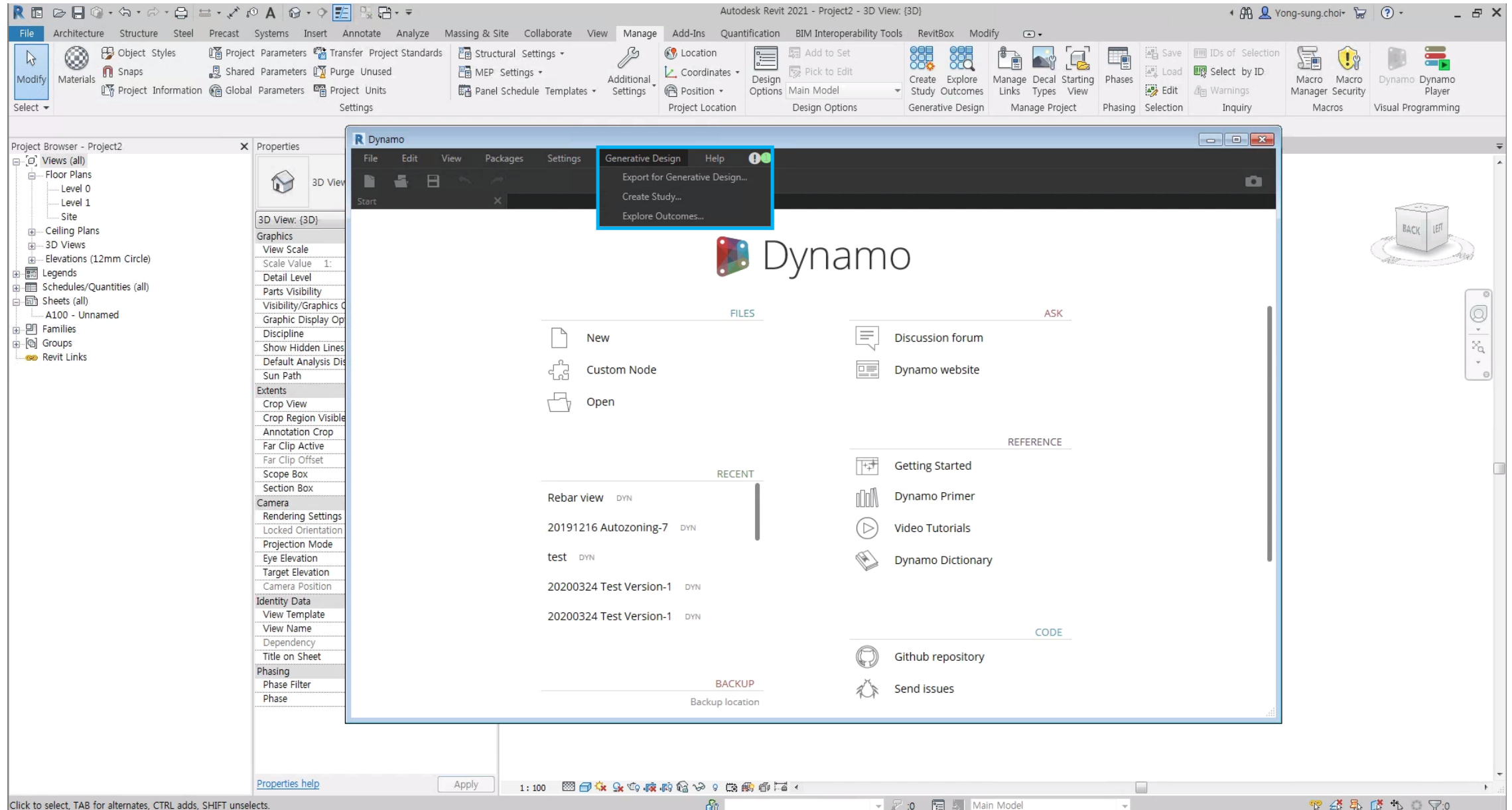
Revit 2021



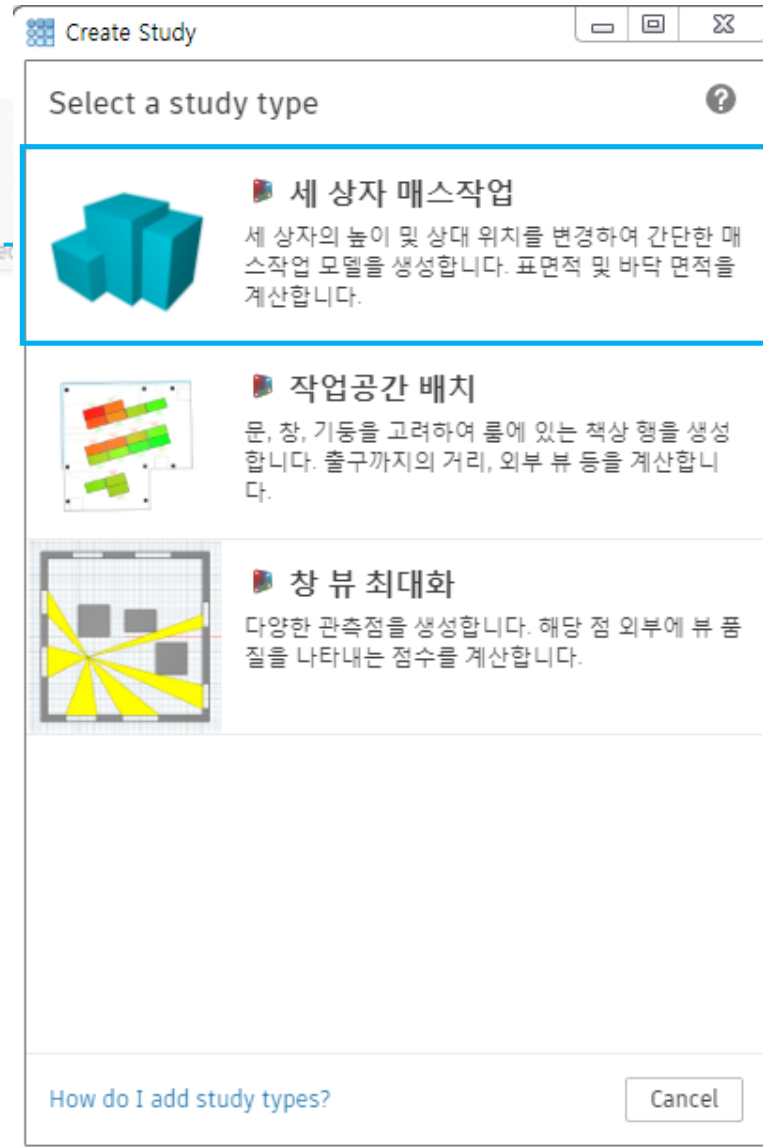
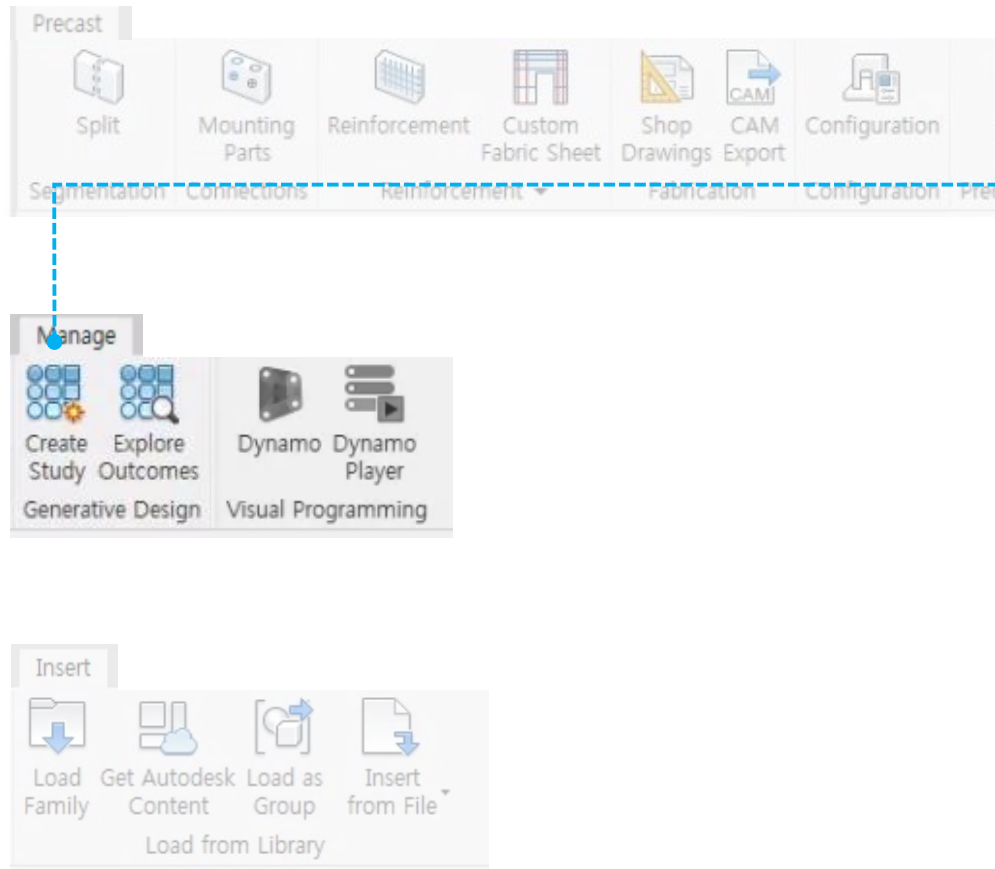
Revit 2021



Revit 2021



Revit 2021



Revit 2021

Define Study

세 상자 매스작업

Study Name 세 상자 매스작업 002

Method Optimize

Choose variables

- ☒ 상자 1 높이 20 to 200
- ☒ 상자 2 높이 20 to 200
- ☒ 상자 3 높이 20 to 200
- ☒ 상자 2 위치 X 0 to 50
- ☒ 상자 2 위치 Y 0 to 50
- ☒ 상자 3 위치 X 20 to 70
- ☒ 상자 3 위치 Y 20 to 70

Set goals

- ☒ 바닥 면적 ☒ Minimize ☐ Maximize
- ☒ 표면적 ☒ Minimize ☐ Maximize

Set constraints

- ☐ 바닥 면적 Min Max
- ☐ 표면적 Min Max

Generation Settings

Population Size 20

Generations 10

How do I define a study? Cancel Generate

Optimize

Define Study

세 상자 매스작업

Study Name 세 상자 매스작업 001

Method Cross Product

Choose variables

- ☒ 상자 1 높이 20 to 200
Number of Variations 2
- ☒ 상자 2 높이 20 to 200
Number of Variations 2
- ☒ 상자 3 높이 20 to 200
Number of Variations 2
- ☒ 상자 2 위치 X 0 to 50
Number of Variations 2
- ☒ 상자 2 위치 Y 0 to 50
Number of Variations 2
- ☒ 상자 3 위치 X 20 to 70
Number of Variations 2
- ☒ 상자 3 위치 Y 20 to 70
Number of Variations 2

Total number of outcomes: 128

Issues

No issues. Ready to generate results!

How do I define a study? Cancel Generate

Cross Product

Define Study

세 상자 매스작업

Study Name 세 상자 매스작업 001

Method Randomize

Choose variables

- ☒ 상자 1 높이 20 to 200
- ☒ 상자 2 높이 20 to 200
- ☒ 상자 3 높이 20 to 200
- ☒ 상자 2 위치 X 0 to 50
- ☒ 상자 2 위치 Y 0 to 50
- ☒ 상자 3 위치 X 20 to 70
- ☒ 상자 3 위치 Y 20 to 70

Generation Settings

Number of solutions 40

Seed 1

Issues

No issues. Ready to generate results!

How do I define a study? Cancel Generate

Randomize

Define Study

세 상자 매스작업

Study Name 세 상자 매스작업 001

Method Like This

Choose variables

- ☒ 상자 1 높이 Initial Value 20 200 160
- ☒ 상자 2 높이 Initial Value 20 200 120
- ☒ 상자 3 높이 Initial Value 20 200 80
- ☒ 상자 2 위치 X Initial Value 0 50 34
- ☒ 상자 2 위치 Y Initial Value 0 50 0
- ☒ 상자 3 위치 X Initial Value 20 70 52
- ☒ 상자 3 위치 Y Initial Value 20 70 40

Generation Settings

Number of solutions 40

Seed 1

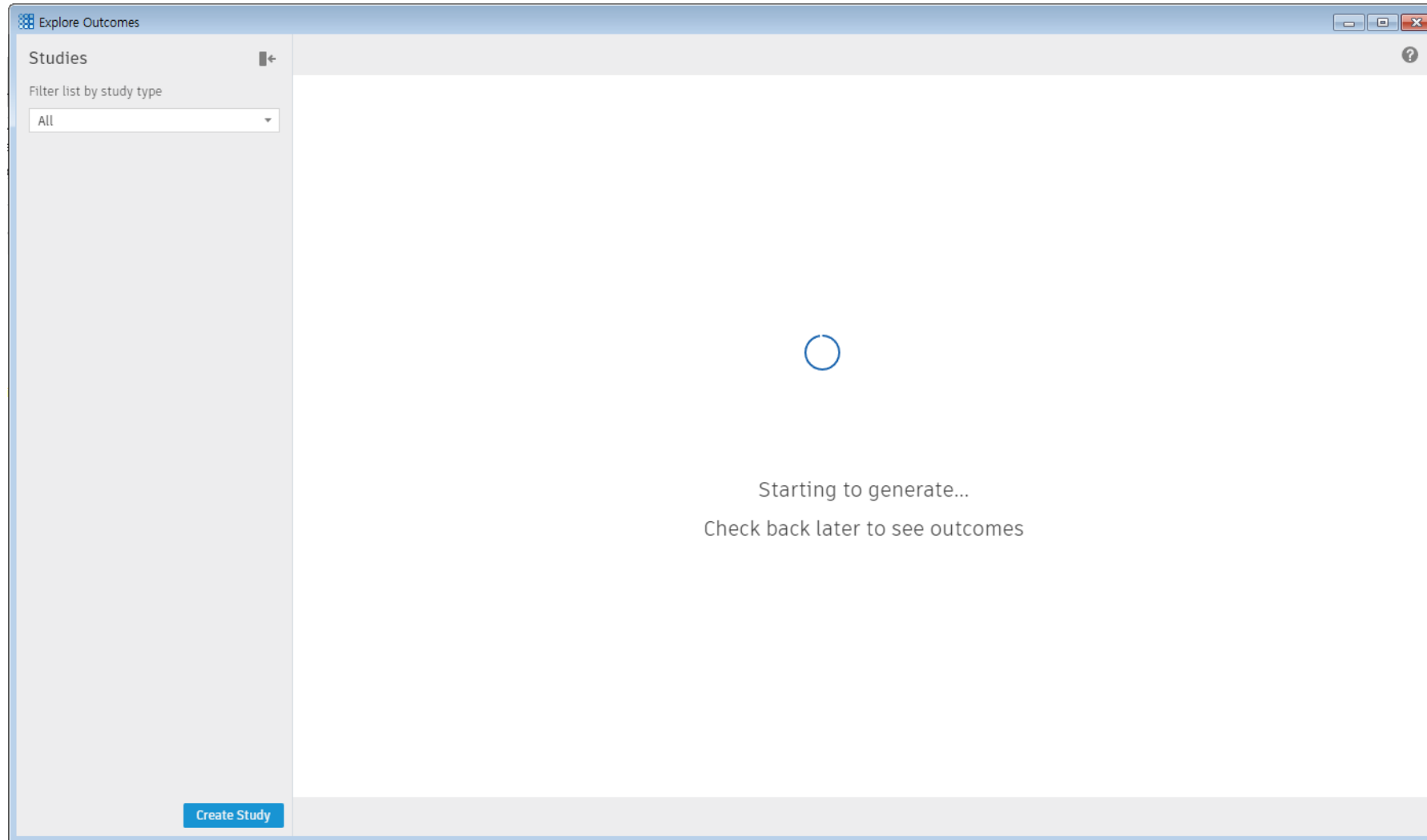
Issues

No issues. Ready to generate results!

How do I define a study? Cancel Generate

Like This

Revit 2021



Revit 2021

The screenshot displays the Revit 2021 interface with the 'Explore Outcomes' window open. The window shows a grid of 11 study thumbnails for '세 상자 매스작업 001'. The first thumbnail is selected, and its details are shown on the right. The details include a 3D model of the study and a table of outputs and inputs.

Study Details:

- Study Name: 세 상자 매스작업 001
- Created: 17 Jun 2020, 14:13
- Progress: 128/128

Outputs:

Output Name	Value
바닥 면적	57300.0
표면적	49800.0

Inputs:

Input Name	Value
상자 1 높이	20
상자 2 높이	20
상자 3 높이	200
상자 2 위치 X	0
상자 2 위치 Y	0
상자 3 위치 X	20
상자 3 위치 Y	20

Visuals:

- A 3D model of the study is shown in the 'Details' panel.
- A 2D diagram of the study is shown at the bottom of the 'Explore Outcomes' window.

Buttons:

- Create Study
- Create Revit Elements

Revit 2021

The screenshot displays the Autodesk Revit 2021 interface with the 'Studies' tool open. The main window shows a 3D model of a building structure, with a 'Details' panel on the right displaying a large 3D view of the model. The 'Studies' panel on the left lists the study '세 상자 매스작업 001' (Se Sangja Mass Operation 001) and shows a grid of 12 study thumbnails. Below the thumbnails, a 'Details' section shows a 3D view of the model. The 'Outputs' section displays the following data:

Output	Value
바닥 면적	12300.0
표면적	13800.0

The 'Inputs' section displays the following data:

Input	Value
상자 1 높이	20
상자 2 높이	20
상자 3 높이	20
상자 2 위치 X	0
상자 2 위치 Y	0
상자 3 위치 X	20,000
상자 3 위치 Y	20

The 'Properties' panel at the bottom shows the '바닥 면적' (Floor Area) property with a value of 12300.0. The 'Study' panel at the bottom shows the '세 상자 매스작업 001' study with a value of 128 of 128. The 'Study' panel also includes a 'Create Study' button and a 'Create Revit Elements' button.

Revit 2021

Explore Outcomes

Studies

Filter list by study type

All

세 상자 매스작업 001

세 상자 매스작업

17 Jun 2020, 14:13

128/128

세 상자 매스작업 001

Sort by 바닥 면적

1 2 3 4 5 6 7 8 9 10 11

Details

Charts

Details

Outputs

바닥 면적 57300.0

표면적 49800.0

Inputs

상자 1 높이 20

상자 2 높이 20

상자 3 높이 200

상자 2 위치 X 0

상자 2 위치 Y 0

상자 3 위치 X 20.000

상자 3 위치 Y 20.000

바닥 면적

표면적

Create Study

128 of 128

Create Revit Elements

Autodesk Revit 2021 - Project2 - 3D View: (3D)

Collaborate View Manage Add-Ins Quantification BIM Interoperability Tools RevitBox Modify

Building Pad Split Surface Merge Subregion Property Line Graded Region Label Contours

Modify Site

(3D)

FRONT

Section Box

Camera

Rendering Settings

Locked Orientation

Projection Mode Orthographic

Eye Elevation 5792.4

Target Elevation 4000.0

Camera Position Adjusting

Identity Data

View Template <None>

View Name (3D)

Dependency Independent

Title on Sheet

Phasing

Phase Filter Show All

Phase New Construction

Properties help

Apply

1: 100

Main Model

Revit 2021

The screenshot displays the Autodesk Revit 2021 interface with the 'Explore Outcomes' window open. The window title is '세 상자 매스작업 001'. The 'Studies' panel on the left shows a filter list by study type, with '세 상자 매스작업' selected. The main area shows a grid of 10 study thumbnails, with the 4th thumbnail selected. Below the grid is a 'Details' panel showing a 3D model of the selected study. The 'Outputs' table shows the following values:

바닥 면적	60000.0
표면적	54000.0

The 'Inputs' table shows the following values:

상자 1 높이	20
상자 2 높이	20
상자 3 높이	200
상자 2 위치 X	0
상자 2 위치 Y	0
상자 3 위치 X	20,000
상자 3 위치 Y	70

The 'Details' panel also shows a 3D model of the selected study. The 'Outputs' table shows the following values:

바닥 면적	60000.0
표면적	54000.0

The 'Inputs' table shows the following values:

상자 1 높이	20
상자 2 높이	20
상자 3 높이	200
상자 2 위치 X	0
상자 2 위치 Y	0
상자 3 위치 X	20,000
상자 3 위치 Y	70

The 'Details' panel also shows a 3D model of the selected study. The 'Outputs' table shows the following values:

바닥 면적	60000.0
표면적	54000.0

The 'Inputs' table shows the following values:

상자 1 높이	20
상자 2 높이	20
상자 3 높이	200
상자 2 위치 X	0
상자 2 위치 Y	0
상자 3 위치 X	20,000
상자 3 위치 Y	70

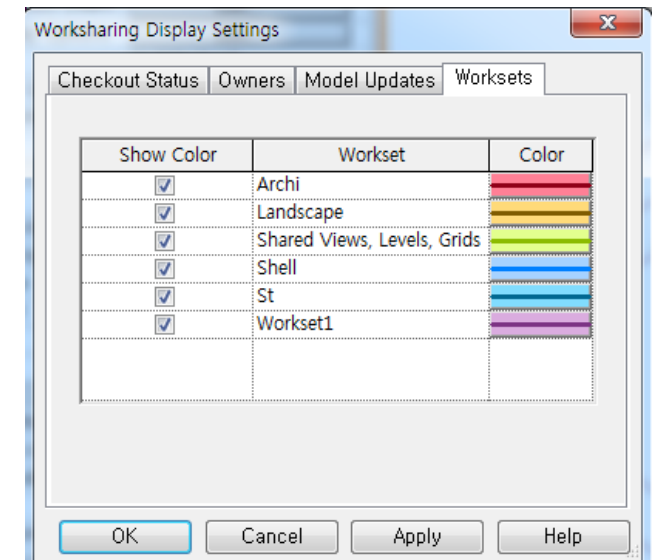
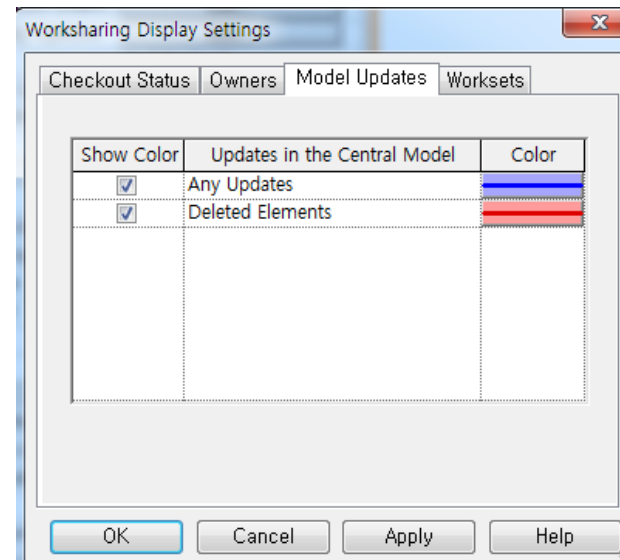
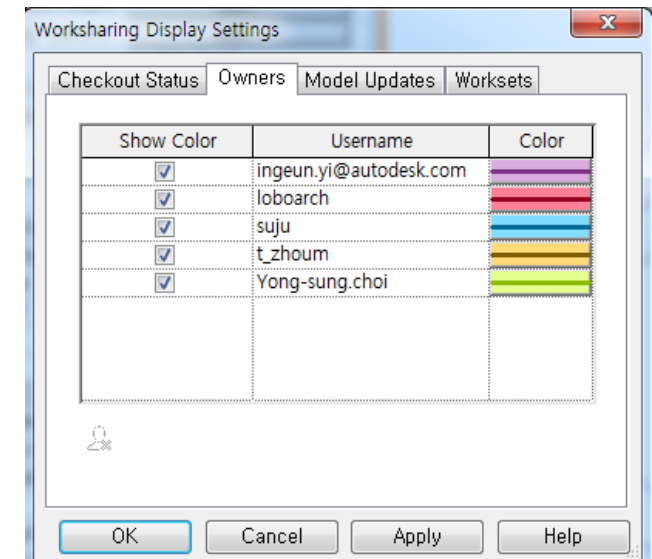
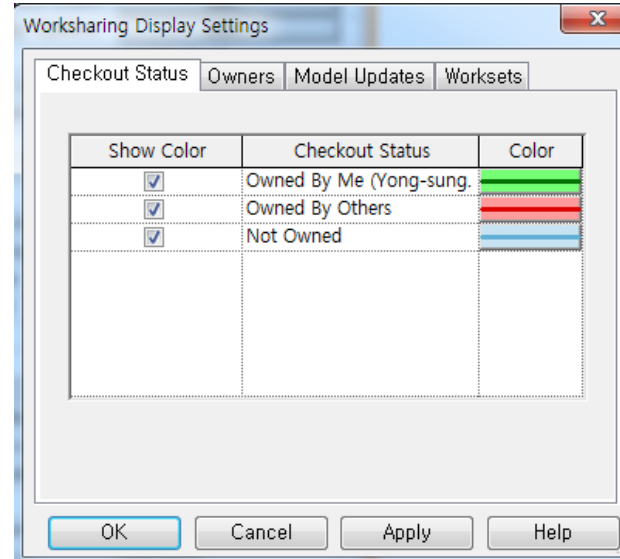
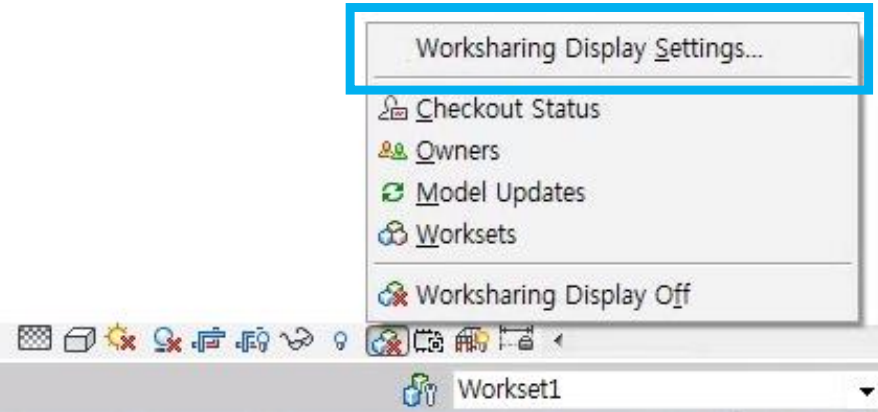
The 'Details' panel also shows a 3D model of the selected study. The 'Outputs' table shows the following values:

바닥 면적	60000.0
표면적	54000.0

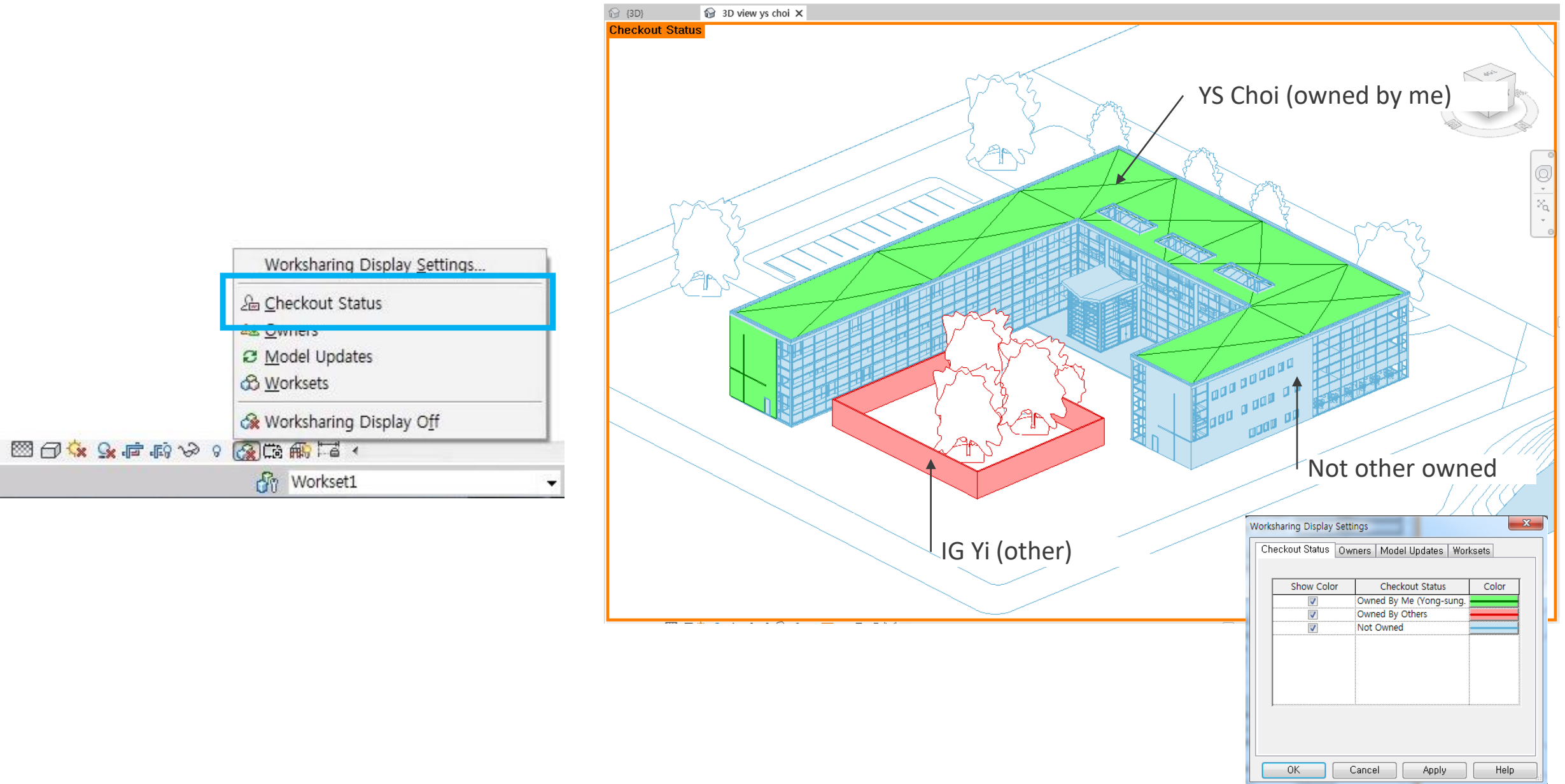
The 'Inputs' table shows the following values:

상자 1 높이	20
상자 2 높이	20
상자 3 높이	200
상자 2 위치 X	0
상자 2 위치 Y	0
상자 3 위치 X	20,000
상자 3 위치 Y	70

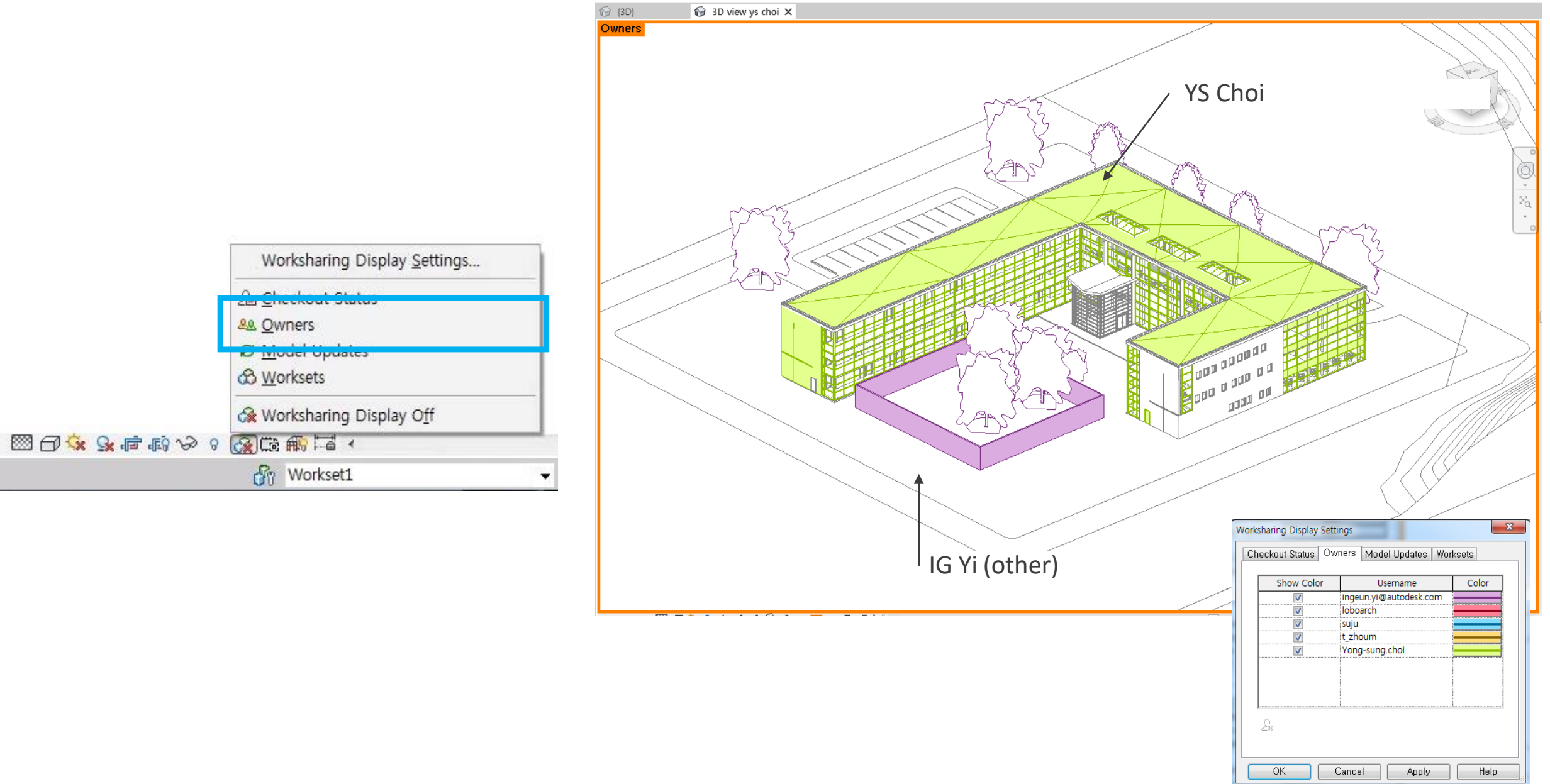
Revit 2021



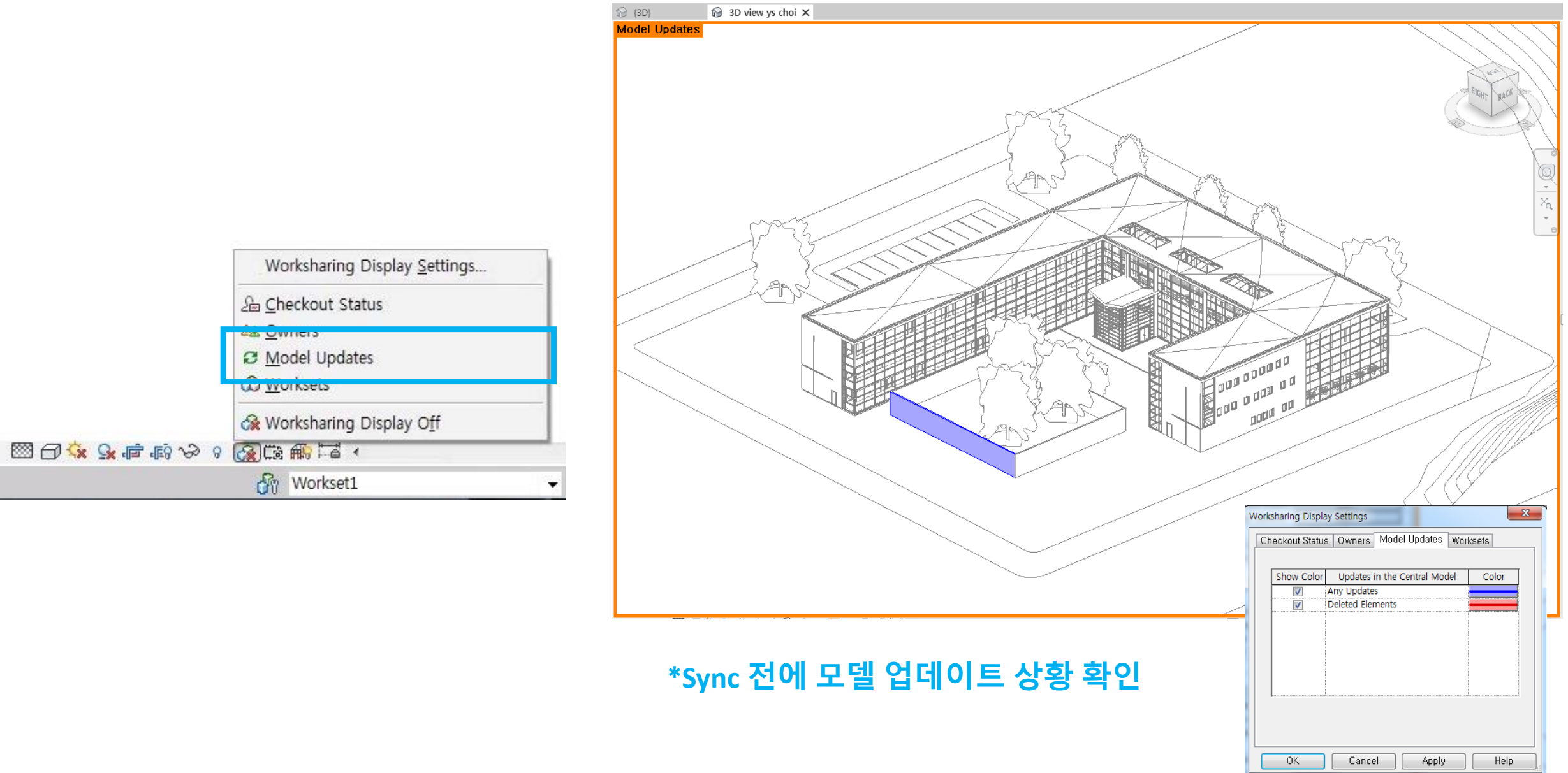
Revit 2021



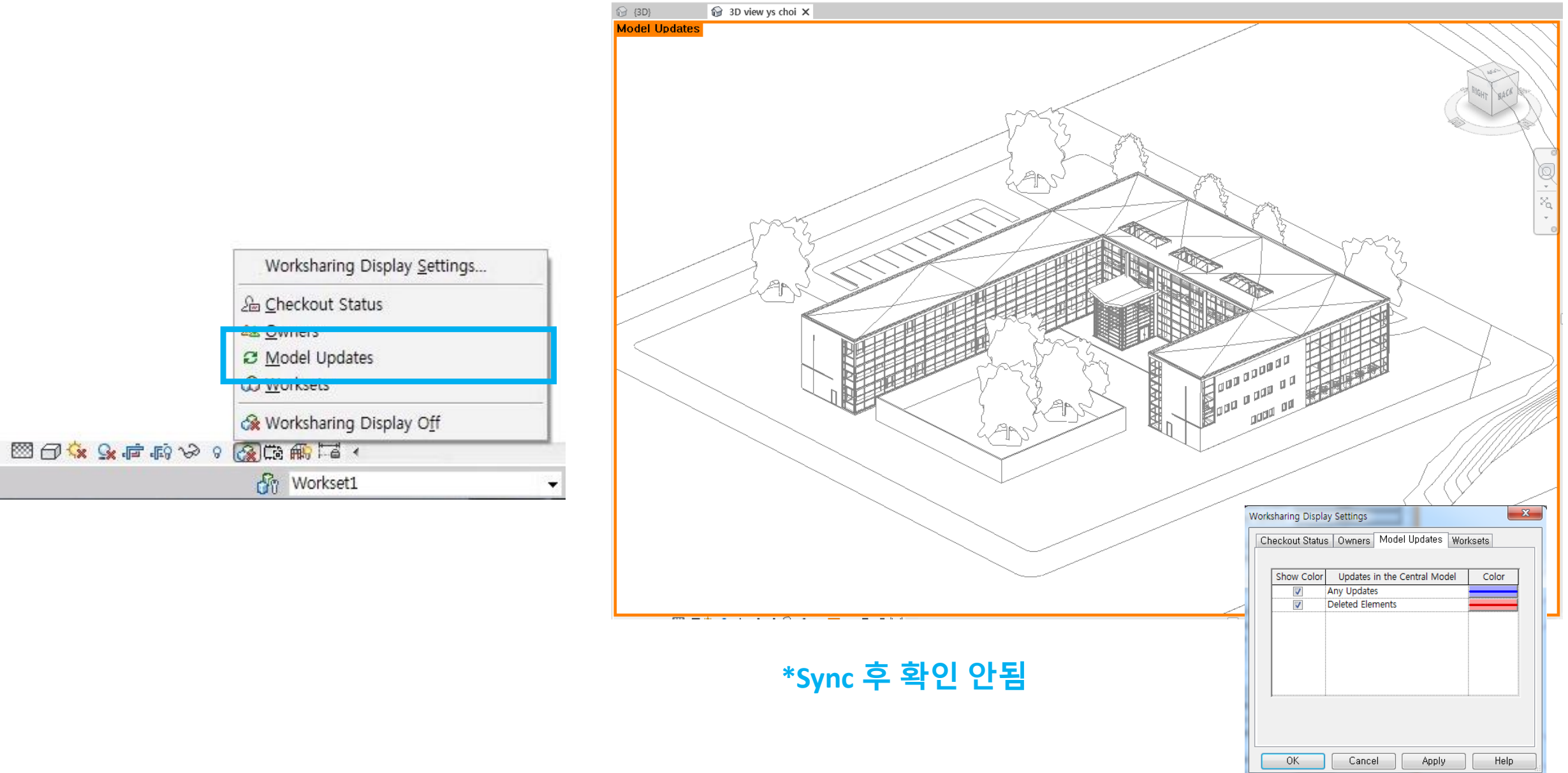
Revit 2021



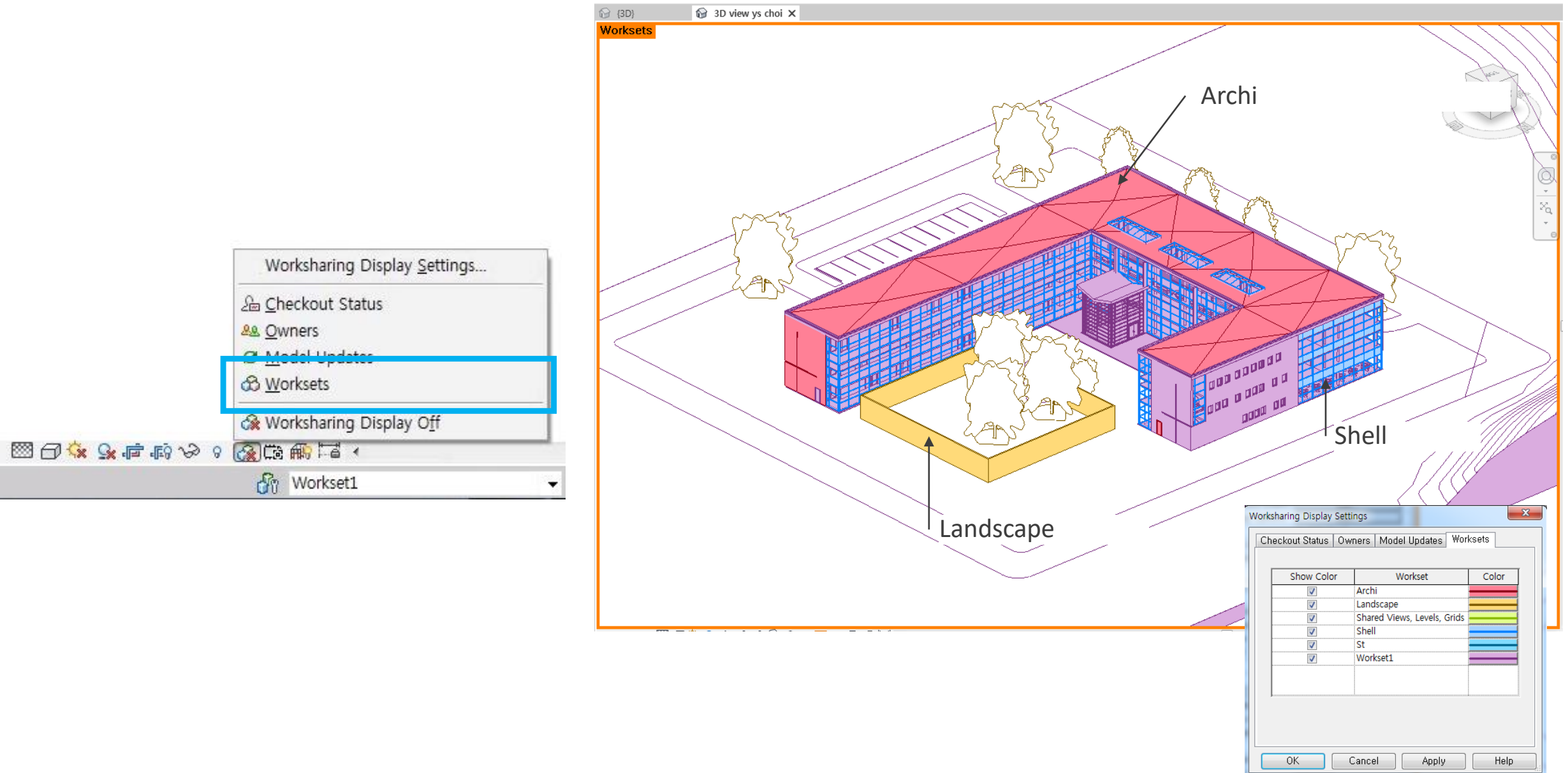
Revit 2021



Revit 2021

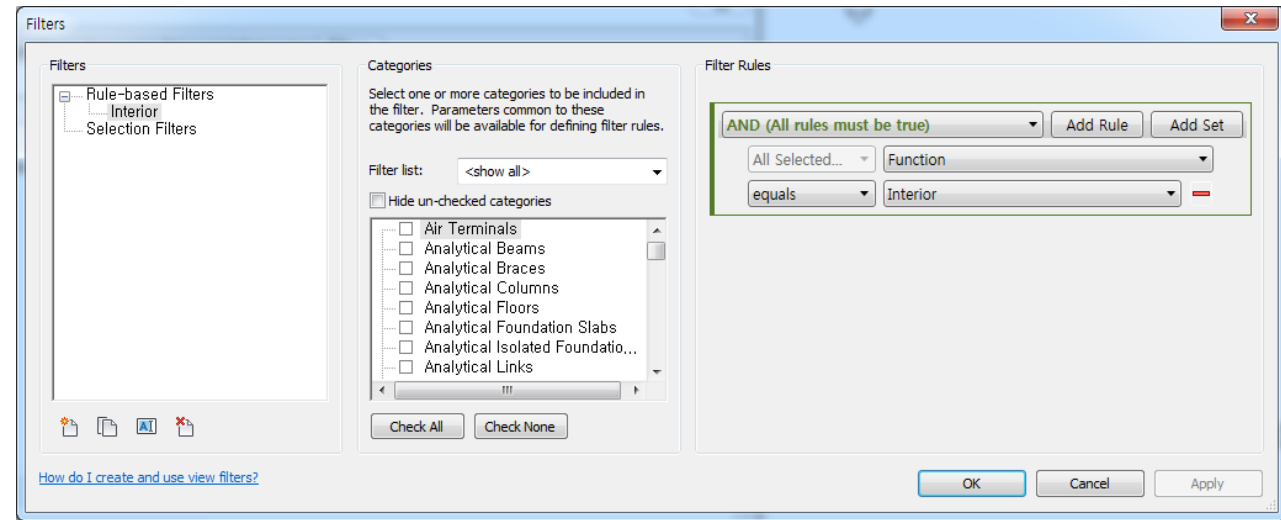


Revit 2021

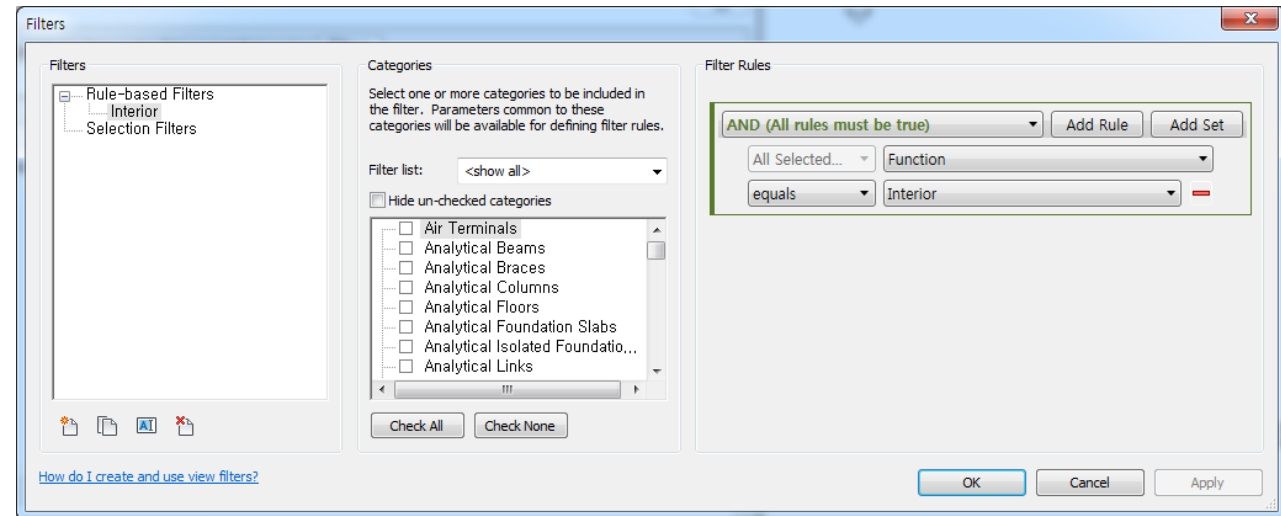


Filter 관리

2020.2

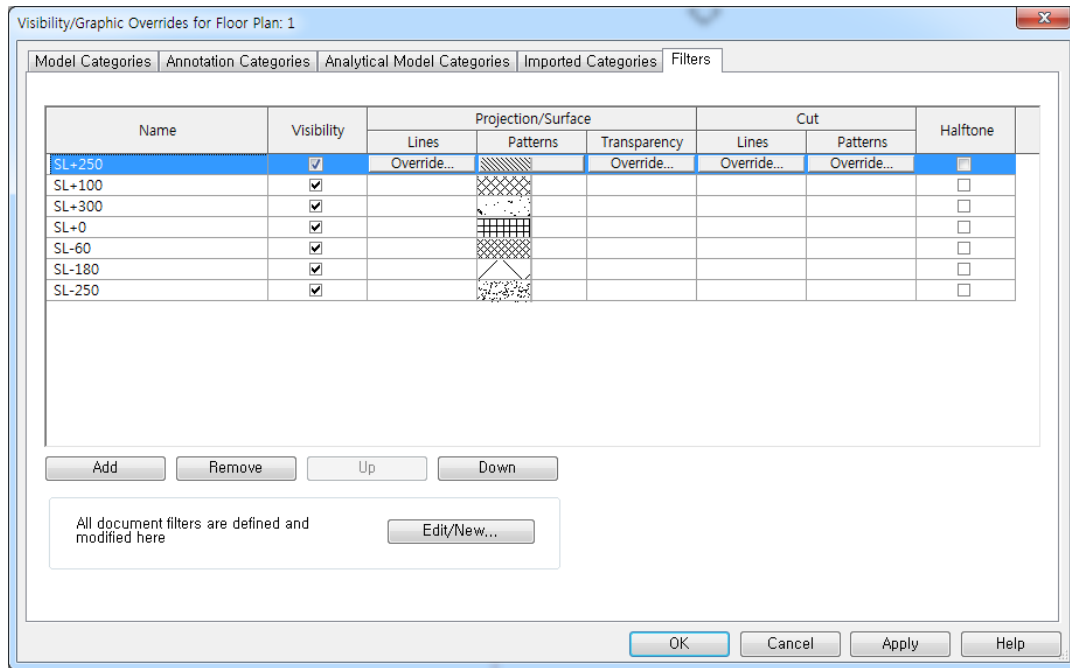


2021

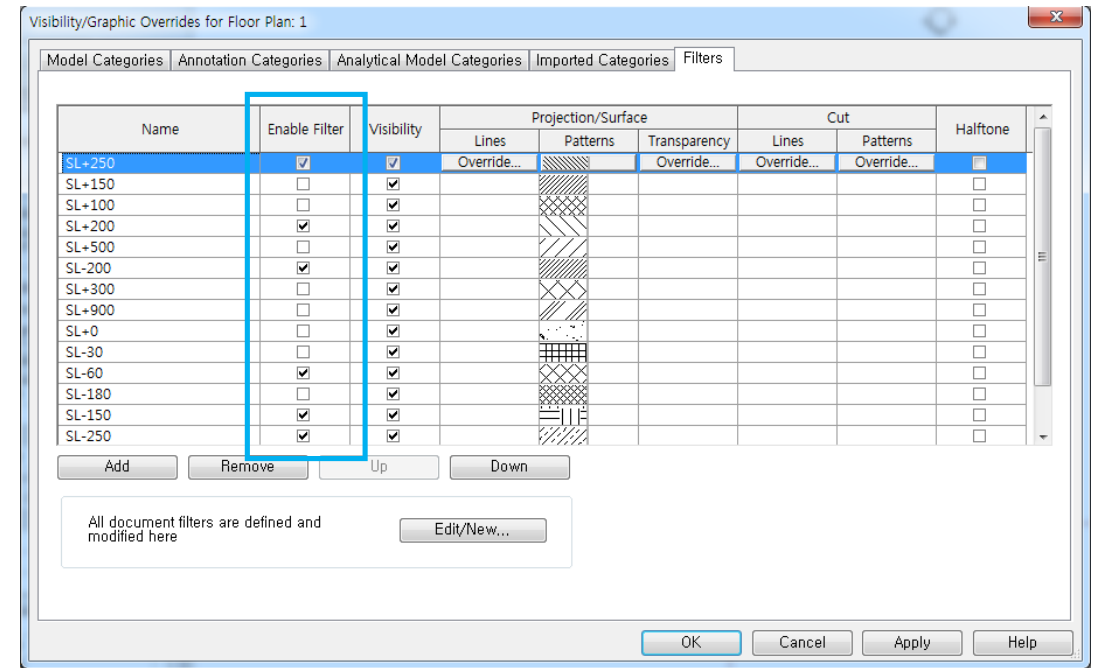


Filter 2021

2020

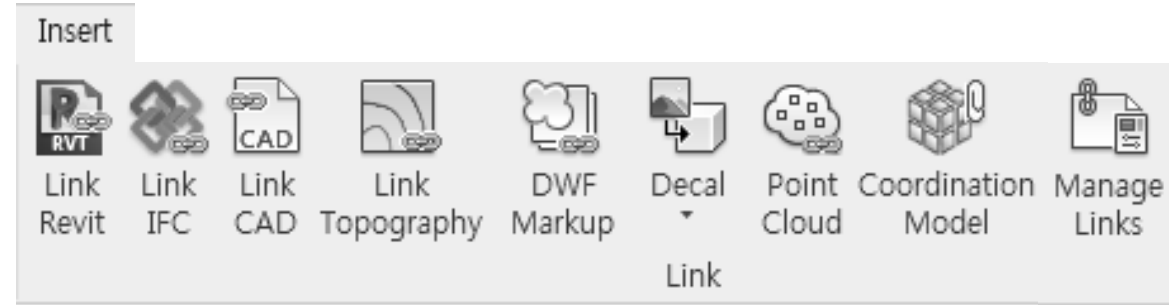


2021

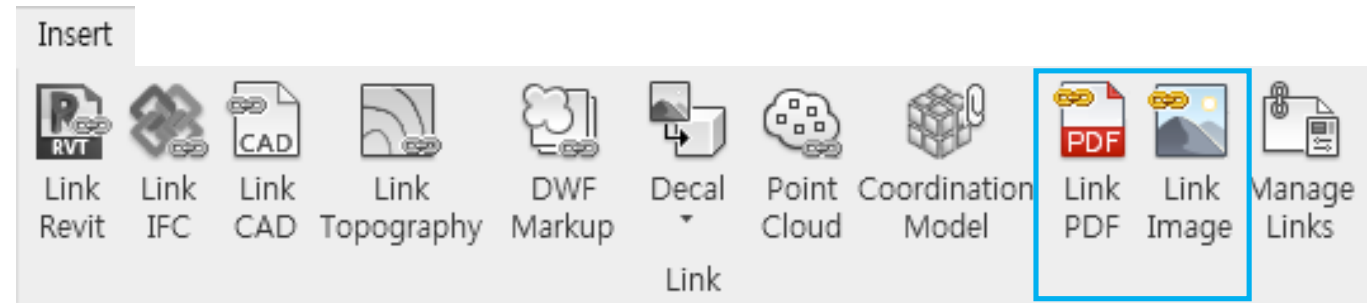


Link PDF and Image

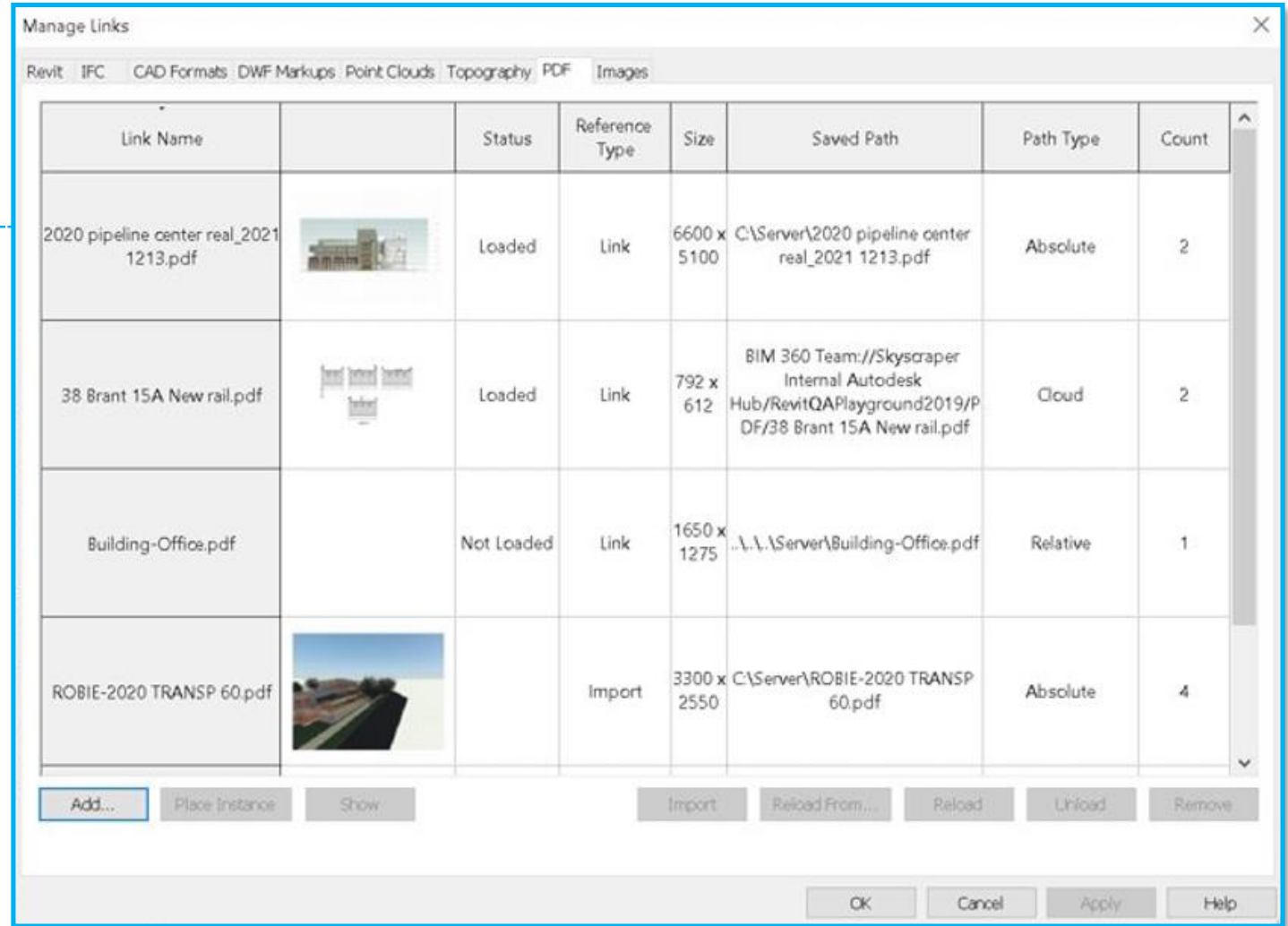
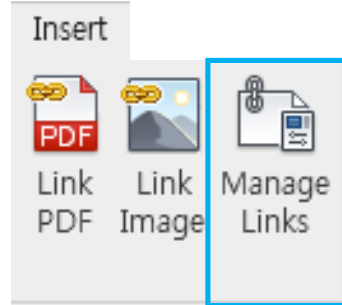
2020



2021

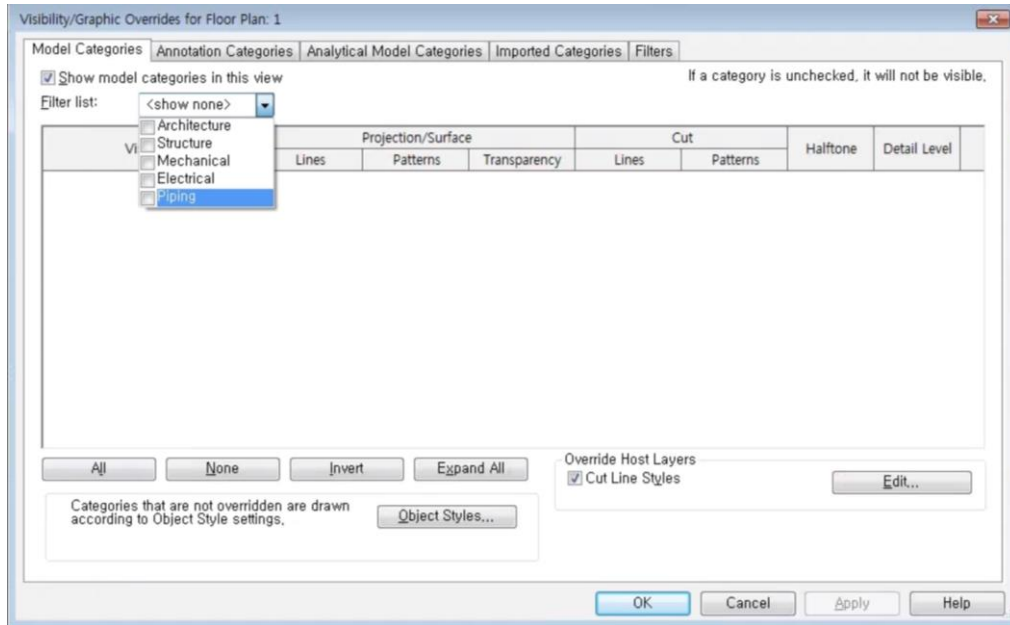


Link PDF and Image 2021

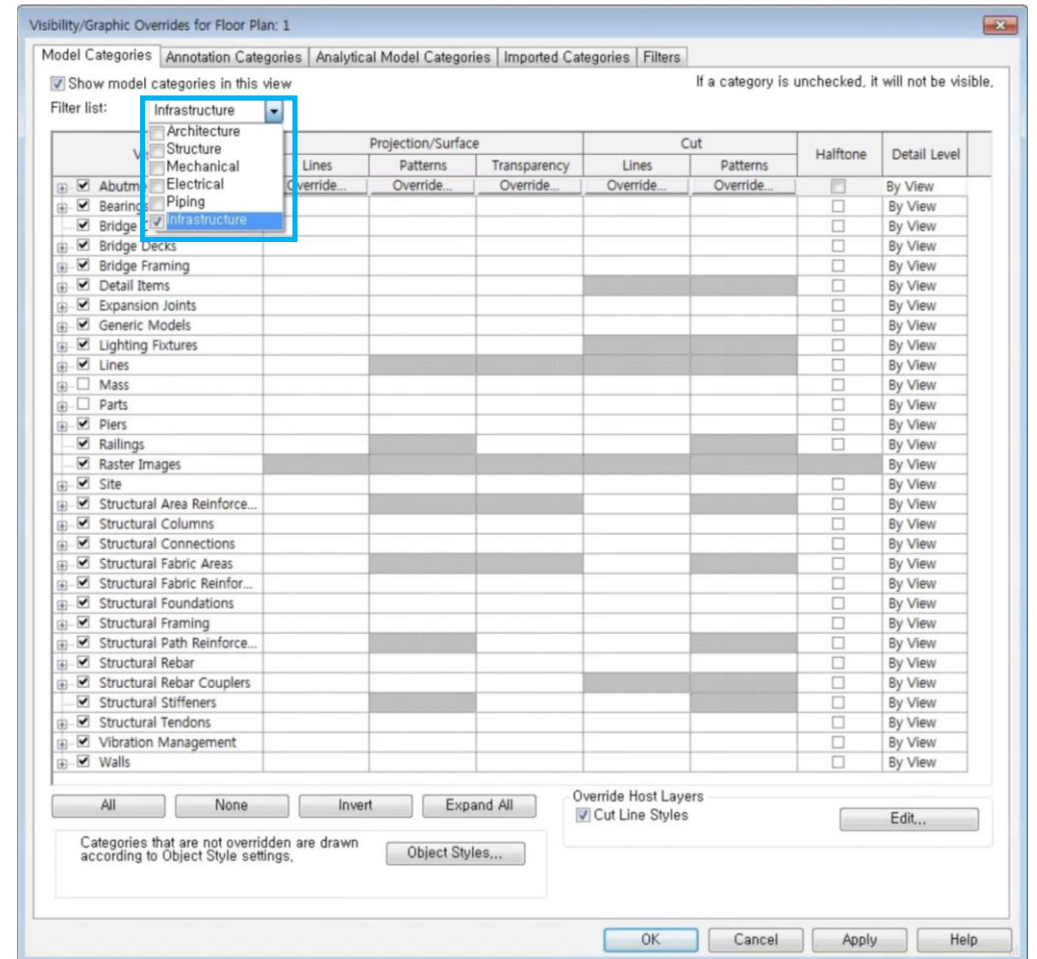


Infrastructure Category

2020

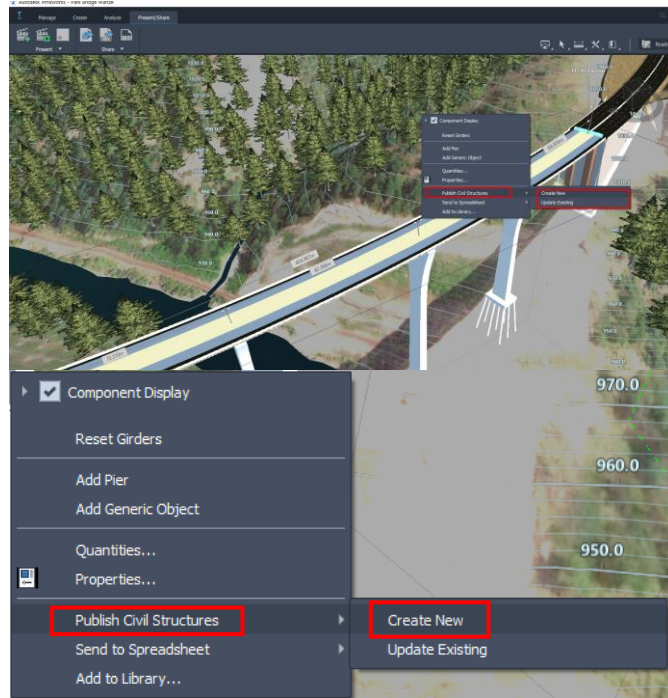


2021



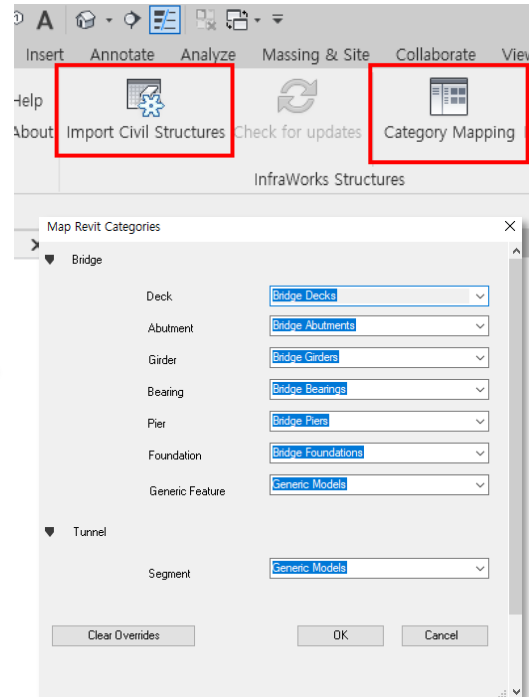
Infrastructure Category

InfraWorks

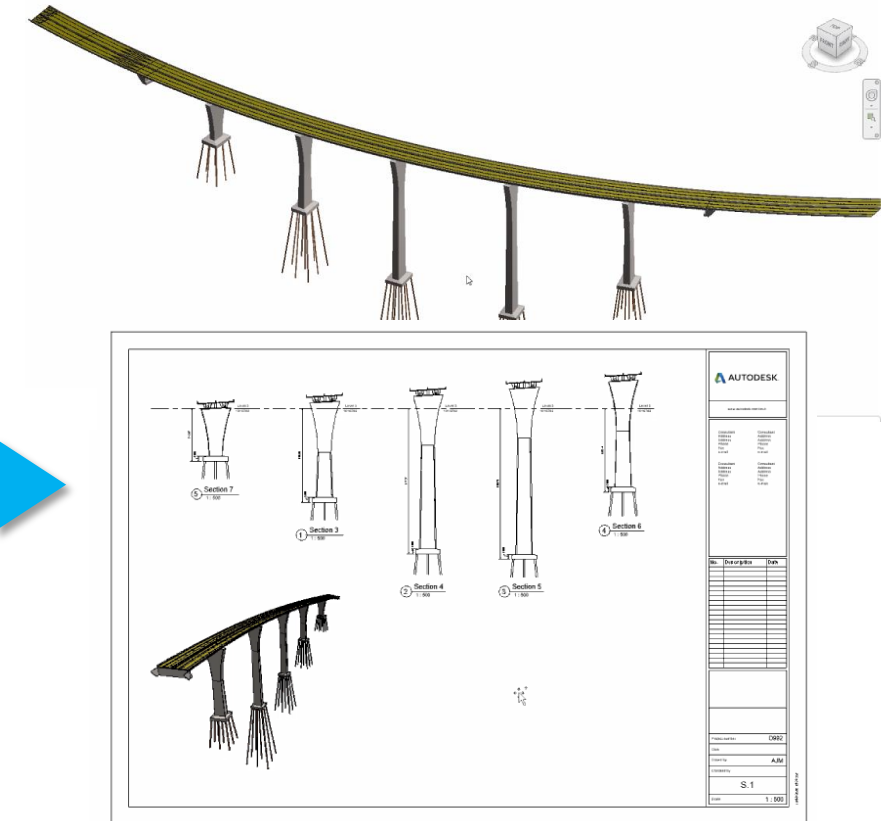


- Publish to IMX
 - Create New
 - Update Existing

Revit



- Category Mapping
 - Deck, Abutment, Girder, Bearing, Pier, Foundation, Generic Feature
- Import Civil Structure



- Import Bridge Model in Revit

01. General

- **Workspace 설정**
- **Generative Design**
- **Work sharing Display**
- **Civil Category**

01. General

Generative Design Civil Category

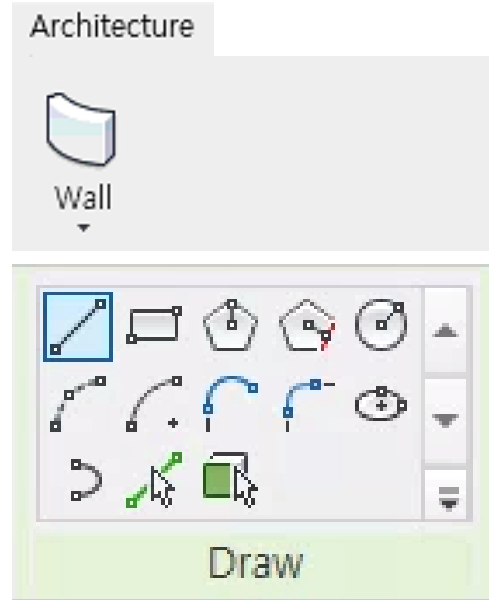
02. MODELING

Modeling

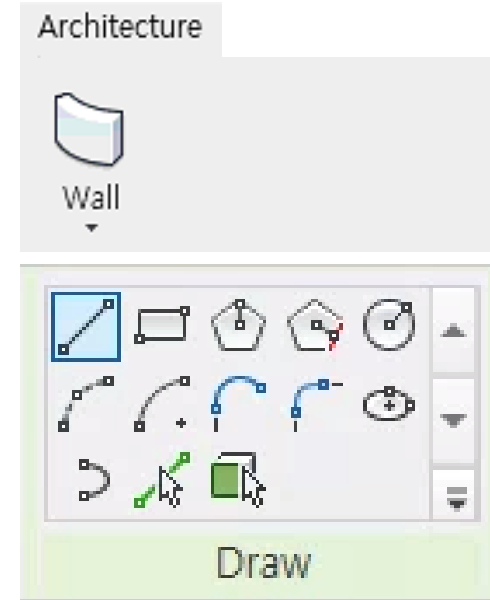


Slanted Walls

2020

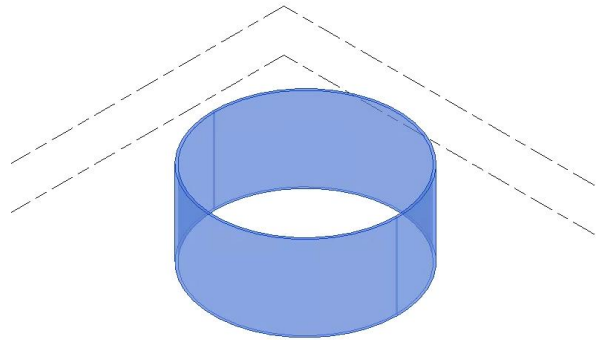
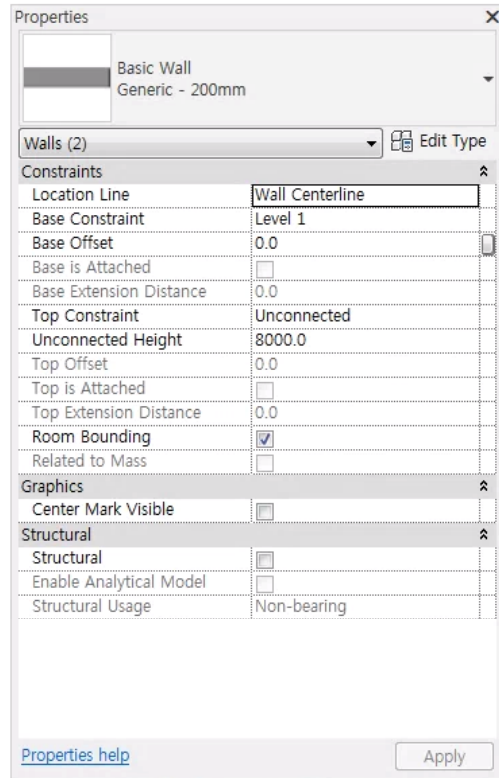


2021

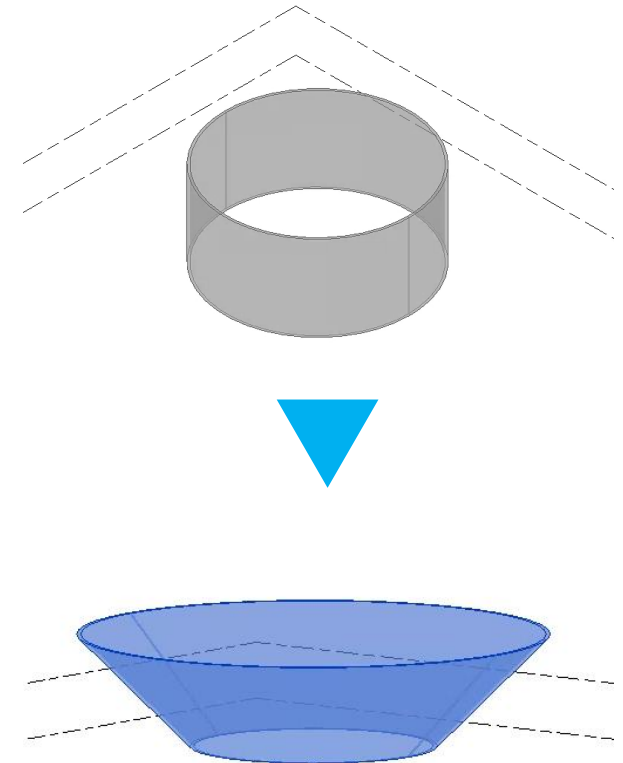
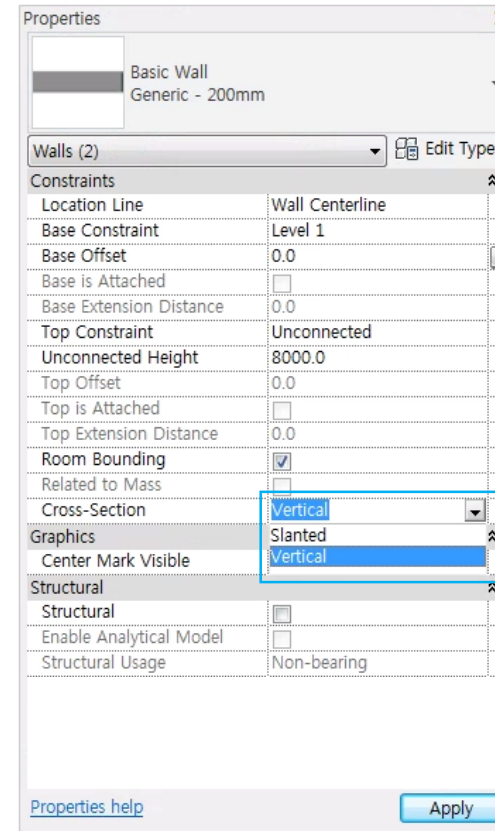


Slanted Walls

2020

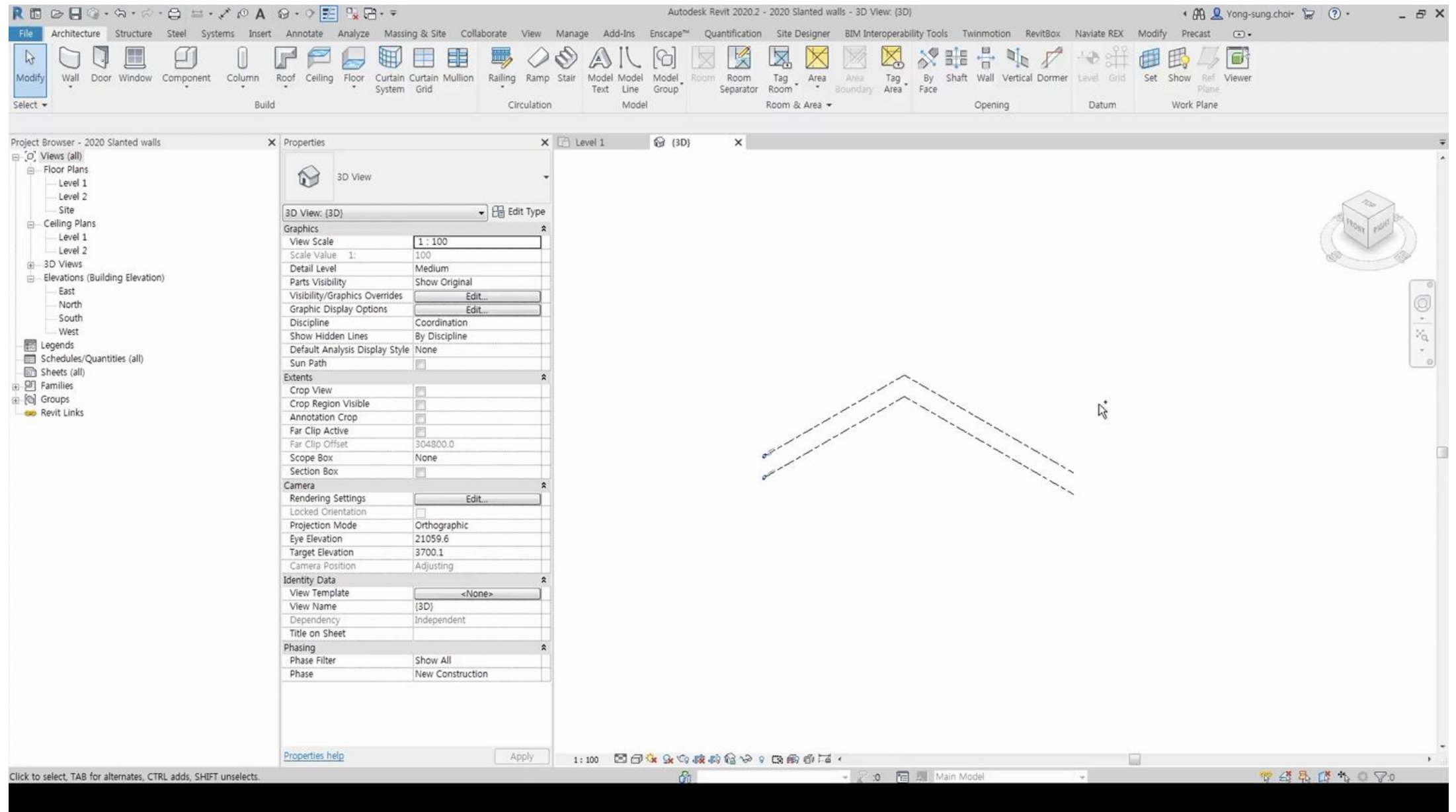


2021

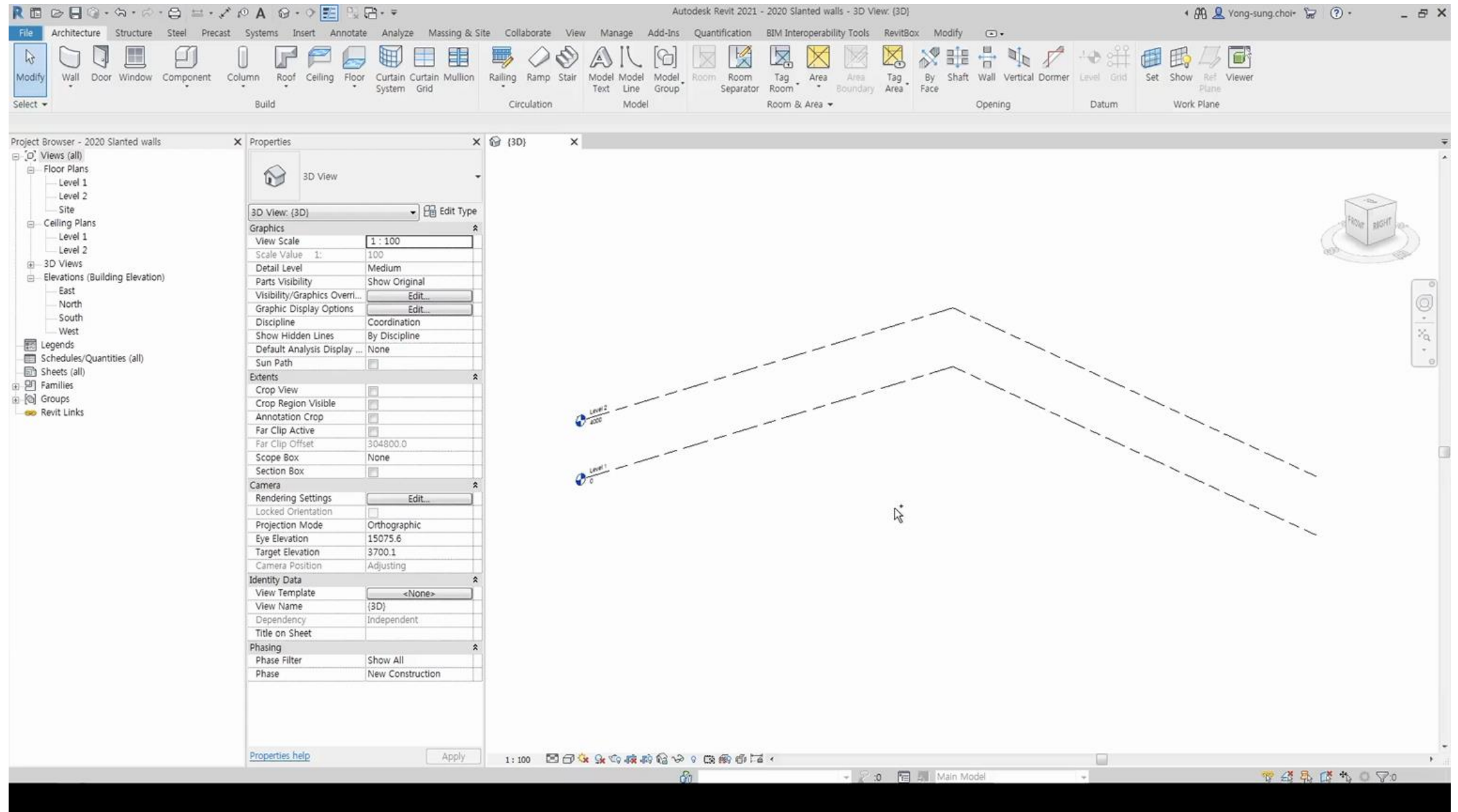


Cross-Section	Slanted
Angle From Vertical	45.00°

Slanted Walls



Slanted Walls 2021



Door & Window 2021



2020

Properties

 M_Single-Flush
0915 x 2134mm

Doors (1) Edit Type

Constraints	
Level	Level 1
Sill Height	0.0
Construction	
Frame Type	
Materials and Finishes	
Frame Material	
Finish	
Identity Data	
Image	
Comments	
Mark	3
Phasing	
Phase Created	New Construction
Phase Demolished	None
Other	
Head Height	2134.0

[Properties help](#) Apply

2021

Properties

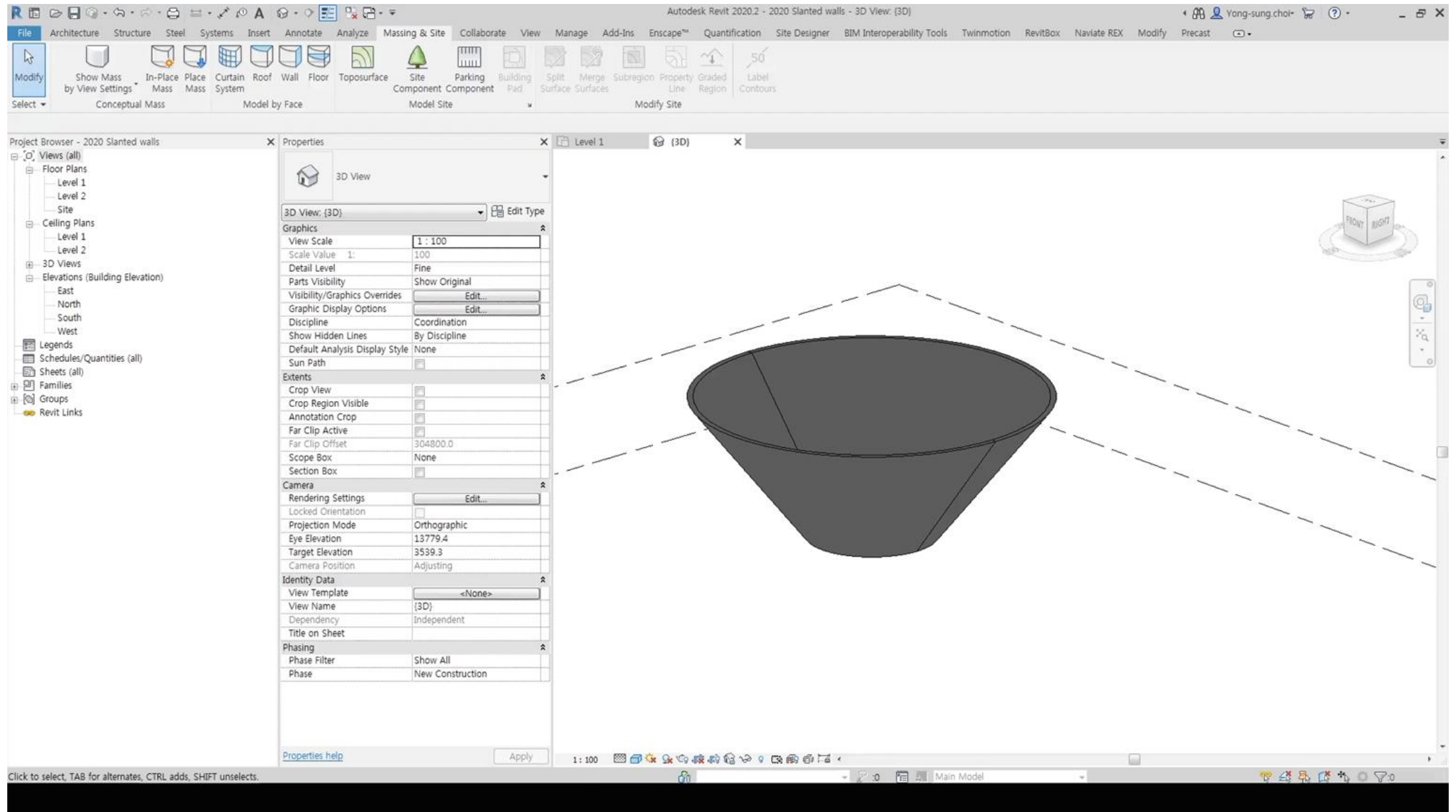
 M_Single-Flush
0915 x 2134mm

Doors (1) Edit Type

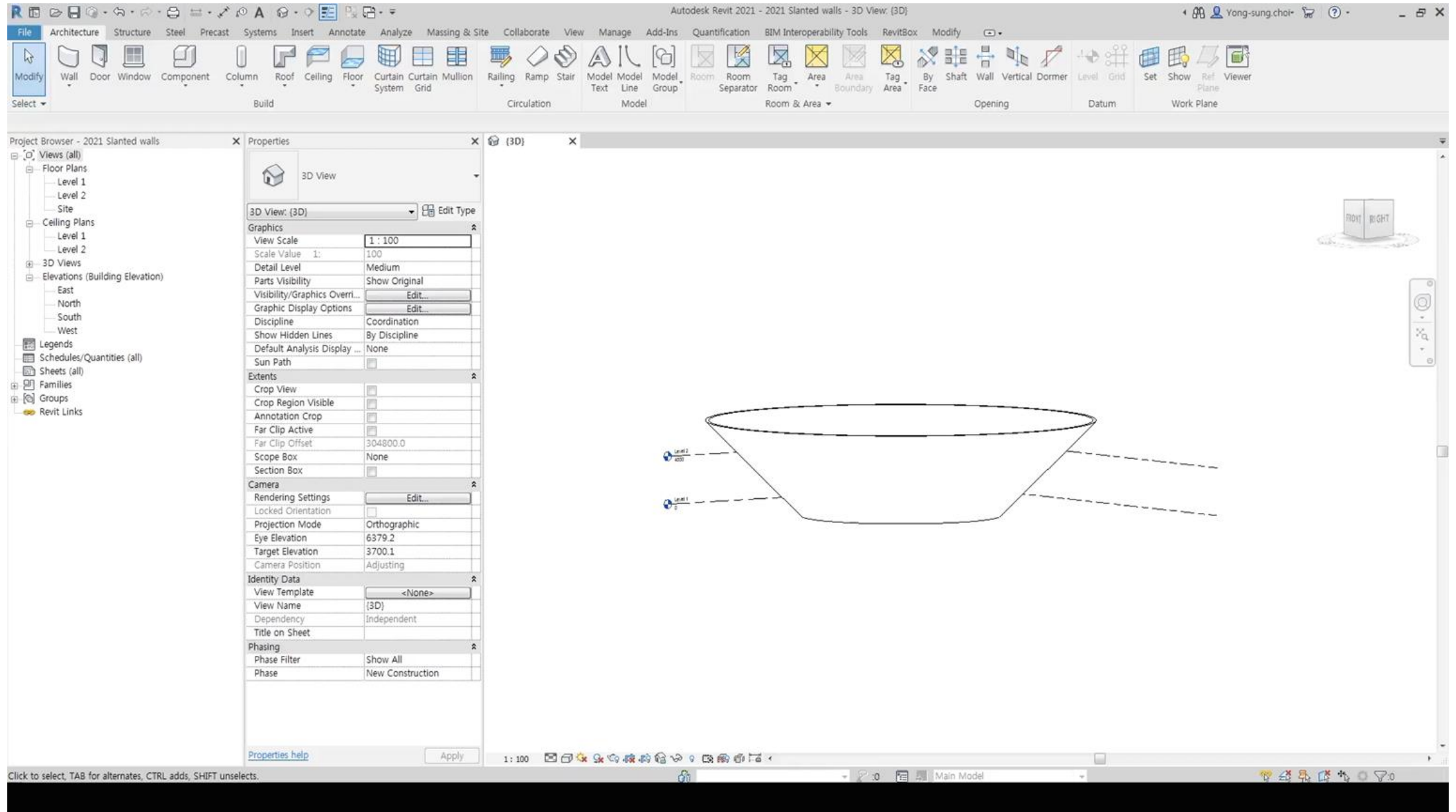
Constraints	
Orientation	Vertical
Level	Slanted
Sill Height	0.0
Construction	
Frame Type	
Materials and Finishes	
Frame Material	
Finish	
Identity Data	
Image	
Comments	
Mark	3
Phasing	
Phase Created	New Construction
Phase Demolished	None
Other	
Head Height	2134.0

[Properties help](#) Apply

Door & Window 2020



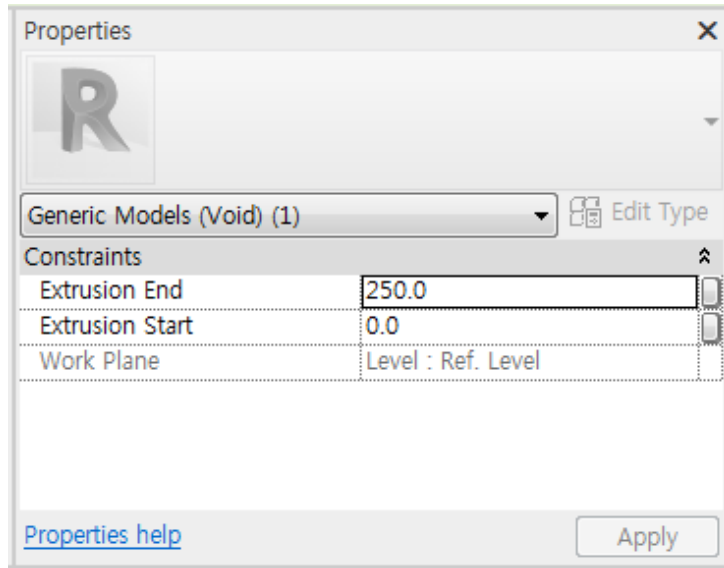
Door & Window 2021



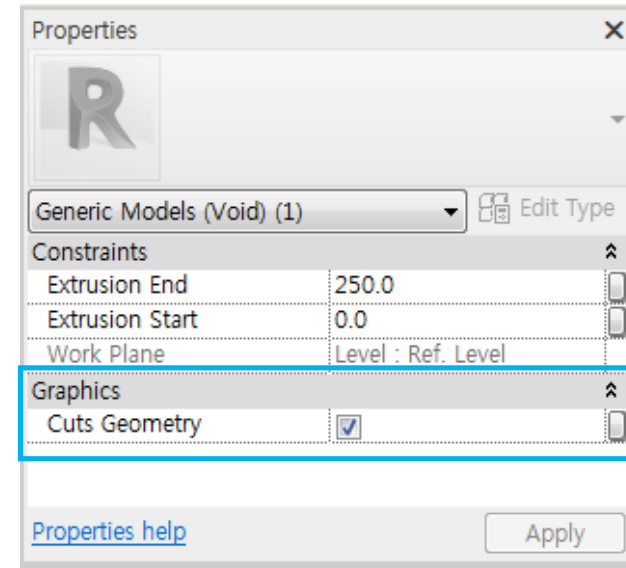
Family void modeling 2021



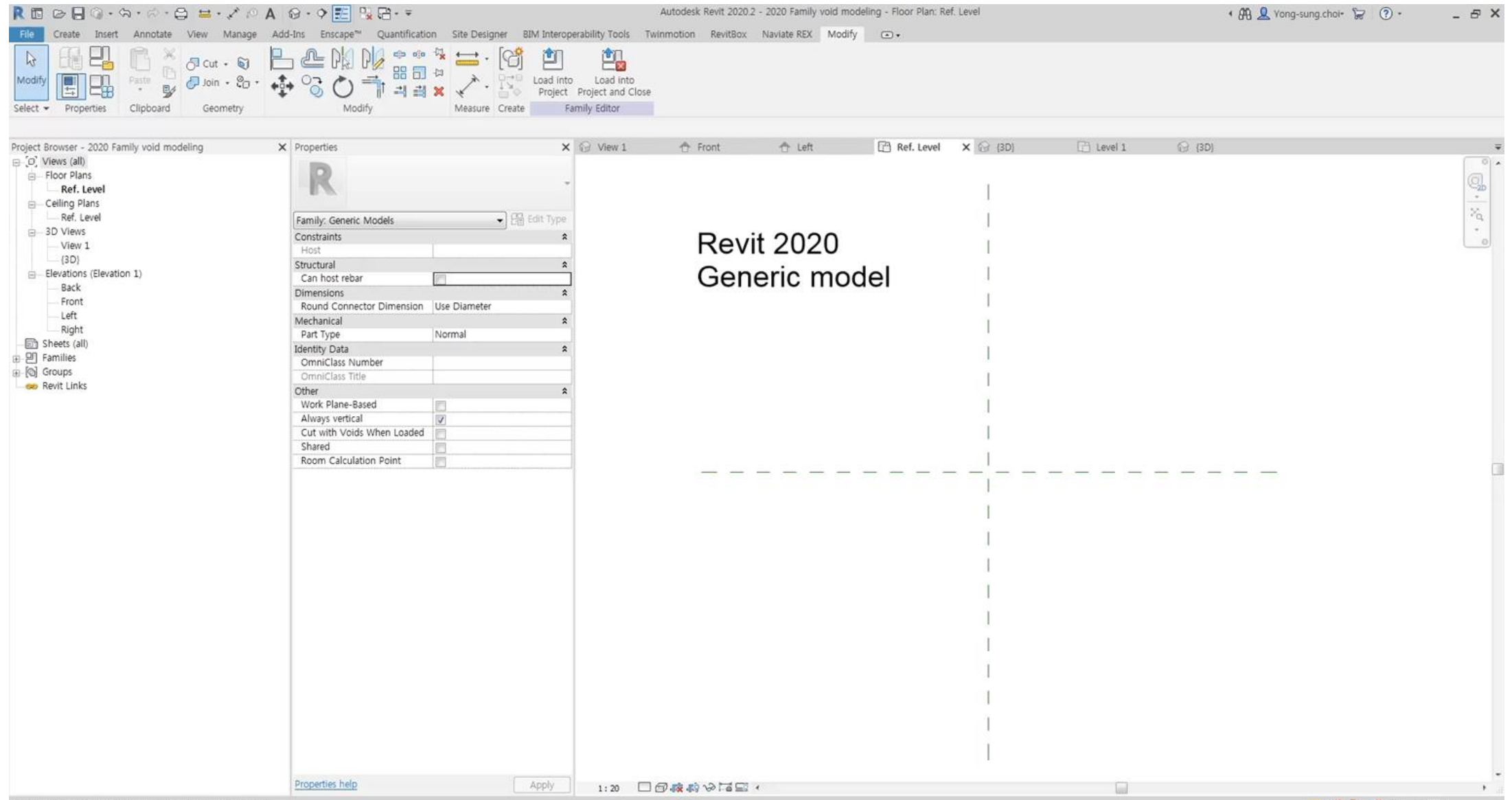
2020



2021

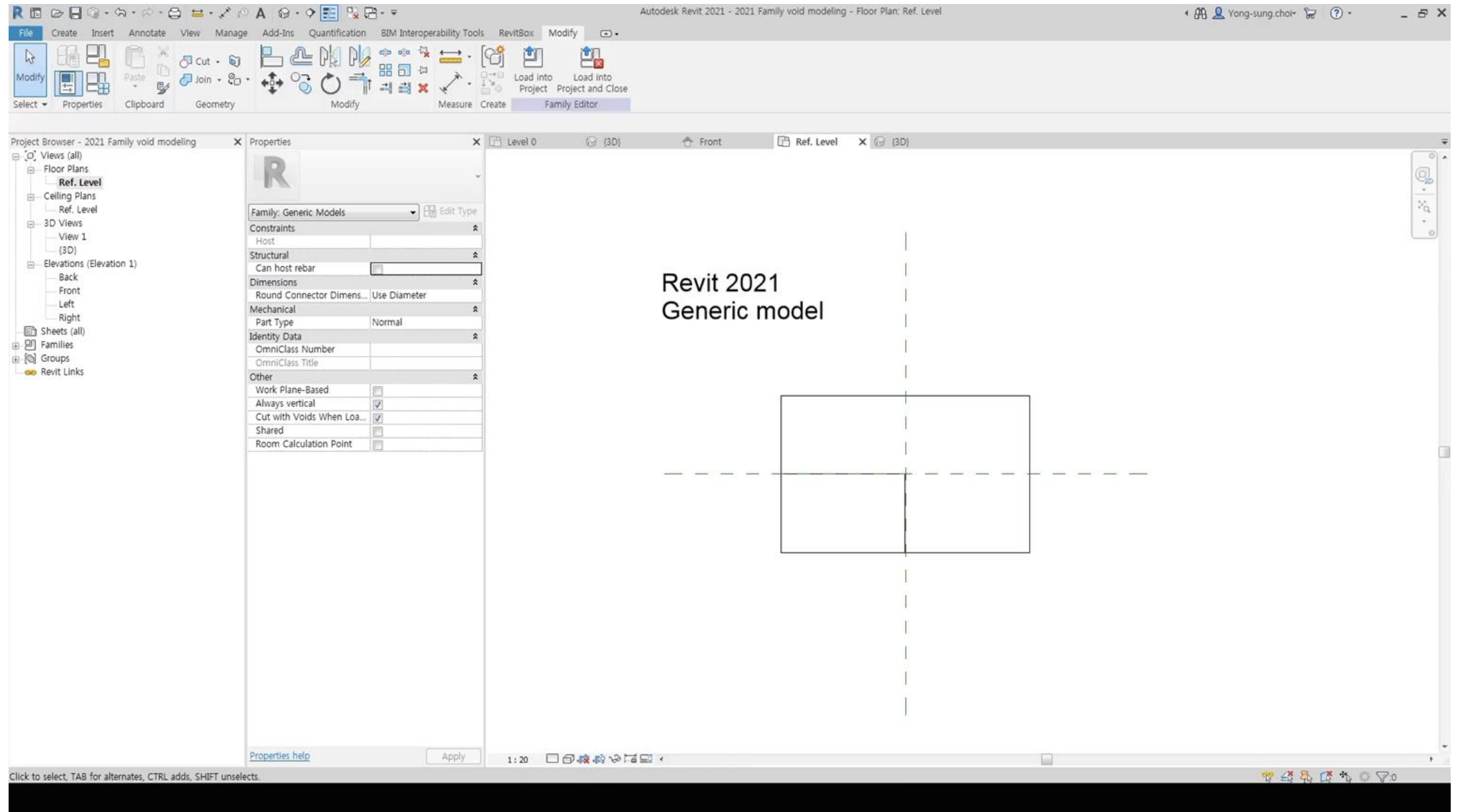


Family void modeling 2020



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

Family void modeling 2021



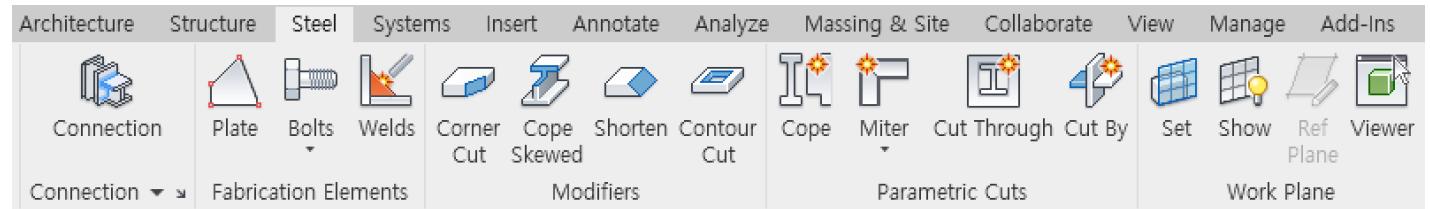
Modeling



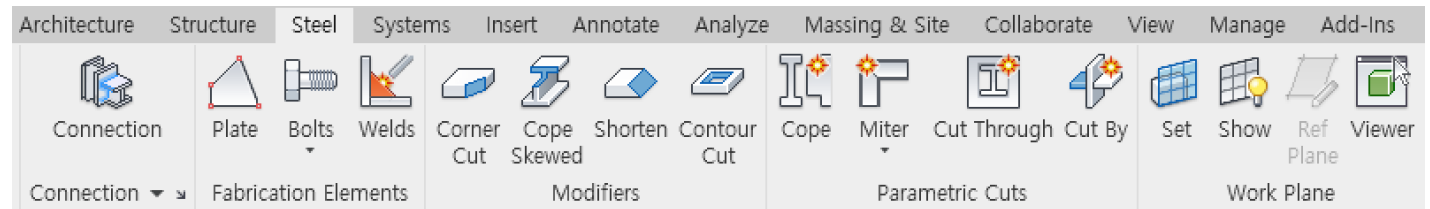
Steel Connection 2021



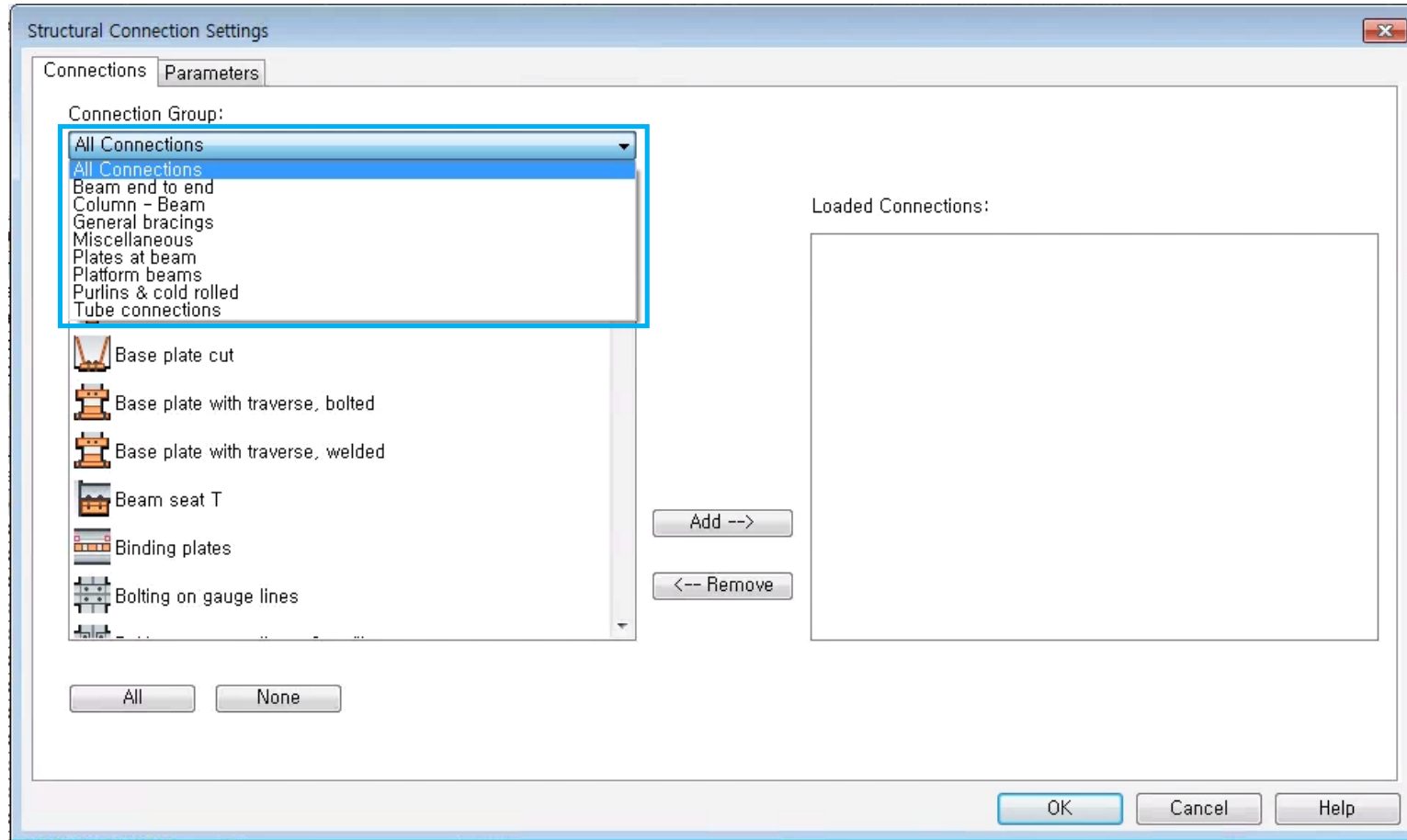
2020



2021



Steel Connection 2021



Beam end to end

Column-Beam

General bracings

Miscellaneous

Plate at beam

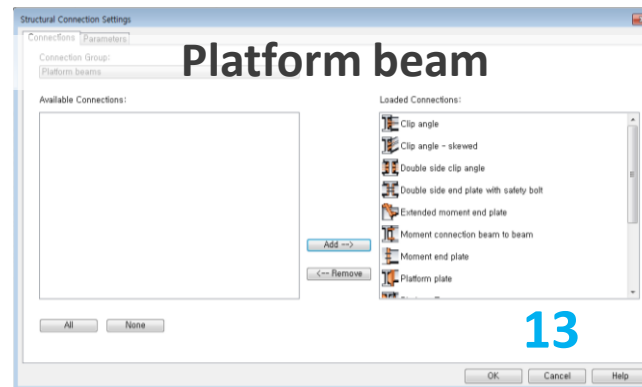
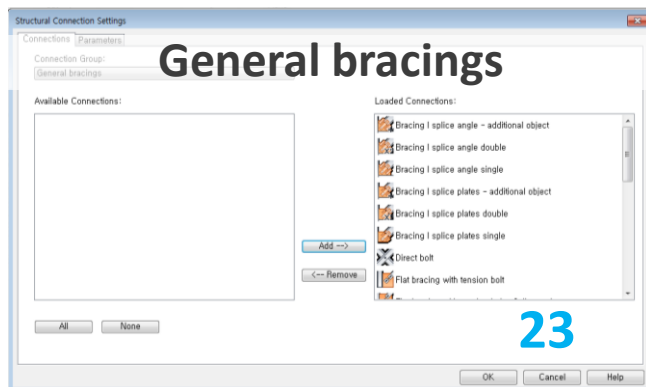
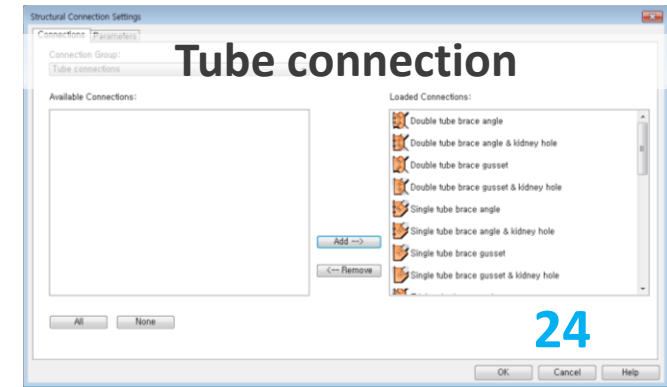
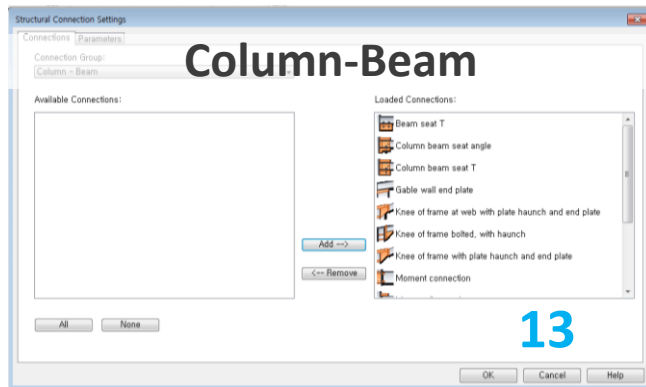
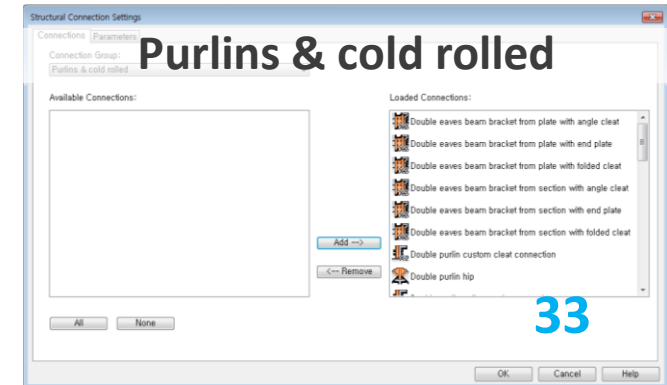
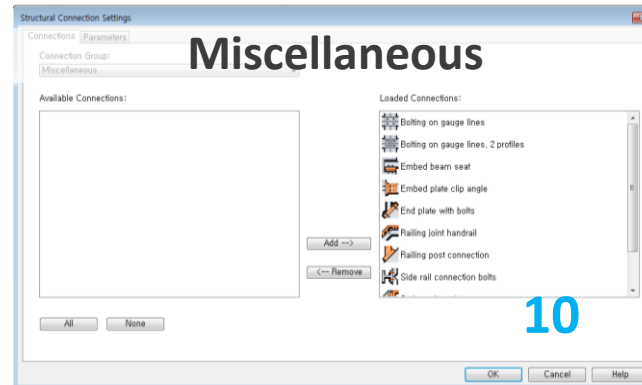
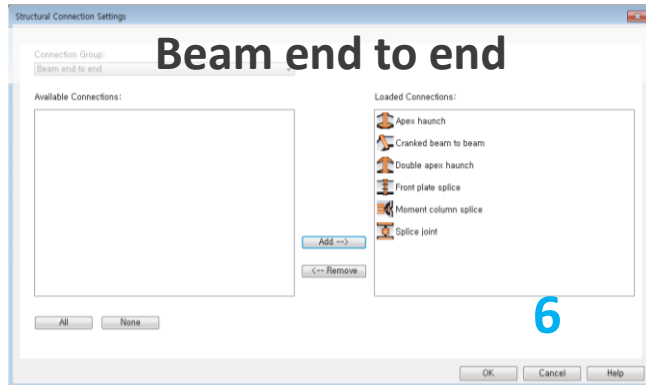
Platform beam

Purlins & cold rolled

Tube connection

8 Groups

Steel Connection 2021



133
connection

Create Stiffeners on Steel Beams



2020

Structural Connection Settings

Connections Parameters

Connection Group:
Plates at beam

Available Connections:

- Base plate
- Base plate cut
- Base plate with traverse, bolted
- Base plate with traverse, welded
- Binding plates
- Corner base plate
- End plate
- Tube base plate

All None

2021

Structural Connection Settings

Connections Parameters

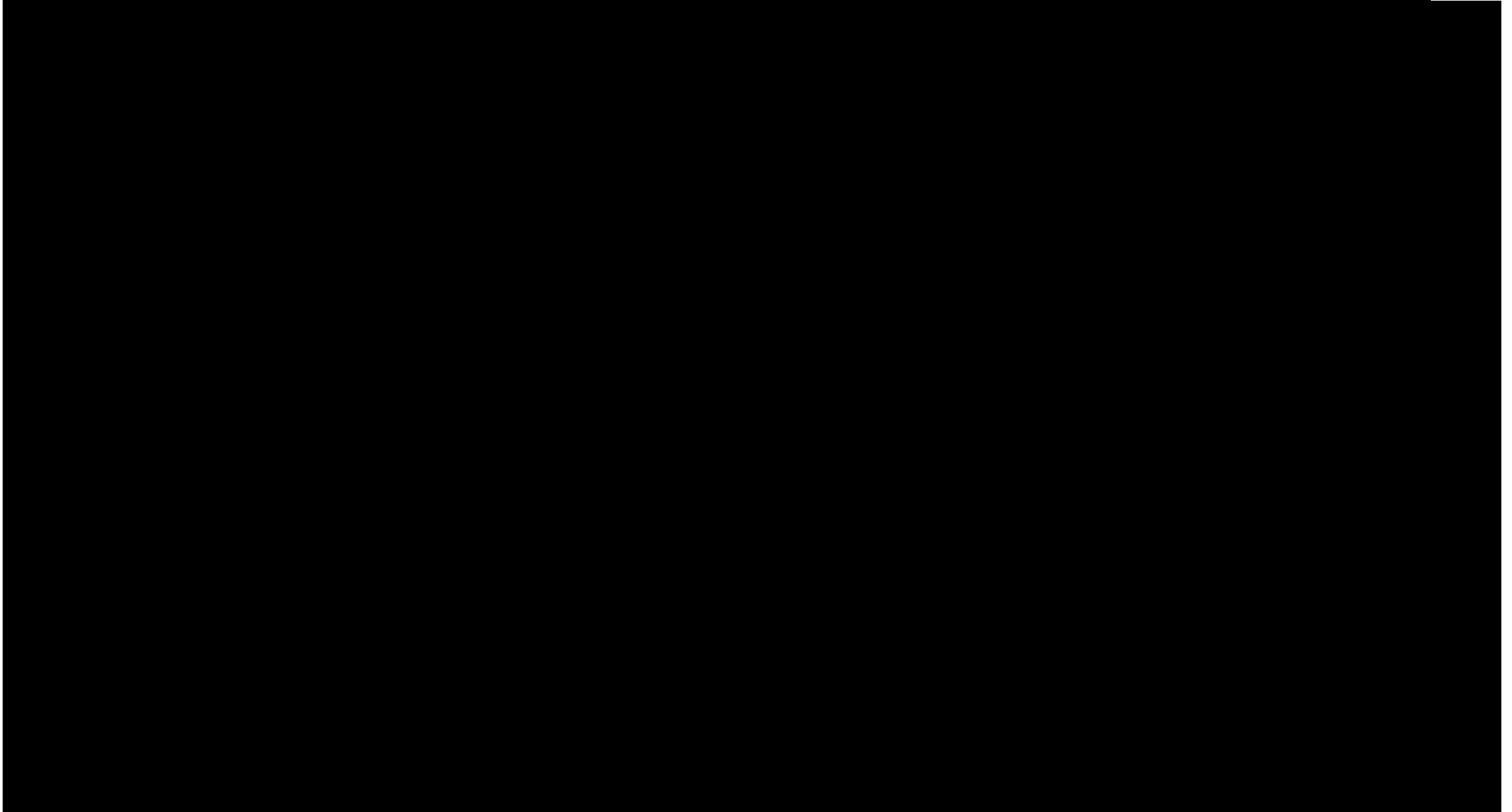
Connection Group:
Plates at beam

Available Connections:

- Base plate
- Base plate cut
- Base plate with traverse, bolted
- Base plate with traverse, welded
- Binding plates
- Corner base plate
- End plate
- Stiffener
- Tube base plate

All None

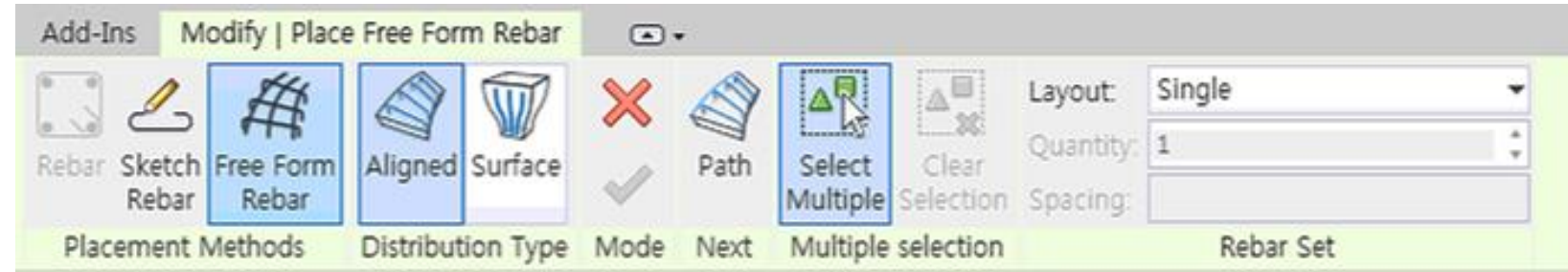
Create Stiffeners on Steel Beams 2021



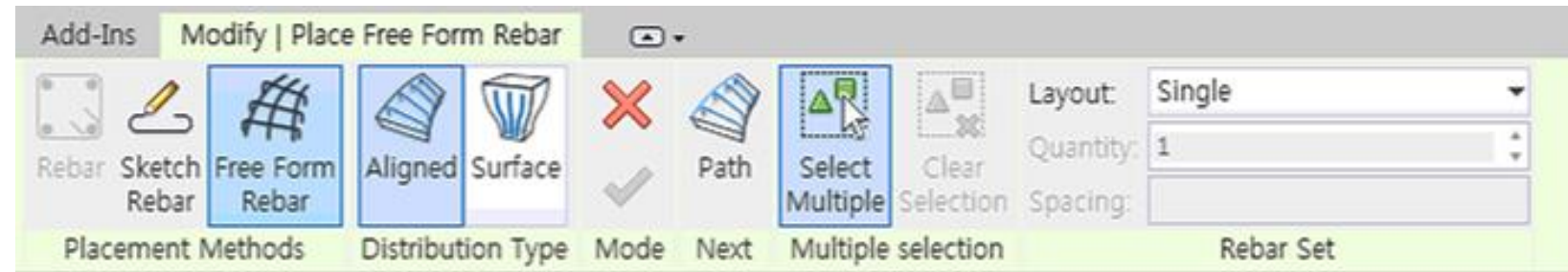
Rebar



2020



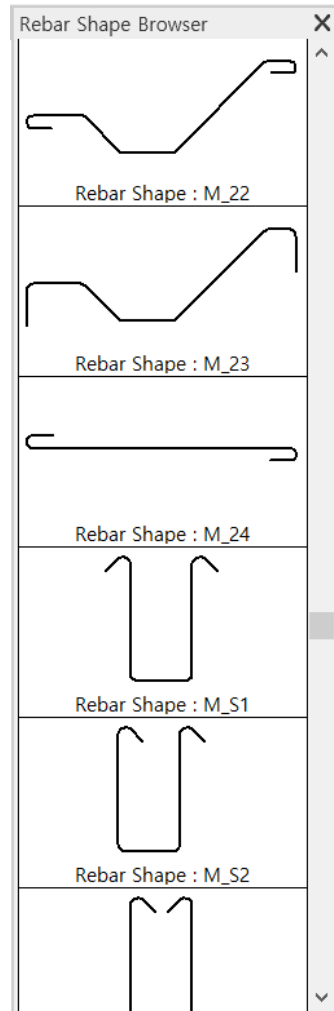
2021



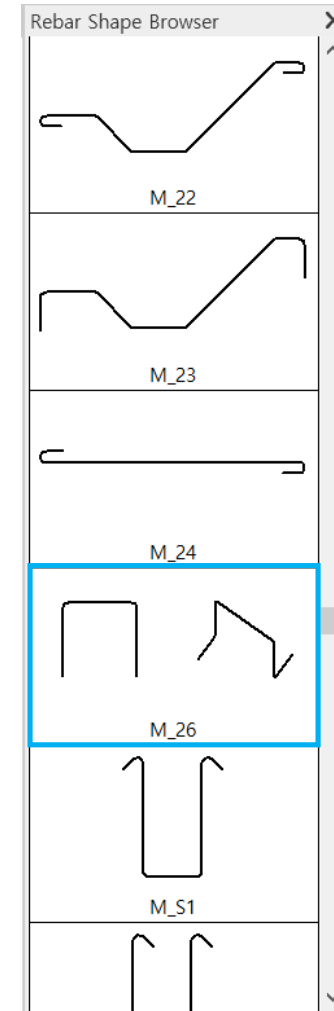
Rebar Shape Browser



2020



2021



Rebar Shape Browser 2021



Properties

Rebar Bar
13M

Structural Rebar (1) Edit Type

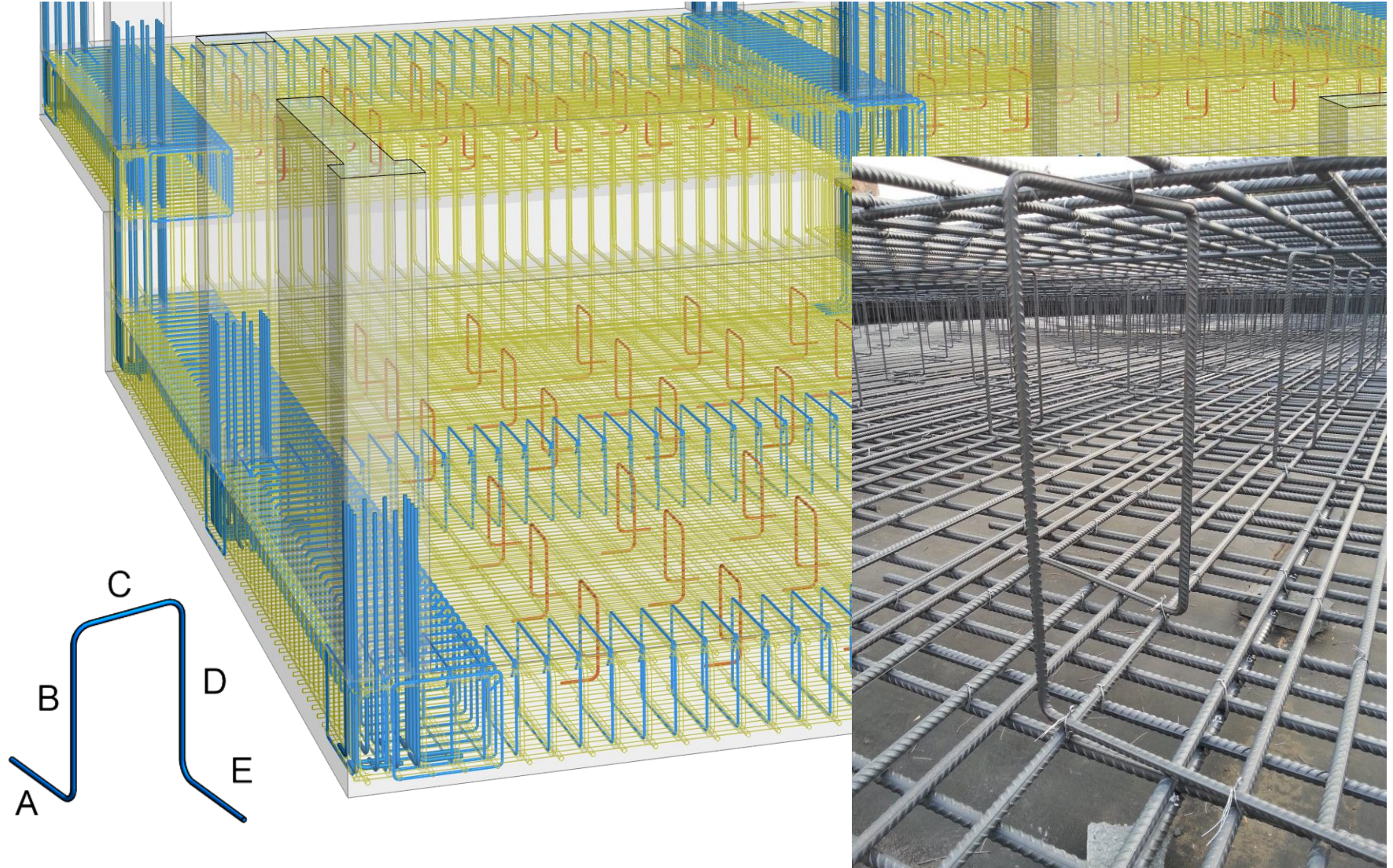
Construction

Partition	
Rebar Number	4
Schedule Mark	1
Geometry	Shape Driven
Style	Standard
Shape	M_17
Shape Image	<None>
Hook At Start	Standard - 90 deg.
Hook Rotation At Start	90.00°
End Treatment At Start	None
Hook At End	Standard - 90 deg.
Hook Rotation At End	270.00°
End Treatment At End	None
Override Hook Lengths	☐
Rounding Overrides	Edit...

Rebar Set

Layout Rule	Single
Quantity	1
Spacing	

면외 각도 수정 가능



Hook Lengths 추가 길이 조정



2020

Properties

Rebar Bar
13M

Structural Rebar (1) Edit Type

Construction

Partition	
Rebar Number	3
Schedule Mark	2
Geometry	Shape Driven
Style	Standard
Shape	Rebar Shape 1
Shape Image	<None>
Hook At Start	Standard - 90 deg.
Hook At End	None
Rounding Overrides	Edit...
End Treatment At Start	None
End Treatment At End	None

Dimensions

A	0.0 mm (0 mm)
B	4324.9 mm (4320 mm)
C	0.0 mm (0 mm)
D	0.0 mm (0 mm)
E	0.0 mm (0 mm)
F	0.0 mm (0 mm)
G	0.0 mm (0 mm)
H	0.0 mm (0 mm)
J	0.0 mm (0 mm)
K	0.0 mm (0 mm)
O	0.0 mm (0 mm)
R	0.0 mm (0 mm)
Bar Length	4492.3 mm (4490 mm)
Total Bar Length	4490 mm

2021

Properties

Rebar Bar
13M

Structural Rebar (1) Edit Type

Construction

Partition	
Rebar Number	3
Schedule Mark	2
Geometry	Shape Driven
Style	Standard
Shape	Rebar Shape 1
Shape Image	<None>
Hook At Start	None
Hook Rotation At Start	0.00°
End Treatment At Start	None
Hook At End	Standard - 90 deg.
Hook Rotation At End	180.00°
End Treatment At End	None
Override Hook Lengths	☒
Rounding Overrides	Edit...

Dimensions

A	0.0 mm (0 mm)
B	4308.1 mm (4310 mm)
C	400.0 mm (400 mm)
D	0.0 mm (0 mm)
E	0.0 mm (0 mm)
F	0.0 mm (0 mm)
G	0.0 mm (0 mm)
H	0.0 mm (0 mm)
J	0.0 mm (0 mm)
K	0.0 mm (0 mm)
O	0.0 mm (0 mm)
R	0.0 mm (0 mm)
Bar Length	4675.5 mm (4680 mm)
Total Bar Length	4680 mm

Hook Lengths 추가 길이 조정 2021



Autodesk Revit 2021 - Hook_2021_by sarah - Detail View: Detail 0

File Architecture Structure Steel Precast Systems Insert Annotate Analyze Massing & Site Collaborate View Manage Add-Ins Quantification BIM Interoperability Tools Modify

Select Modify Beam Wall Column Floor Truss Brace Beam System Connection Isolated Wall Slab Rebar Area Path Fabric Area Sheet Cover Rebar Coupler Component Model Text Model Line Model Group By Face Shaft Wall Vertical Dormer Level Grid Set Ref Plane Viewer Datum Work Plane

Properties {3D} Level 1 Detail 0

Detail View Detail

Detail View: Detail 0 Edit Type

Graphics

View Scale	1 : 25
Scale Value 1:	25
Display Model	Normal
Detail Level	Fine
Parts Visibility	Show Original
Visibility/Graphics ...	Edit...
Graphic Display Op...	Edit...
Hide at scales coars...	1 : 100
Discipline	Structural
Show Hidden Lines	By Discipline
Color Scheme Locat...	Background
Color Scheme	<none>
Default Analysis Dis...	None
Sun Path	☐

Extents

Crop View	☒
Crop Region Visible	☒
Annotation Crop	☐
Far Clipping	Clip without line
Far Clip Offset	1072.4
Scope Box	None

Identity Data

View Template	<None>
View Name	Detail 0

Properties help Apply

1 : 25

Level 1

0

Project Browser - Hook_2021_by sarah

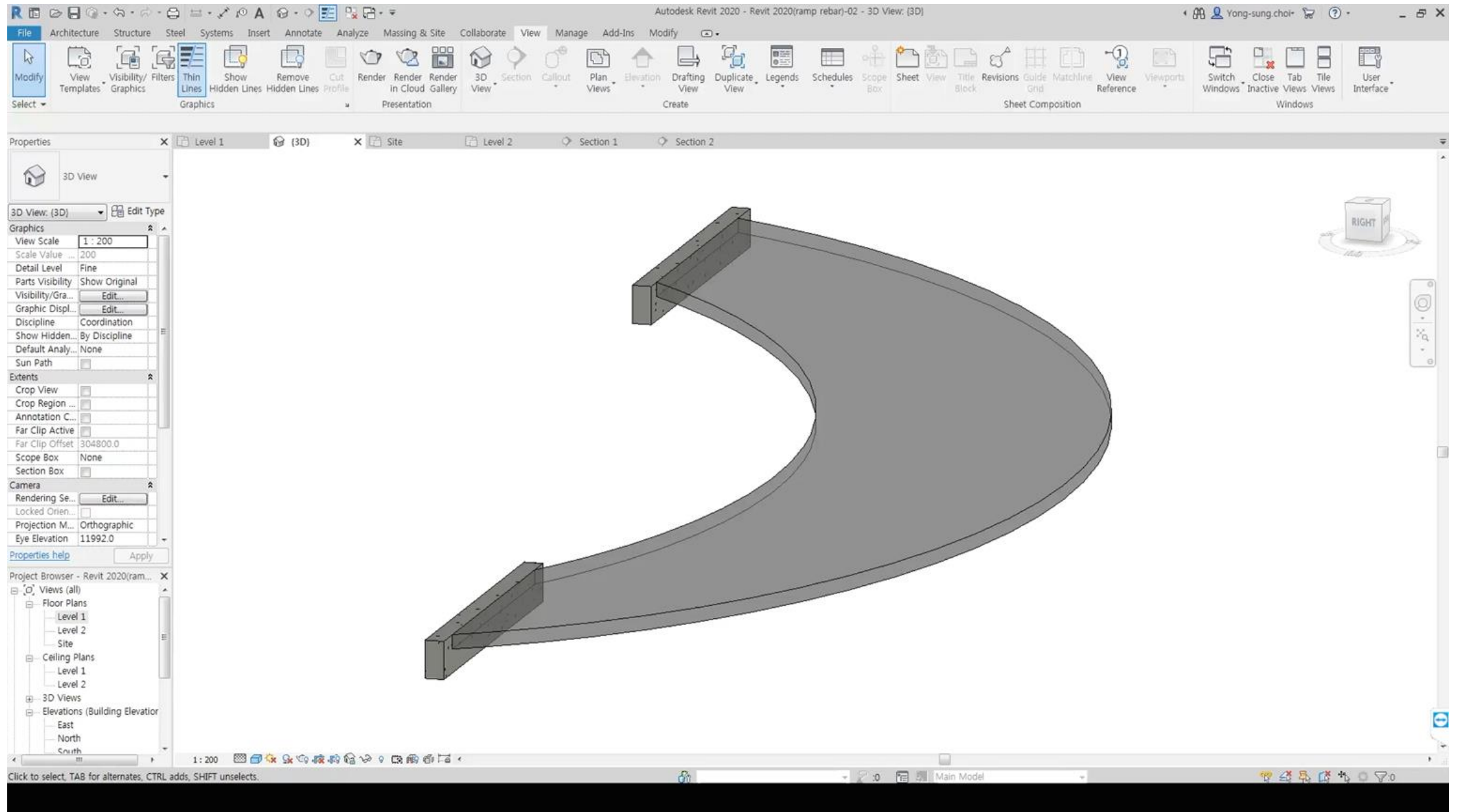
- Views (all)
- Structural Plans
 - Level 1
 - Level 1 - Analytical
 - Level 2
 - Level 2 - Analytical
 - Level 3
 - Site
- Floor Plans
- Ceiling Plans
- 3D Views
- Elevations (Building Elevation)
- Detail Views (Detail)
- Legends
- Schedules/Quantities (all)
- Sheets (all)
- Families
- Groups
- Revit Links

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

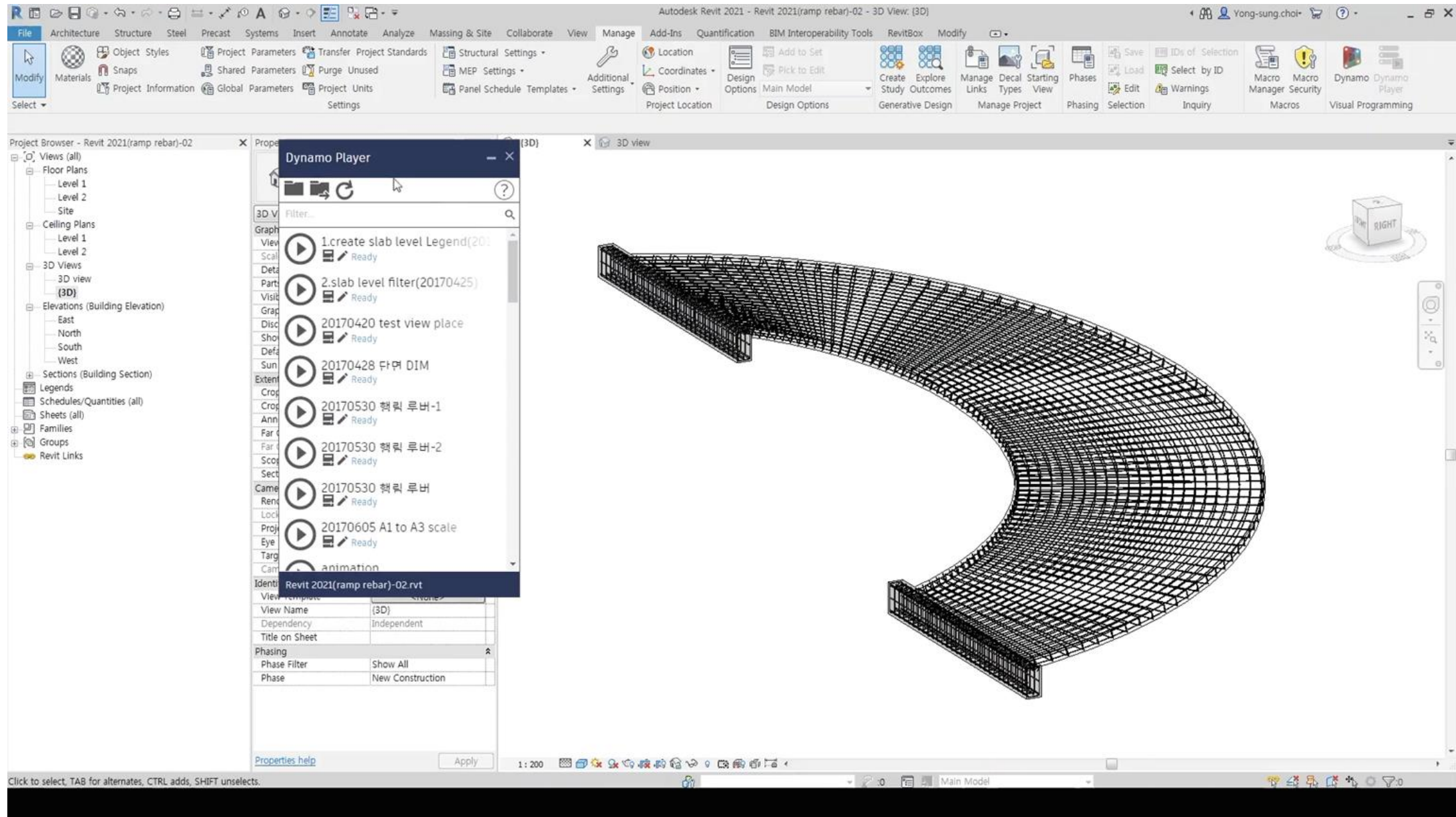
Main Model

오후 1:30 2020-06-23

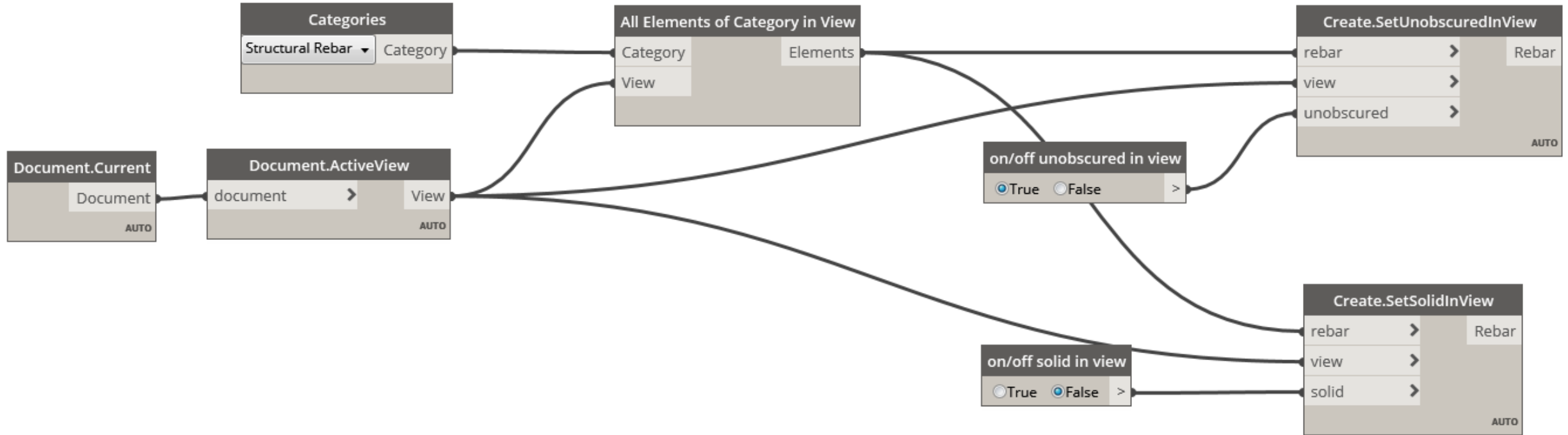
Rebar 2020



Rebar with Dynamo



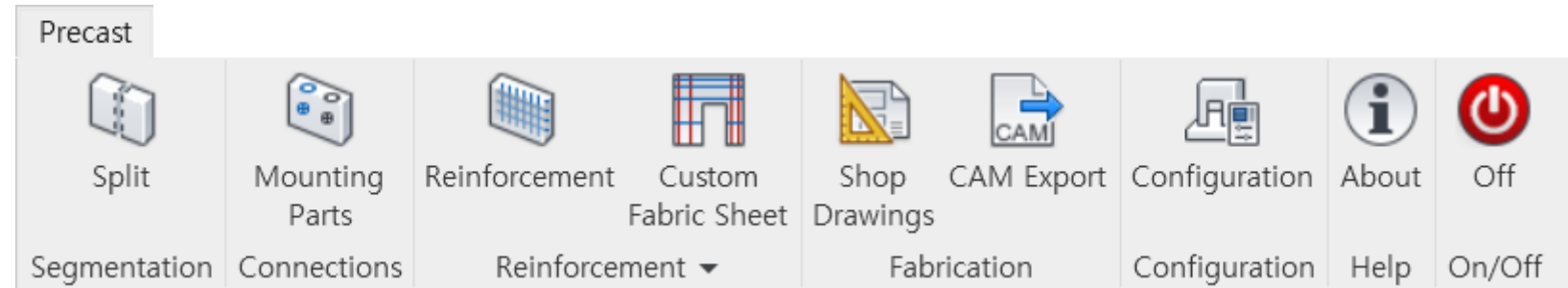
Rebar with Dynamo



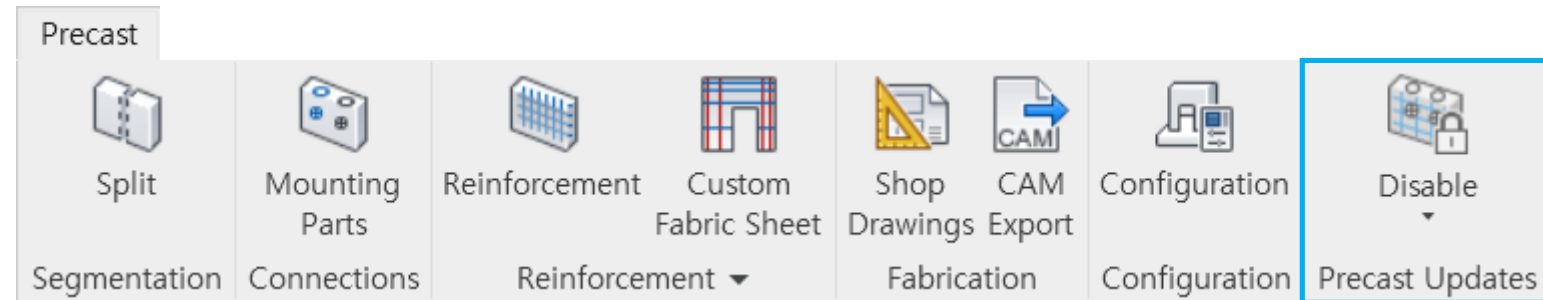
Precast



2020



2021



Precast 2020



Autodesk - Account

← → ↻ ⓘ 주의 요함 | manage.autodesk.com/cep/#products-services/updates

AUTODESK ACCOUNT

?

홈

제품 및 서비스

모든 제품 및 서비스

제품 업데이트

평가판

보고

클라우드 서비스 사용량

개인정보/쿠키

이용 약관

개인정보 설정

빠른 링크

제품 업데이트

precast

CSV로 내보내기

정렬 기준 날짜 필터

precast의 결과 4개

이전 업데이트 (4)

> ☐

Structural Precast Extension for Revit 2020

Structural Precast Extension for Revit 2020

릴리즈됨: 8월 21, 2019

심각도: Medium

다운로드

⋮

> ☐

Structural Precast Extension Update 1 for Revit 2019

Structural Precast Extension for Revit Update 1

릴리즈됨: 1월 16, 2019

심각도: Medium

다운로드

⋮

> ☐

Structural Precast Extension for Revit 2019

Structural Precast Extension for Revit 2019

릴리즈됨: 5월 14, 2018

심각도: Medium

다운로드

⋮

> ☐

Structural Precast for Revit 2018

Structural Precast Extension for Revit 2018

릴리즈됨: 8월 22, 2017

심각도: Medium

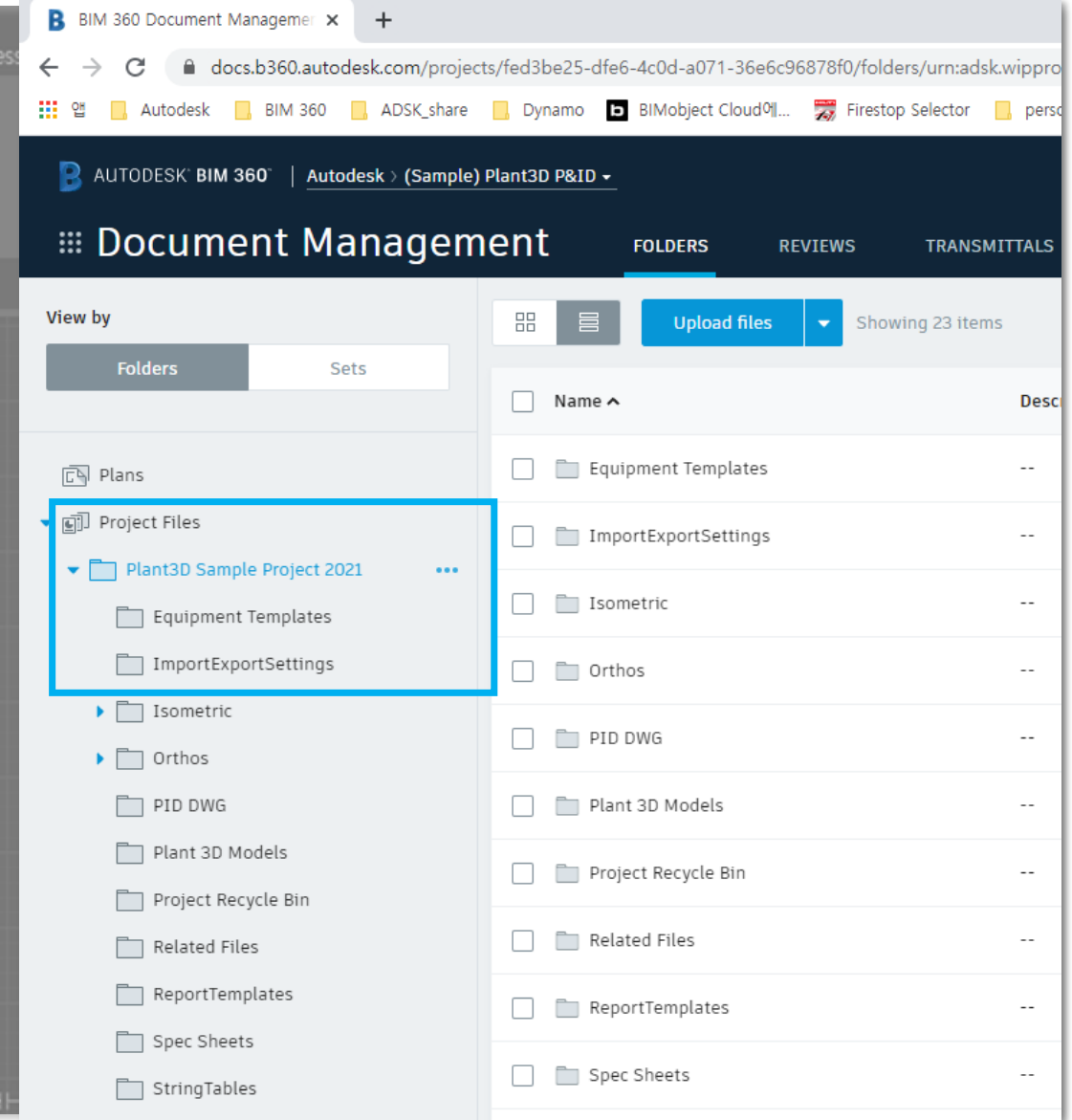
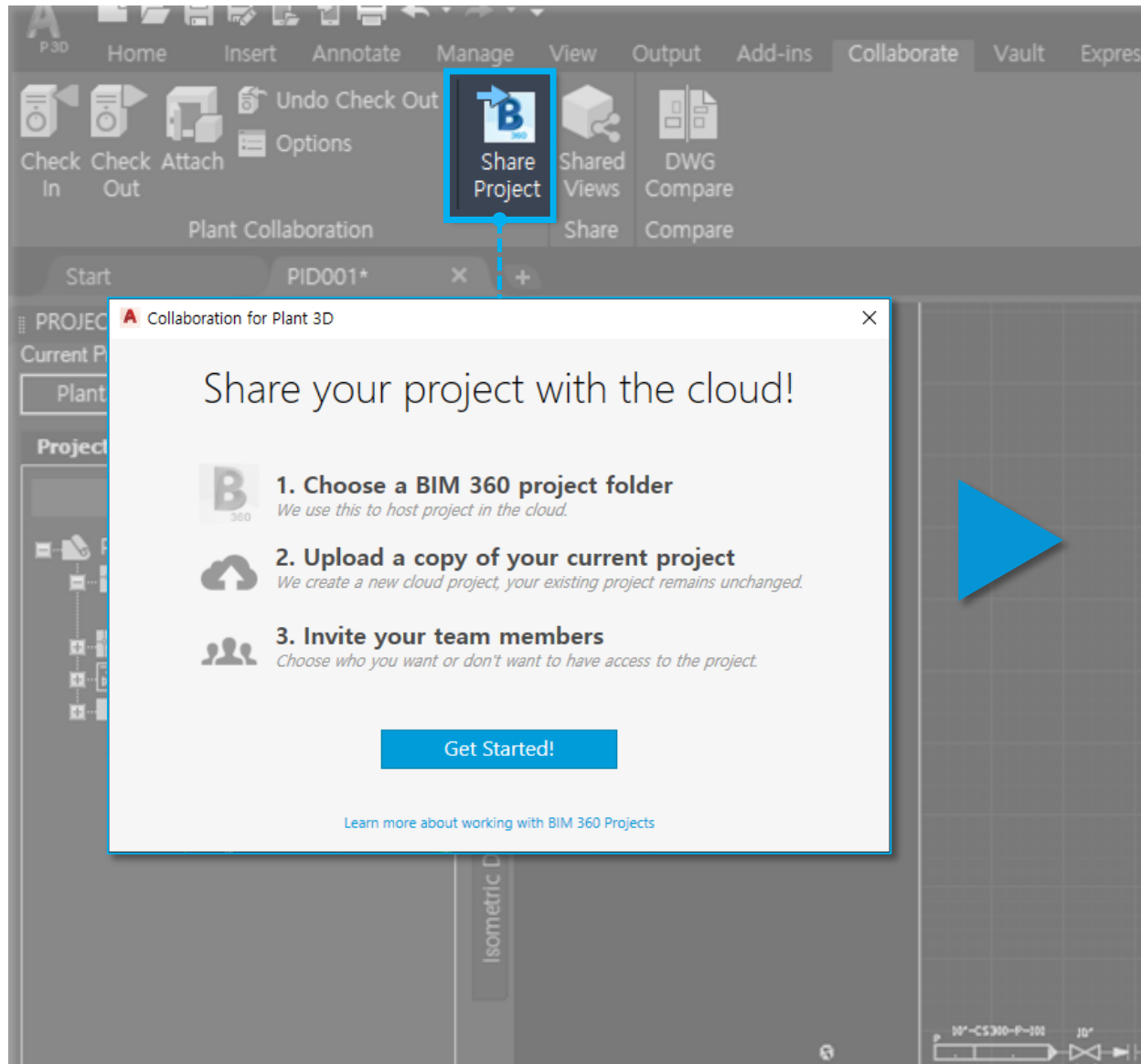
다운로드

⋮

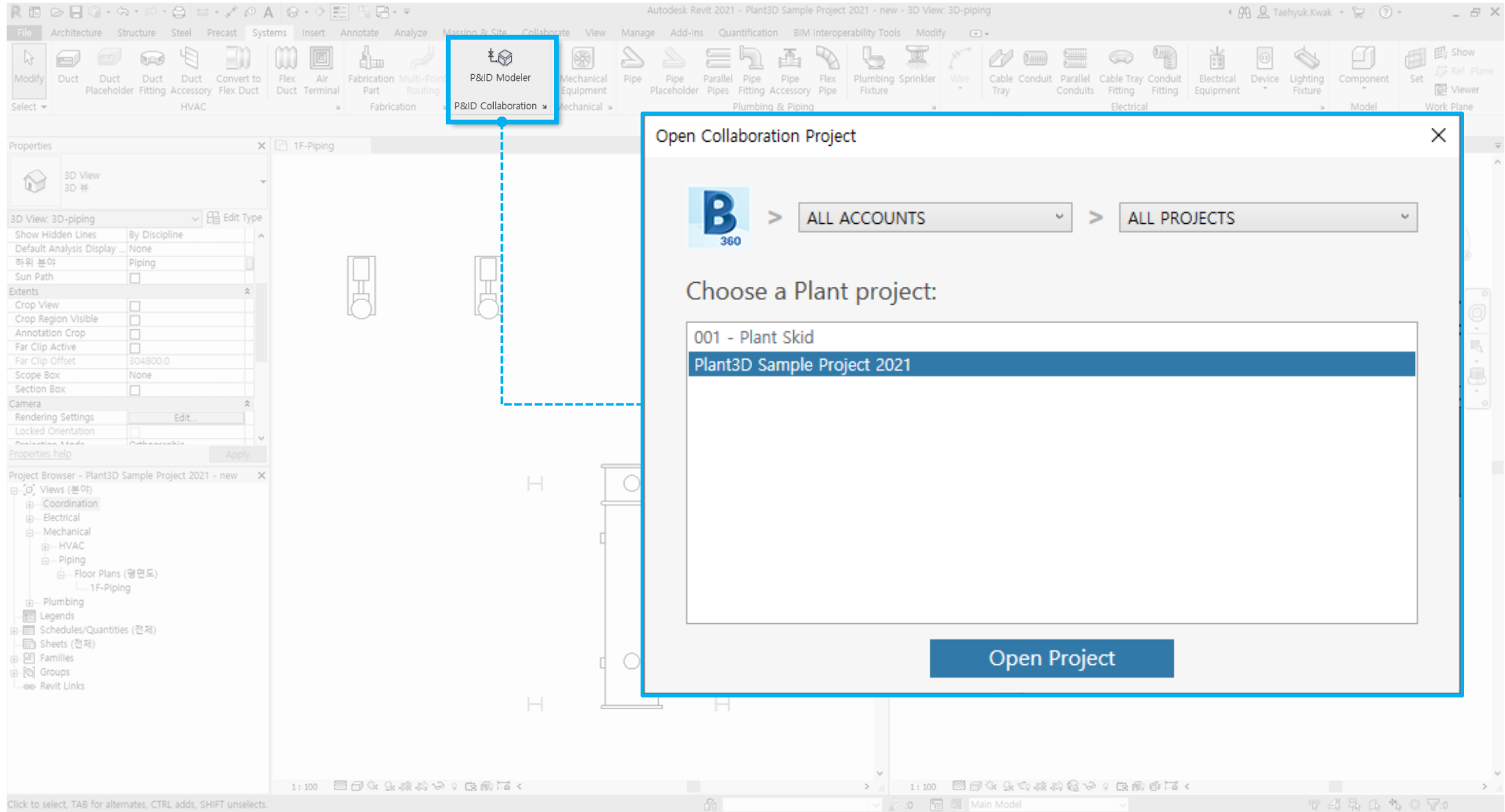
8개 새 알림

Modeling



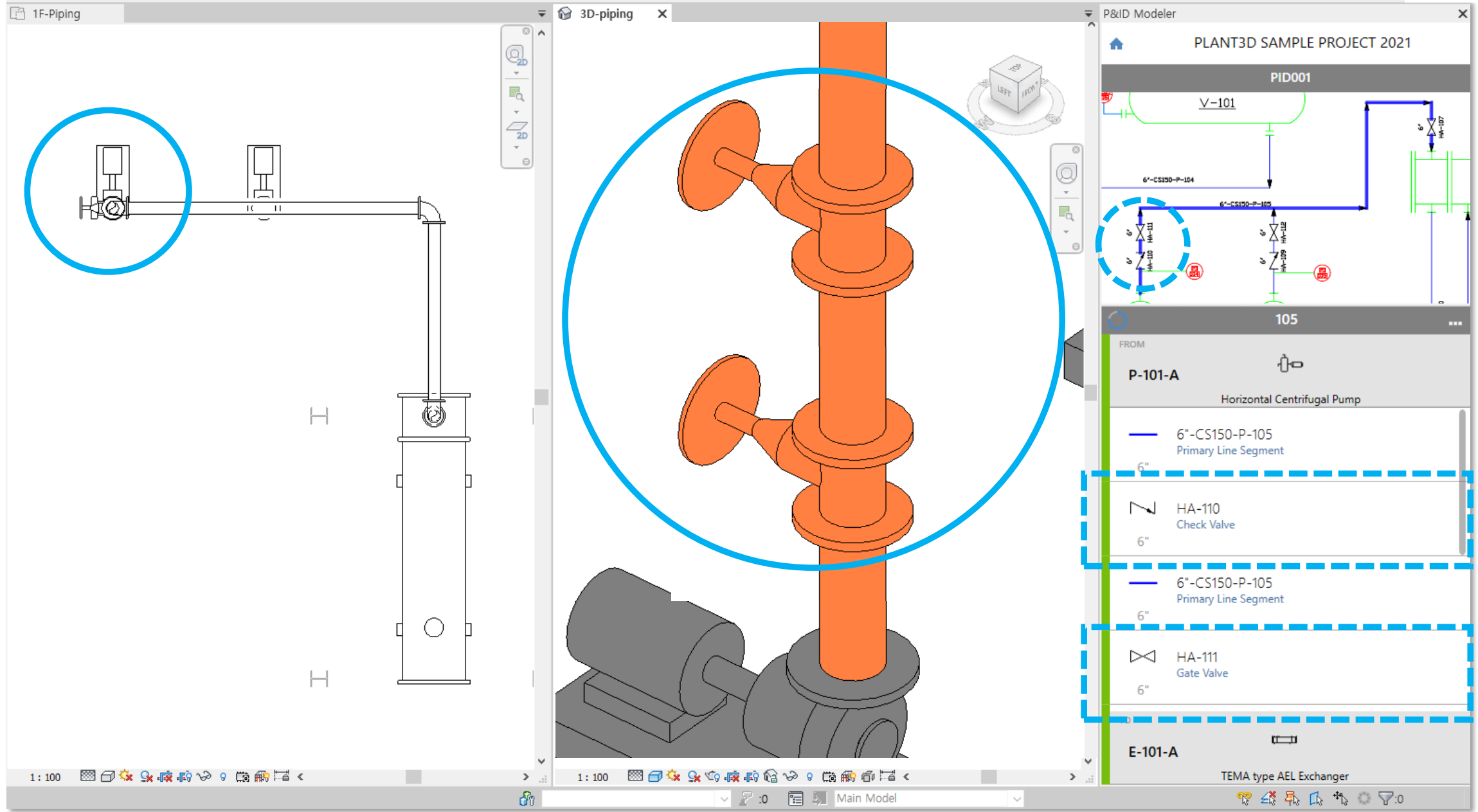


P&ID

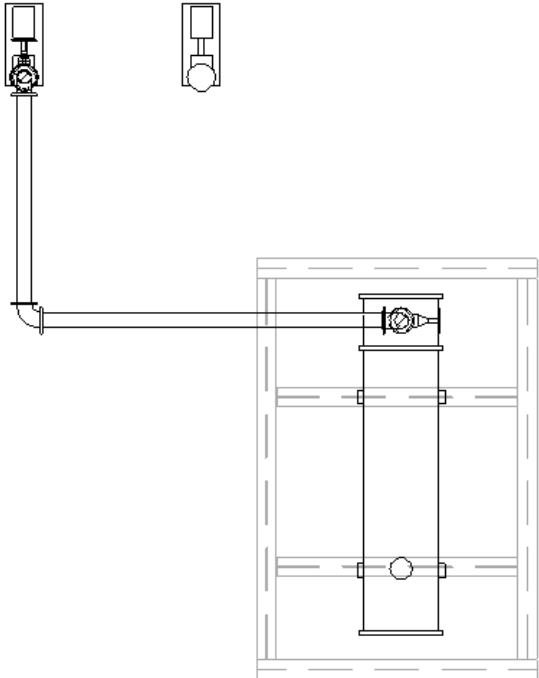


Click to select, TAB for alternates, CTRL adds, SHIFT unselects.

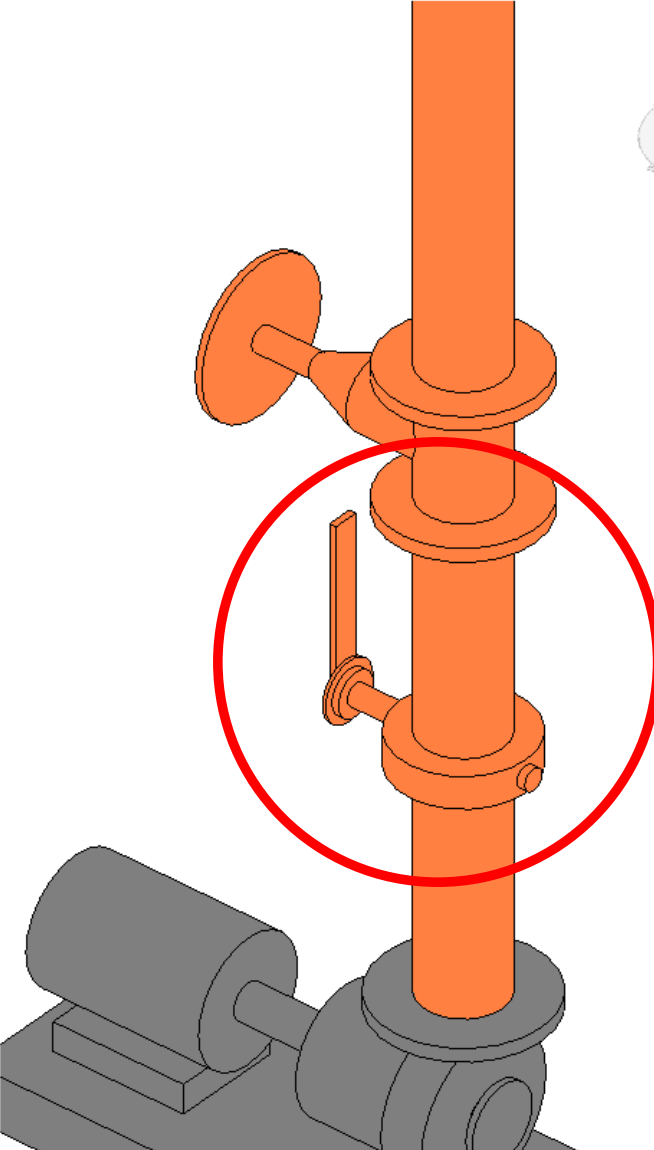
P&ID



1F-Piping



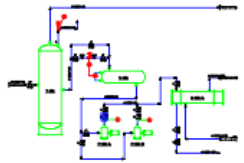
3D-piping



P&ID Modeler

PLANT3D SAMPLE PROJECT 2021

PID001



105

FROM

P-101-A

Horizontal Centrifugal Pump

6"-CS150-P-105
Primary Line Segment

6"

HA-110

Check Valve

Revit part does not match:

6" Butterfly Valve - 2-12 Inch

Click to view part in model

6"

HA-111

Gate Valve

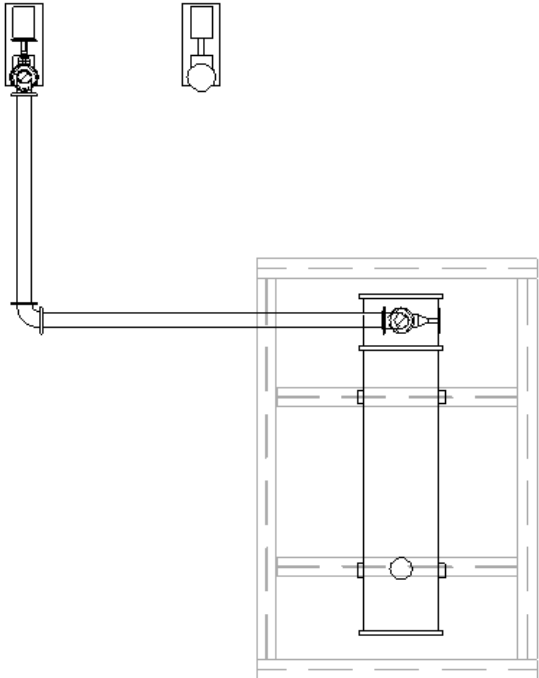
6"

TO

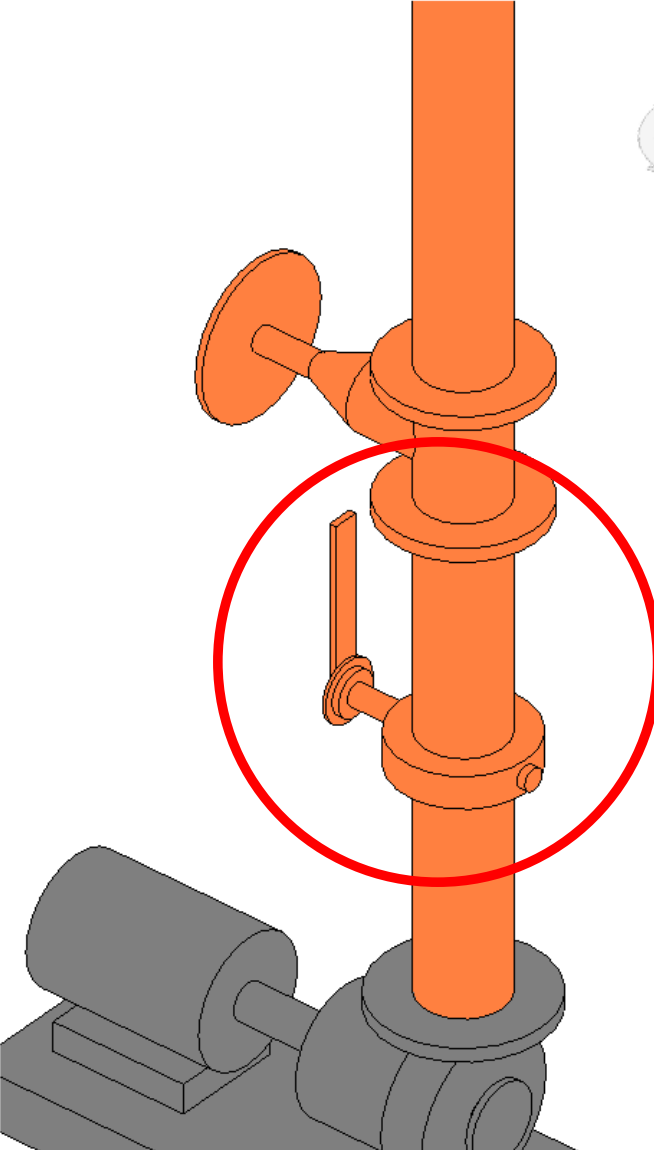
E-101-A

TEMA type AEL Exchanger

1 : 100



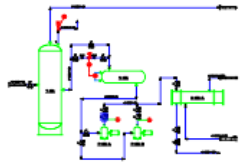
1 : 100



P&ID Modeler

PLANT3D SAMPLE PROJECT 2021

PID001



105

FROM

P-101-A

Horizontal Centrifugal Pump

6"-CS150-P-105
Primary Line Segment

6"

HA-110

Check Valve

Revit part does not match:

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HA-111

Gate Valve

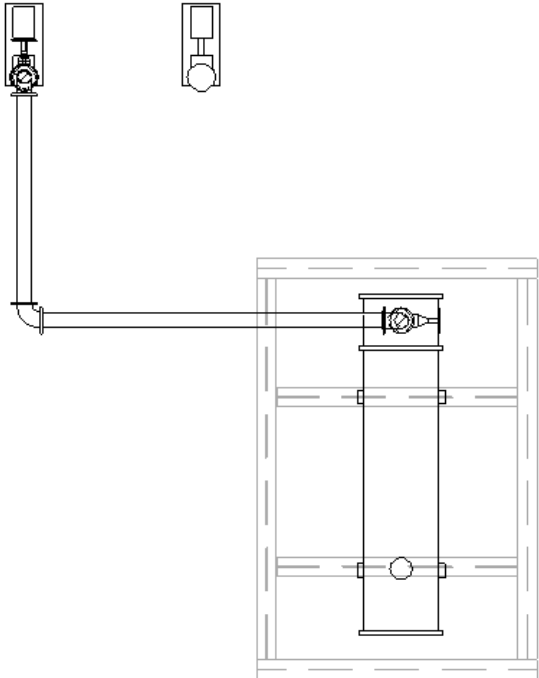
6"

TO

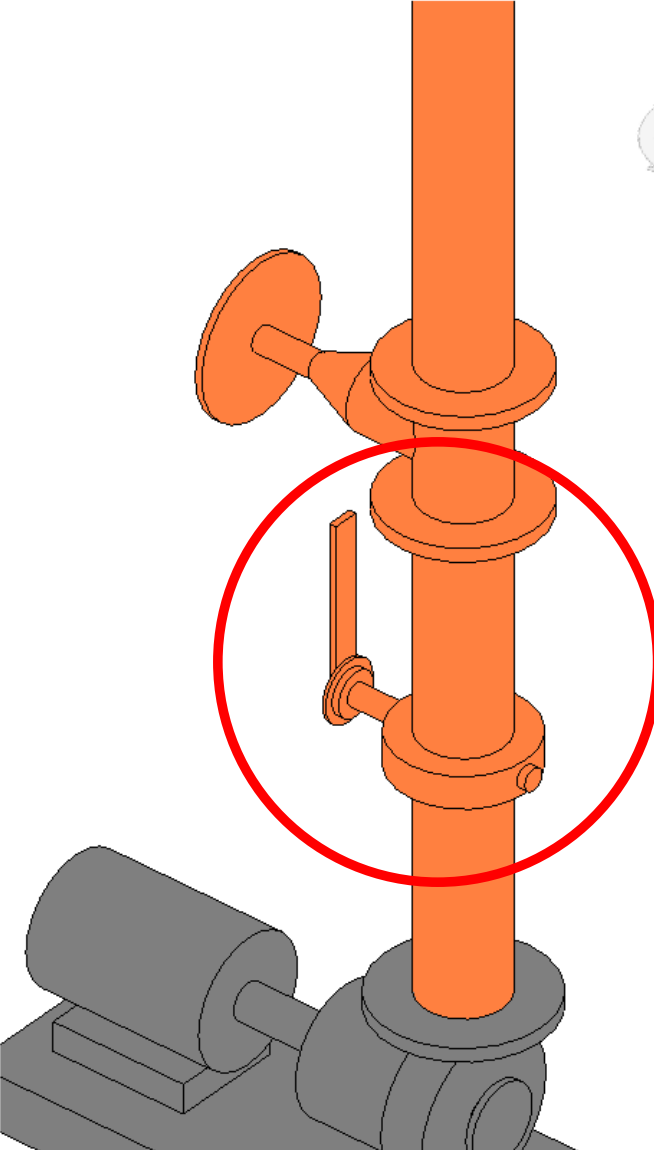
E-101-A

TEMA type AEL Exchanger

1 : 100



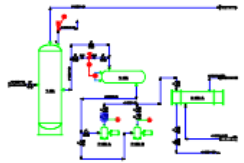
1 : 100



P&ID Modeler

PLANT3D SAMPLE PROJECT 2021

PID001



105

FROM

P-101-A

Horizontal Centrifugal Pump

6"-CS150-P-105
Primary Line Segment

6"

HA-110

Check Valve

Revit part does not match:

6" Butterfly Valve - 2-12 Inch

Click to view part in model

6"

HA-111

Gate Valve

6"

TO

E-101-A

TEMA type AEL Exchanger

P&ID



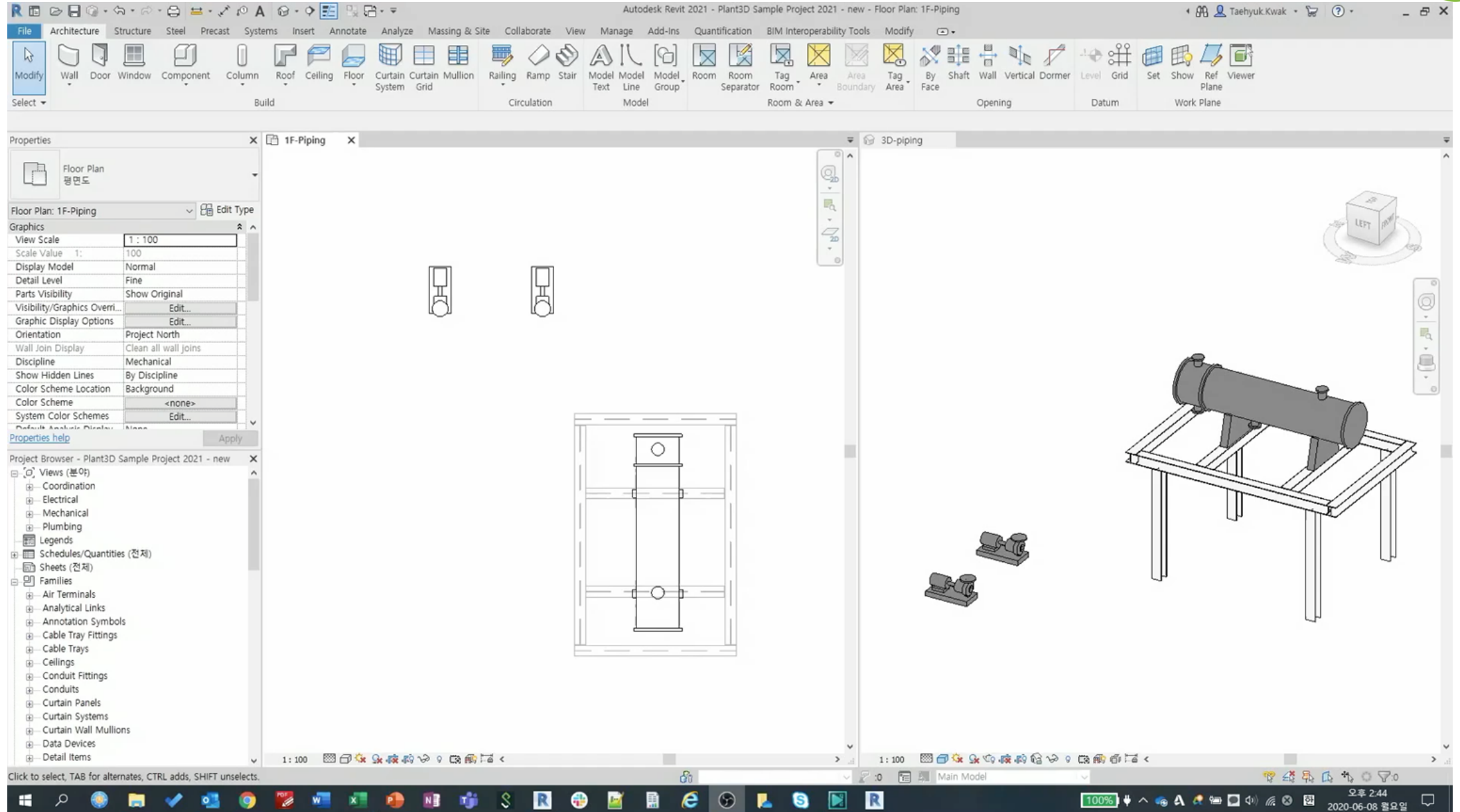
The image displays a software interface for P&ID modeling, showing three main panels: 1F-Piping, 3D-piping, and P&ID Modeler.

1F-Piping Panel: Shows a 2D schematic of a piping system. A vertical pipe with a valve is connected to a horizontal pipe that enters a rectangular vessel. The scale is 1:100.

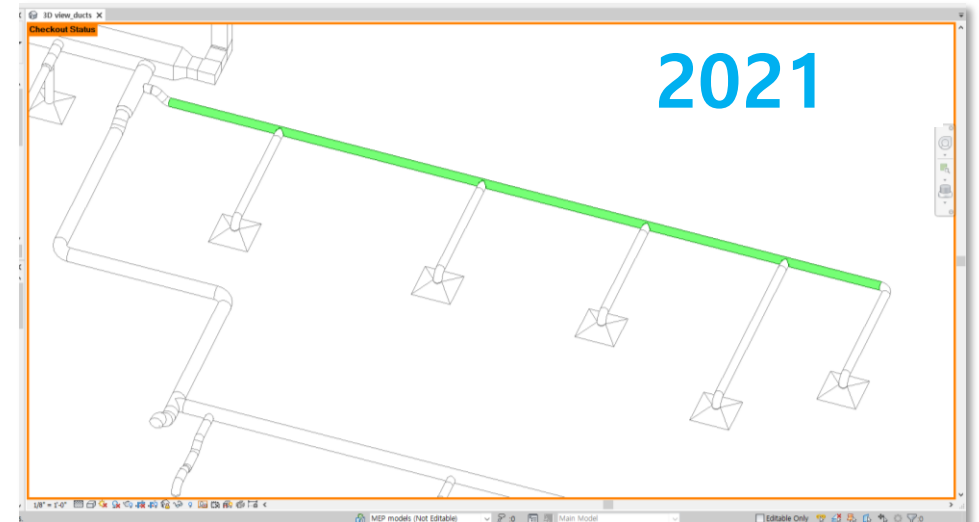
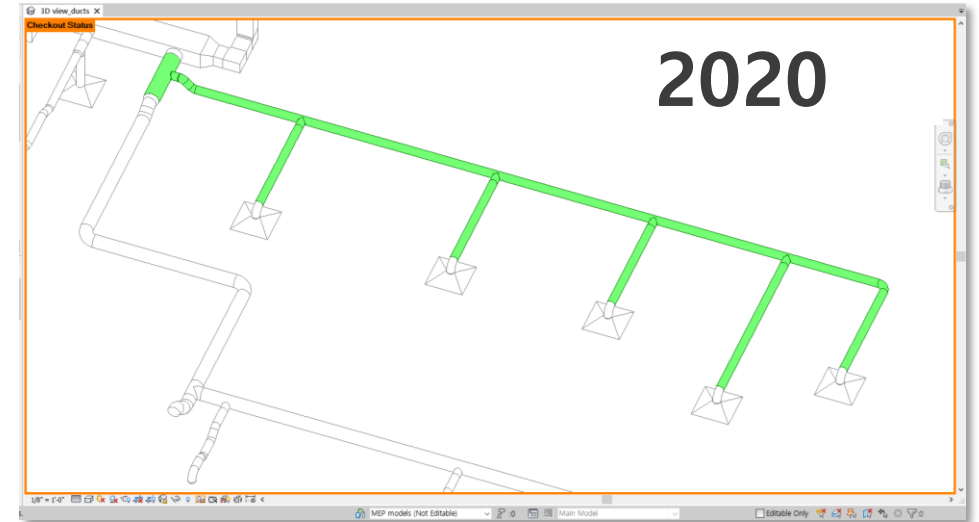
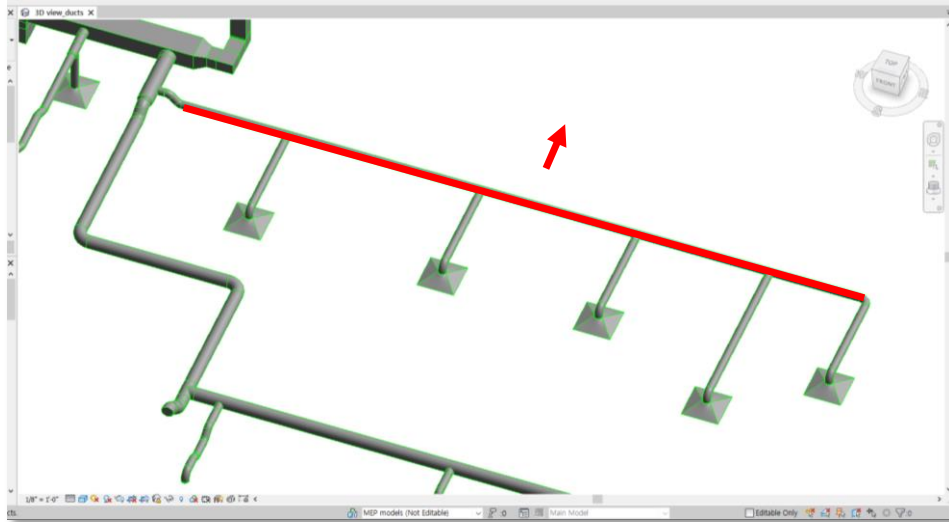
3D-piping Panel: Shows a 3D isometric view of the same piping system. The pipes are colored orange. A red circle highlights a connection point where a vertical pipe meets a horizontal pipe. The scale is 1:100.

P&ID Modeler Panel: Displays the project hierarchy and a detailed view of a specific piping segment. The project is titled 'PLANT3D SAMPLE PROJECT 2021' and the P&ID is 'PID001'. A small schematic of the entire process is shown at the top. The detailed view shows a segment between 'P-101-A' (Horizontal Centrifugal Pump) and 'E-101-A' (TEMA type AEL Exchanger). The segment is labeled '6"-CS150-P-105 Primary Line Segment' and '6"'. A red dashed box highlights the connection area, and a message box states 'Piping is not fully connected.'

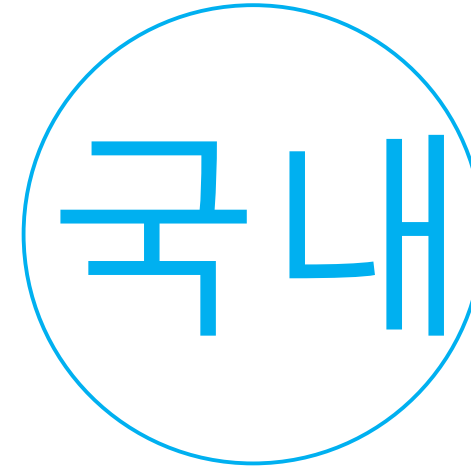
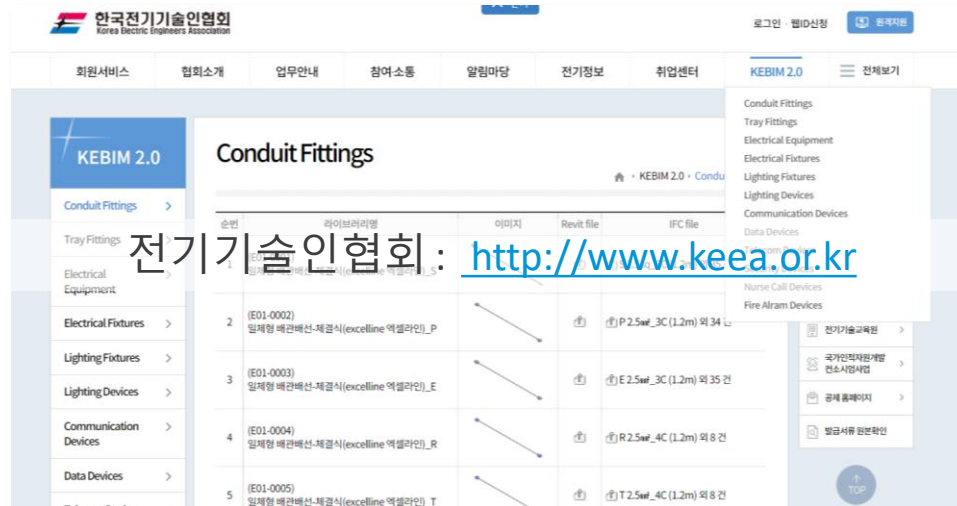
Bottom Panel: Shows the 'Main Model' tab with various tool icons and a scale of 1:100.



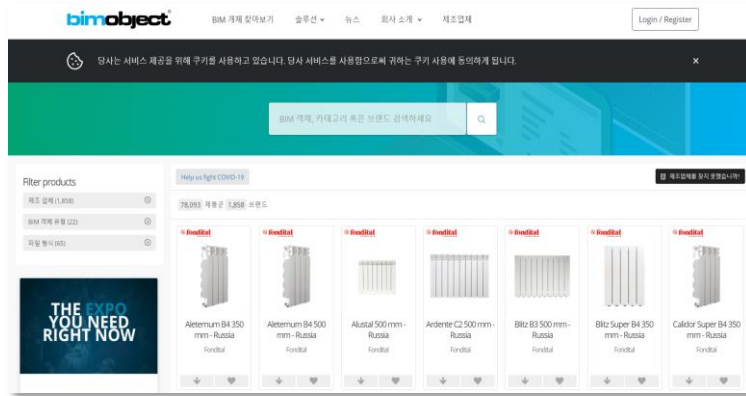
Work sharing Display



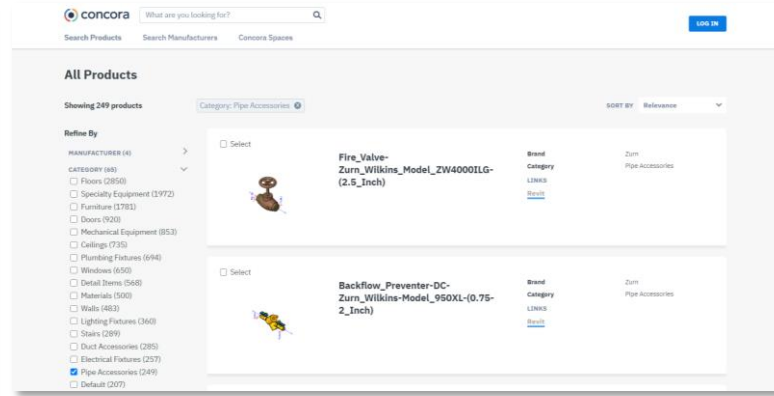
MEP Library



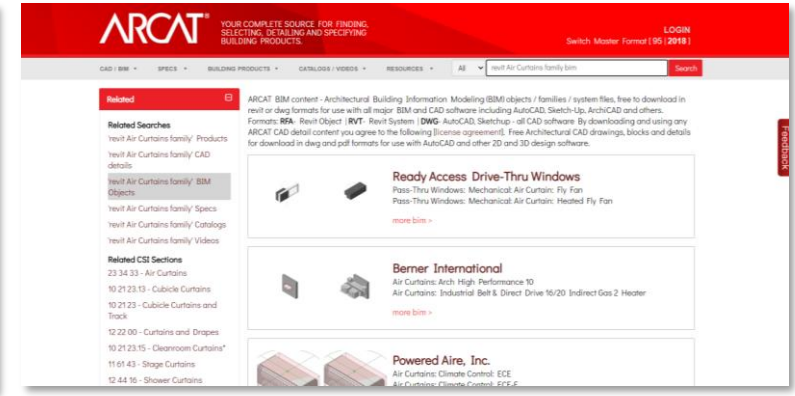
MEP Library



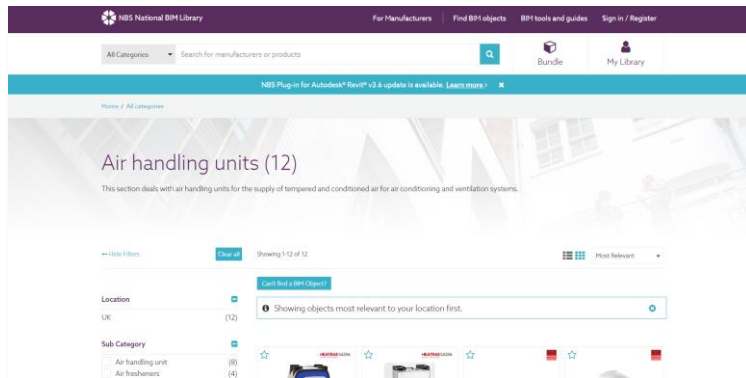
BIMOBJECT : <https://www.bimobject.com>



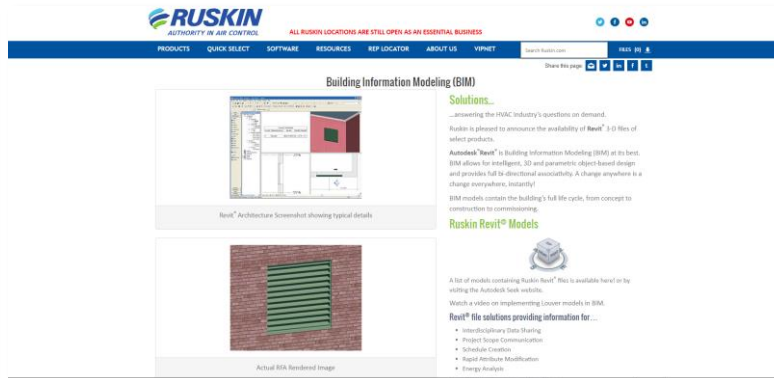
CONCORR : <https://library.concorr.com/>



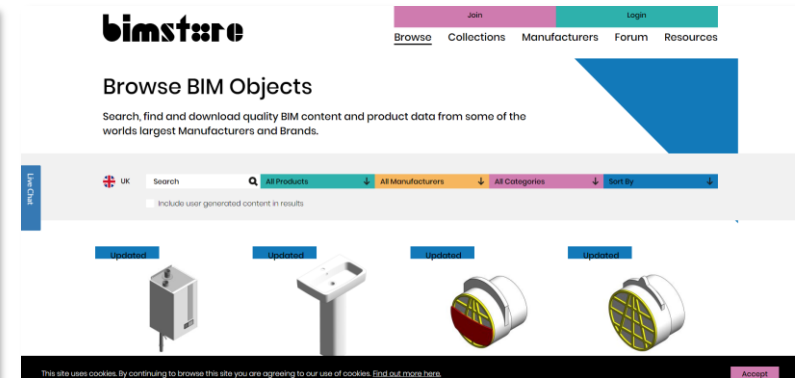
ARCAT : <https://www.arcat.com>



NBS National BIM Library :
<https://www.nationalbimlibrary.com>



RUSKIN : <https://www.ruskin.com>



BIMSTORE : <https://www.bimstore.co/>

Modeling



- 사선 벽
- Door & Window
- Void geometry



- Steel Connection
- Edit Connection detail
- Rebar



- P&ID with BIM 360
- Work sharing

02. MODELING

구조 부재 모델링 강화

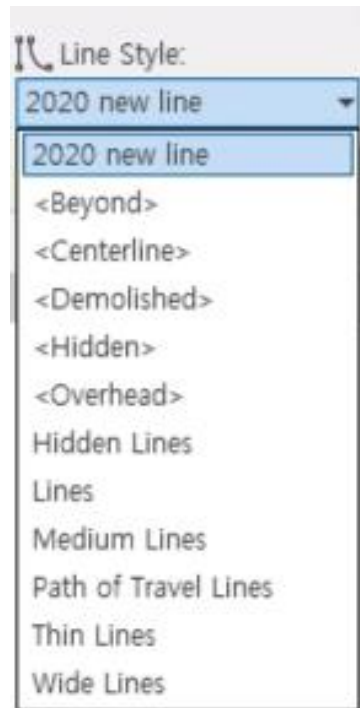
03. 2D & 3D Document

2D & 3D document

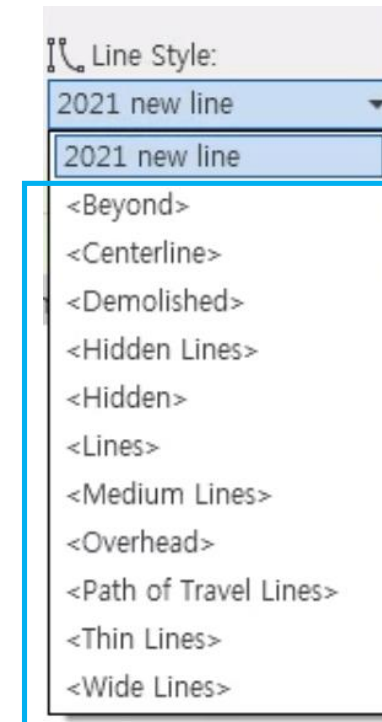


Line style naming

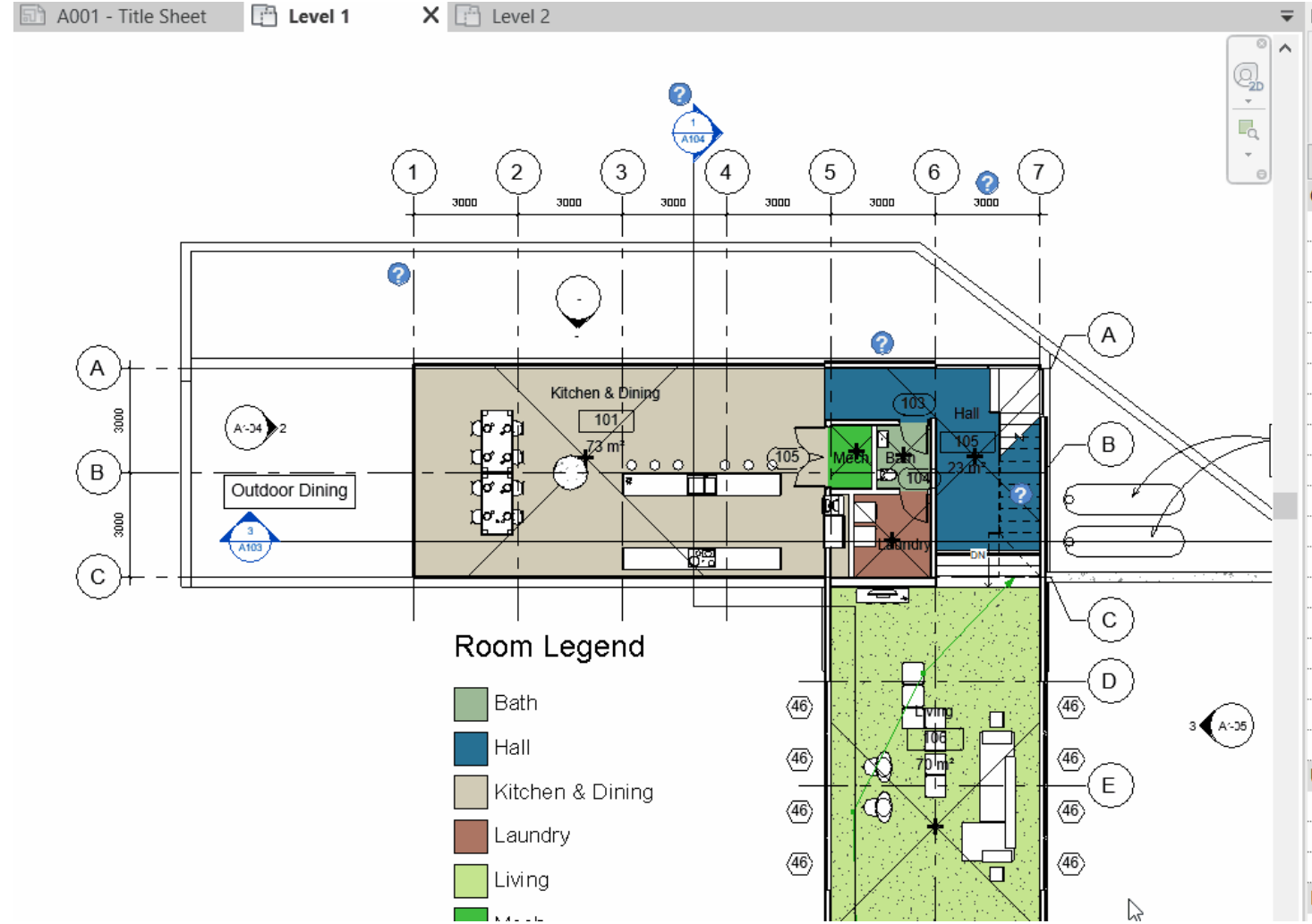
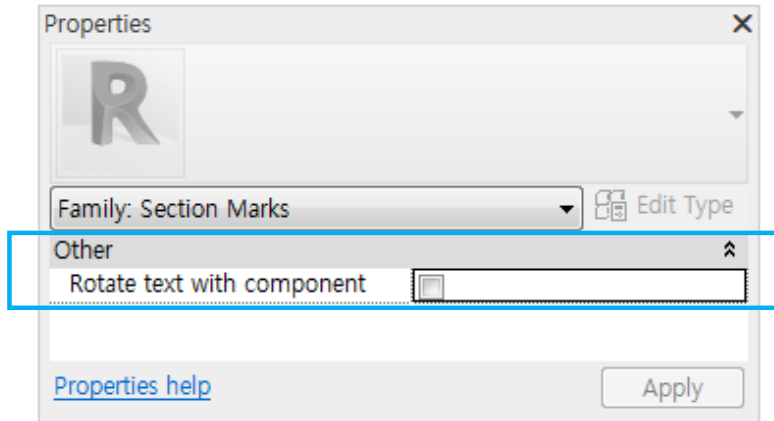
2020



2021



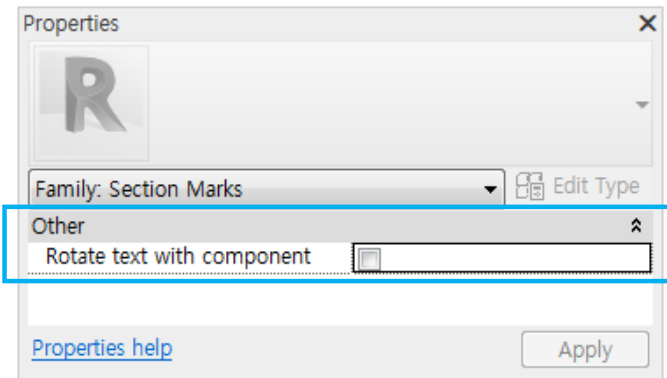
Annotation Tag 2021



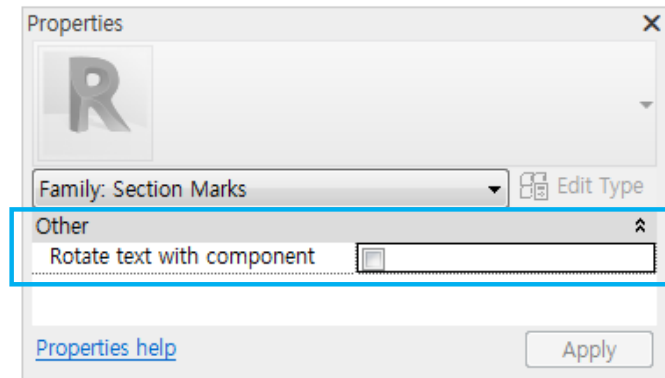
Annotation Tag



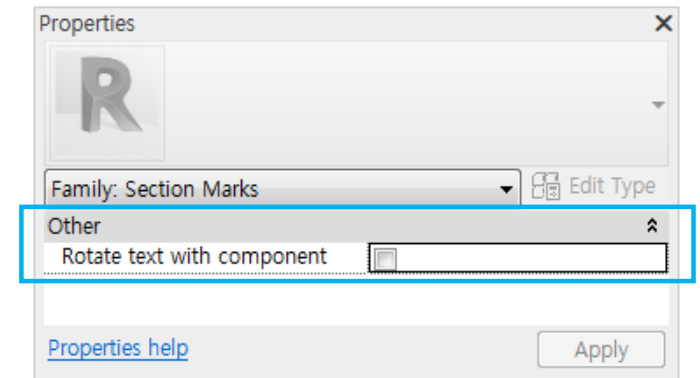
2019.2



2020



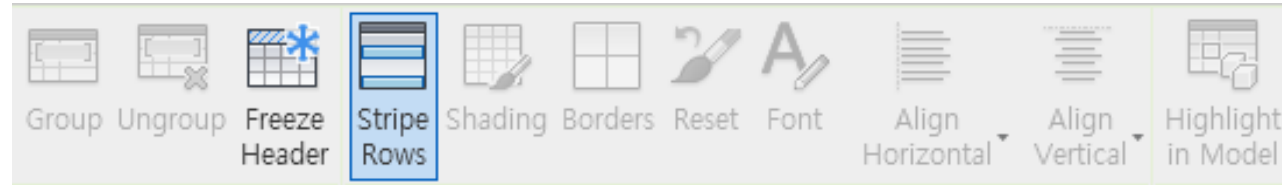
2021



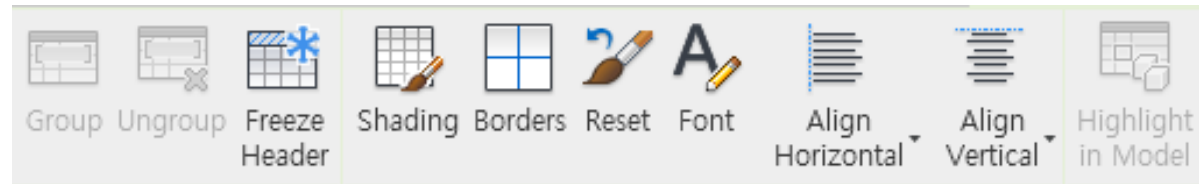
Schedule



2020



2021



Schedule 2021



Properties

Schedule

Schedule: 00.콘크리트기둥 일람표 Edit Type

Identity Data

View Template: <None>

View Name: 00.콘크리트기둥 일람표

Dependency: Independent

Phasing

Phase Filter: None

Phase: New Construction

Other

Fields: Edit...

Filter: Edit...

Sorting/Grouping: Edit...

Formatting: Edit...

Appearance: Edit...

[Properties help](#) Apply

Schedule Properties

Fields Filter Sorting/Grouping Formatting Appearance

Graphics

Build schedule: ☒ Top-down ☐ Bottom-up

Grid lines: ☒ <Thin Lines> ☐ Grid in headers/footers/spacers

Outline: ☐ <Thin Lines>

Height: Variable ☐ Blank row before data

Stripe Rows: ☒ First Row Stripe Color ☐ ☐

☒ Show Stripe Rows on Sheets

Text

☒ Show Title

☒ Show Headers

Title text: 3,6mm 돋움 dot

Header text: 3,0mm 돋움B

Body text: 3,0mm 돋움

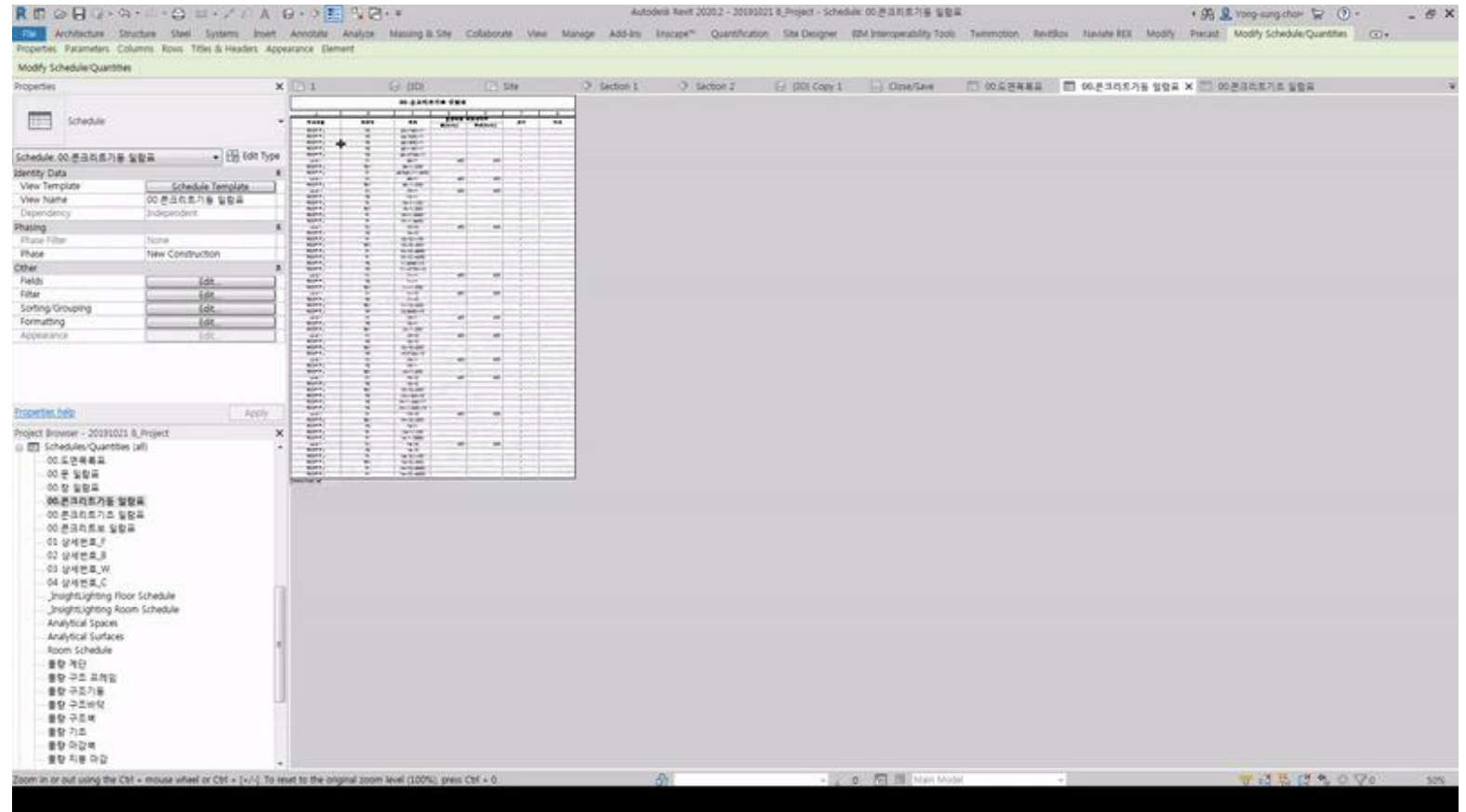
OK Cancel Help

A	B	C	D 콘크리트 부재사이즈		E	F	G
하단레벨	부재명	위치	폭(mm)	두께(mm)	개수	비고	
ROOF F.L	P2	A4(-750)-Y1			1		
ROOF F.L	P2	A5(1600)-Y1			1		
ROOF F.L	P2	A6(1900)-Y1			1		
ROOF F.L	P2	A8(-150)-Y1			1		
ROOF F.L	P2	A8(-2725)-Y1			1		
Level 1	C1	A8-Y1	500	600	1		
ROOF F.L	SC1	A8-Y1(200)			1		
ROOF F.L	P1	A9(350)-Y1(523			1		
Level 1	C1	A9-Y1	500	600	1		
ROOF F.L	SC1	A9-Y1(200)			1		
Level 1	C1	X0-Y1	500	600	1		
ROOF F.L	P2	X0-Y1			1		
ROOF F.L	P1	X0-Y1(100)			1		
ROOF F.L	SC1	X0-Y1(200)			1		
ROOF F.L	P1	X0-Y1(2690)			1		
ROOF F.L	P1	X0-Y1(5230)			1		
Level 1	C1	X0-Y2	500	600	1		
ROOF F.L	P2	X0-Y2			1		
ROOF F.L	P1	X0-Y2(-100)			1		
ROOF F.L	SC1	X0-Y2(-200)			1		
ROOF F.L	P1	X0-Y2(-2690)			1		
ROOF F.L	P1	X0-Y2(-5230)			1		
ROOF F.L	P2	X1(2650)-Y2			1		
ROOF F.L	P2	X1(-2700)-Y2			1		
Level 1	C1	X1-Y1	500	600	1		
ROOF F.L	P2	X1-Y1			1		
ROOF F.L	SC1	X1-Y1(200)			1		
Level 1	C1	X1-Y2	500	600	1		
ROOF F.L	P2	X1-Y2			1		
ROOF F.L	SC1	X1-Y2(-200)			1		
ROOF F.L	P2	X2(2650)-Y2			1		
Level 1	C1	X2-Y1	500	600	1		
ROOF F.L	P2	X2-Y1			1		
ROOF F.L	SC1	X2-Y1(200)			1		

Schedule 2021

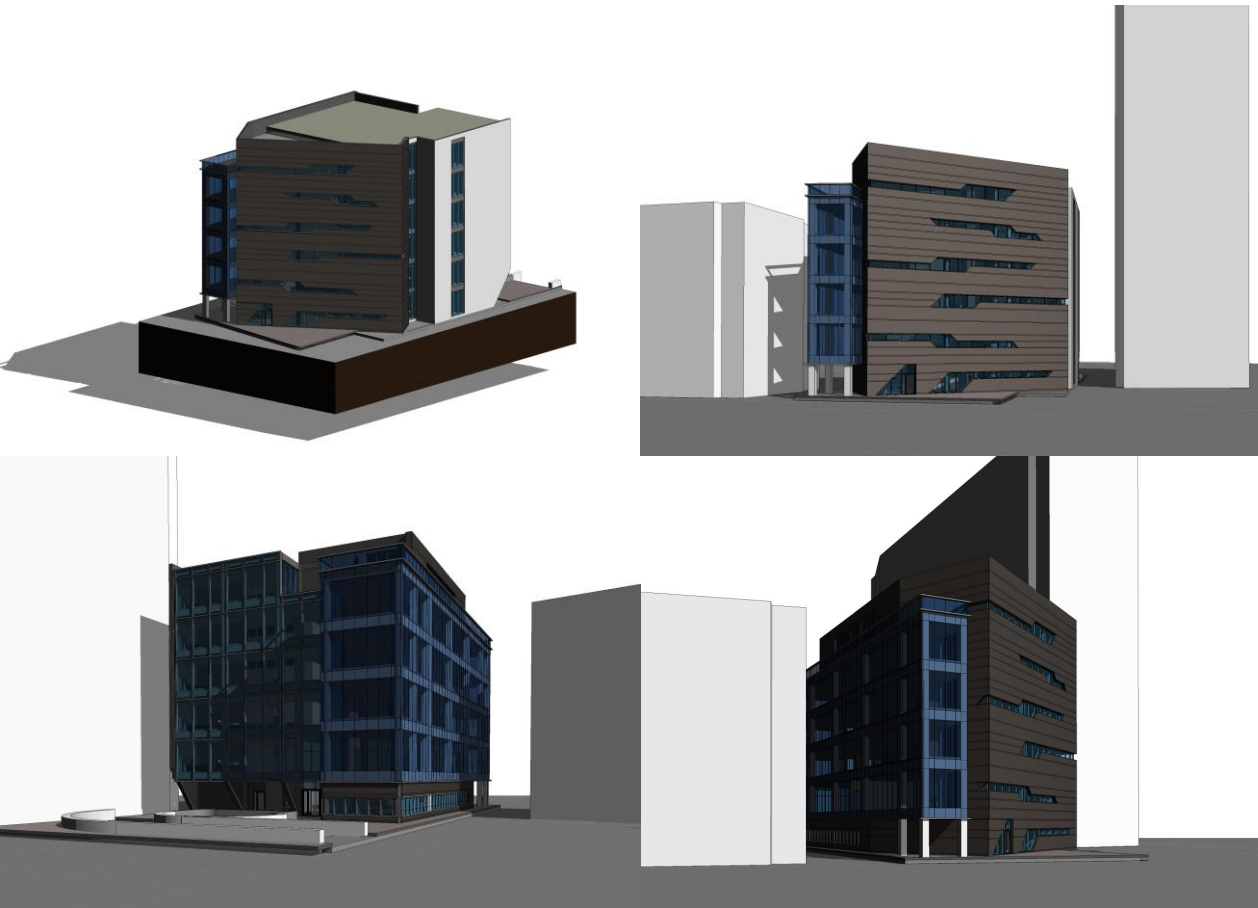


Ctrl + Zoom in/out

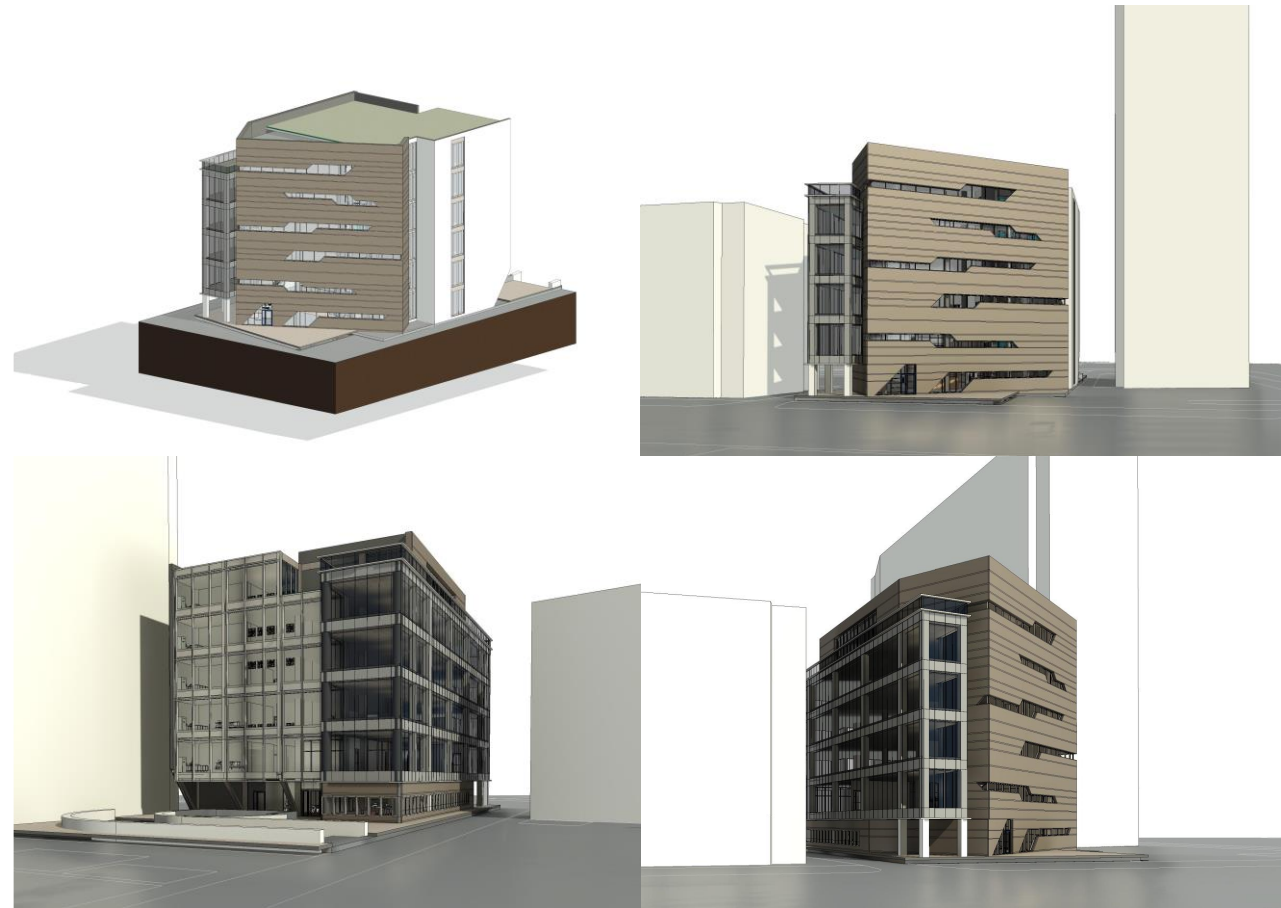


Realistic viewing

2020

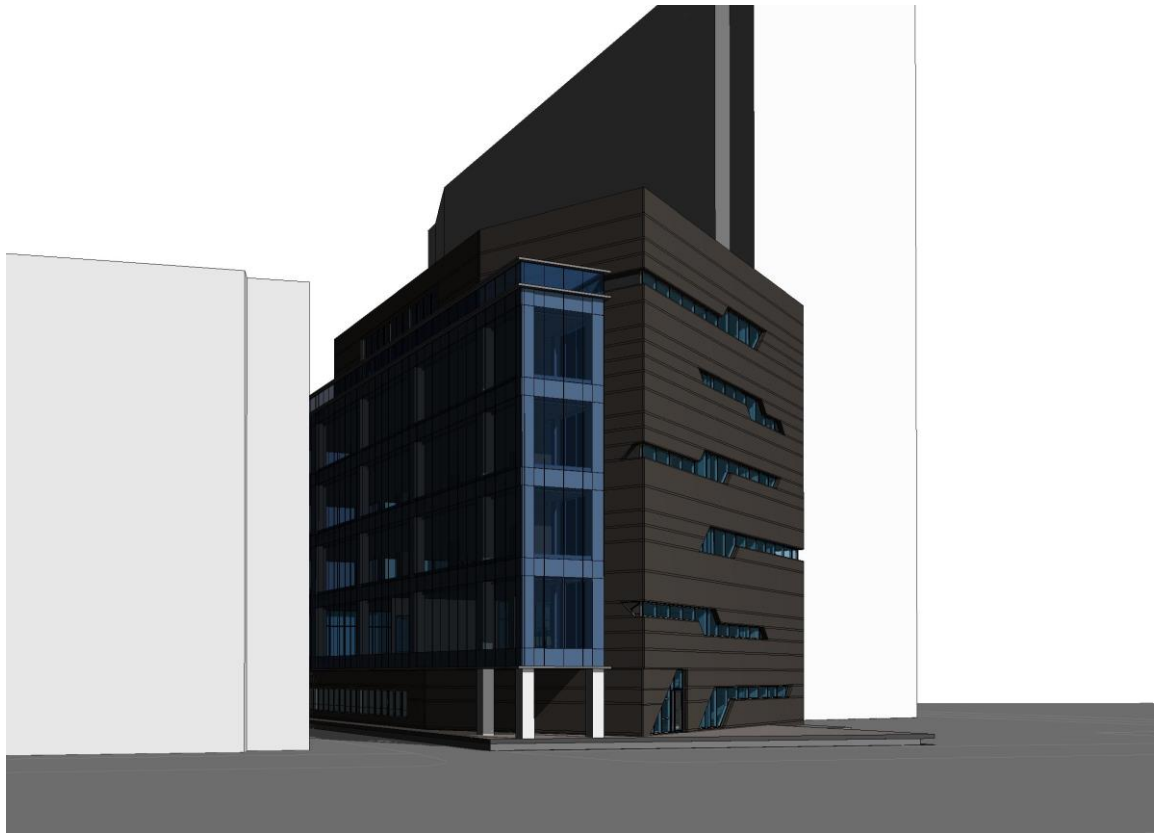


2021



Realistic viewing

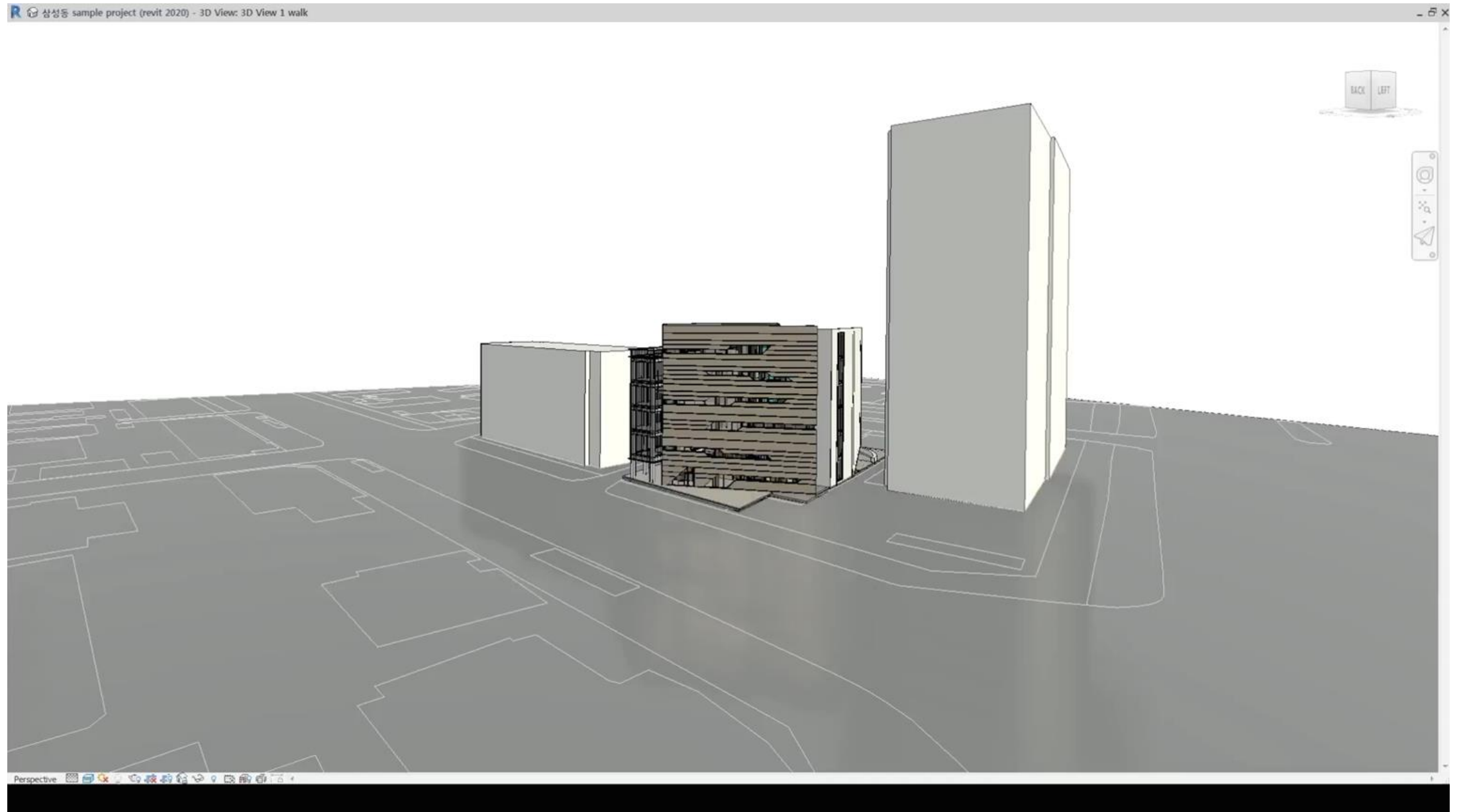
2020



2021



Realistic viewing 2021

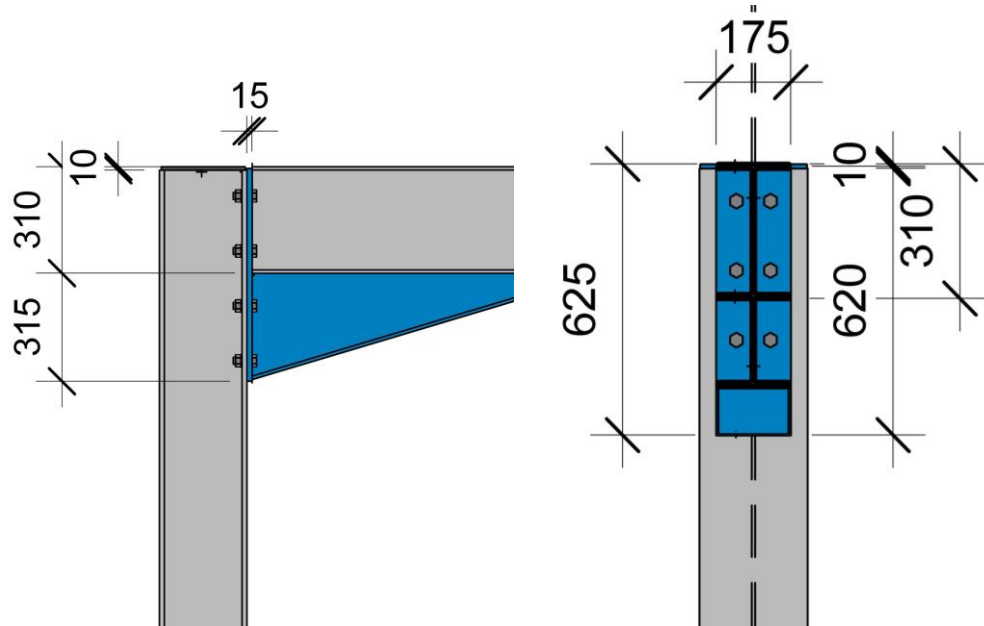
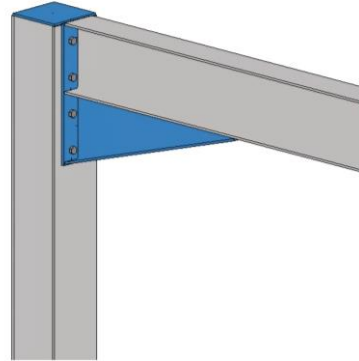


2D & 3D document

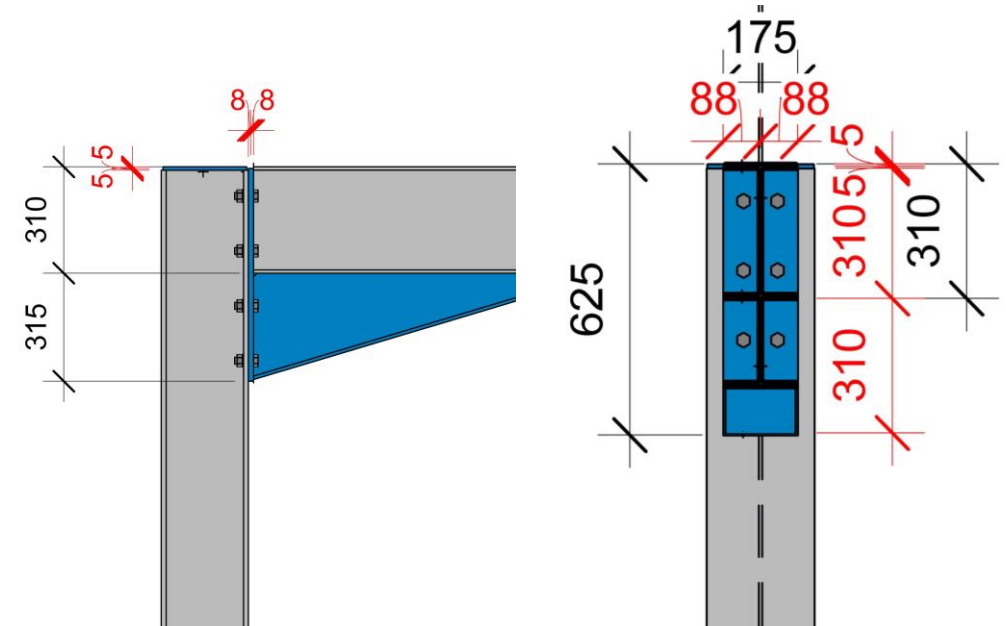
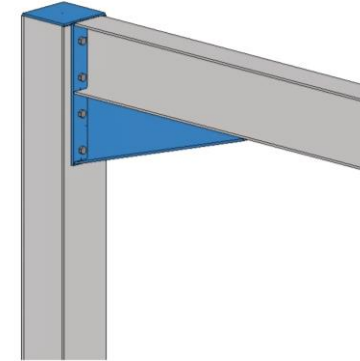


Steel Dimension

2020



2021



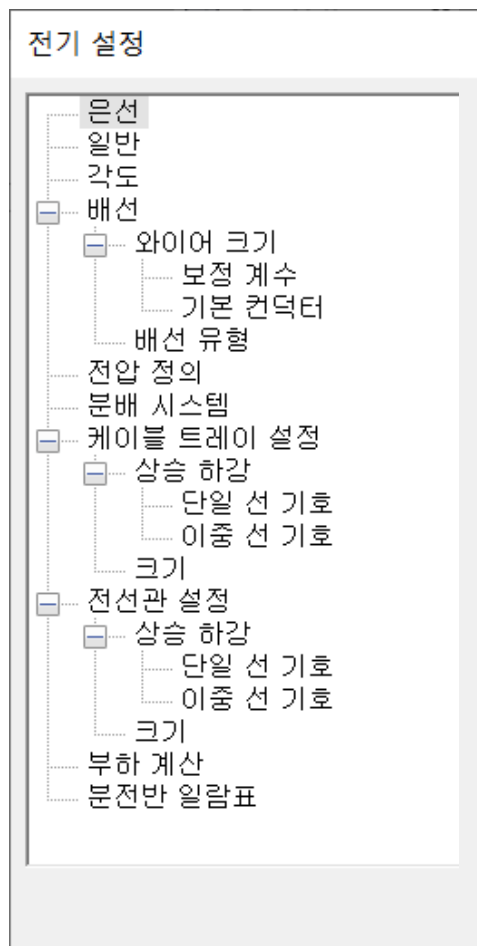
2D & 3D document



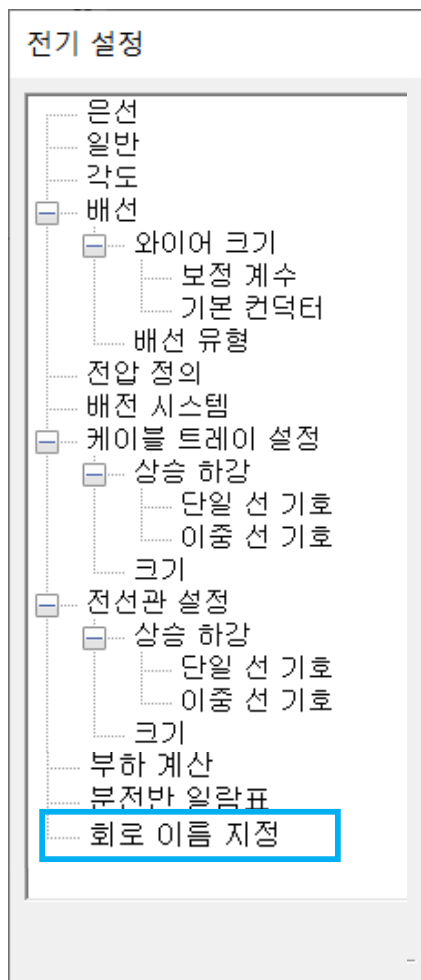
Electrical Circuit Naming



2020



2021



Electrical Circuit Naming



2020

특성

Panelboard
100 A

전기 시설물 (1) 유형 편집

철거 공정	없음
전기 - 회로	
최대 #1 극 차단기	10
주	100.00 A
MCB 등급	100.00 A
패널 분기	☒
하위 피드 러그	☒
피드	
회로 이름 지정	공정별
회로 접두어 구분 기...	패널 이름
회로 접두어	접두어
수정	표준
단락 등급	공정별
분배 시스템	220 단상

특성 도움말 적용

2021

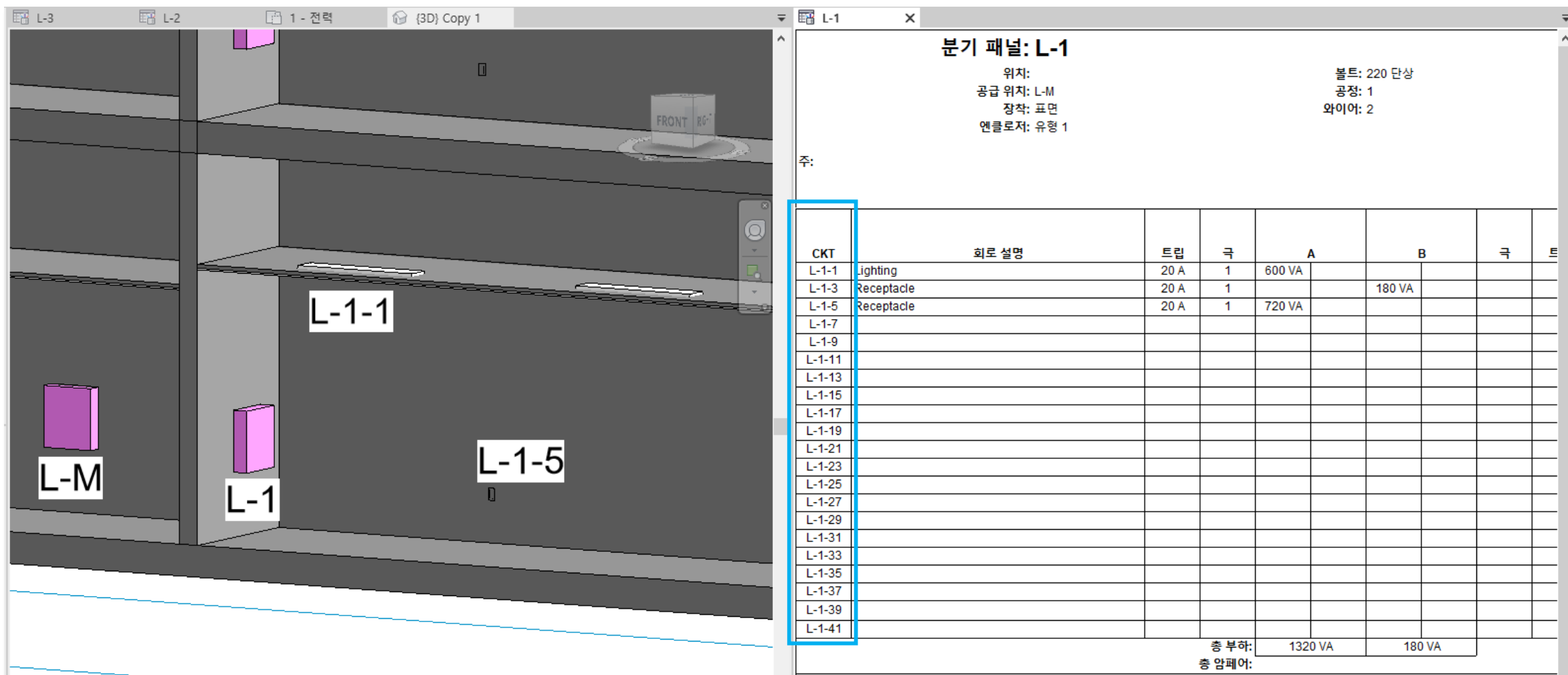
특성

Panelboard
100 A

전기 시설물 (1) 유형 편집

해설	
전기 - 회로	
최대 단일 극 차단...	12
간선	100.00 A
MCB 등급	100.00 A
패널 분기	☒
하위 패널 분기	☒
인입 방향	
회로 이름 지정	접두어
회로 접두어 구분	표준
회로 접두어	패널 이름
수정	상 기반
단락 등급	프로젝트 기반
배전 시스템	Abbreviation and Ways
수전 원점	Classification and Index
와이어 수	Phase label and Ways

특성 도움말 적용



2020



2021

분기 패널: L-1							
위치: 공급 위치: L-M 장착: 표면 엔클로저: 유형 1				볼트: 220 단상 공장: 1 와이어: 2			
주:							
CKT	회로 설명	트립	극	A		B	
1	Lighting	20 A	1	600 VA			
3	Receptacle	20 A	1			180 VA	
5	Receptacle	20 A	1	720 VA			
7							
9							
11							
13							
15							
17							
19							
21							
23							
25							
27							
29							
31							
33							
35							
37							
39							
41							
총 부하:				1320 VA		180 VA	
총 암페어:							

분기 패널: L-1

위치: _____

공급 위치: L-M

장착: 표면

엔클로저: 유형 1

볼트: 220 단상

공정: 1

와이어: 2

주: _____

CKT	회로 설명	트립	극	B	
1	Lighting	20 A	1	600 VA	
3	Receptacle	20 A	1	720 VA	
5	Receptacle	20 A	1	180 VA	
7					
9					
11					
13					
15					
17					
19					
21					
23					
25					
27					
29					
31					
33					
35					
37					
39					
41					
총 부하:				1500 VA	
총 암페어:				7 A	

Single Phase L-N Panelboards



2020

템플릿 옵션 설정

이러한 설정은 분전반 일람표 템플릿의 회로 테이블 부분에 적용됩니다.

열 머리글 문자 방향(C): 수평

부하 표시 형식 선택(F):

공정별 부하
상별 열 분리 부하
상별 열 공유 부하
상 대칭 열

#	φ1	φ2	φ3	#	
1	100	150		2	
3		100	150	4	
5			100	150	6

☐ 다중 공정 회로의 경우 회로 번호를 한 행에 표시(O)
☐ 다중 공정 회로의 경우 다중 행 표시(D)

단상 패널용:
☒ 3상에 대한 열 숨기기(H)
☐ 3상에 대한 열을 표시하지만 사용 안 함(S)

공정 열 값 표시 형식:
☒ 부하
☐ 전류

확인 취소 적용(A)

2021

템플릿 옵션 설정

이러한 설정은 분전반 일람표 템플릿의 회로 테이블 부분에 적용됩니다.

열 머리글 문자 방향(C): 수평

부하 표시 형식 선택(F):

상별 부하
상별 열 분리 부하
상별 열 공유 부하
상 대칭 열

#	φ1	φ2	φ3	#	
1	100	150		2	
3		100	150	4	
5			100	150	6

☐ 복수-상 회로는 한 행에 회로 번호 표시(O)
☐ 복수-상 회로를 여러 행에 표시(D)

패널의 3상 외의 처리:
☒ 사용되지 않은 상의 열 숨김(H)
☐ 사용되지 않은 상을 표시는 하지만 사용 불가(S)

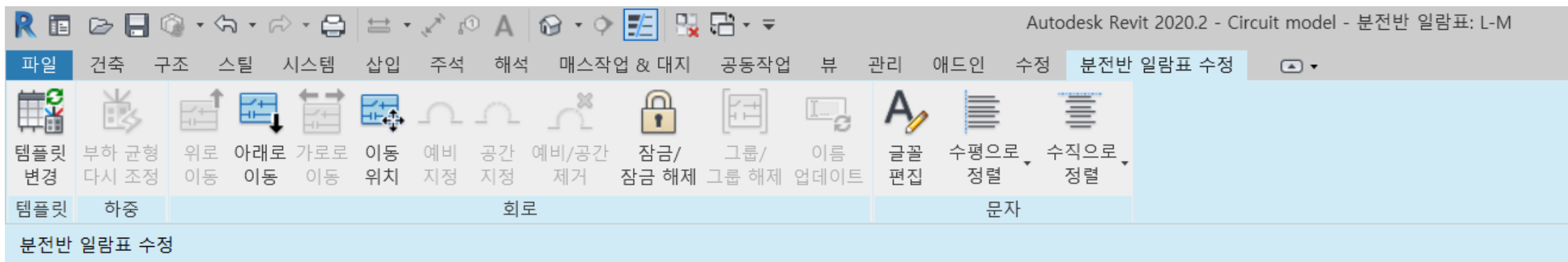
상 열 값 표시:
☒ 부하
☐ 전류

확인 취소 적용(A)

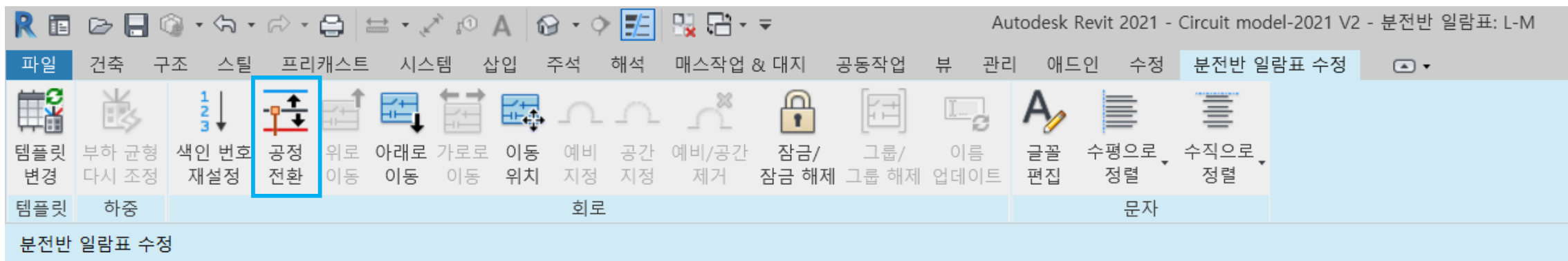
Switchboard Circuit Phase Selection



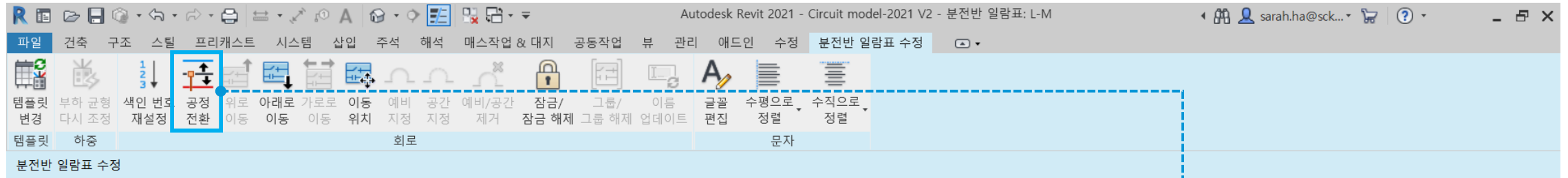
2020



2021



Switchboard Circuit Phase Selection



특성

전기 회로 (1) 유형 편집

전기 공학

일람표 회로 주기

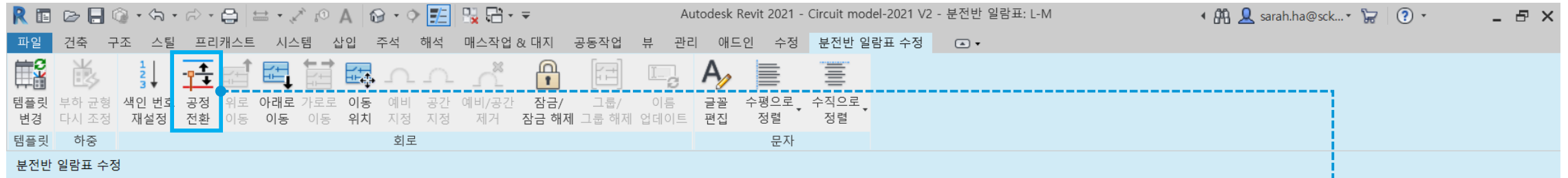
전기 - 부하

회로 번호	1
연결 유형	차단기
부하 이름	L-1
패널	L-M
시스템 유형	전력
부하 분류	Lighting; Receptacle
부하 분류 약어	L; R
극 수	1
등급	20.00 A
프레임	400.00 A
전압	220.00 V
외견 부하	1500.00 VA
피상부하 A상	0.00 VA
피상부하 B상	1500.00 VA
피상부하 C상	0.00 VA
외견 전류	6.82 A

특성 도움말 적용

극 수	프레임 크기	트립 등급	A	B	C
1	400 A	20 A		1500 VA	
1	400 A	20 A			1860 VA
3	400 A	20 A	1080 VA	600 VA	0 VA
총 연결 부하:			1080 VA	2100 VA	1860 VA
총 암페어:			5 A	10 A	9 A

Switchboard Circuit Phase Selection



특성

전기 회로 (1) 유형 편집

전기 공학

일람표 회로 주기

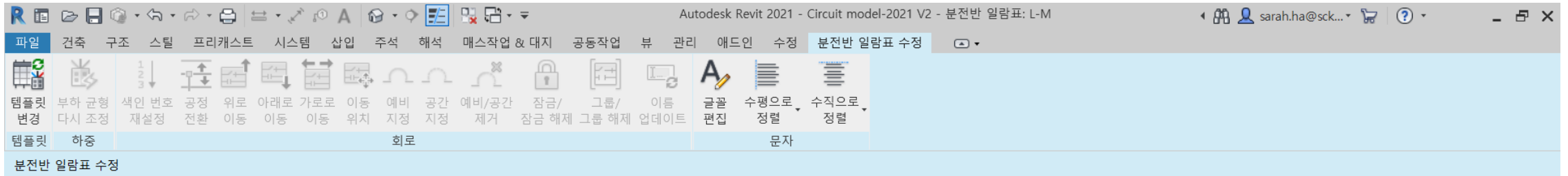
전기 - 부하

회로 번호	1
연결 유형	차단기
부하 이름	L-1
패널	L-M
시스템 유형	전력
부하 분류	Lighting; Receptacle
부하 분류 약어	L; R
극 수	1
등급	20.00 A
프레임	400.00 A
전압	220.00 V
외견 부하	1500.00 VA
피상부하 A상	0.00 VA
피상부하 B상	0.00 VA
피상부하 C상	1500.00 VA
외견 전류	6.82 A

특성 도움말 적용

			A	B	C
극 수	프레임 크기	트립 등급			
1	400 A	20 A			1500 VA
1	400 A	20 A			1860 VA
3	400 A	20 A	1080 VA	600 VA	0 VA
총 연결 부하:			1080 VA	600 VA	3360 VA
총 암페어:			5 A	3 A	16 A

Switchboard Circuit Quantity



특성

switchboard-380-220-3
100 A

전기 시설물 (1) 유형 편집

공정

생성 공정	새 시공
철거 공정	없음

일반

설치	표면
함	유형 1
패널 이름	L-M
위치	

전기 - 회로

간선	100.00 A
MCB 등급	100.00 A
최대 회로 수	8
패널 분기	☒
하위 패널 분기	☒
인입 방향	
회로 이름 지정	표준
회로 접두어 구분 ...	
회로 접두어	

수정

단락 등급	
배전 시스템	380/220 wye
수전 원점	
와이어 수	4
상 수	3
전기 데이터	380 V/3-0 VA

특성 도움말 적용

스위치 보드: L-M

위치:
공급 위치:
장착: 표면
엔클로저: 유형 1

볼트: 380/220 wye
공정: 3
와이어: 4

A.I.C. 등급:
주 유형:
주 등급: 100 A
MCB 등급: 100 A

CKT	회로 설명	극 수	프레임 크기	트립 등급	A	B	C
1	L-1	1	400 A	20 A			1500 VA
2	L-2	1	400 A	20 A			1860 VA
3	L-3	3	400 A	20 A	1080 VA	600 VA	0 VA
4							
5							
6							
7							
8							
총 연결 부하:					1080 VA	600 VA	3360 VA
총 암페어:					5 A	3 A	16 A

Switchboard Circuit Quantity



Autodesk Revit 2021 - Circuit model-2021 V2 - 분전반 일람표: L-M

파일 건축 구조 스타일 프리캐스트 시스템 삽입 주석 해석 매스작업 & 대지 공동작업 부 관리 애드인 수정 분전반 일람표 수정

템플릿 변경 부하 균형 색인 번호 공정 위로 아래로 가로로 이동 예비 공간 예비/공간 잠금/ 그룹/ 이동 글꼴 수평으로 수직으로

템플릿 하중 회로

분전반 일람표 수정

특성 switchboard-380-220-3 100 A

전기 시설물 (1) 유형 편집

공정 생성 공정 새 시공
철거 공정 없음

일반 설치 표면
함 유형 1
패널 이름 L-M
위치

전기 - 회로

간선	100.00 A
MCB 등급	100.00 A
최대 회로 수	8
패널 분기	☒
하위 패널 분기	☒
인입 방향	
회로 이름 지정	표준
회로 접두어 구분	
회로 접두어	
수정	
단락 등급	
배전 시스템	380/220 wye
수전 원점	
와이어 수	4
상 수	3
전기 데이터	380 V/3-0 VA

특성 도움말 적용

스위

템플릿 옵션 설정

이러한 설정은 전체 분전반 일람표 템플릿에 적용됩니다. 템플릿 뷰에서 모양을 추가로 사용자화할 수 있습니다.

이름: 스위치 보드_2
유형: 배전반

크기
전체 폭(T): 304,8000 mm
표시된 슬롯 수(N):
☒ 최대 회로 수에 따라 가변
☐ 상수 값으로 고정(F): 20

부분
분전반 일람표에 표시:
☒ 머리글(H)
☒ 부하 요약(L)
☒ 바닥글(F)

경계
템플릿의 외부 경계(O): ☒ <가는 선>
부분 사이의 경계(B): ☒ <가는 선>

확인 취소 적용(A)

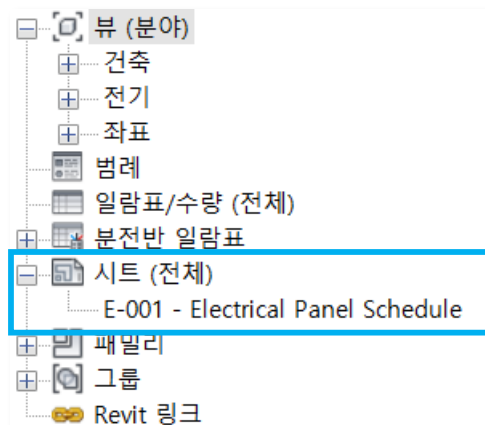
J.C. 등급:
주 유형:
주 등급: 100 A
MCB 등급: 100 A

A	B	C
		1500 VA
		1860 VA
30 VA	600 VA	0 VA
30 VA	600 VA	3360 VA
5 A	3 A	16 A

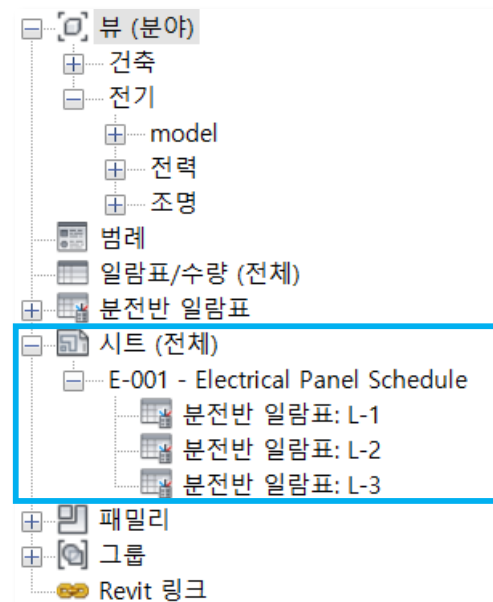
Panel Schedule Nodes



2020



2021



2D & 3D document



- Line style naming
- Annotation tag
- Schedule
- Realistic viewing



- Steel Modeling
- Steel Dimension



- Electrical Circuit Naming
- Single Phase L-N Panel
- Switchboard Circuit
 - Phase Selection
- Panel Schedule Nodes

03. 2D & 3D Document

2D Modeling, 3D Viewing
Schedule 작업 편의성 증가

04. SIMULATION

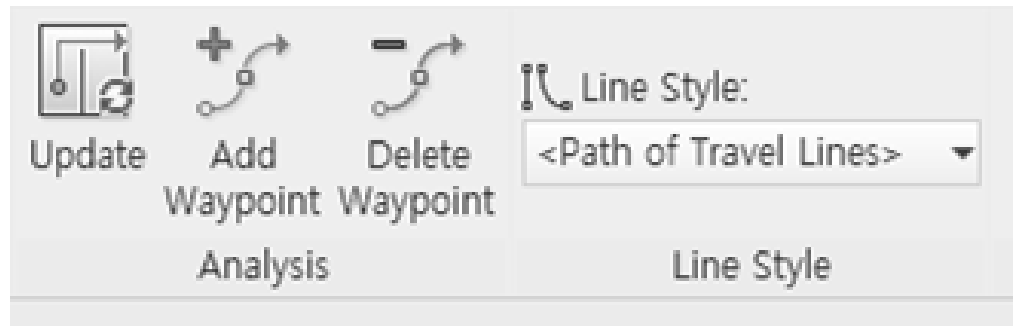
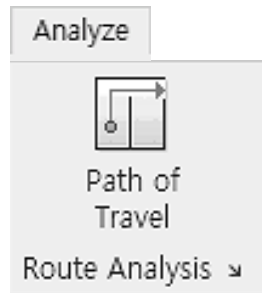
Simulation



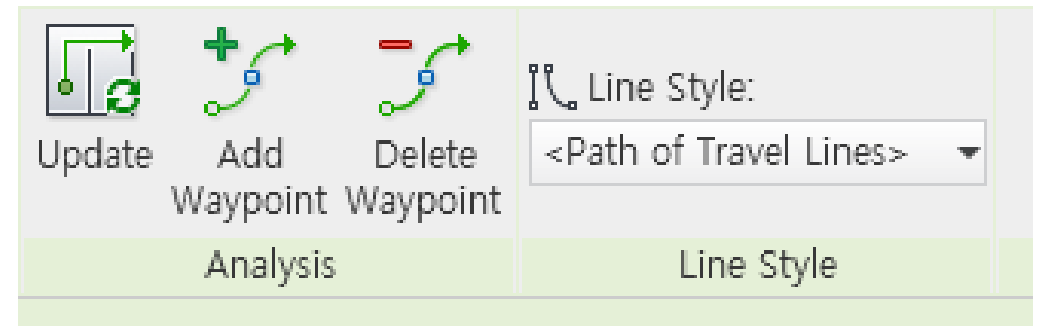
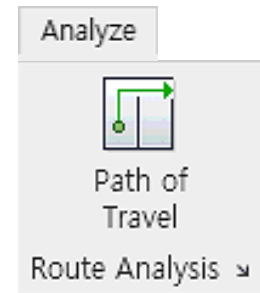
Route Analysis



2020.2



2021



Route Analysis



Autodesk Revit 2020 - Revit 2020 tech summit.rvt - 3D View: (3D)

Yong-sung.choi

File Architecture Structure Steel Systems Insert Annotate Analyze Massing & Site Collaborate View Manage Add-Ins Modify

Modify Select Boundary Conditions Analytical Model Loads Load Cases Load Combinations Analytical Model Tools Adjust Reset Supports Consistency Spaces & Zones Space Separator Space Tag Space Naming Heating and Cooling Loads Panel Schedules Duct Pressure Loss Report Pipe Pressure Loss Report Check Duct Systems Check Pipe Systems Check Circuits Disconnects Show Legend Duct Legend Pipe Legend Color Fill Location Create Energy Model Generate Optimize Energy Settings Path of Travel Route Analysis

Properties 3D View

3D View: (3D) Edit Type

Graphics

View Scale	1 : 100
Scale Value	100
Detail Level	Fine
Parts Visibility	Show Both
Visibility/Graphics Overrides	Edit...
Graphic Display Options	Edit...
Discipline	Coordination
Show Hidden Lines	By Discipline
Default Analysis Display Style	None
Sun Path	☐

Extents

Crop View	☐
Crop Region Visible	☐
Annotation Crop	☐

Project Browser - Revit 2020 tech summit.rvt

- 01.Base
 - Structural Plans
 - Floor Plans
 - 1층 상세 평면도
 - 1층 스페이스 프로그램
 - 1층 평면도 평면 -1
 - 2층 스페이스 프로그램
 - 2층 평면도 평면 -1
 - 3층 스페이스 프로그램
 - 3층 평면도 평면 -1
 - 3층 평면도 평면 -1 - 붙어웃 1
 - 4층 스페이스 프로그램
 - 4층 평면도 평면 -1
 - 4층 평면도 평면 -1 - 붙어웃 1
 - 5층 스페이스 프로그램
 - 5층 평면도 평면 -1
 - RF
 - Site
 - Site 복사본 1
- 3D Views
- Elevations

1 : 100

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

Main Model

Route Analysis

2020.2 & 2021



Properties

Path of Travel Lines (1) [Edit Type](#)

Graphics	
Line Style	Path of Travel Lines
Detail Line	☒
Dimensions	
Speed	4.828 km/h
View Name	1층 평면도 평면 -1
Level	1
Time	17.701 s
Length	23738.8
Identity Data	
From Room	Not available
To Room	Not available
Mark	

[Properties help](#) [Apply](#)

Route Analysis Settings

Revit will never consider the following as obstacles:

- Hidden elements
- Demolished elements
- Underlay elements (defined by the view's underlay property)

☒ In addition, do not consider these model categories as obstacles, even when visible:

☐ Air Terminals
☐ Cable Tray Fittings
☐ Cable Trays
☐ Casework
☐ Ceilings
☐ Columns
☐ Communication Devices
☐ Conduit Fittings
☐ Conduits
☐ Curtain Panels
☐ Curtain Wall Mullions
☐ Data Devices
☒ Doors
☐ Duct Accessories
☐ Duct Fittings
☐ Duct Insulations
☐ Duct Linings
☐ Duct Placeholders
☐ Ducts

[Check All](#) [Check None](#)

Analysis zone in plan:

Top (above the view's level): 2032.0

Bottom (above the view's level): 203.2

[How do these settings affect the Path of Travel?](#) [OK](#) [Cancel](#)

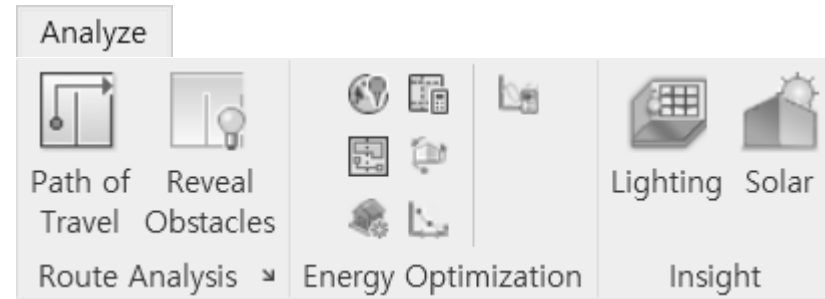
Simulation



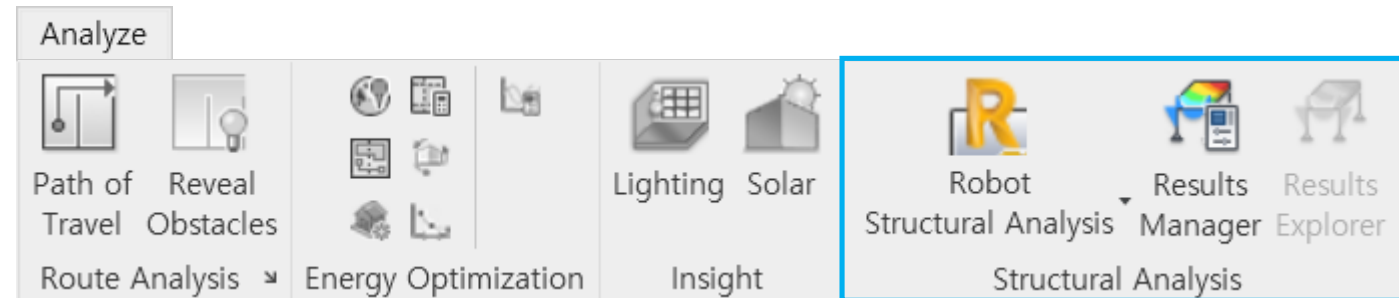
Structural Analysis



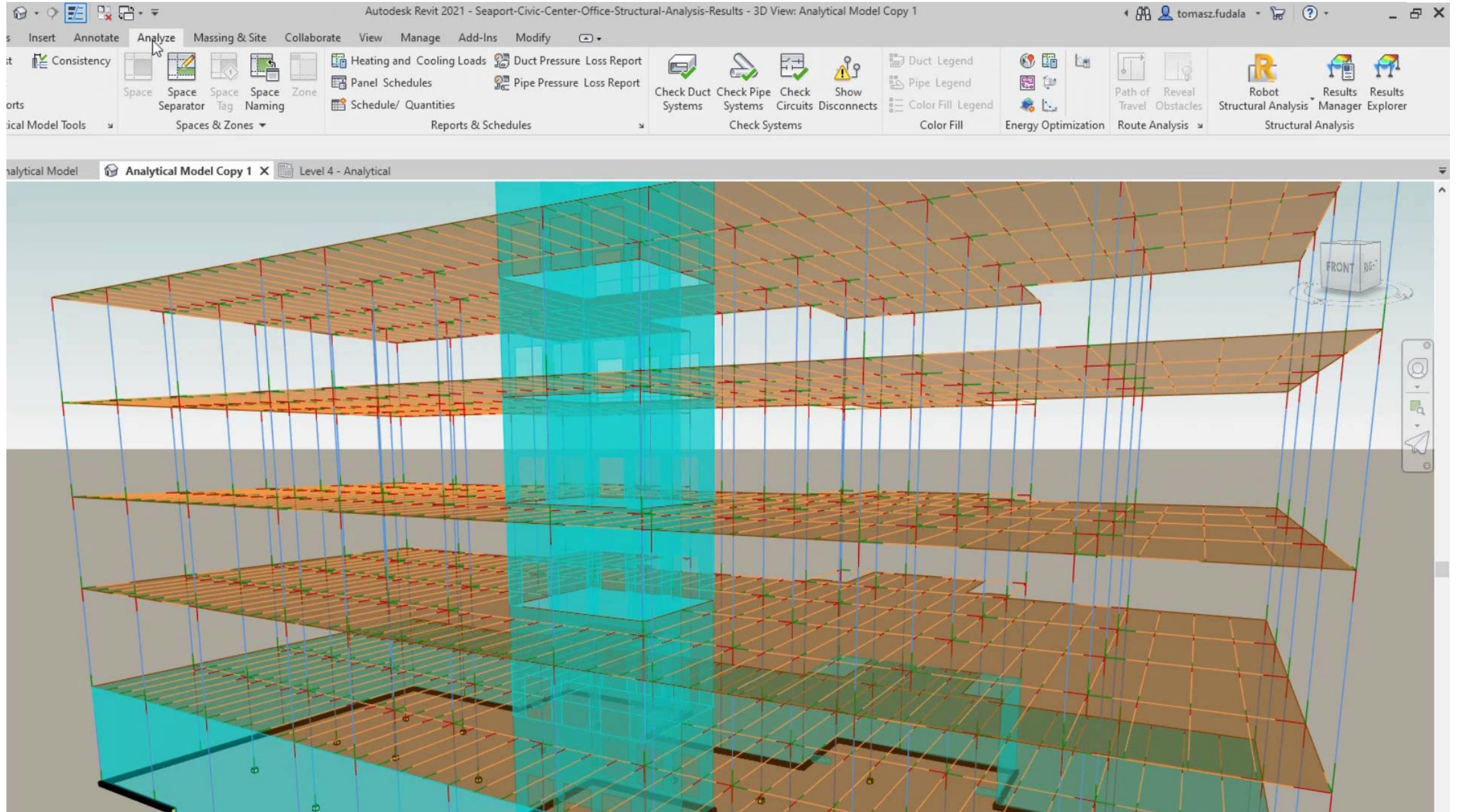
2020



2021

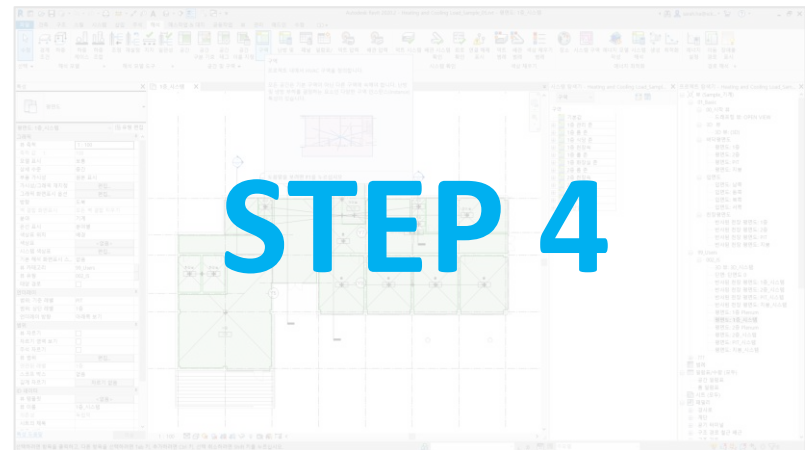
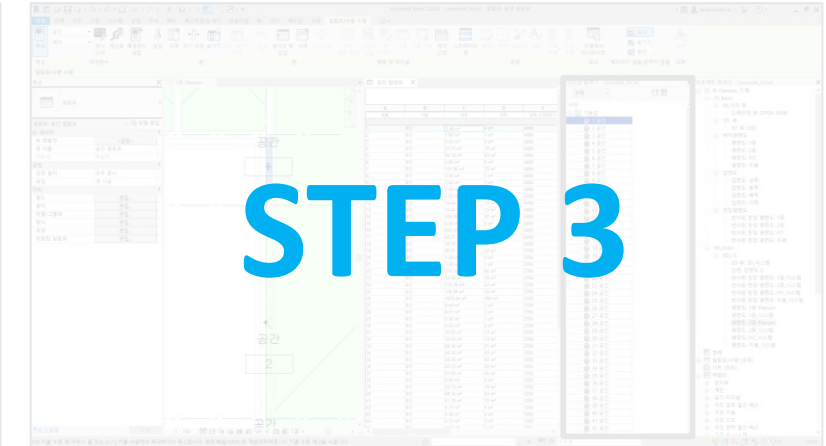
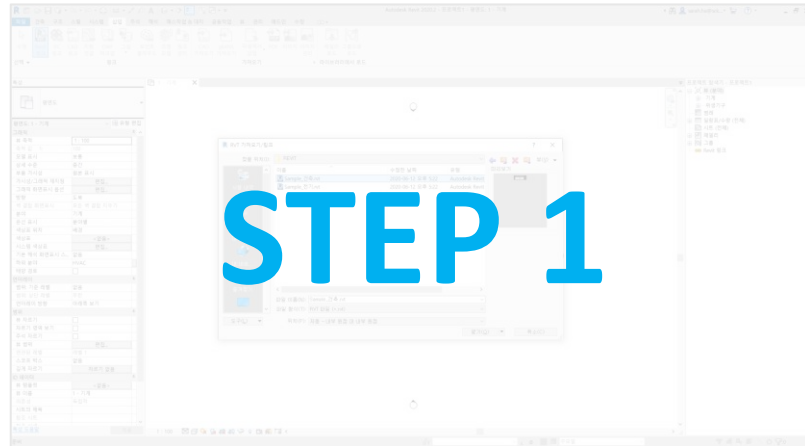


Structural Analysis 2021

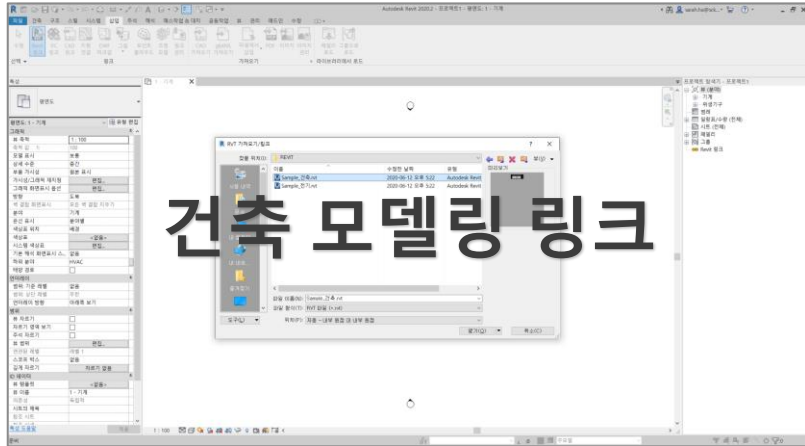




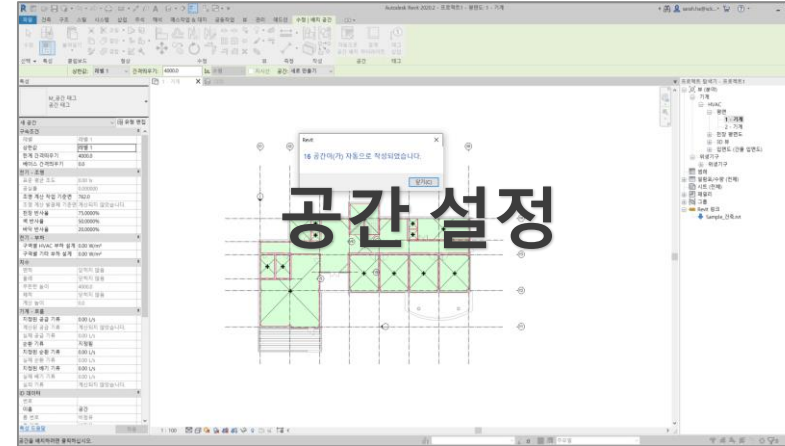
Heating and Cooling Analysis



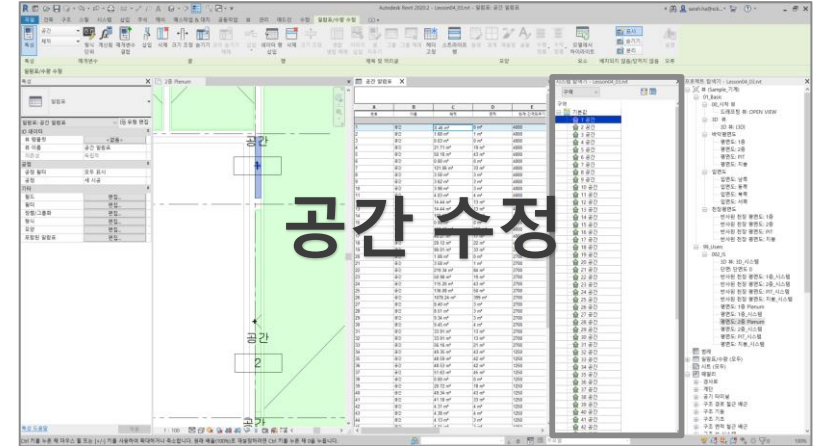
Heating and Cooling Analysis



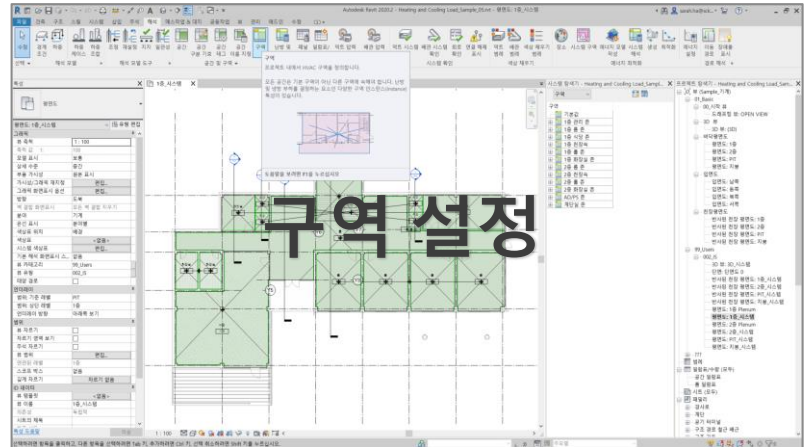
건축 모델링 링크



공간 설정



공간 수정



구역 설정



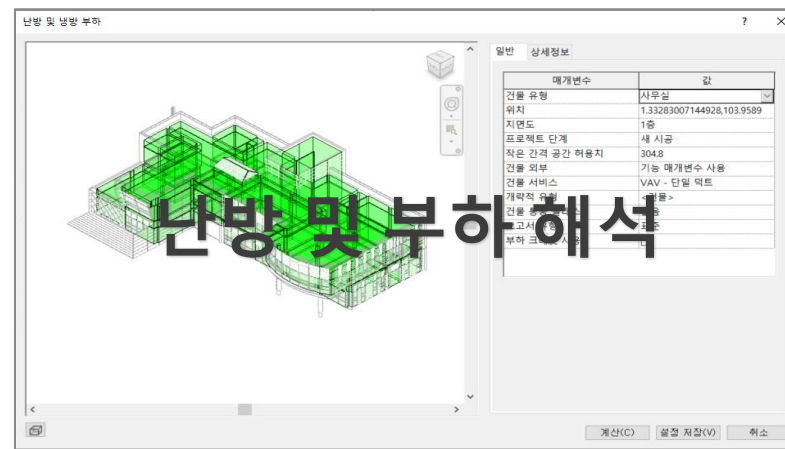
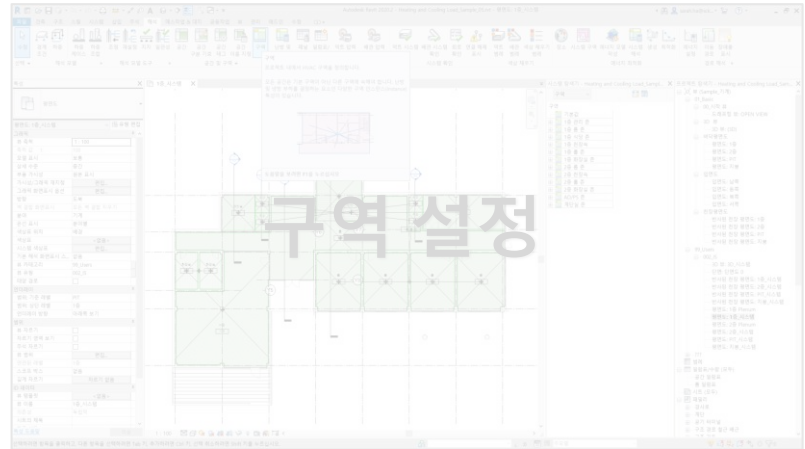
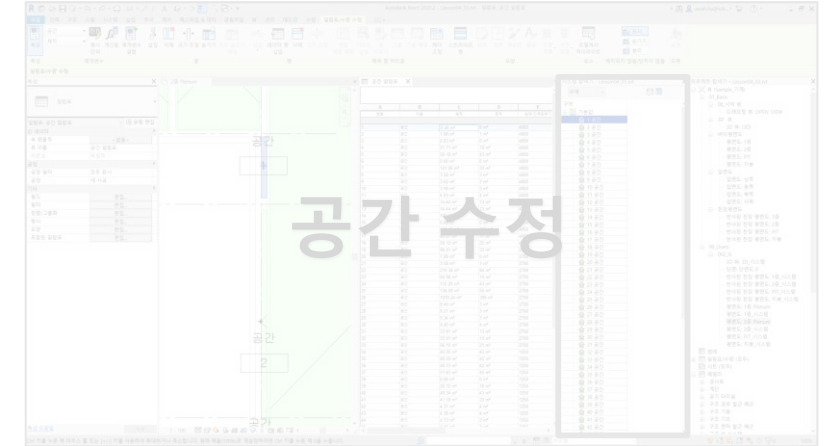
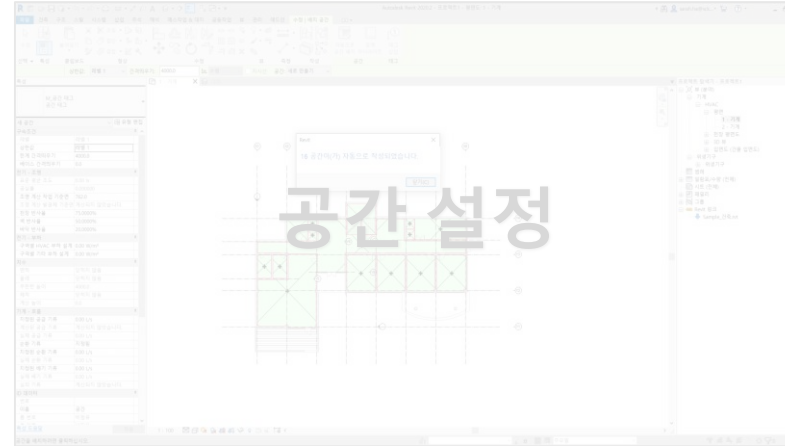
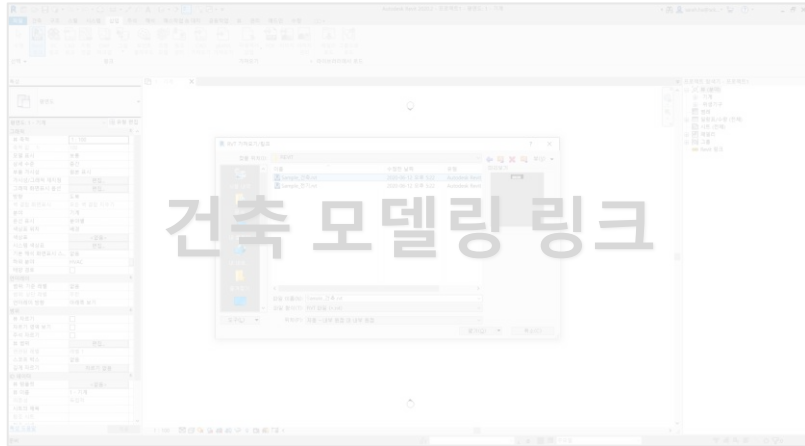
난방 및 부하 해석

구역 요약 - 1층 관리 존

면적 (m²)	61
부하 (m³)	164.40
냉방 설정점	23 °C
난방 설정점	21 °C
습기 온도	12 °C
사람 수	3
통풍 (L/s)	0.0
VAV - 단일 덕트	46.00% (Calculated)
개선타입 결과	
냉각 및 냉방 들어오는 건물 온도	23 °C
냉각 및 냉방 들어오는 습기 온도	16 °C
냉각 및 냉방 나가는 건물 온도	11 °C
냉각 및 냉방 나가는 습기 온도	11 °C
통합 공기 건물 온도	23 °C
개선타입 결과	
최고 난방 부하 (W)	1,931
최고 난방 열 및 시간	9월 오전 9:00
최고 난방 적정 부하 (W)	1,812
최고 난방 잠재 부하 (W)	119
최고 난방 기류 (L/s)	195.5
최고 난방 부하 (W)	701
최고 난방 기류 (L/s)	35.2
최고 공기 기류 (L/s)	0.0
개요	
난방 부하 밀도 (W/m²)	31.71
난방 흐름 밀도 (L/s m²)	2.24
난방 부하/부하 (L/s kW)	70.69
난방 용역/부하 (m³/kW)	31.54
난방 부하 밀도 (W/m²)	11.51
난방 흐름 밀도 (L/s m²)	0.58
공기 밀도 (L/s m²)	0.00
공기/개원 (L/s)	0.0

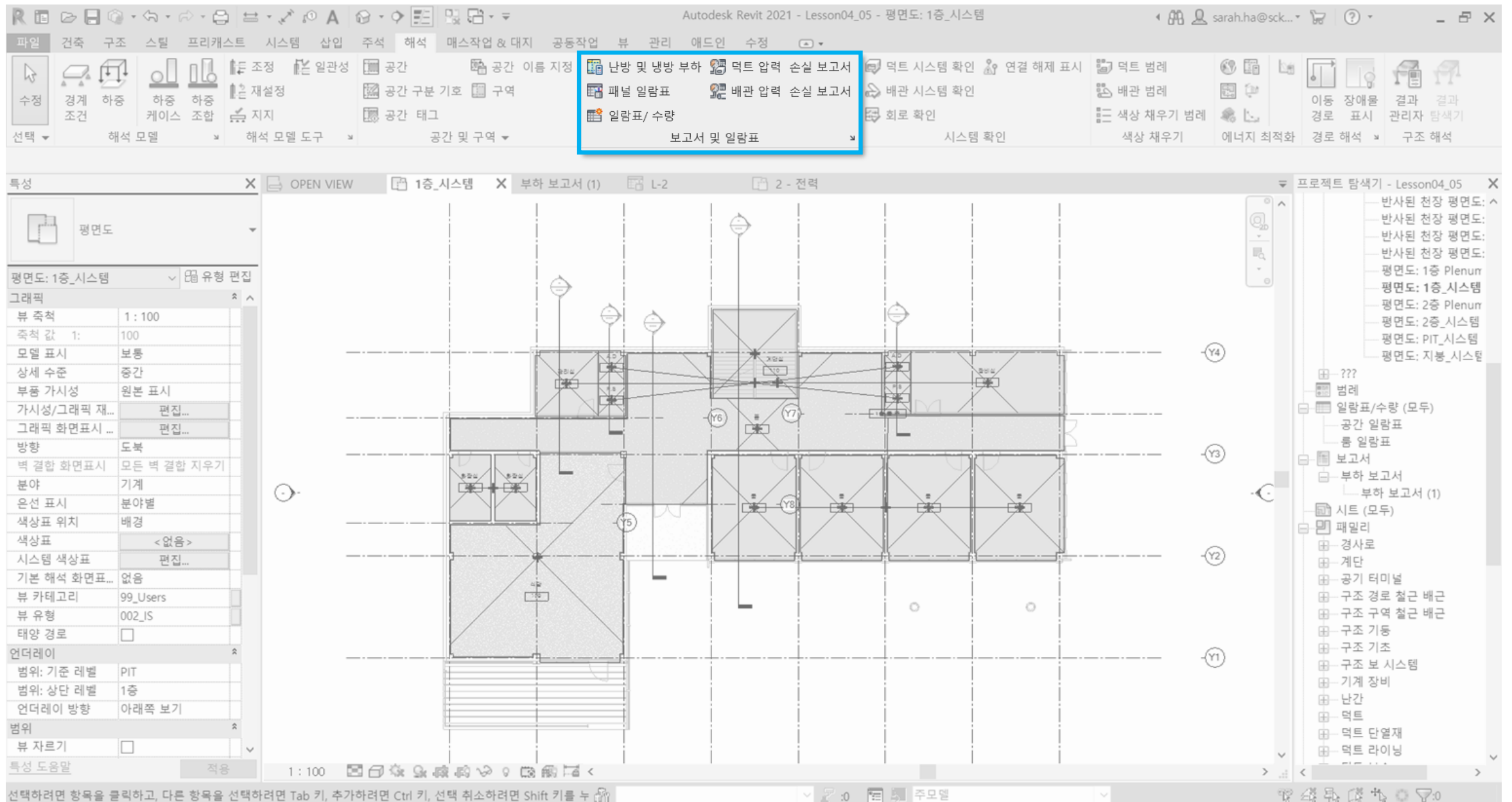
난방 및 부하 보고서

Heating and Cooling Analysis

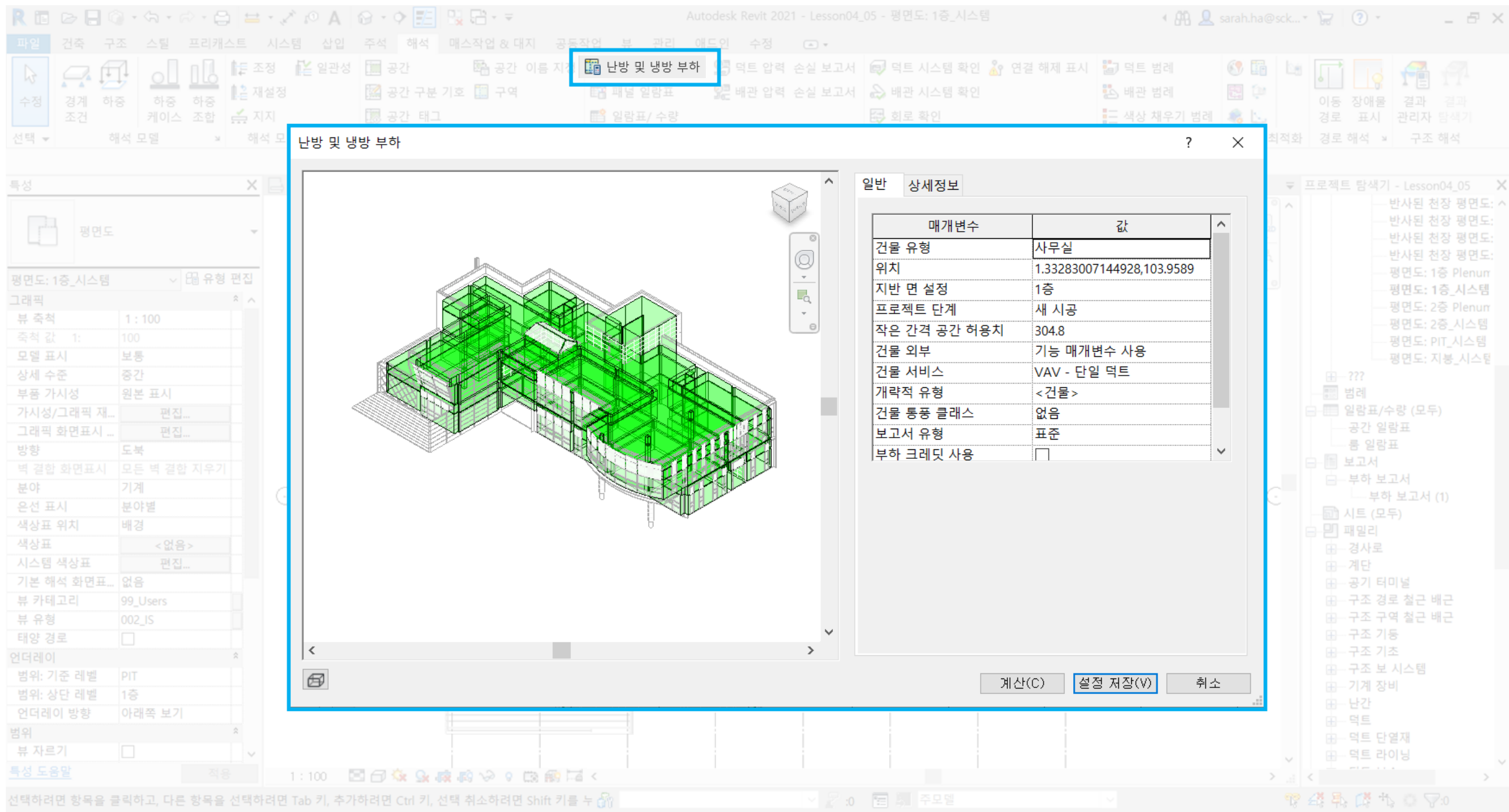


구역 요약 - 1층 관리 존

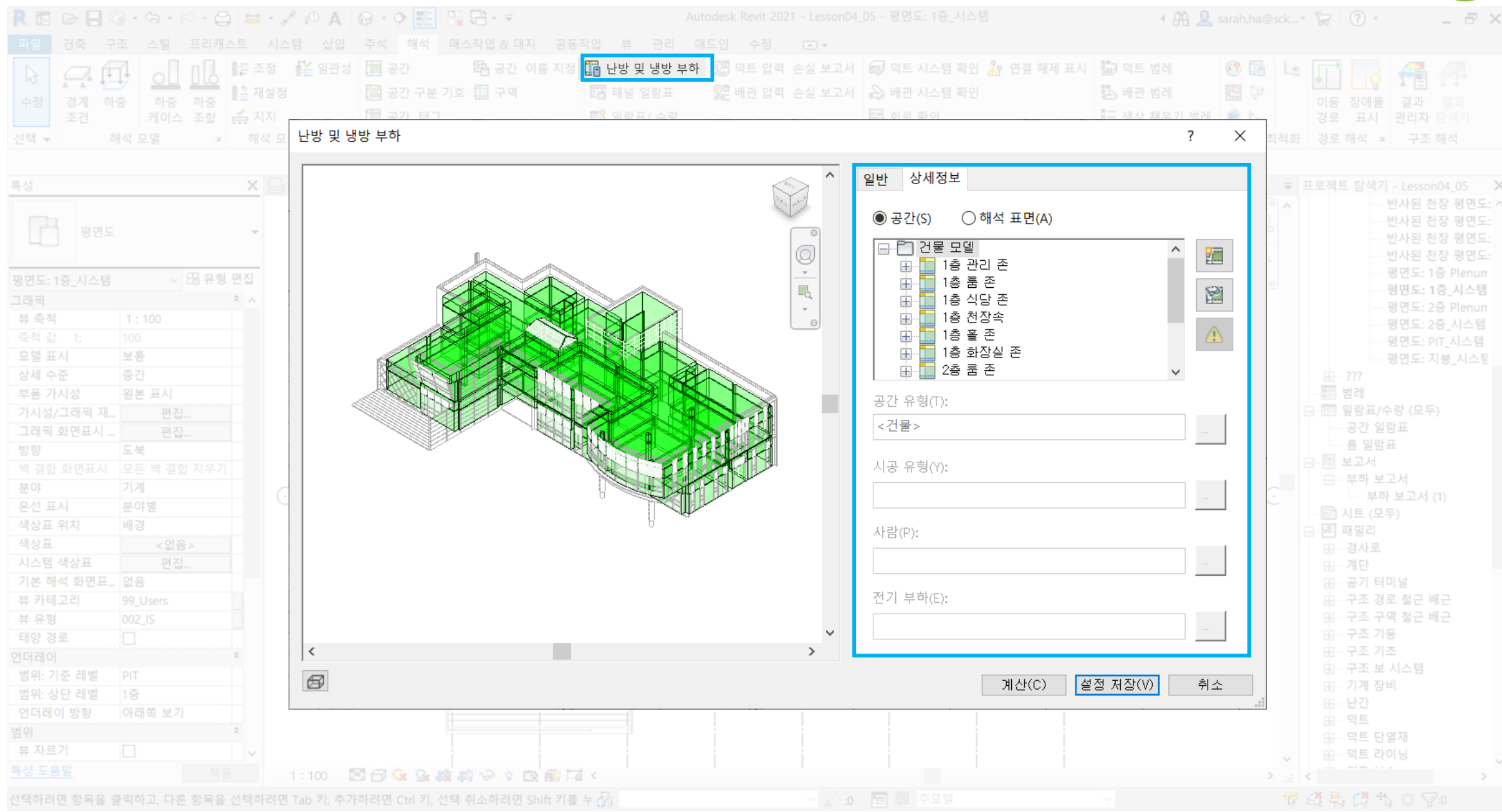
면적 (m²)	61
부피 (m³)	164.40
냉방 설정점	23 °C
난방 설정점	21 °C
습기 온도	12 °C
사람 수	3
통풍 (L/s)	0.0
기계 부하 계산 유형	VAV - 단일 덕트
상대 습도	46.00% (Calculated)
계산된 결과	
건물 냉방 부하 (W)	1,931
최고 냉방 부하 (W)	9월 오전 9:00
최고 냉방 적정 부하 (W)	1,812
최고 냉방 잠재 부하 (W)	119
최고 냉방 기류 (L/s)	196.5
최고 냉방 기류 (m³/s)	701
최고 냉방 기류 (L/s)	35.2
최고 환기 기류 (L/s)	0.0
계산된 결과	
냉방 부하 밀도 (W/m²)	31.71
냉방 부하 밀도 (L/s·m²)	2.24
냉방 부하 밀도 (L/s·kW)	70.69
냉방 부하 밀도 (m³/s·kW)	31.54
냉방 부하 밀도 (W/m²)	11.51
냉방 부하 밀도 (L/s·m²)	0.58
환기/냉방 (L/s)	0.0



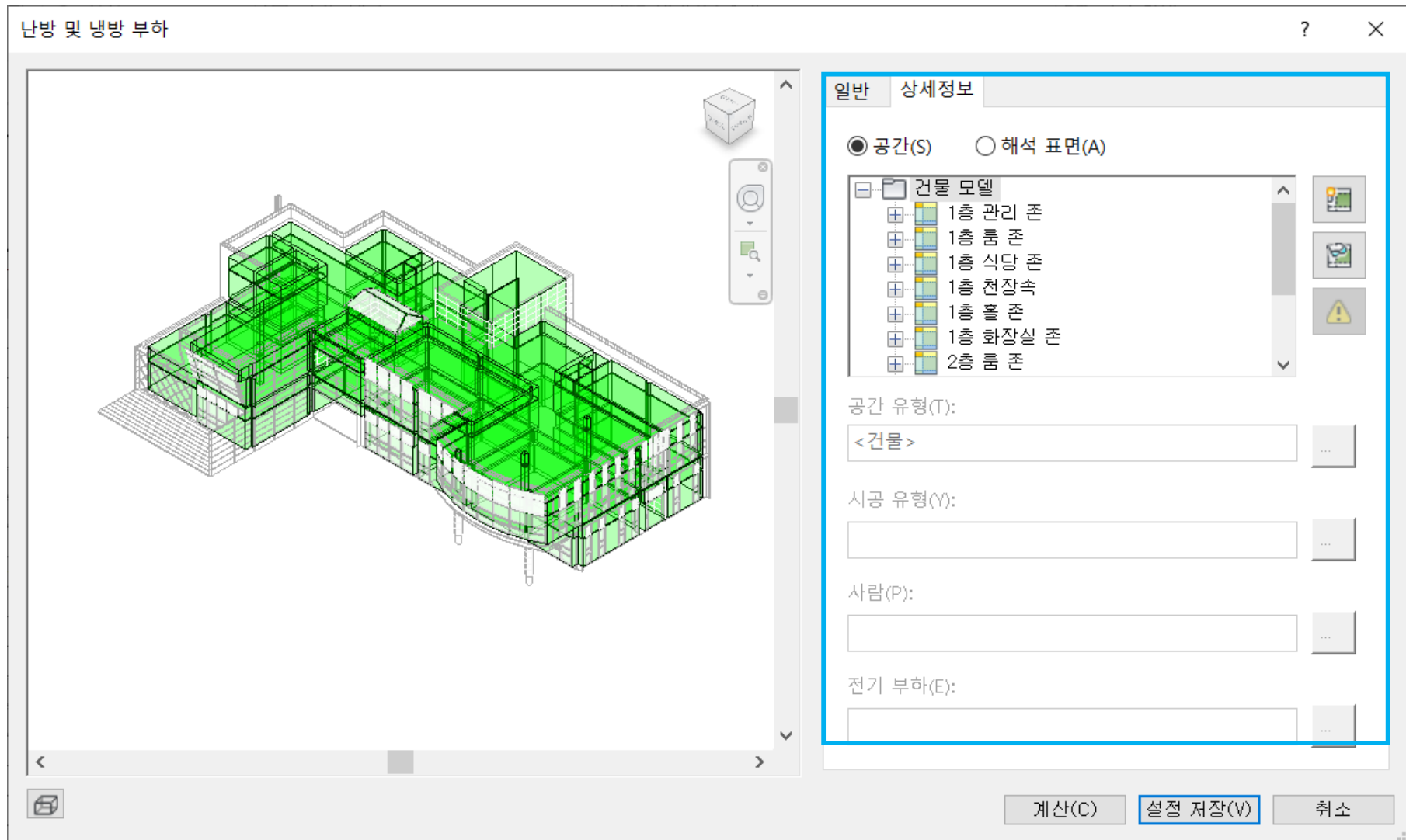
Heating and Cooling Analysis



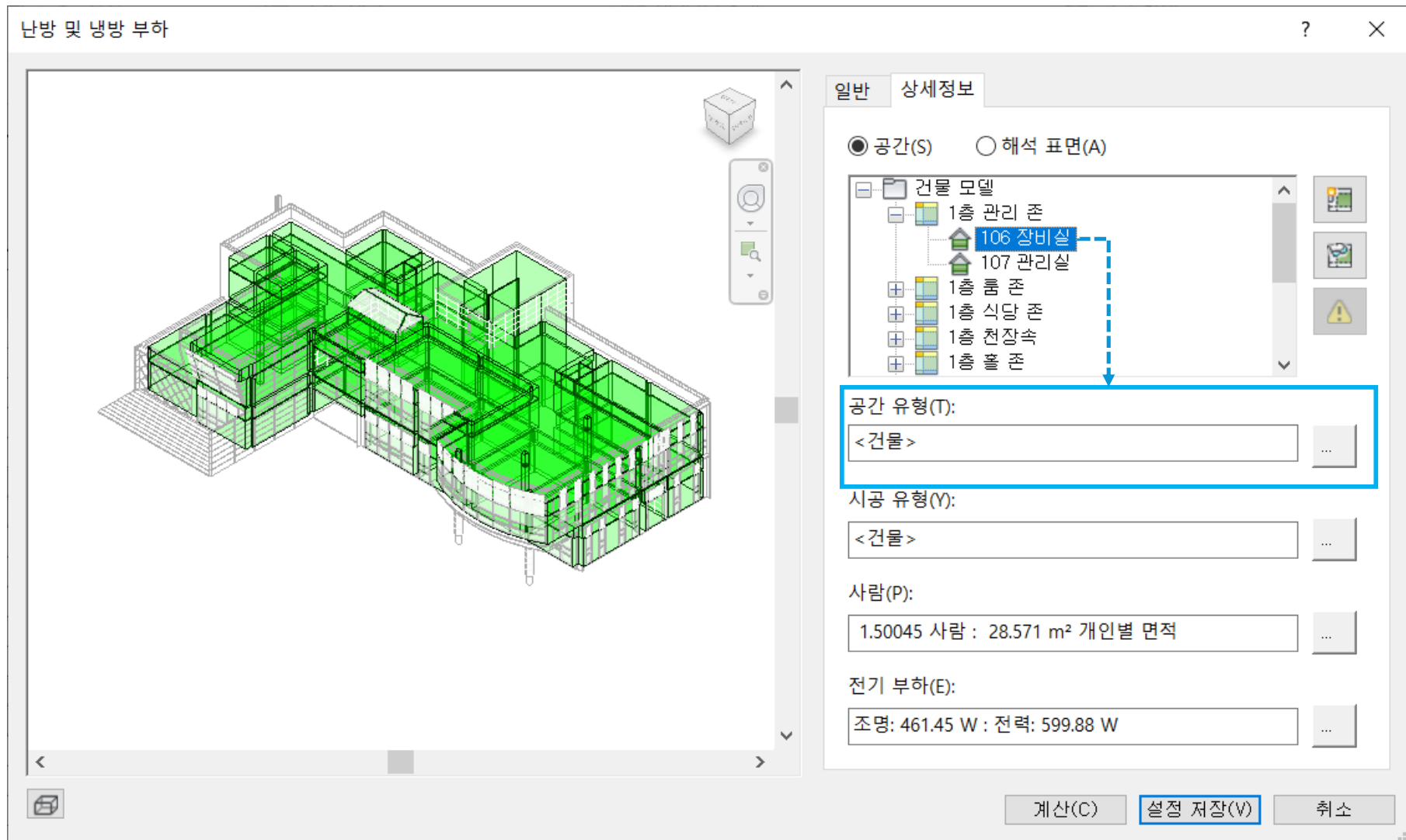
Heating and Cooling Analysis



Heating and Cooling Analysis



Heating and Cooling Analysis



Heating and Cooling Analysis

공간 유형 설정

필터(F): 검색어 입력

<건물>

간호사실 - 병원/보건소
간호실/간호/호연 - 교도소
간호실/간호/호연 - 교도소
개인 서비스 판매 영역 - 상점
경기 영역 체육관
경찰서 실험실 - 경찰서/소방서
계단 - 비활성
계단 및 직원 라운지 - 병원/보건소
중요홀
중요홀
실 - 교도소
구급실 - 법원
금융 활동 영역 - 사무실
기숙사 독서실
기숙사 침실
기타 텔레비전 방송 경기 영역 - 스포츠 경기장
대량 상품 판매 영역 - 상점
도서관 - 시청각 - 도서관-시청각
독서 공간 - 도서관
라운지/휴양
로비
로비 - 강단
로비 - 강단
로비 - 강단
로비 - 강단
로비 - 강단
로비 - 강단
로비 - 강단
로비 - 강단

매개변수	값
에너지 해석	
개인별 면적	28.571 m ²
1인당 현열 취득	73.27 W
1인당 잠열 취득	58.61 W
조명 부하 밀도	10.76 W/m ²
전력 부하 밀도	13.99 W/m ²
면적당 통풍 기류	0.19 L/(s·m ²)
천장속 조명 방사	20.0000%
점유 일람표	일반 사무실 점유 - 오전 8시 ~
조명 일람표	사무실 조명 - 오전 6시 ~ 오후 1
전력 일람표	사무실 조명 - 오전 6시 ~ 오후 1
사람당 실외 공기	2.36 L/s
면적당 실외 공기	0.30 L/(s·m ²)
시간당 공기 전환	0.000000
실외 공기 방법	사람별 및 면적별

확인

취소

Heating and Cooling Analysis

1층 관리 존 공간

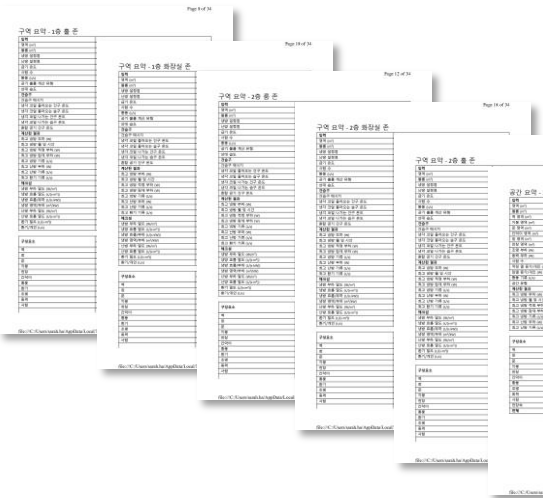
공간 이름	영역 (m ²)	볼륨 (m ³)	최고 냉방 부하 (w)	냉방 기류 (L/s)	최고 난방 부하 (w)	난방 기류 (L/s)
107 관리실	18	48.65	453	31.7	41	2.1
106 장비실	43	115.75	1,441	104.8	660	33.1

공간 요약 - 107 관리실

[공간 요약으로 돌아가기](#)

입력	
영역 (m ²)	18
볼륨 (m ³)	48.65
벽 영역 (m ²)	2
지붕 영역 (m ²)	0
문 영역 (m ²)	3
칸막이 영역 (m ²)	0
창 영역 (m ²)	0
천창 영역 (m ²)	0
조명 부하 (w)	194
동력 부하 (w)	252
사람 수	1
적정 열 증가/개인 (w)	73
잠열 증가/개인 (w)	59
통풍 기류 (L/s)	0.0
공간 유형	사무실 (건물 유형에서 상속됨)
계산된 결과	
최고 냉방 부하 (w)	453
최고 냉방 월 및 시간	7월 오후 4:00
최고 냉방 적정 부하 (w)	418
최고 냉방 잠재 부하 (w)	35
최고 냉방 기류 (L/s)	31.7
최고 난방 부하 (w)	41
최고 난방 기류 (L/s)	2.1

Heating and Cooling Analysis



구역 요약 - 1층 룬 존

입력	
영역 (m²)	165
부하 (m³)	444.26
냉방 설정점	23 °C
난방 설정점	21 °C
급기 온도	12 °C
사람 수	6
통풍 (L/s)	0.0
공기 부하 계산 유형	VAV - 단일 덕트
상대 습도	46.00% (Calculated)
건습구	
건습구 메시지	None
냉각 코일 들어오는 건구 온도	23 °C
냉각 코일 들어오는 습구 온도	16 °C
냉각 코일 나가는 건구 온도	11 °C
냉각 코일 나가는 습구 온도	11 °C
혼합 공기 건구 온도	23 °C
계산된 결과	
최고 냉방 부하 (W)	8,694
최고 냉방 월 및 시간	11월 오후 2:00
최고 냉방 적정 부하 (W)	8,373
최고 냉방 잠재 부하 (W)	321
최고 냉방 기류 (L/s)	627.2
최고 난방 부하 (W)	-367
최고 난방 기류 (L/s)	0.0
최고 환기 기류 (L/s)	0.0
체크섬	
냉방 부하 밀도 (W/m²)	52.84
냉방 흐름 밀도 (L/(s·m²))	3.81
냉방 흐름/부하 (L/(s·kW))	72.15
냉방 영역/부하 (m²/kW)	18.93
난방 부하 밀도 (W/m²)	-2.23
난방 흐름 밀도 (L/(s·m²))	0.00
환기 밀도 (L/(s·m²))	0.00
환기/개인 (L/s)	0.0

구성요소	냉각		난방	
	부하 (W)	백분율/전체	부하 (W)	백분율/전체
벽	139	1.60%	-18	5.01%
창	4,254	48.94%	-348	94.99%
문	0	0.00%	0	0.00%
지붕	0	0.00%	0	0.00%
천장	0	0.00%	0	0.00%
칸막이	0	0.00%	0	0.00%
통풍	0	0.00%	0	0.00%
환기	0	0.00%	0	0.00%
조명	1,473	16.95%		
동력	1,915	22.03%		
사람	666	7.66%		

Simulation



- Route Analysis



- Structure Analysis



- Heating & Cooling load

04. **SIMULATION**

구조 & MEP

05. ETC

Revit 2021 & Dynamo 2.5



Dynamo is an open source component technology for visual programming. It allows you to manipulate data, explore design options, automate processes. When used in partnership with other applications it can manipulate and interconnect complex systems like CAD, Building Information Models, and simulation engines.

- ✓ Rapid design iteration and broad interoperability
- ✓ Lightweight scripting interface
- ✓ Shared component between Autodesk Revit, Alias, Advanced Steel, FormIt, Civil3D

DOWNLOAD

Version 2.1.0



DynamoRevit is a graphical programming interface that lets you customize your building information workflow. DynamoRevit is an open source visual programming platform for designers. It is installed as part of Revit.

- ✓ Rapid design iteration and broad interoperability
- ✓ Lightweight scripting interface

✓ Current builds for Autodesk Revit 2017, 2018 and 2019

DOWNLOAD

Version 2.0.2

Revit 2021 & Dynamo 2.5

The screenshot displays the Dynamo 2.5 application window. The 'About Dynamo' dialog box is open, showing the Dynamo logo and version information. The 'Workspace References' panel is also open, listing installed packages and their versions. The main workspace shows a graph with an 'Input' component connected to a 'Frame' component.

About Dynamo Dialog:

Dynamo License

Those portions created by Ian are provided with the following copyright:

Copyright 2017 Ian Keough

Those portions created by Autodesk employees are provided with the following copyright:

Copyright 2019 Autodesk, Inc.

Licensed under the Apache License, Version 2.0 (the "License"); you may

Dynamo Core 2.5.0.7460
Dynamo Revit 2.5.0.7586

[Dynamo Website](#)

Workspace References:

Package	Version
Structural Design	2019.12.11
Clockwork for Dynamo 2.x	2.3.0
spring nodes	203.1.0
GenerativeDesign	1.0.1
archi-lab.net	2020.23.7

This graph depends on Clockwork for Dynamo 2.x 2.3.0. Would you like to download and install this package?

[Install Specified Version](#)

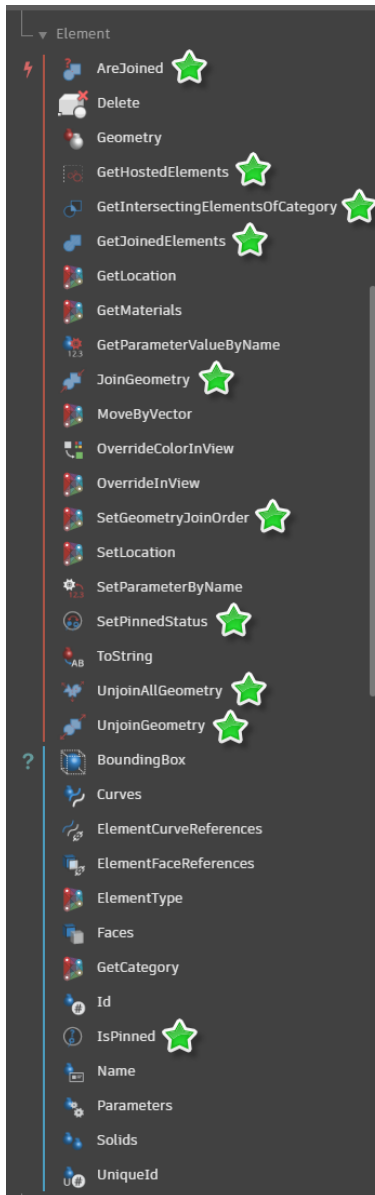
Input Component:

- width: 14
- number of frames: 7
- height1: 4.5

Frame Component:

- insertionPoint
- vector
- width
- height1
- height2

Revit 2021 & Dynamo 2.5



Element.AreJoined		
element	>	bool
otherElement	>	
AUTO		

Element.SetGeometryJoinOrder		
cuttingElement	>	Element[]
otherElement	>	
AUTO		

Element.GetIntersectingElementsOfCategory		
element	>	Element[]
category	>	
AUTO		

Element.GetJoinedElements		
element	>	Element[]
AUTO		

Element.UnjoinAllGeometry		
elements	>	Element[]
AUTO		

Element.JoinGeometry		
element	>	Element[]
otherElement	>	
AUTO		

Element.UnjoinGeometry		
element	>	Element[]
otherElement	>	
AUTO		

Element.GetHostedElements		
element	>	Element[]
includeOpenings	>	
includeShadows	>	
includeEmbeddedWalls	>	
includeSharedEmbeddedInserts	>	
AUTO		

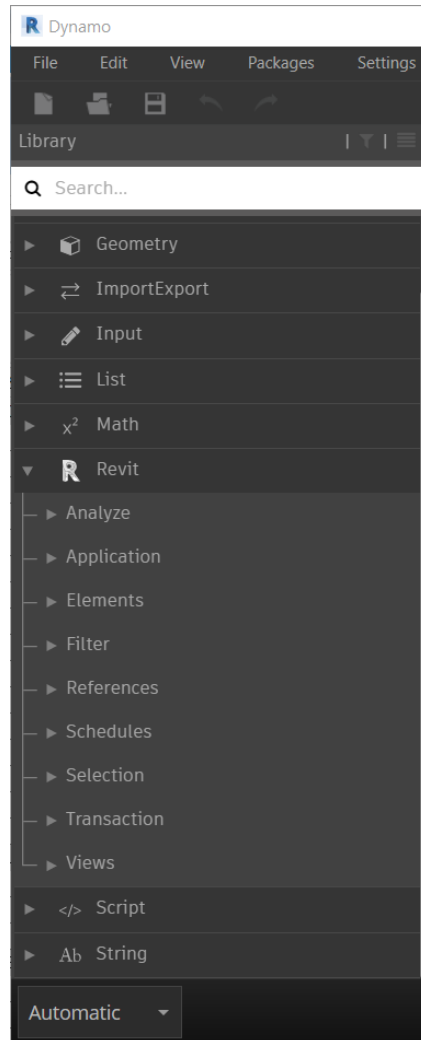
Element.SetPinnedStatus		
element	>	Element
pinned	>	
AUTO		

Element.IsPinned		
element	>	bool
AUTO		

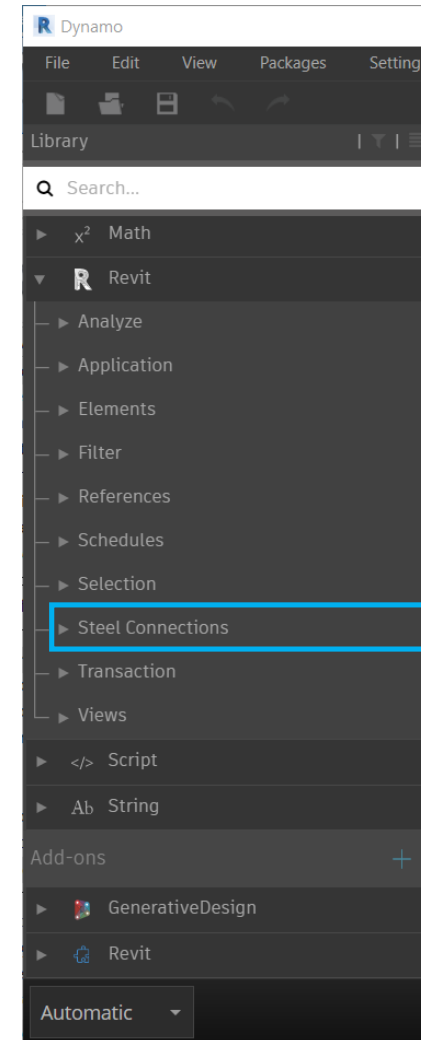
Revit 2021 & Dynamo 2.5



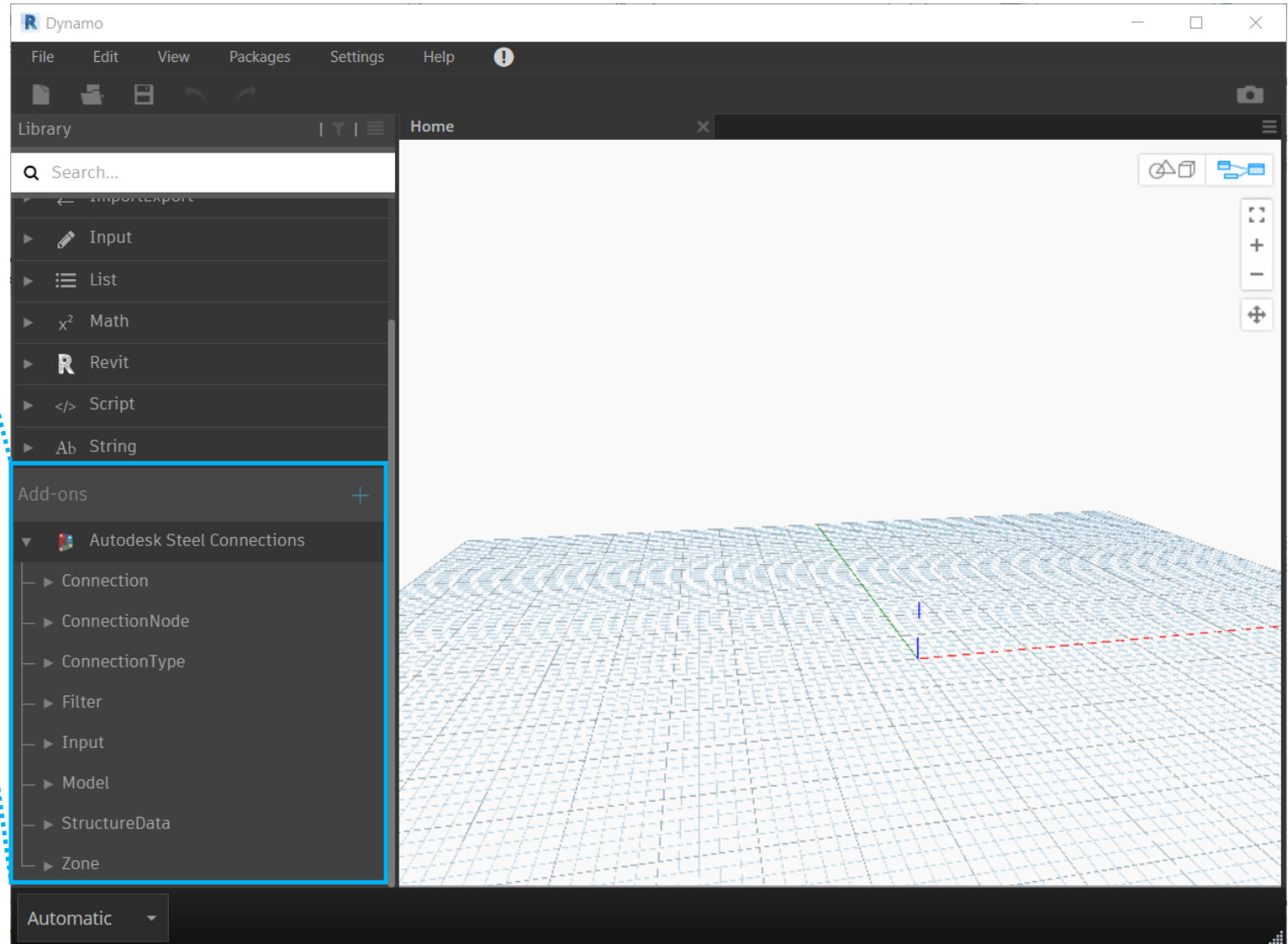
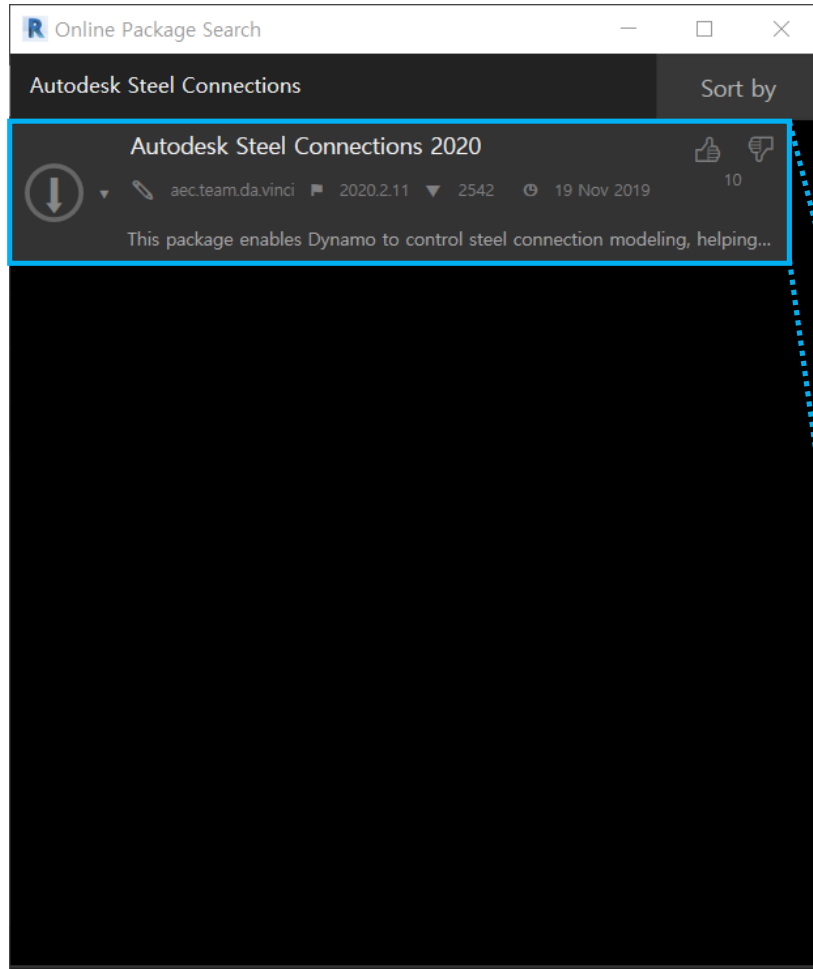
2020



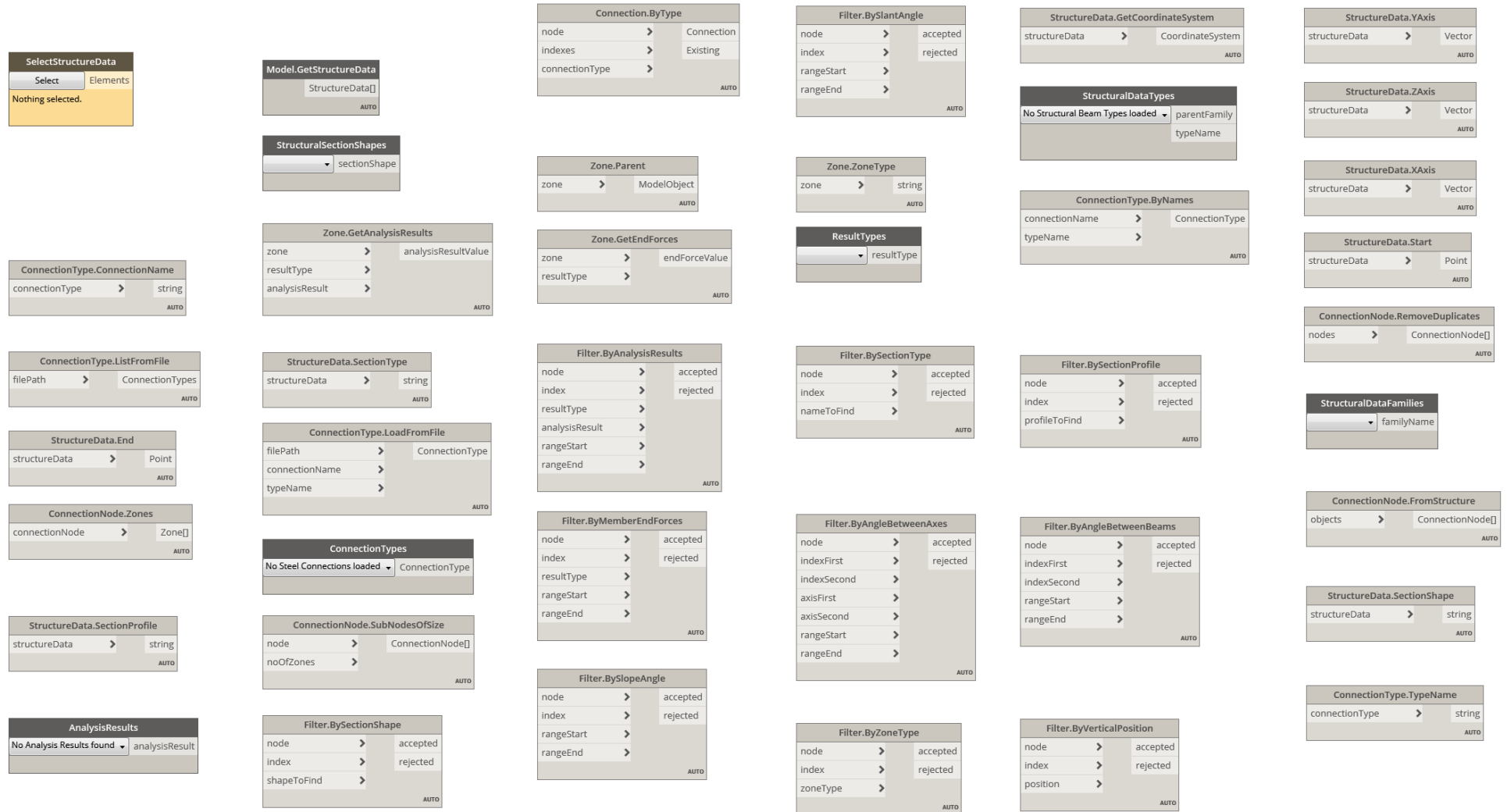
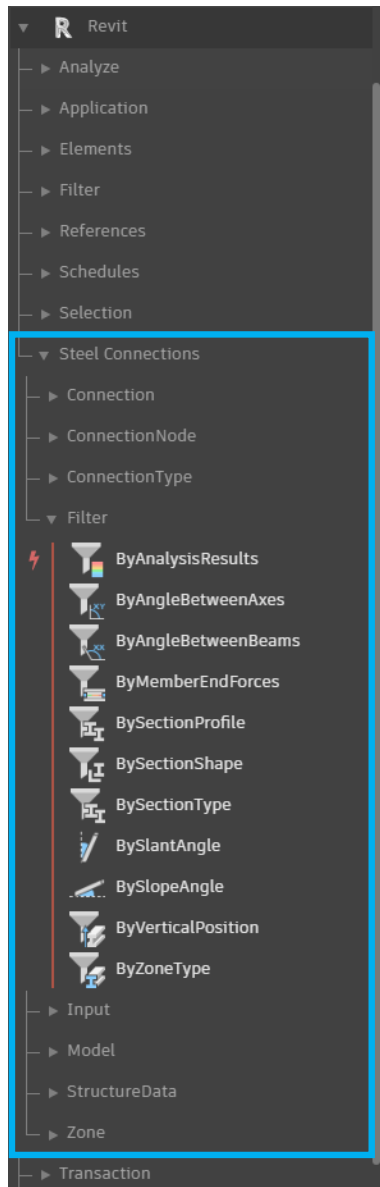
2021



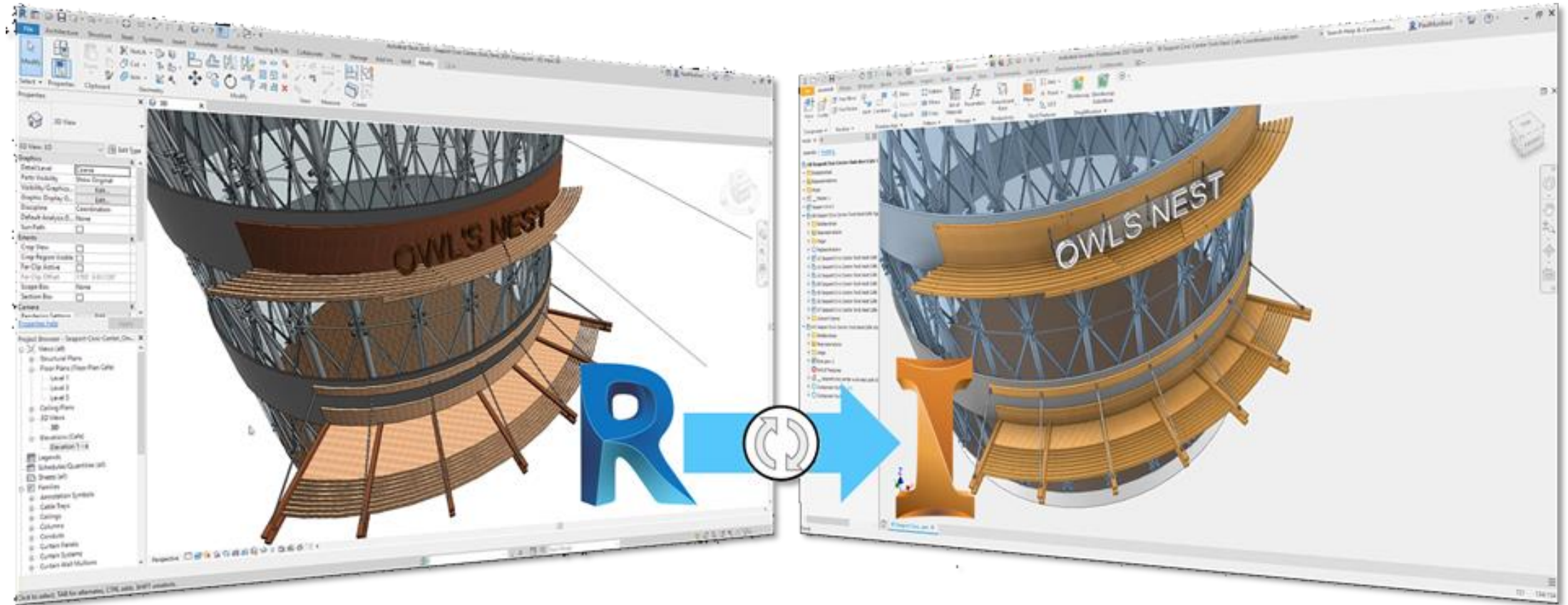
Revit 2020 & Dynamo 2.0



Revit 2021 & Dynamo 2.5



Revit 2021



Revit to Inventor

05. ETC

- **Dynamo 2.5**
- **Revit to Inventor**

05. **ETC**

Dynamo 2.5 업데이트
Inventor

Revit 2021

What's New?

01.GENERAL	Workspace, Generative design
02.MODELING	사선벽, Void family 및 구조 부재 모델링 강화
03.2D&3D Document	2D modeling, 3D viewing Schedule 작업 편의성 증가
04.SIMULATION	구조 & MEP 분석
05.ETC	Dynamo 2.5 업데이트, Inventor

Revit 2021
What's New?

03. Q&A



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