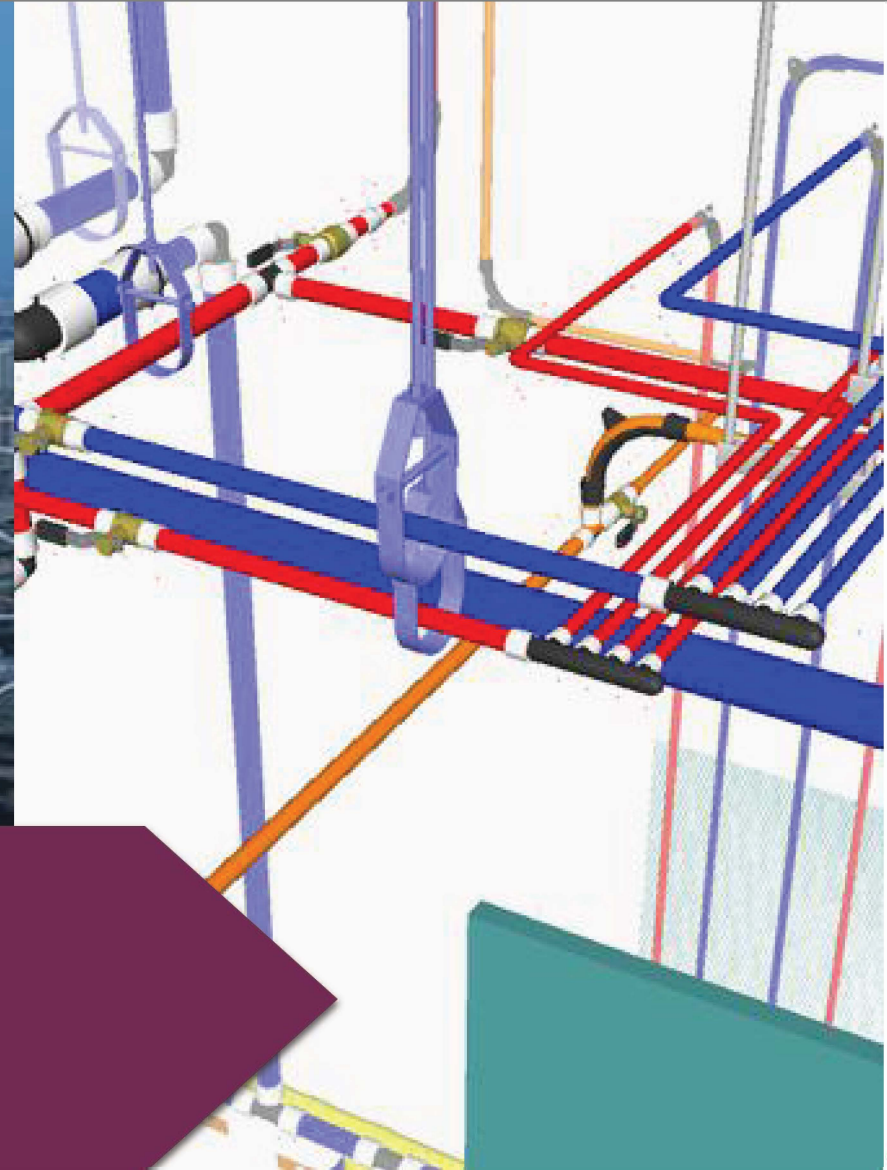




TOPIC 4

BIM FOR MEP SYSTEMS

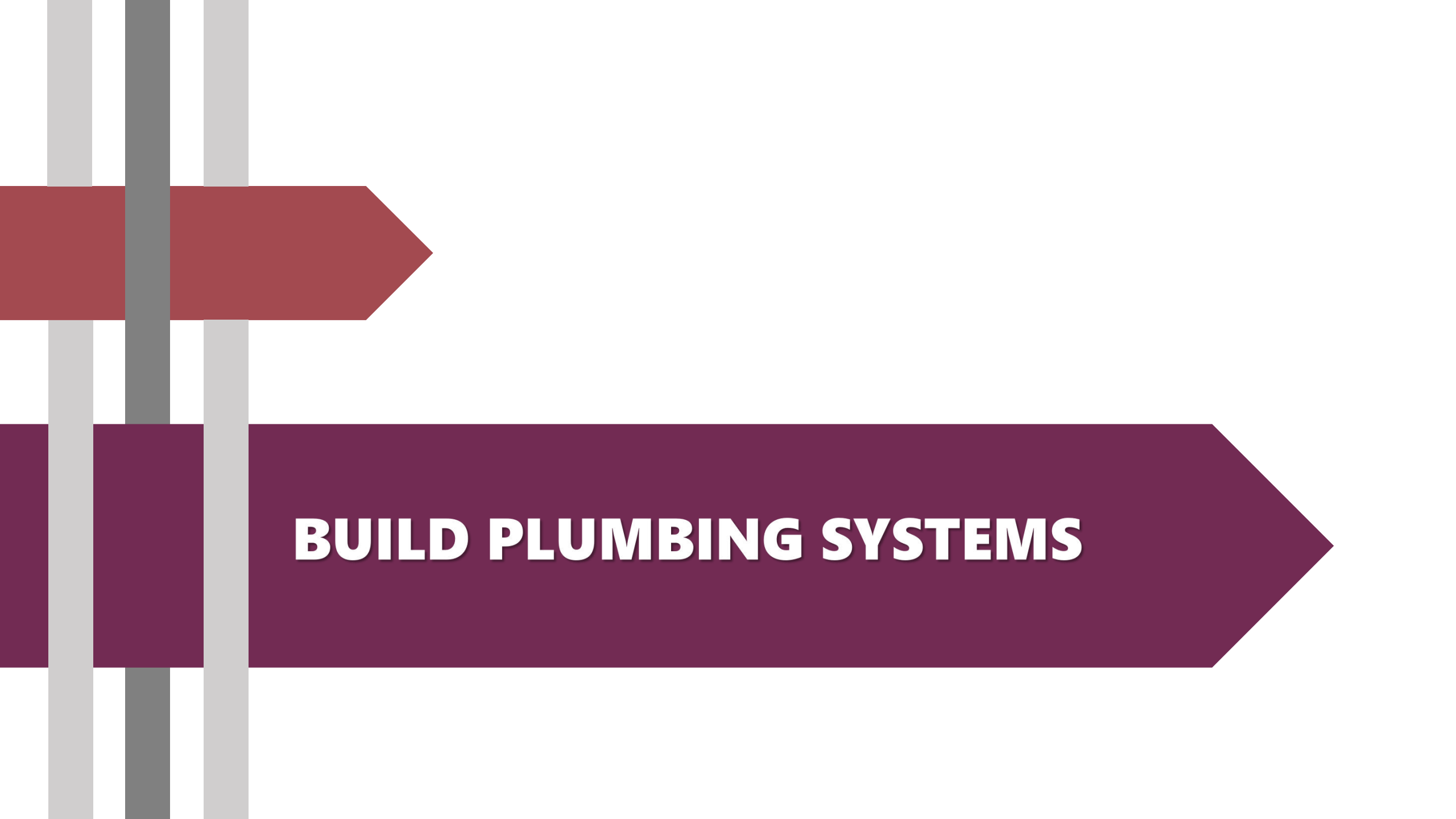
TOPIC 4

BIM FOR PLUMBING SYSTEMS

This module is prepared for the Polytechnics students for understanding of Plumbing Systems Modelling using 3D parametric tool. It is structured in step by step approach consist of the following:

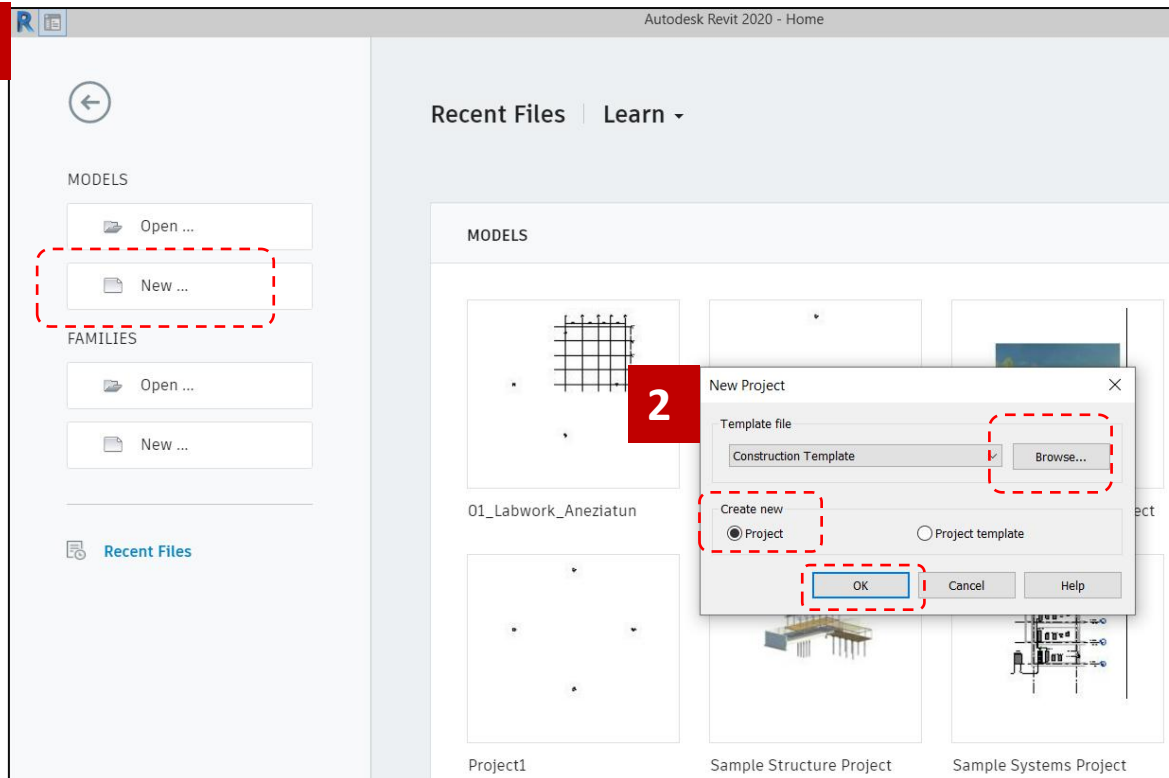
Tools and software to start and Build Plumbing Systems

- Creating Plumbing System
- View 3D Plumbing Model

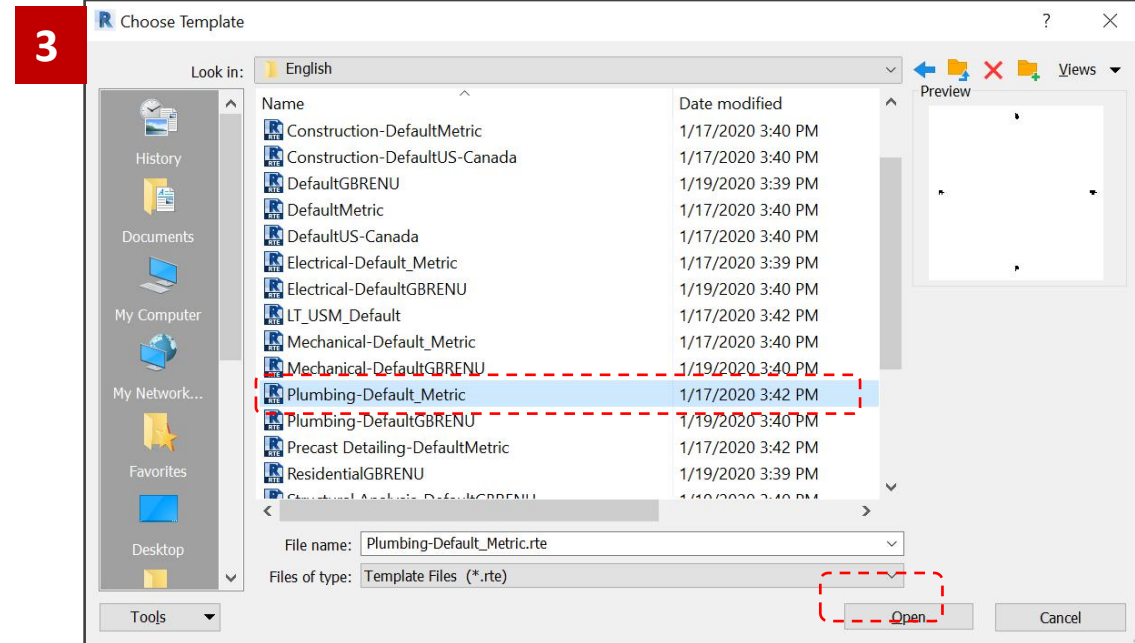
The image features a decorative graphic on the left side consisting of three vertical bars of different heights and colors (light gray, dark gray, and light gray). Two horizontal arrows point to the right: a shorter, reddish-brown arrow positioned above a longer, dark purple arrow. The text "BUILD PLUMBING SYSTEMS" is centered within the purple arrow.

BUILD PLUMBING SYSTEMS

START NEW PROJECTS



1. Click **“New project”**
2. Select **“Browse”**

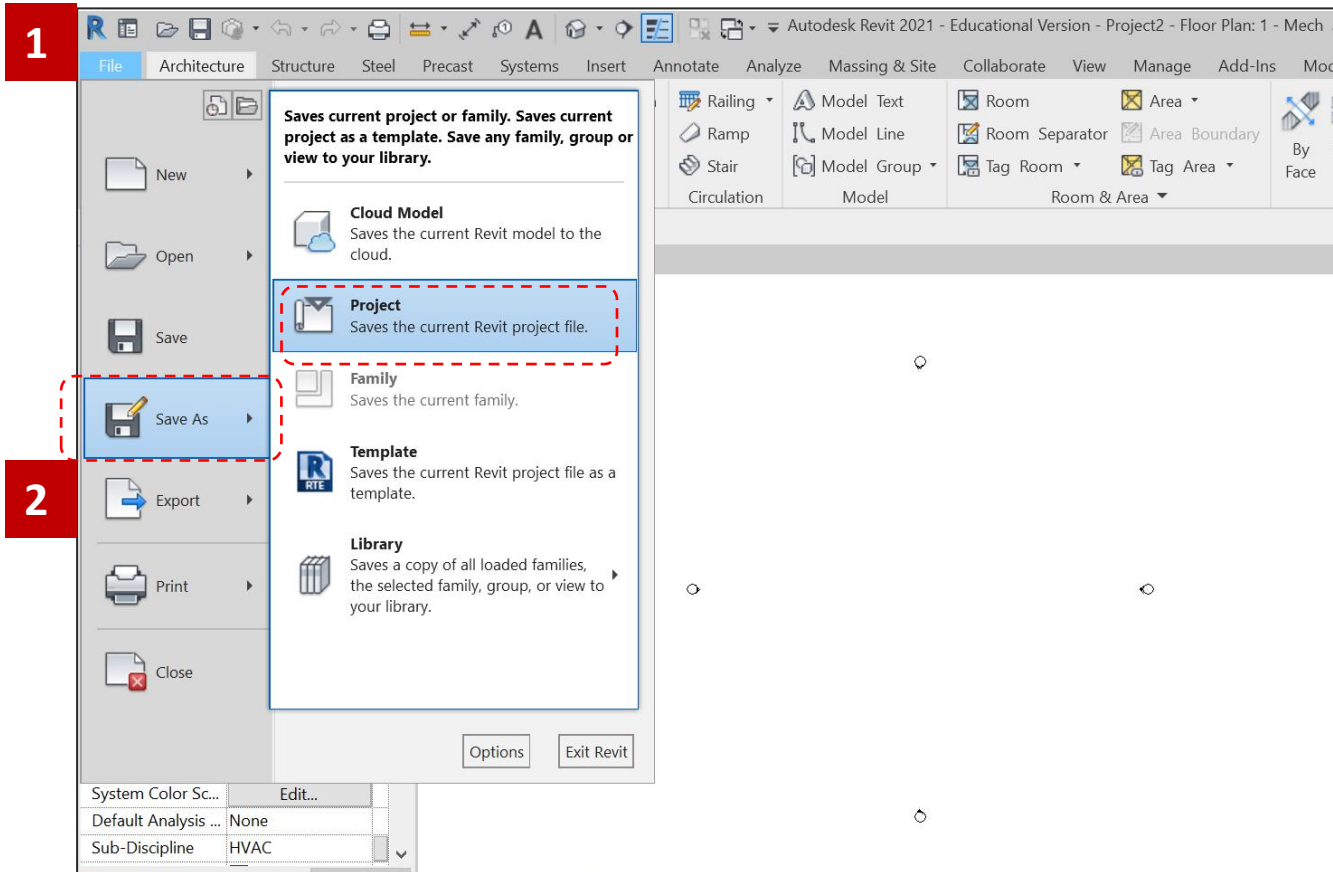


C:\ProgramData\Autodesk\RVT 2021\Templates\English\DefaultMetric

Version

3. Choose **“Plumbing-DefaultMetric”**, Click **“Open”** and click **“OK”**

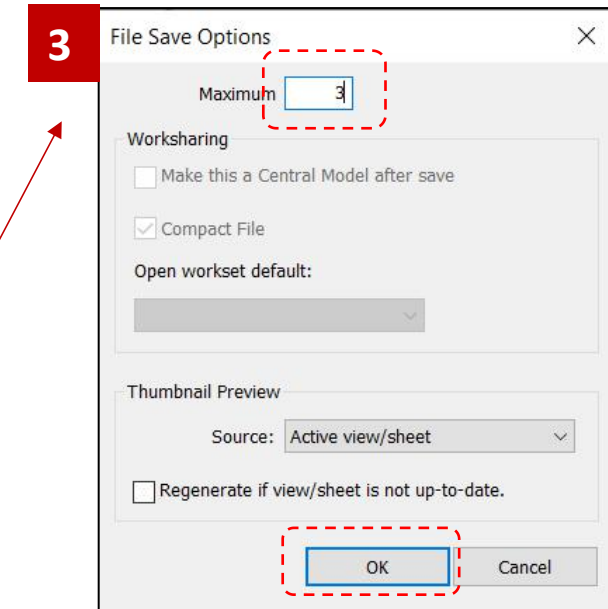
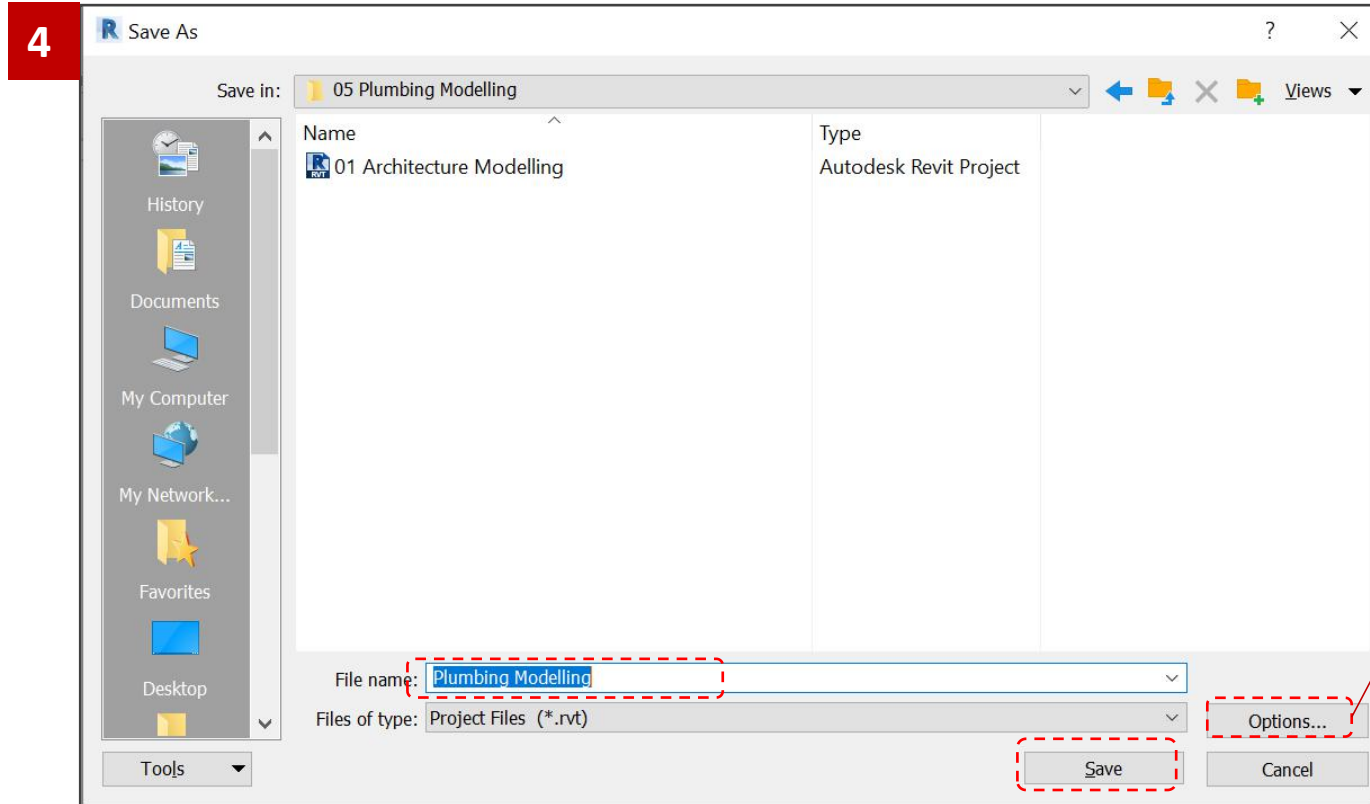
SAVING PROJECTS



1. To save the project, click on the **“File Tab”**.

2. Select **“Save As”**, then select **“Project”**.

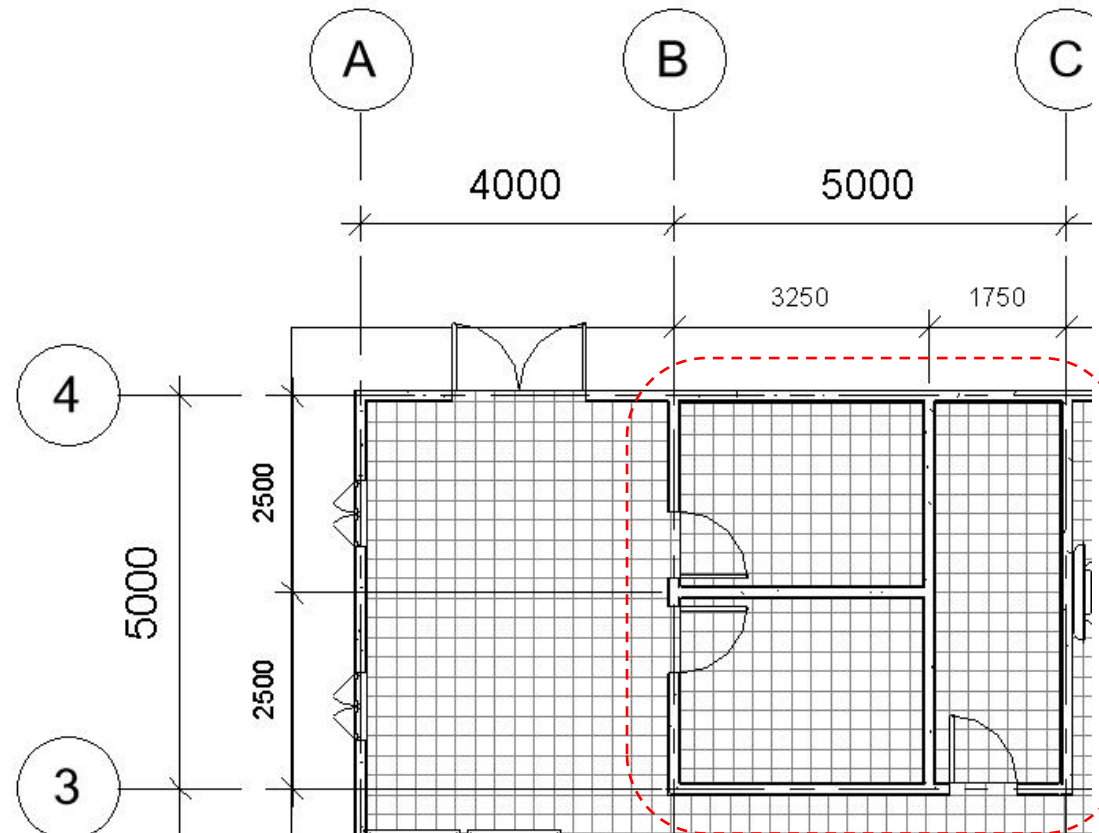
SAVING PROJECTS



3. Click **“Options”**, enter the value **“1 to 3”** on Maximum Backup and click **“OK”**.

4. Change **File name** example **“Plumbing Modelling”** (or any name regarding to your project) and click **“Save”**.

LINK ARCHITECTURAL MODEL

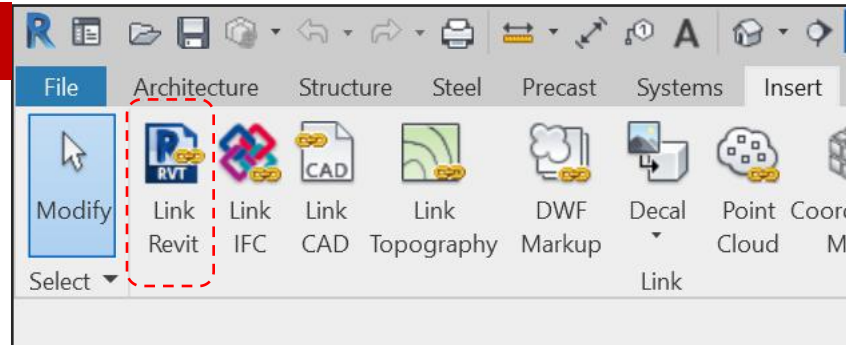


Note:

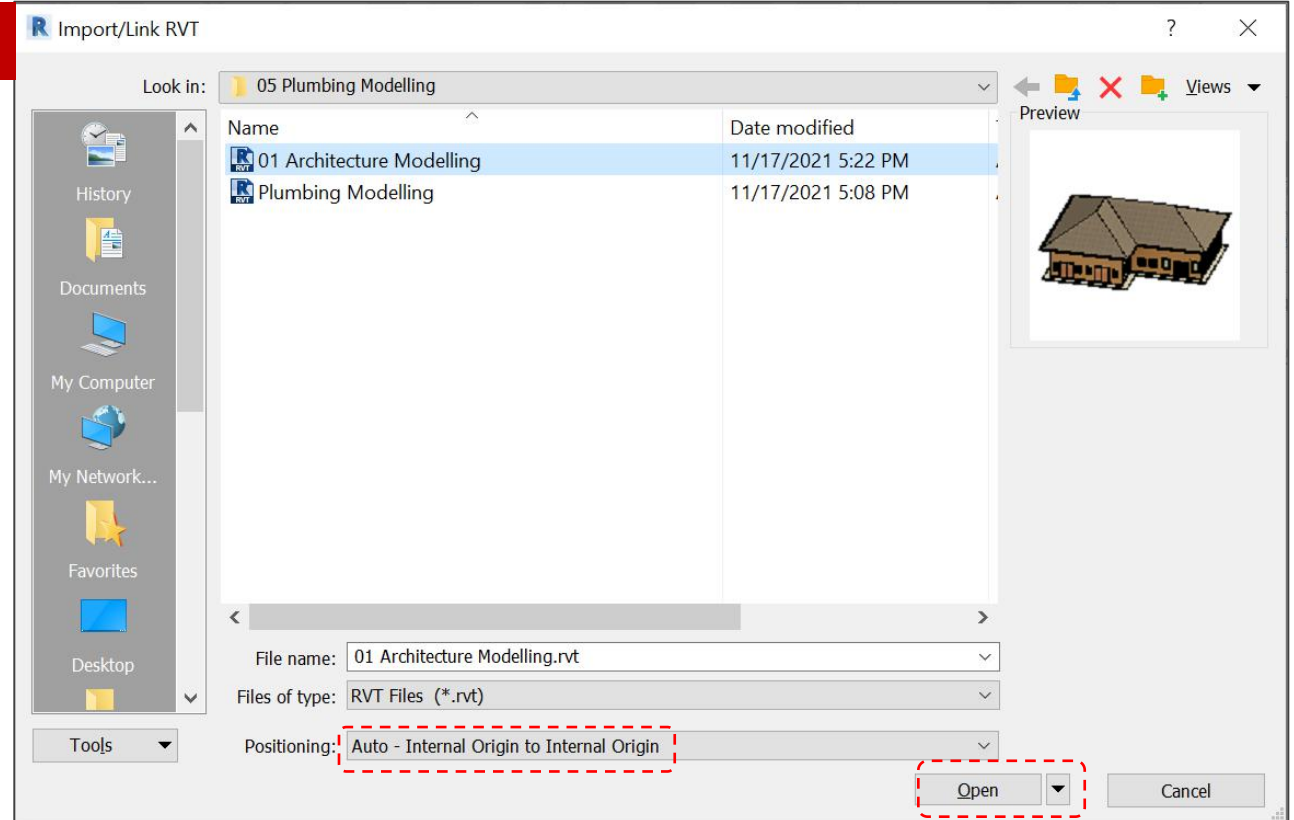
For MEP practise purposes, some modification must be done in Architecture Model as shown in figure before link revit file.

LINK ARCHITECTURAL MODEL

1

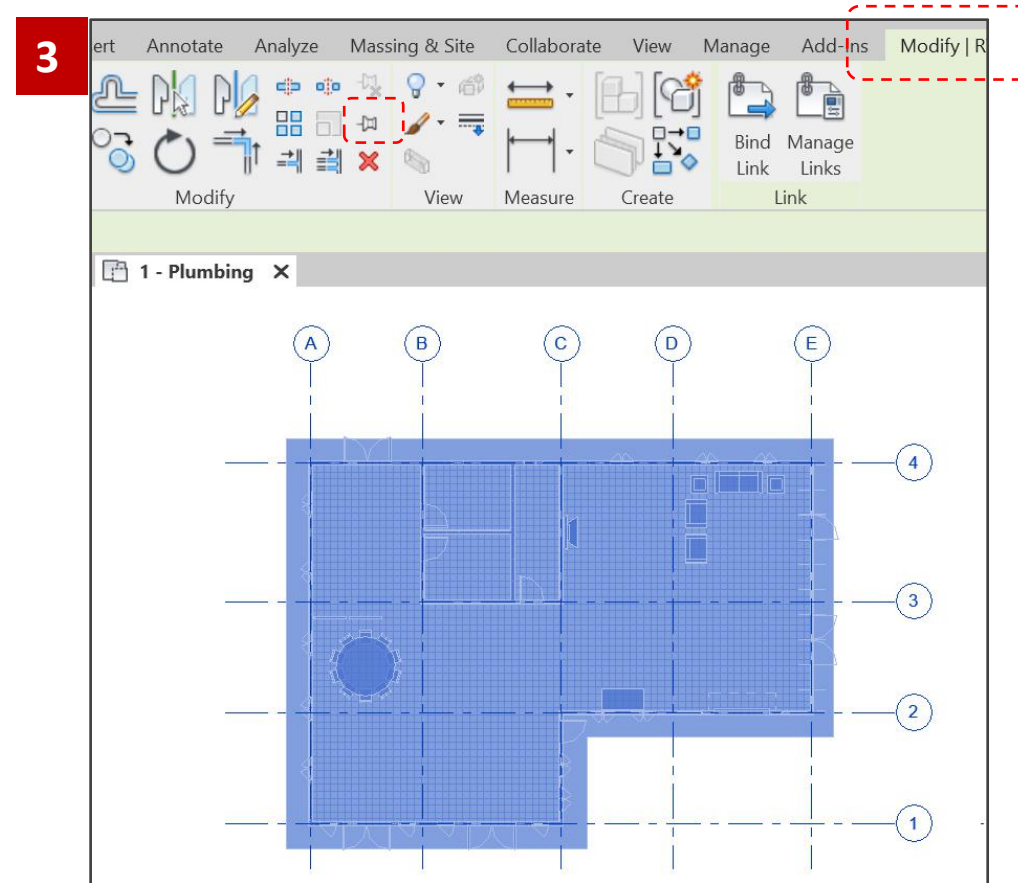


2



1. On **Insert** tab, click **Link Revit**.
2. Find the **Architecture Modelling** file created in **Topic 2: BIM for Architecture**
 - Make sure the **Positioning** is set for **Auto-Origin to Origin**.
 - Then click **“Open”**

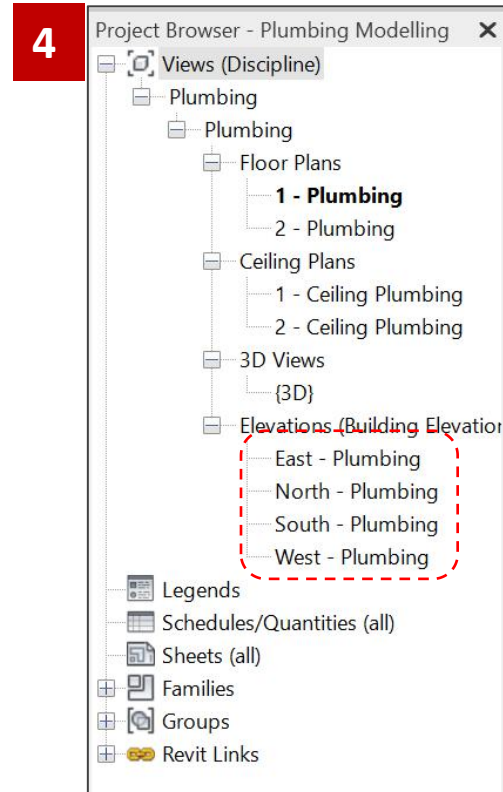
LINK ARCHITECTURAL MODEL



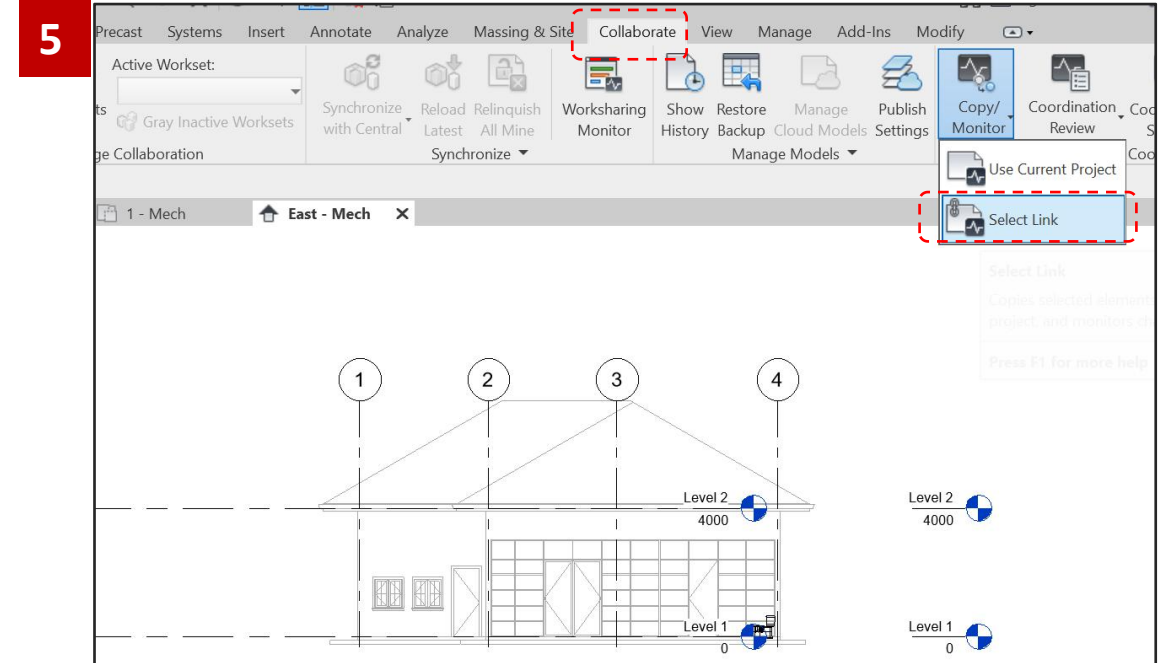
3. Click the linked model, on **Modify | RVT Link** tab, click the **pin icon** to pin the linked architectural model.

COPY/MONITOR - LEVELS

Copy and monitor Grids and Levels from the linked Architecture Model:

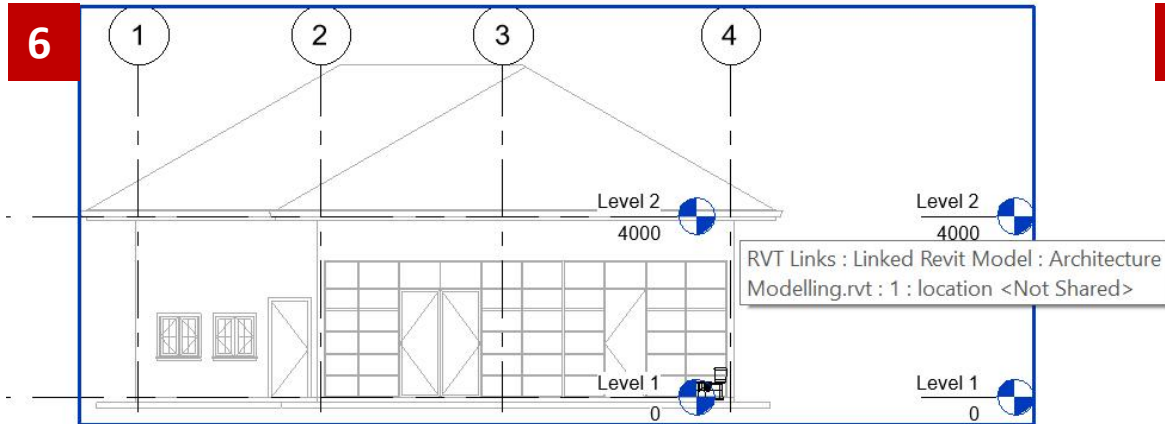


4. To copy the **Levels**, go to **Project Browser**, double click any elevation view. E.g: **“Elevations-East”**.



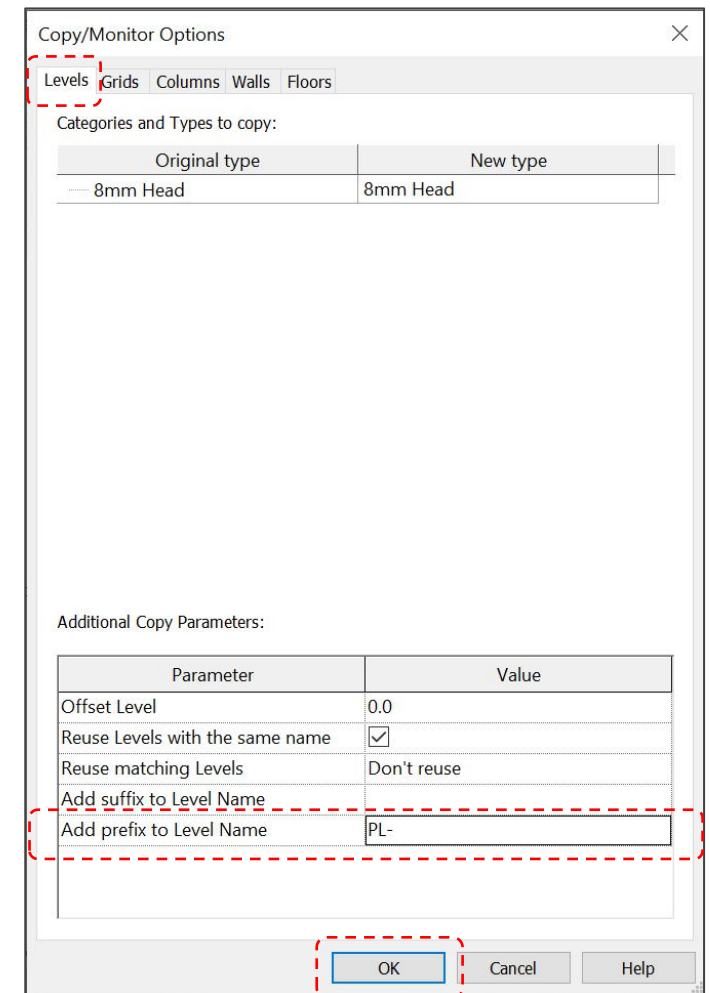
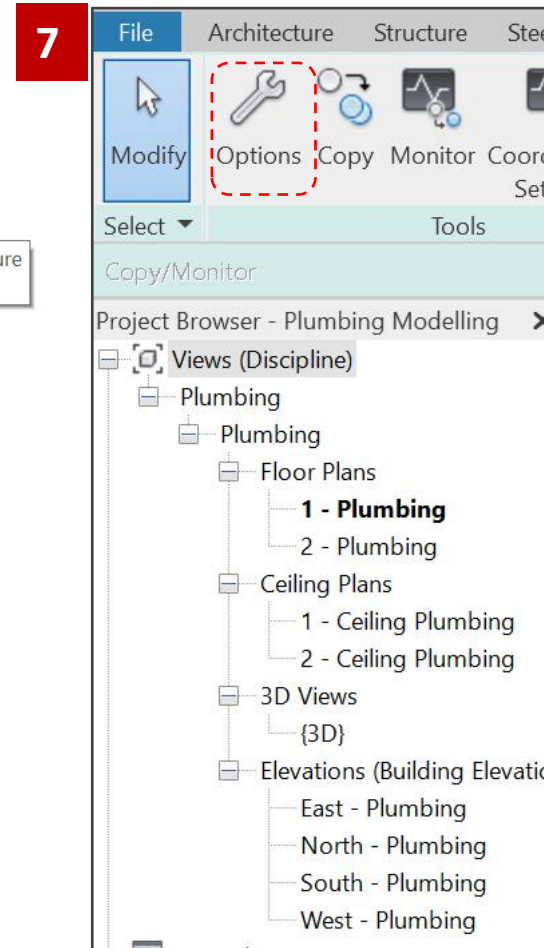
5. On **Collaborate Tab**, Click the **“Copy/Monitor”** and click **“Select Link”**.

COPY/MONITOR - LEVELS



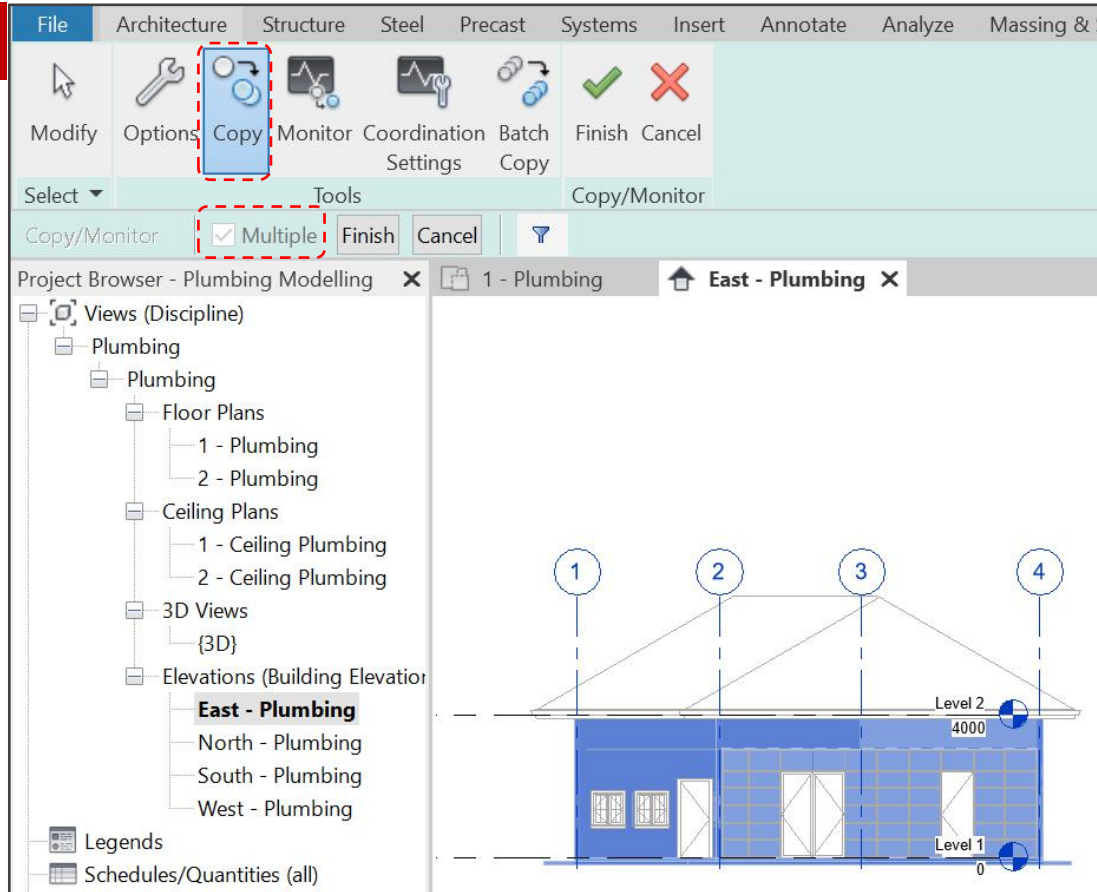
6. Move the cursor to the linked Architecture model until blue box appears then click to select it.

7. Click **Option** on the **Tools** panel.
- On **Copy/Monitor Options**, click **Level** Tab.
 - Under Parameter's **Add prefix to Level Name** row, key-in '**PL-**'
 - Then click **OK**



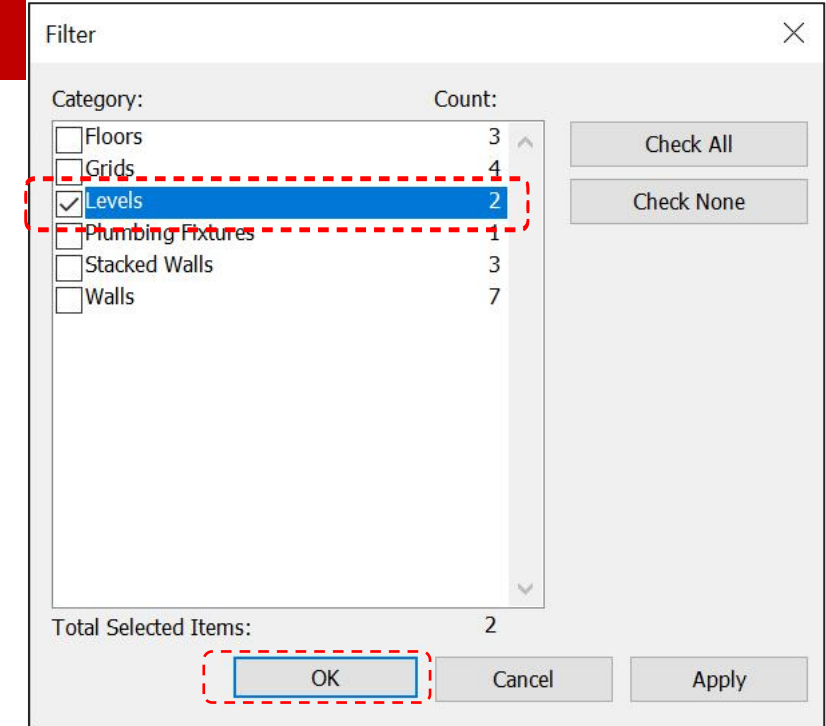
COPY/MONITOR - LEVELS

8



8. Click the **"Copy"** and tick **"Multiple"** before selecting all in drawing area.
 - Select drawing area.

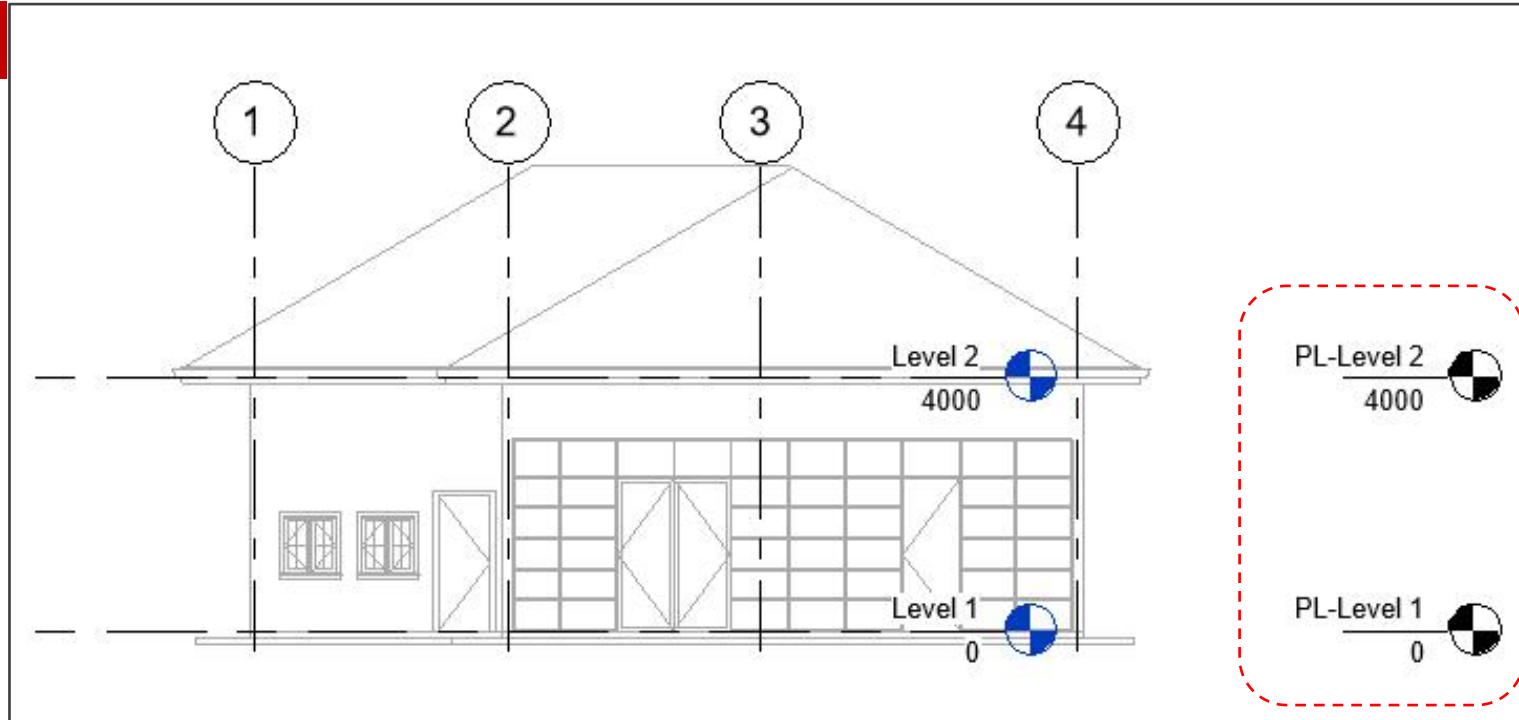
9



9. On **Option Bar**, click **"Filter"** to ensure only **Category: Levels** is selected. Click **"OK"**.
 - Click **"Finish"** on **Option Bar**, then click the **"Finish Edit Mode"**

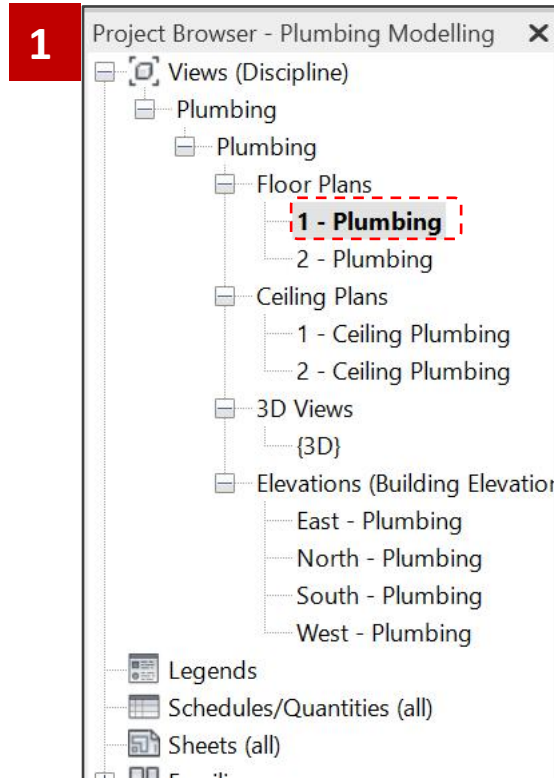
COPY/MONITOR - LEVELS

10

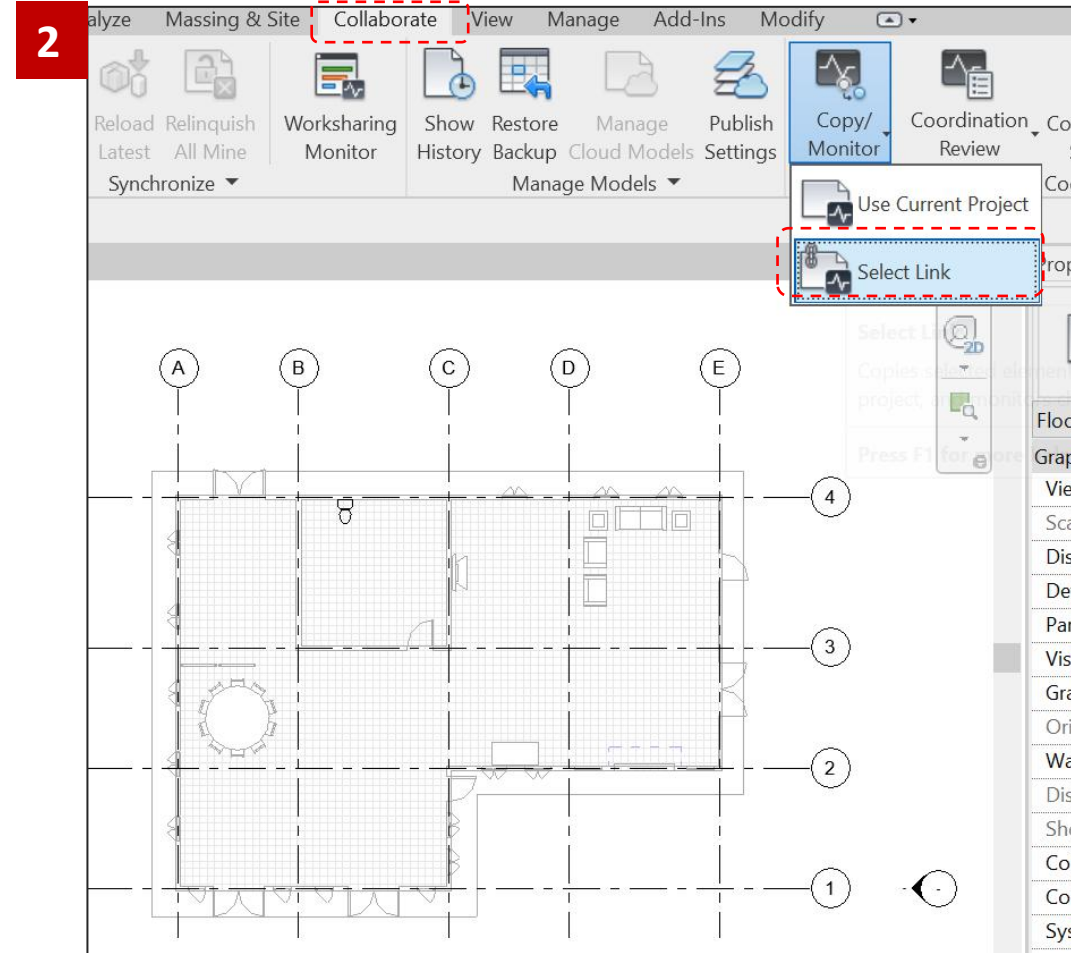


10. Figure show new name for Plumbing Level

COPY/MONITOR - GRIDS



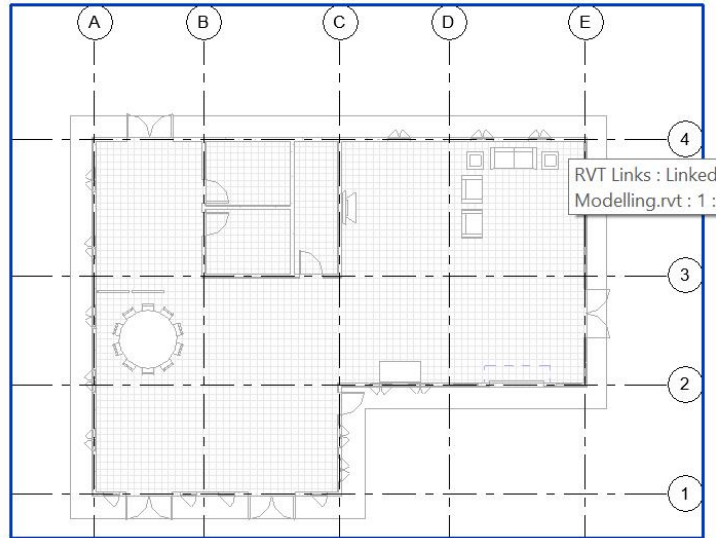
1. To copy the **Grids**, go to **Project Browser**, select **1-Plumbing** floor plan.



2. On **Collaborate Tab**, Click the **"Copy/Monitor"** and click **"Select Link"**.

COPY/MONITOR - GRIDS

3

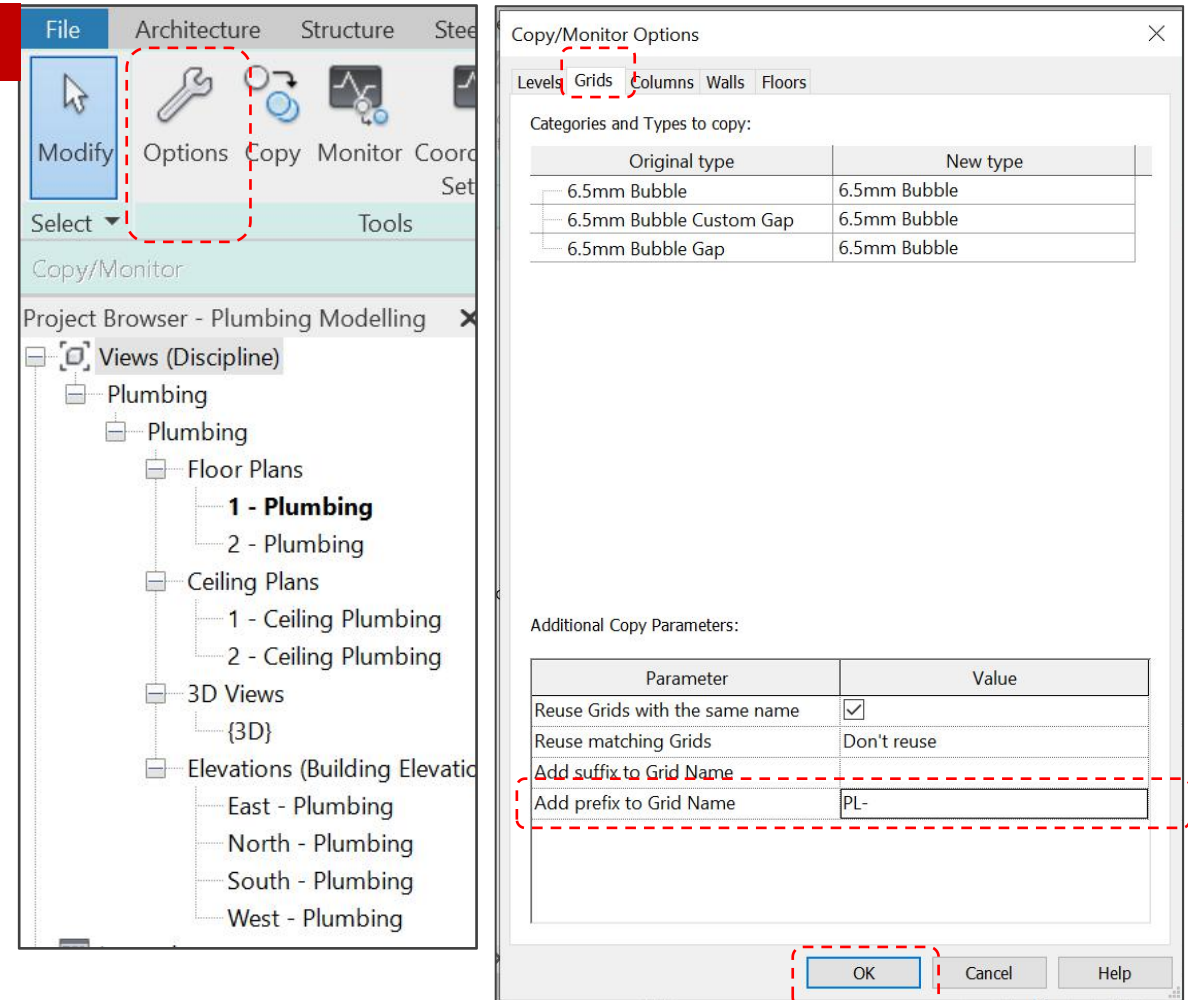


3. Move the cursor to the linked Architecture model until blue box appears then click to select it.

4. Click **Option** on the **Tools** panel.

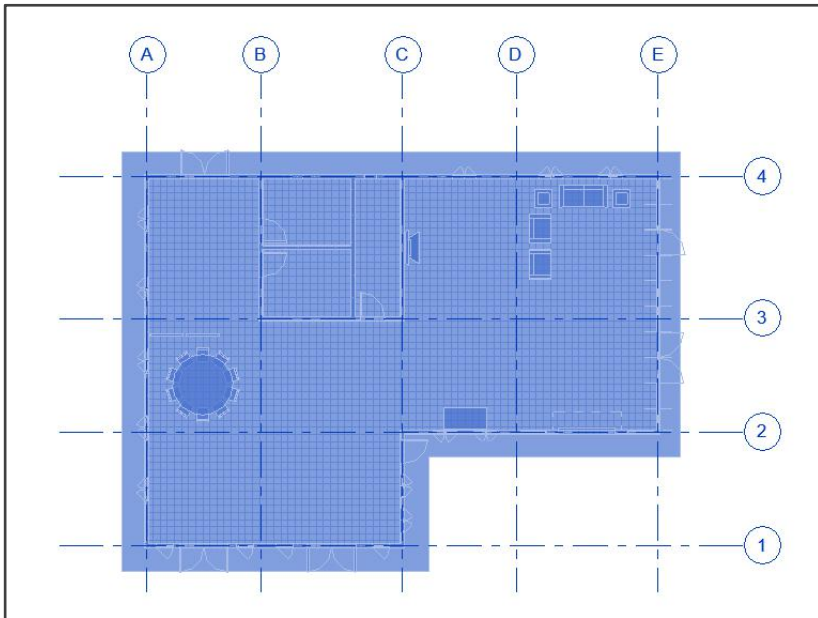
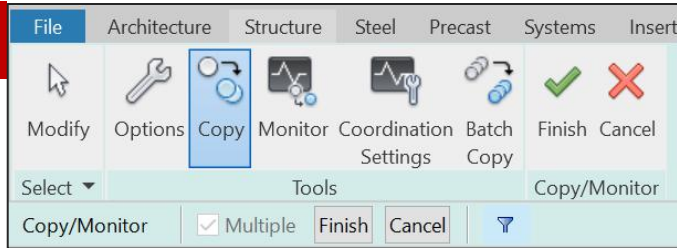
- On **Copy/Monitor Options**, click **Grids** Tab.
- Under Parameter's **Add prefix to Grid Name** row, key-in '**PL-**'
- Then click **OK**

4



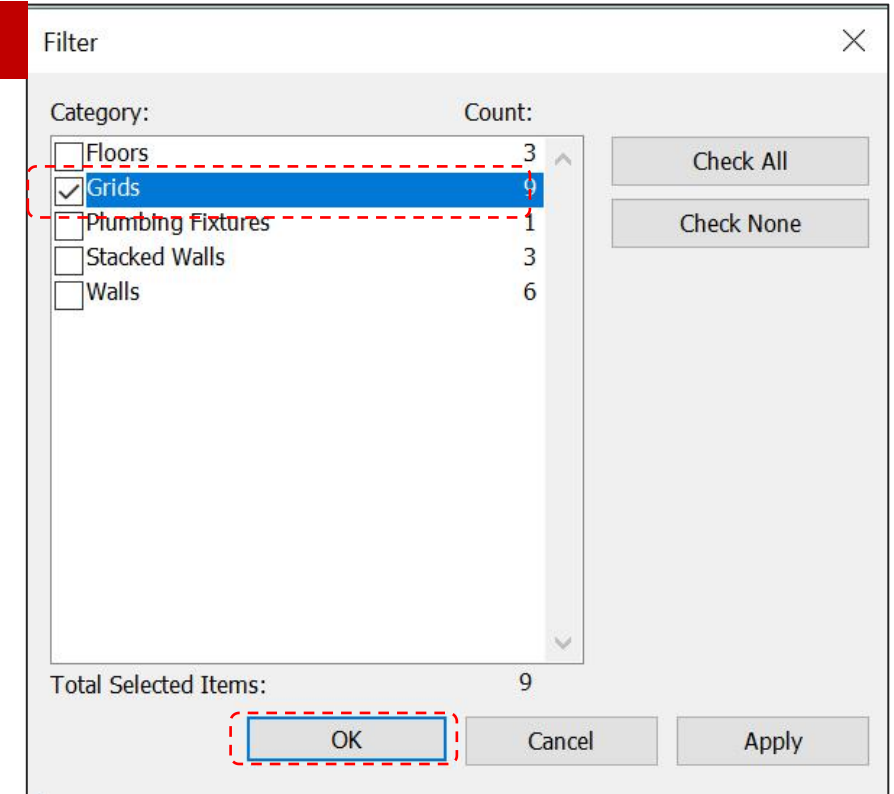
COPY/MONITOR - GRIDS

5



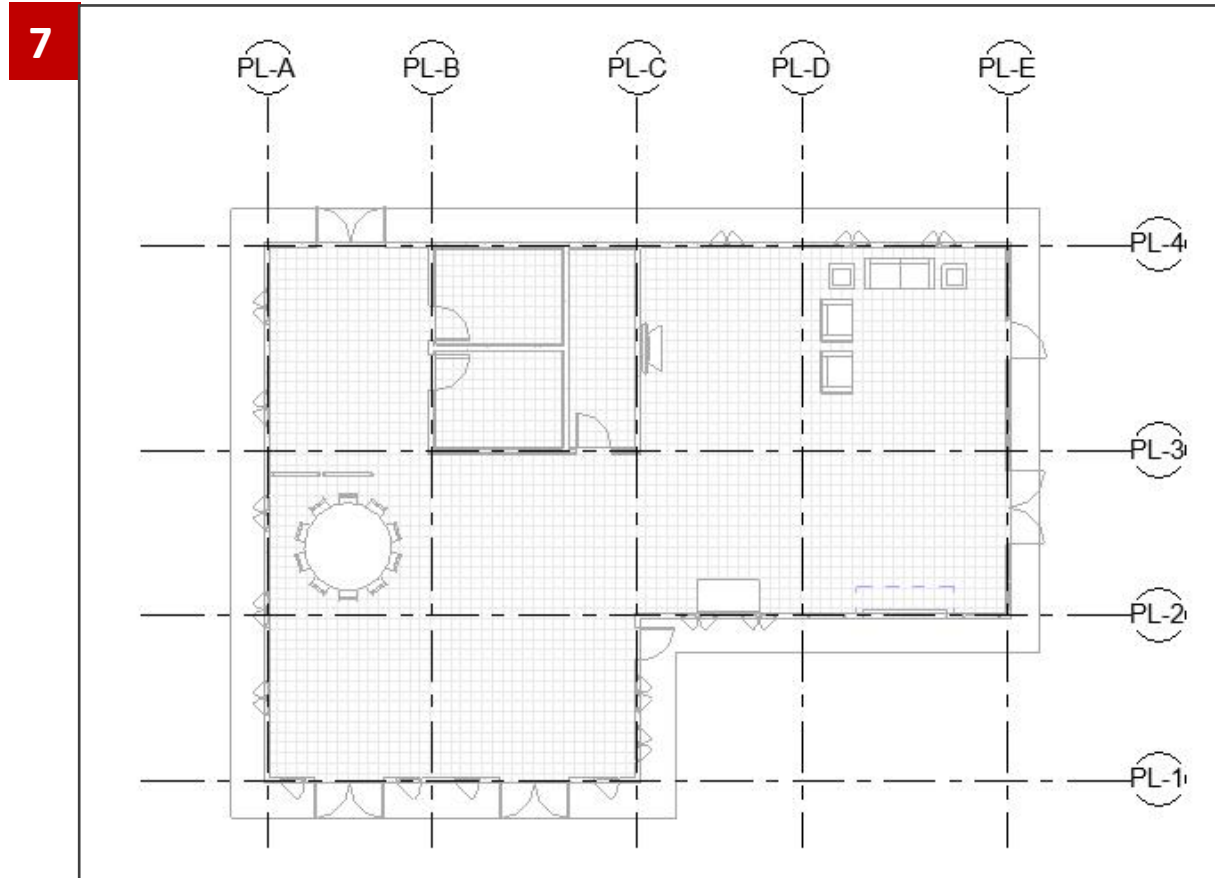
5. Click the **"Copy"** and tick **"Multiple"** before selecting all in drawing area.
 - Select drawing area.

6



6. On **Option Bar**, click **"Filter"** to ensure only **Category: Grids** is selected. Click **"OK"**.
 - Click **"Finish"** on **Option Bar**, then click the **"Finish Edit Mode"**

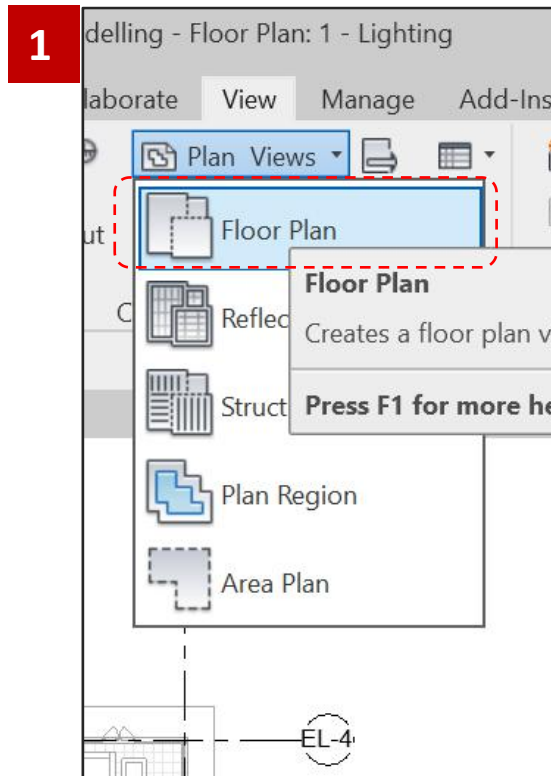
COPY/MONITOR - GRIDS



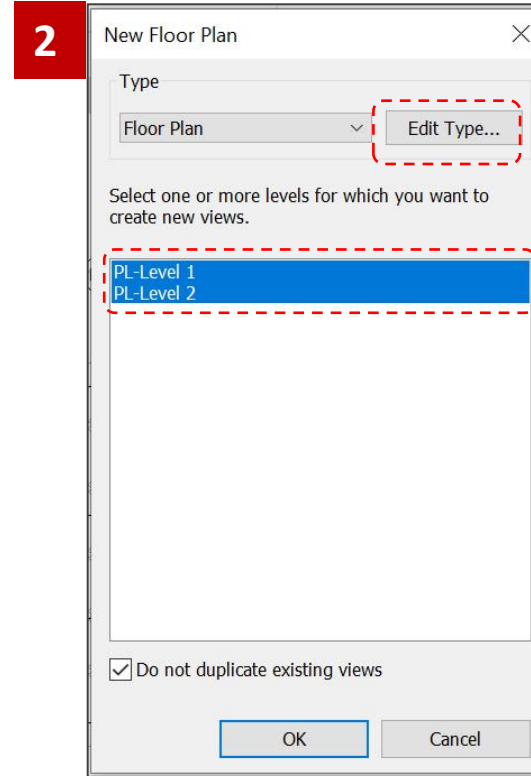
7. Figure show new name for Electrical Grids

PROJECT BROWSER SETUP

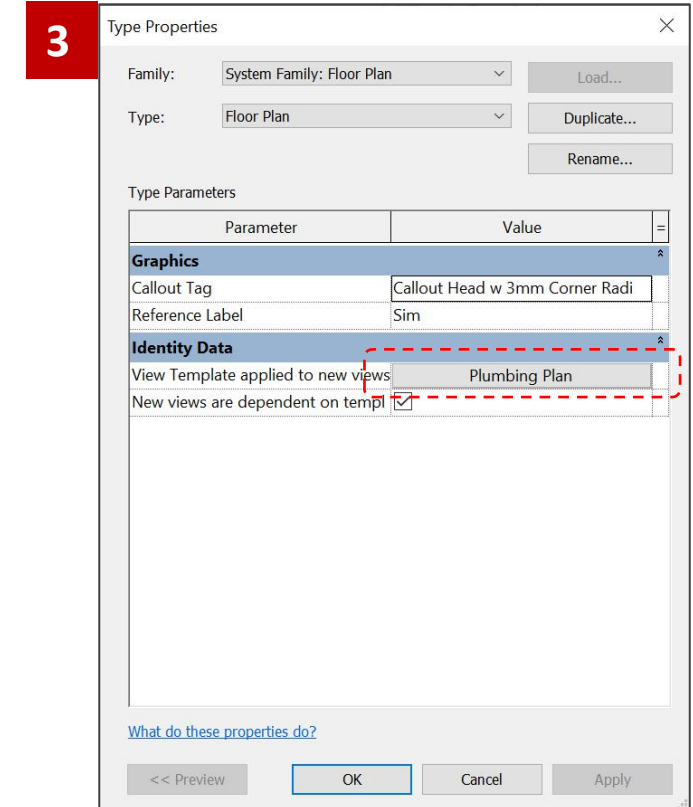
(A) Creating for Cold Water System (CWS) View



1. On **View Tab**, click **Plan Views** icon. Then dropdown menu, click **Floor Plan**.

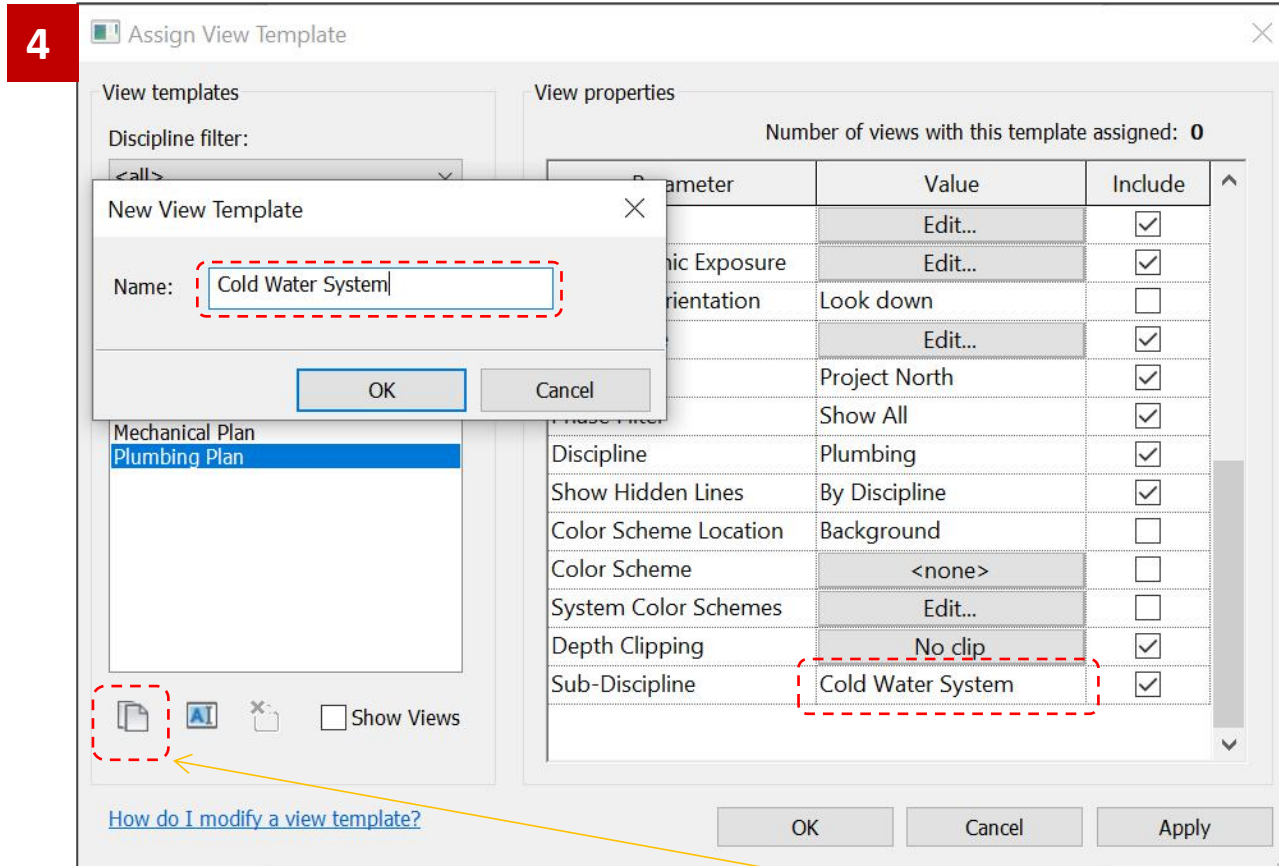


2. On **New Floor Plan** dialog box, select all levels as shown. Then, click **Edit Type**.

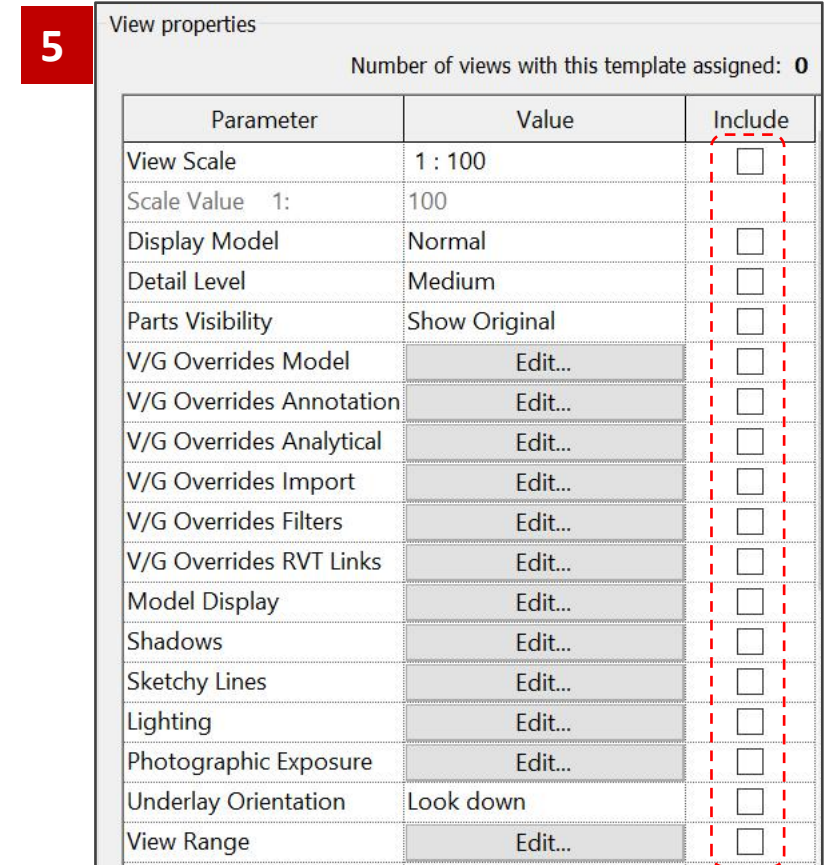


3. On **Type Properties** dialog box, click **Plumbing Plan**.

PROJECT BROWSER SETUP

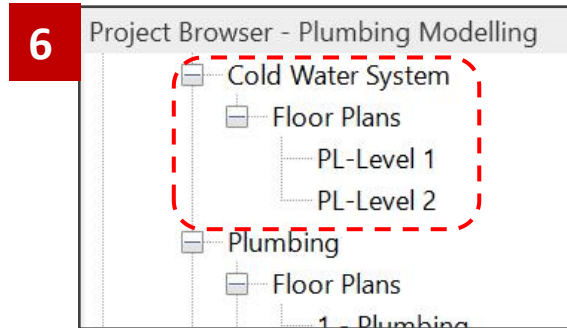


4. In **Assign View Template**, dialog box, click **Duplicate**. Enter 'Cold Water System' as the name. Click **OK**.
- On **sub-discipline** row under **View Properties** section type new sub discipline as 'Cold Water System'. Then press **Enter**.

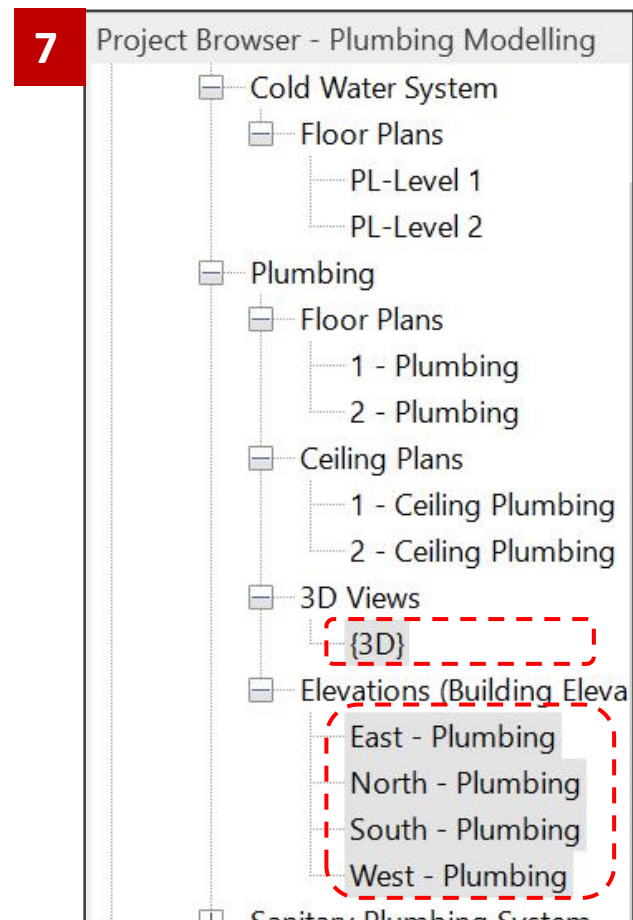


5. On **View Properties** section, **Uncheck** the parameter from **View Scale** to **View Range**.
- Then **OK**.

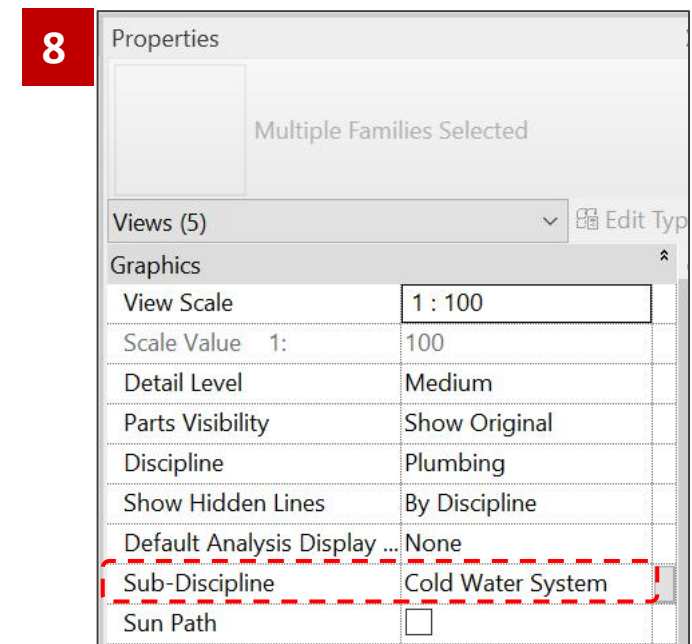
PROJECT BROWSER SETUP



6. The floor plans have been created in **Project Browser**.



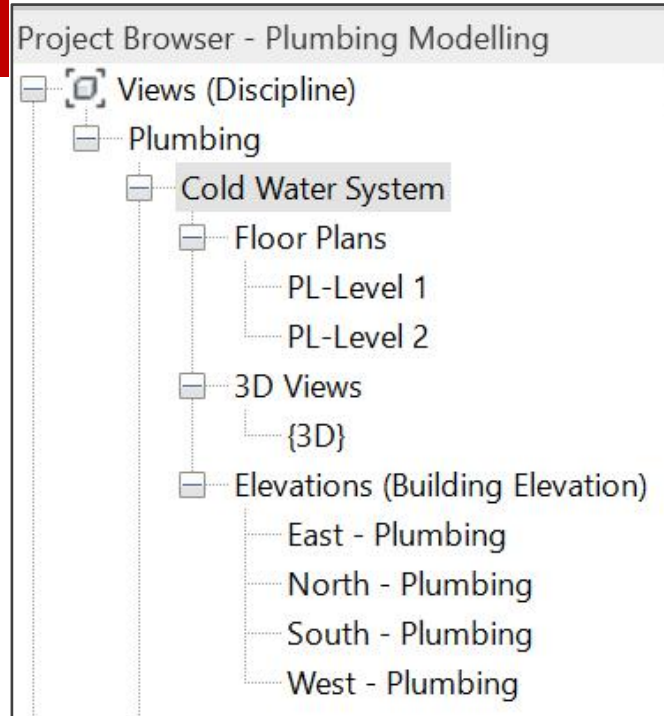
7. Select all **3D views** and **Elevations** from **Plumbing sub-discipline** as shown in figure.



8. In **Properties Palette**, change sub-discipline to **Cold Water System**.

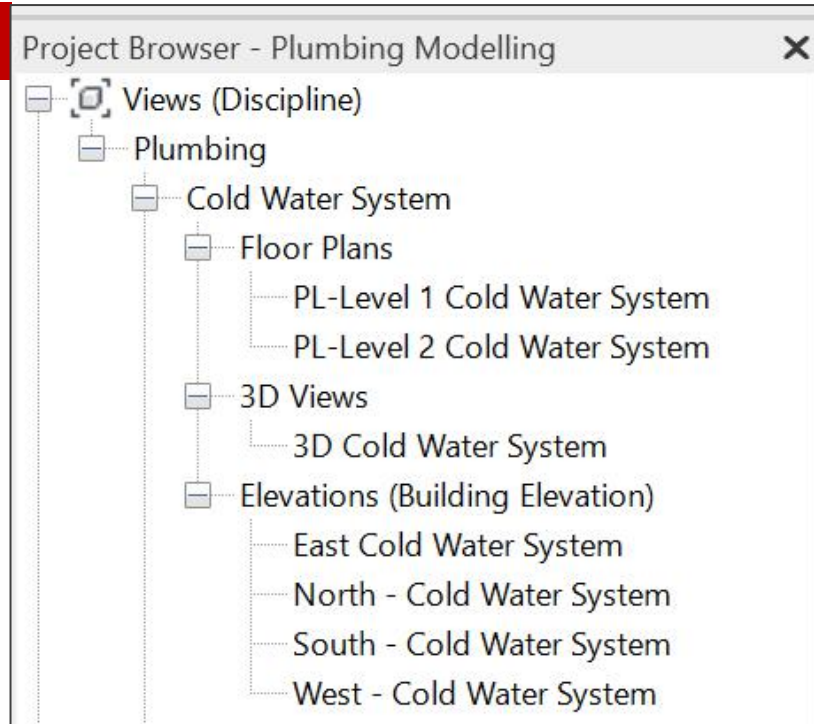
PROJECT BROWSER SETUP

9



9. Figure show all **view** was manage under sub-dicipline **Cold Water System**.

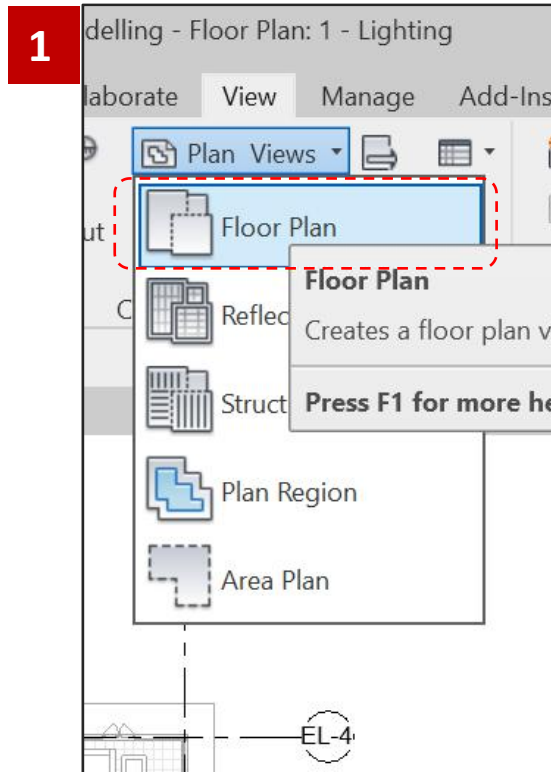
10



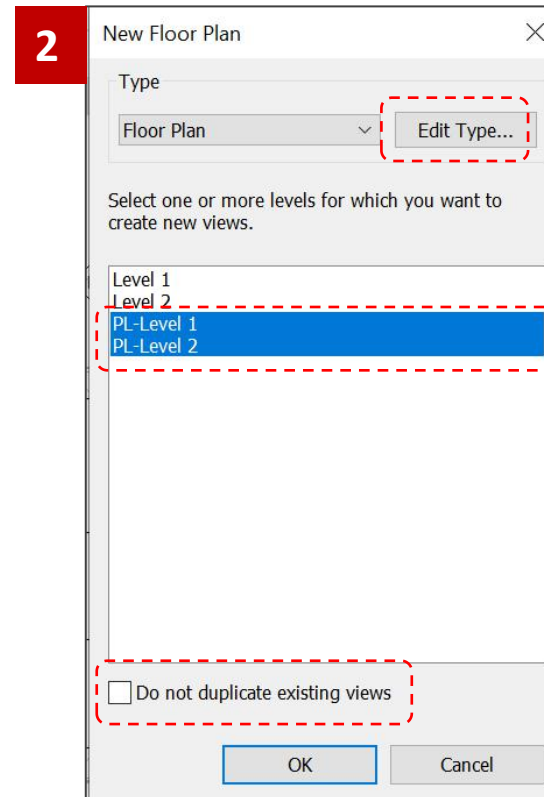
10. **Rename** all the views under **Cold Water System** sub-dicipline as shown in figure.

PROJECT BROWSER SETUP

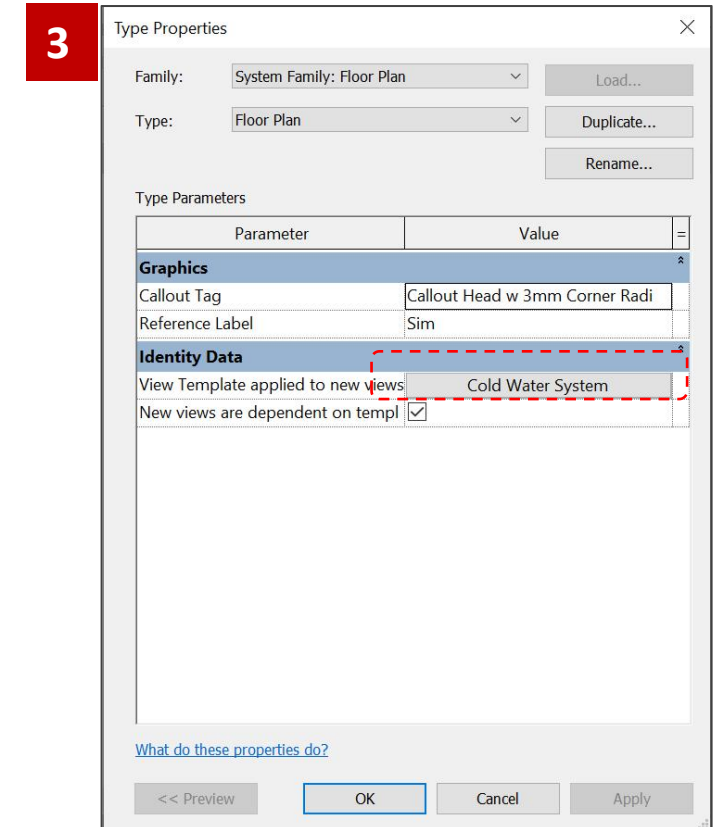
(B) Creating for Sanitary Plumbing System (SPS) View



1. On **View Tab**, click **Plan Views** icon. Then dropdown menu, click **Floor Plan**.



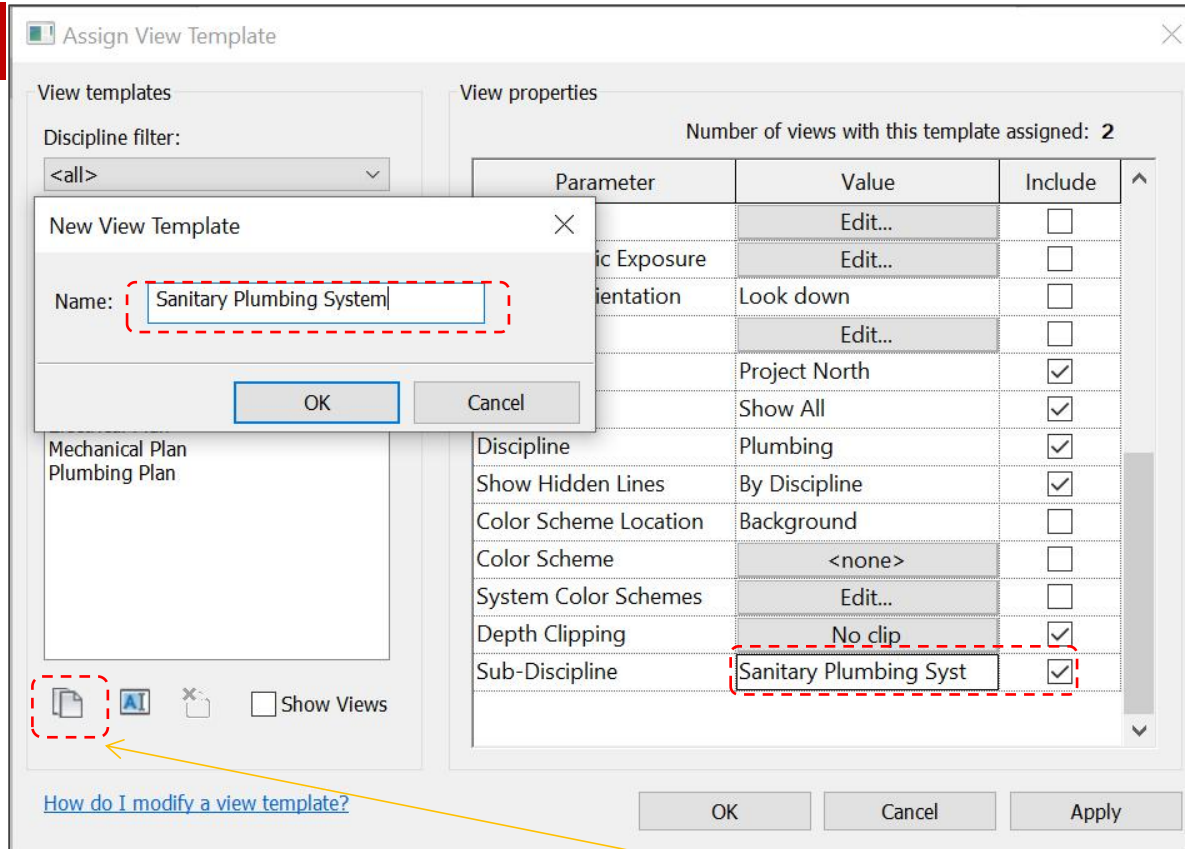
2. On **New Floor Plan** dialog box. Untick '**Do Not duplicate existing views**'. Select all levels as shown. Then click **Edit Type**.



3. On **Type Properties** dialog box, click **Cold Water System**.

PROJECT BROWSER SETUP

4



- In **Assign View Template**, dialog box, click **Duplicate**. Enter **Sanitary Plumbing System** as the name. Click **OK**.
 - On **sub-dicipline** row under **View Properties** type new sub dicipline as '**Sanitary Plumbing System**'. Then press **Enter**.

5

View properties

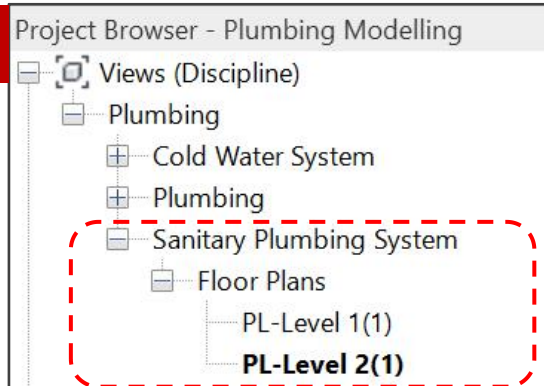
Number of views with this template assigned: 0

Parameter	Value	Include
View Scale	1 : 100	☐
Scale Value 1:	100	☐
Display Model	Normal	☐
Detail Level	Medium	☐
Parts Visibility	Show Original	☐
V/G Overrides Model	Edit...	☐
V/G Overrides Annotation	Edit...	☐
V/G Overrides Analytical	Edit...	☐
V/G Overrides Import	Edit...	☐
V/G Overrides Filters	Edit...	☐
V/G Overrides RVT Links	Edit...	☐
Model Display	Edit...	☐
Shadows	Edit...	☐
Sketchy Lines	Edit...	☐
Lighting	Edit...	☐
Photographic Exposure	Edit...	☐
Underlay Orientation	Look down	☐
View Range	Edit...	☐

- On **View Properties** section, **Uncheck** the parameter from **View Scale** to **View Range**.
 - Then **OK**.

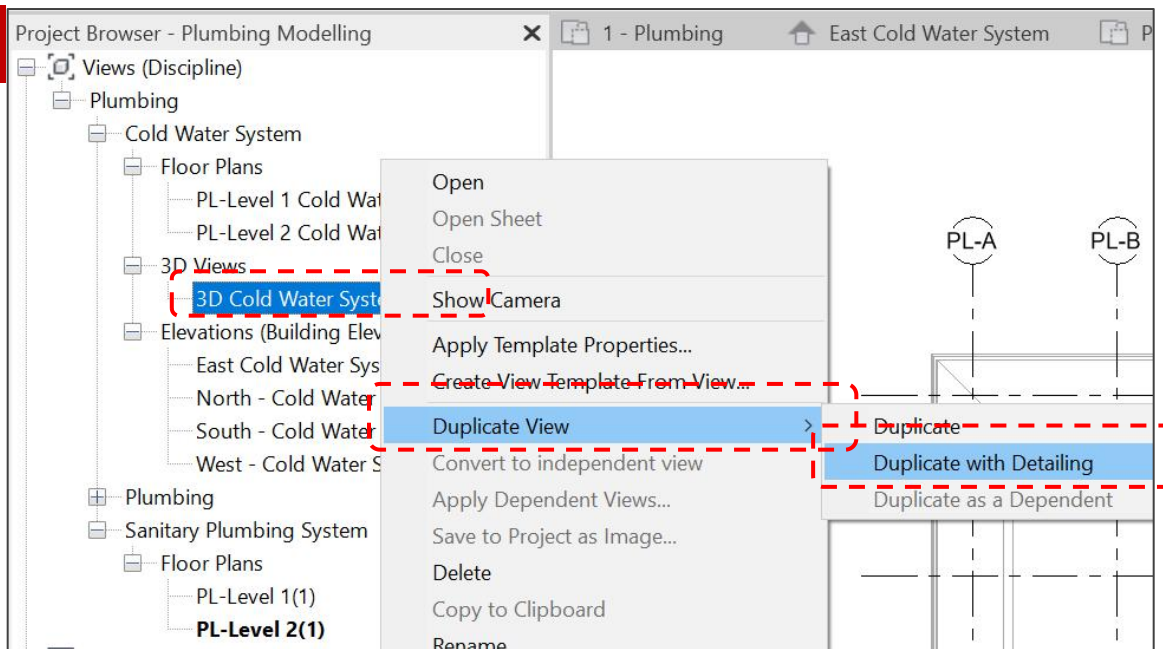
PROJECT BROWSER SETUP

6



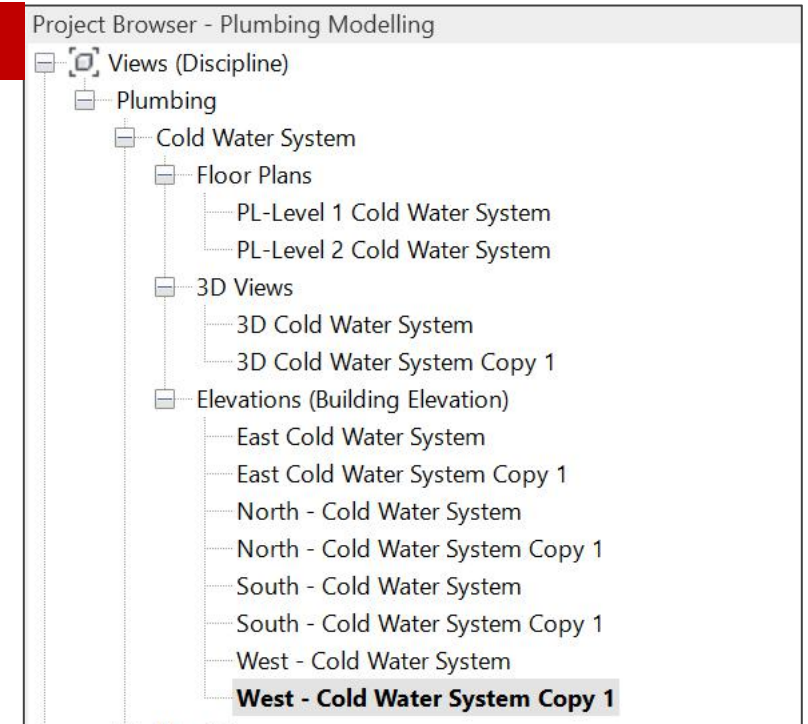
6. The floor plans have been created in **Project Browser**.

7



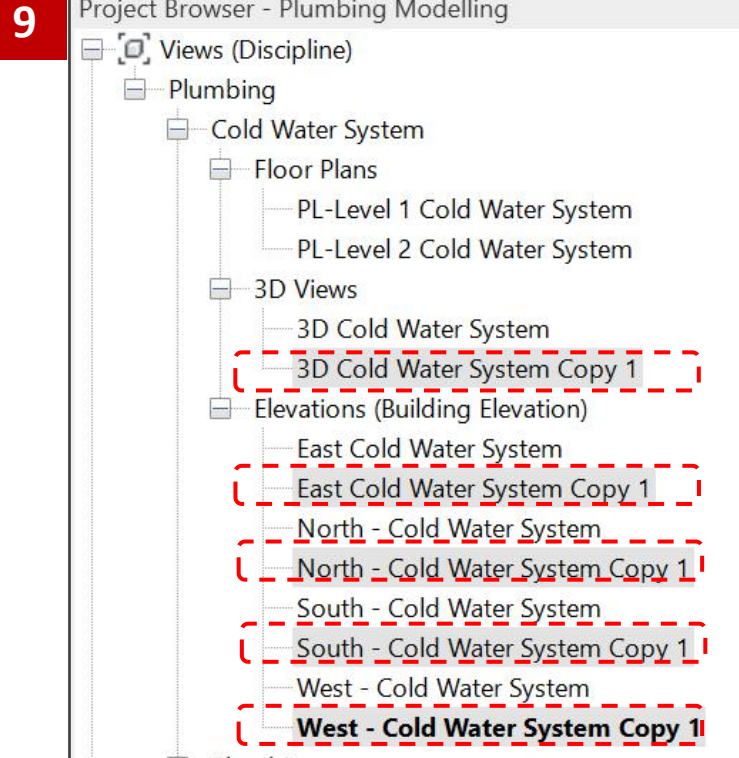
7. Select **3D views**, right-click. Select **Duplicate View**, then click **Duplicate with Detailing**.

8

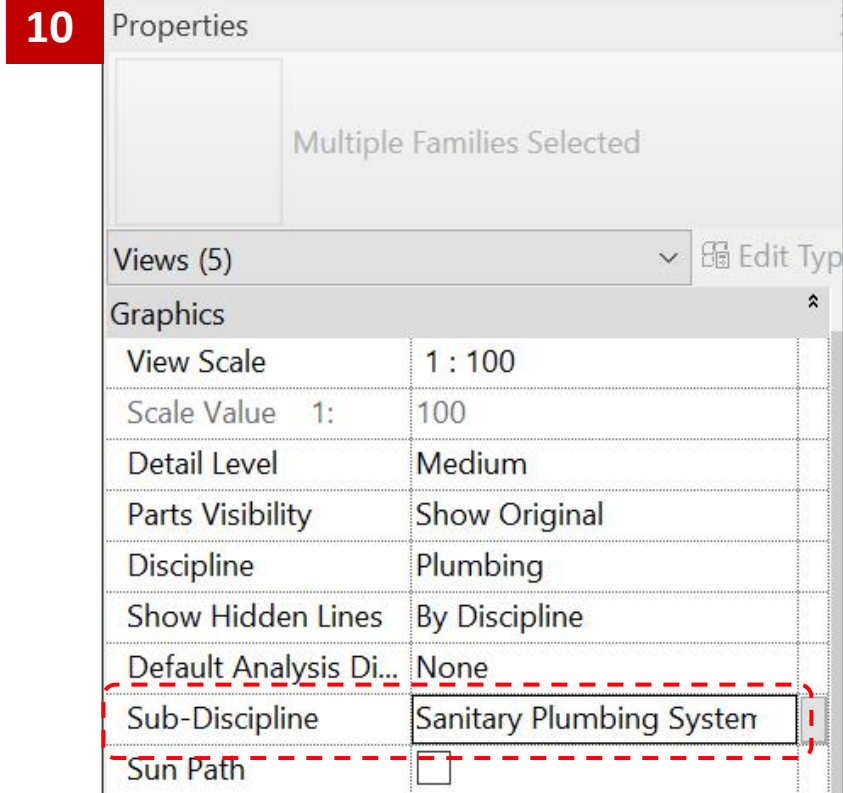


8. Repeat Step 7 for all **Elevation Views** as shown in figure.

PROJECT BROWSER SETUP

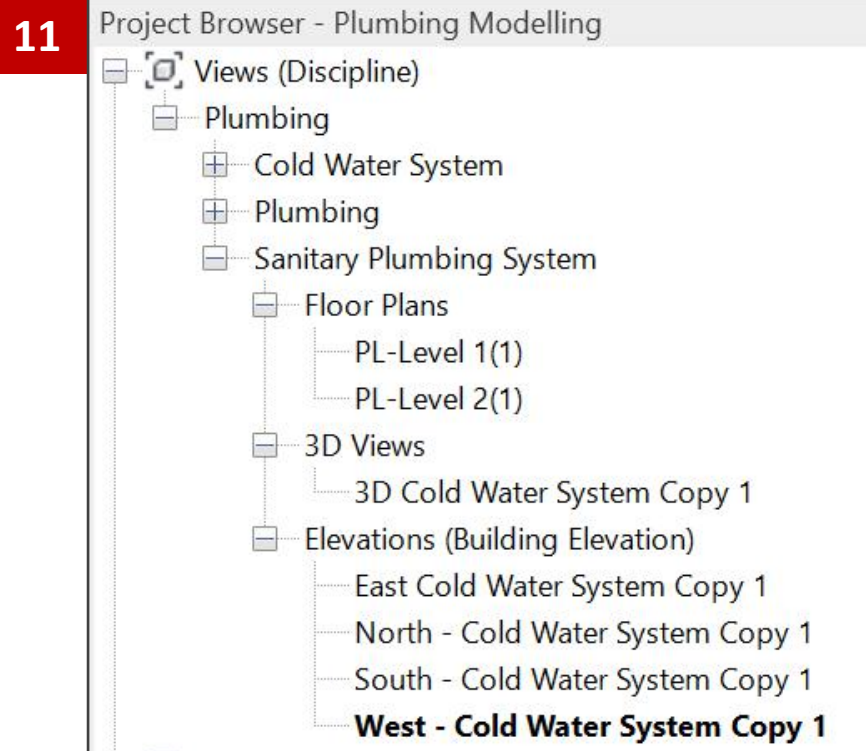


9. Select **3D view** and all **Elevations View** was duplicate as shown in figure.

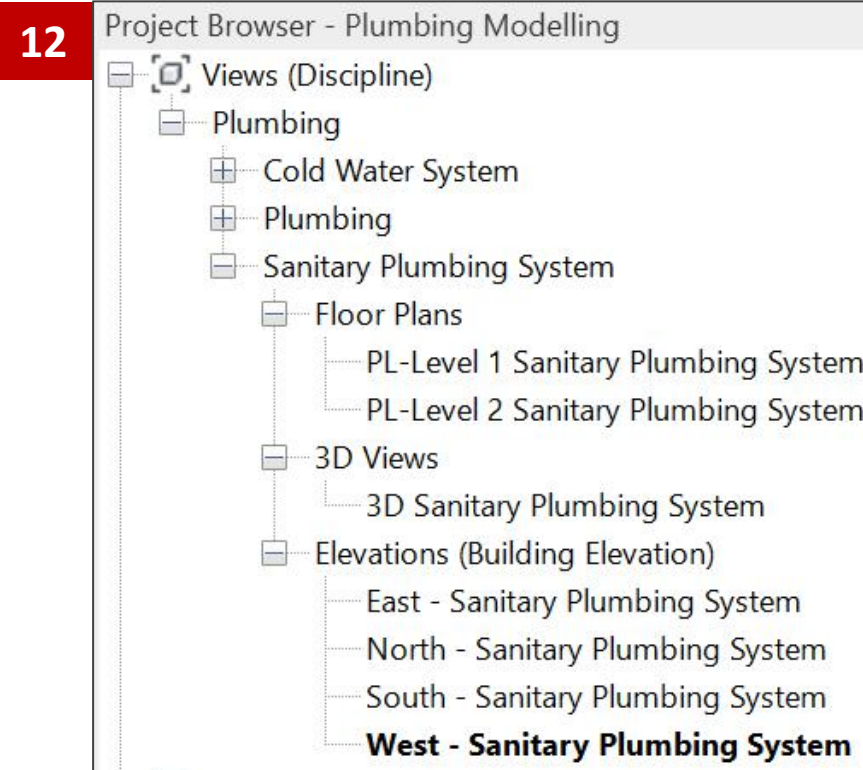


10. In **Properties Palette**, change sub-dicipline to **Sanitary Plumbing System**.

PROJECT BROWSER SETUP



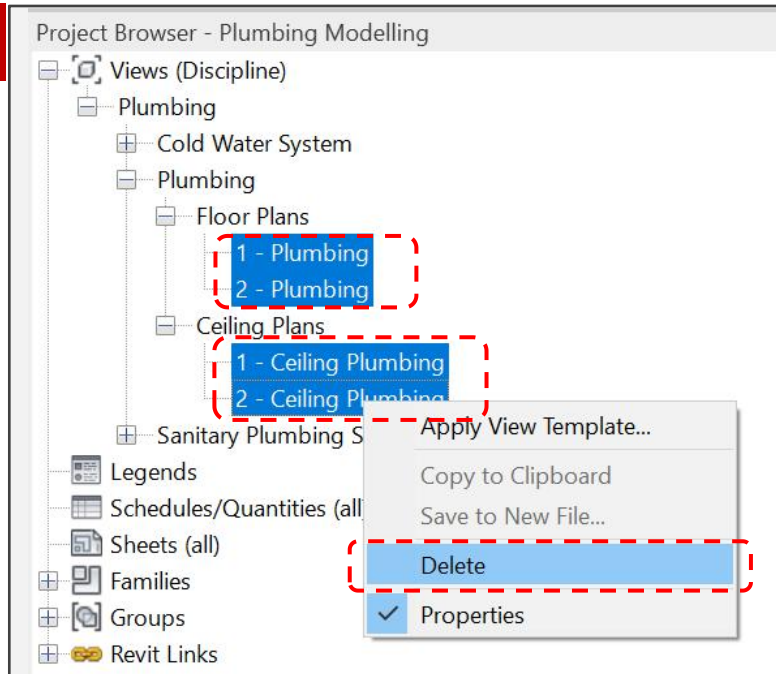
11. Figure show all **view** was manage under sub-dicipline **Sanitary Plumbing System**.



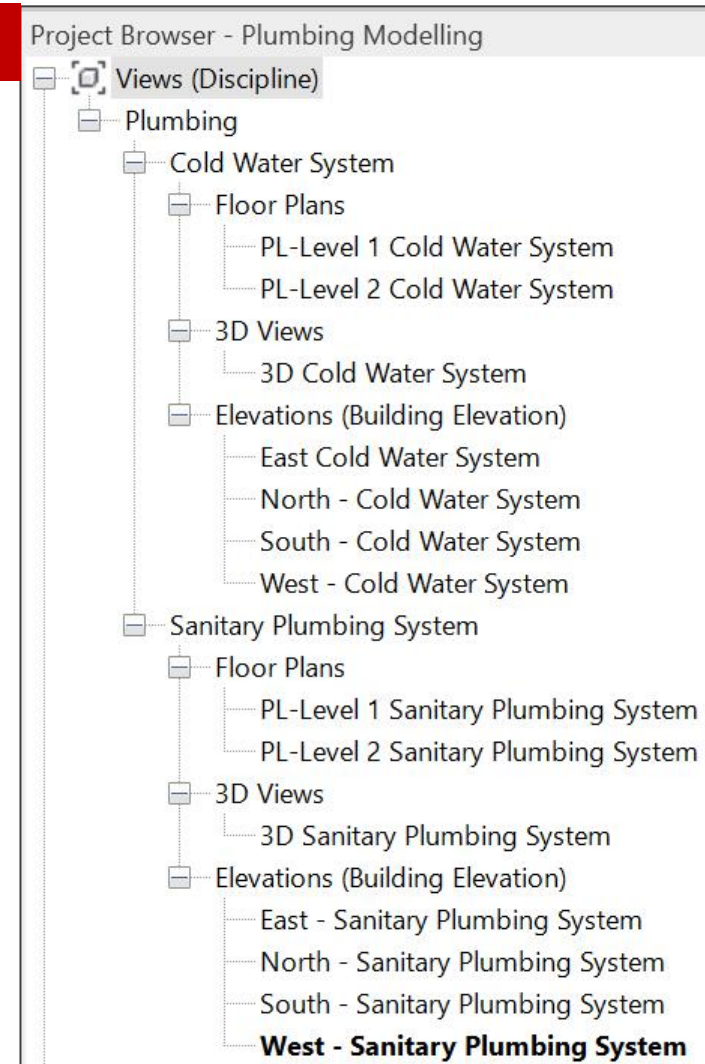
12. **Rename** all the views under **Sanitary Plumbing System** sub-dicipline as shown in figure.

PROJECT BROWSER SETUP

13



14



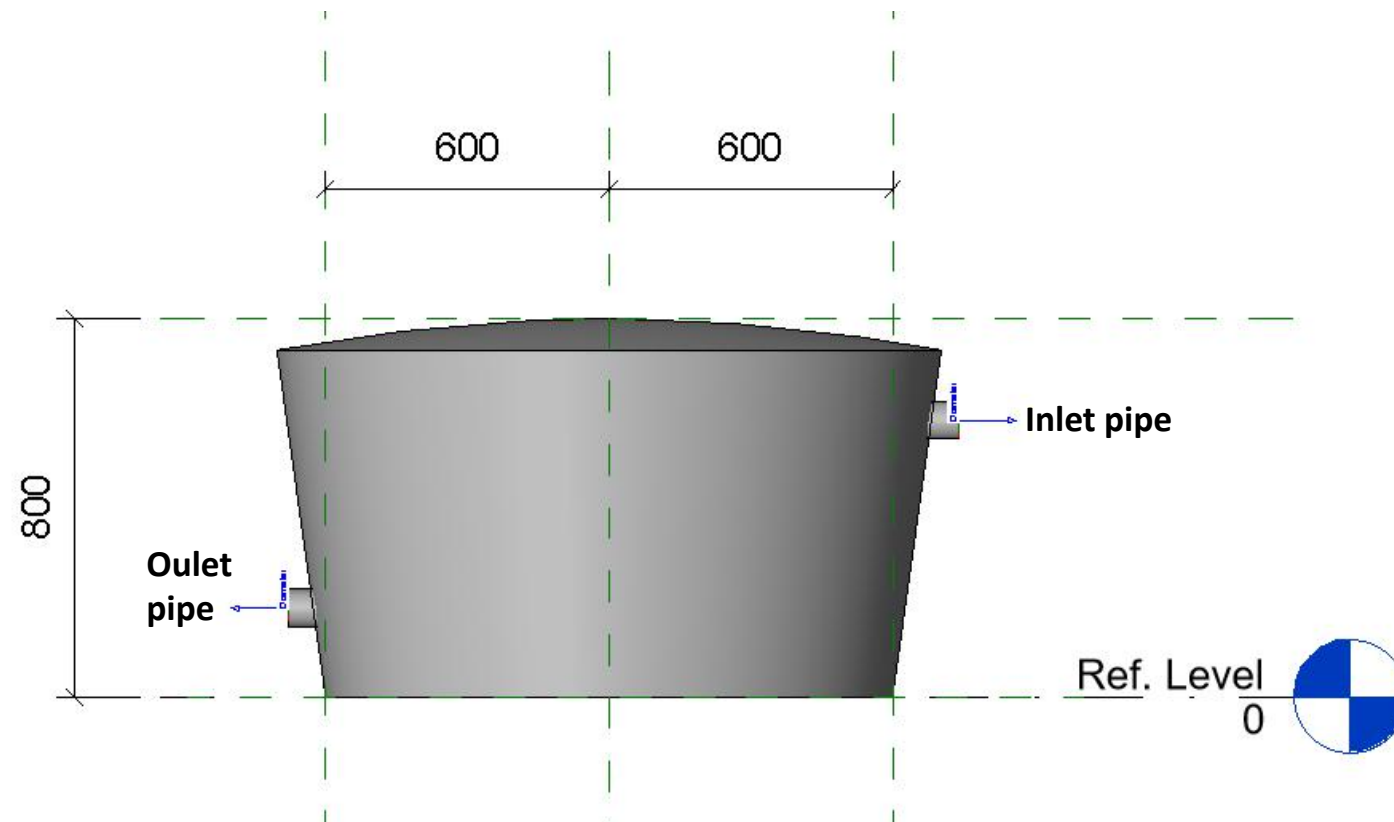
13. Select all view under **default sub-discipline Plumbing** and delete it.

14. Figure show **Final Project Browser** was setup.

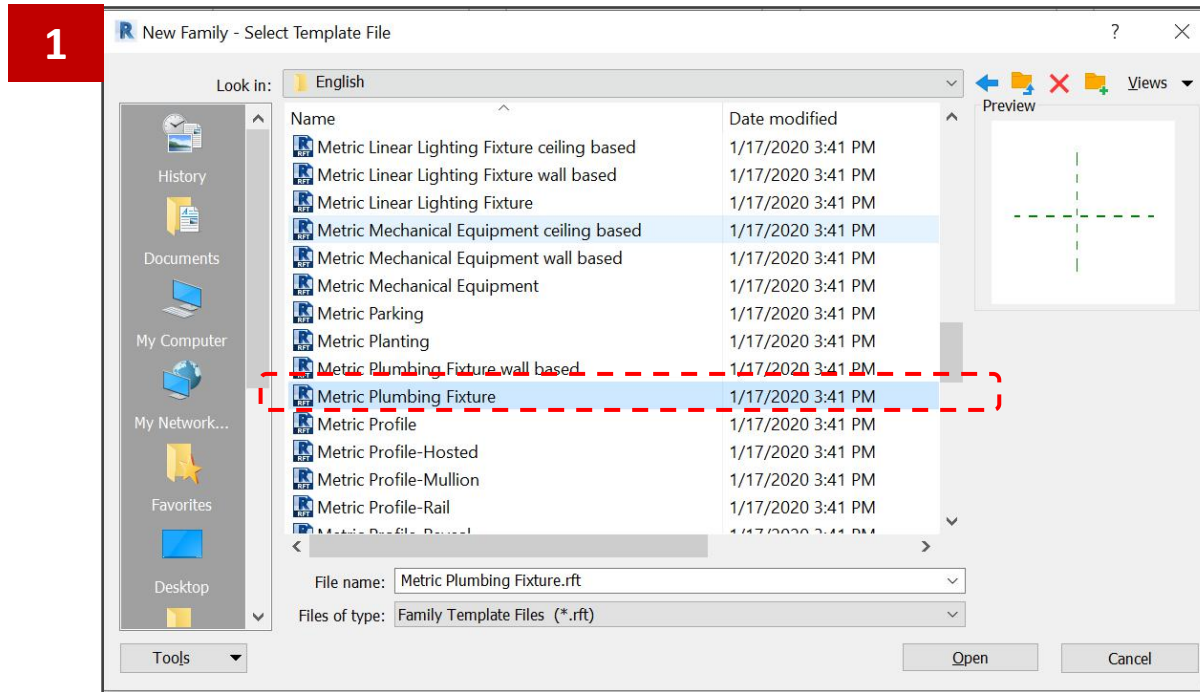
CREATING FAMILY : **Water Tank**

EXERCISE 1: Creating 150 gallon water tank (1200 Diameter x 800 Height)

- Inlet pipe connector : 50mm
- Outlet pipe connector : 32mm

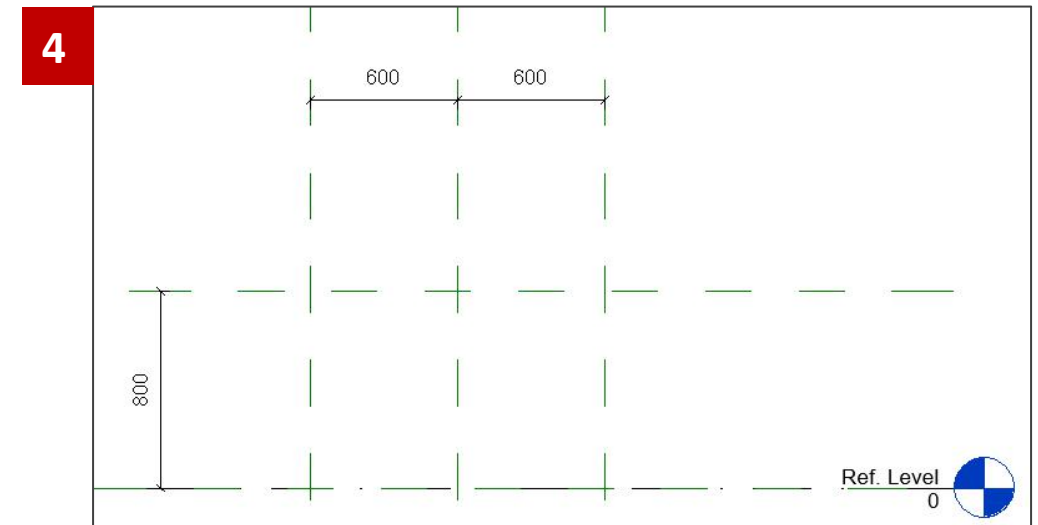
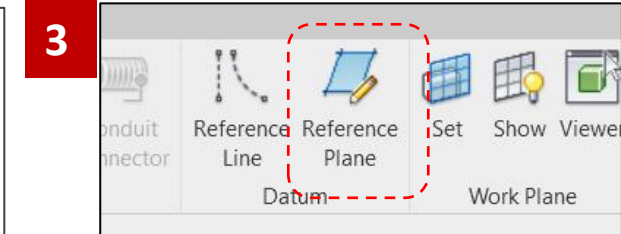
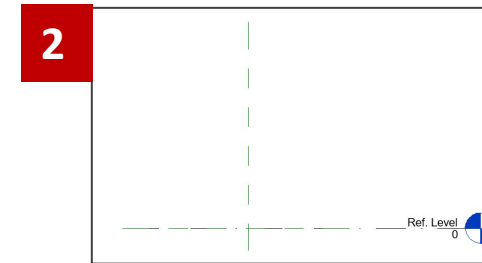


CREATING FAMILY : Water Tank



STEP:

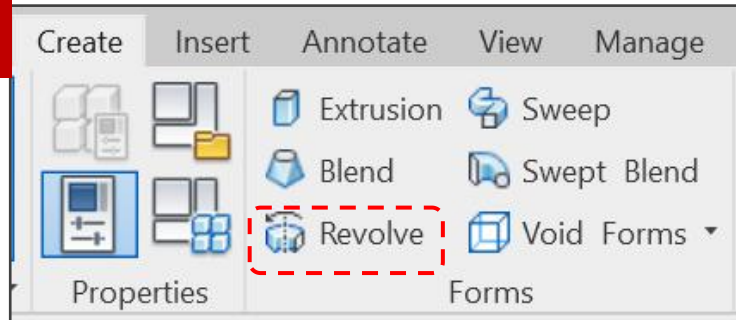
1. Click the **Application Menu** and select “**New : Family**”. Select ‘**Metric Plumbing Fixtures**’ and click **Open**.
2. The diagram show the default **Reference Plane** in drawing area. Change to **Elevation Plan**. E.g **Front**.



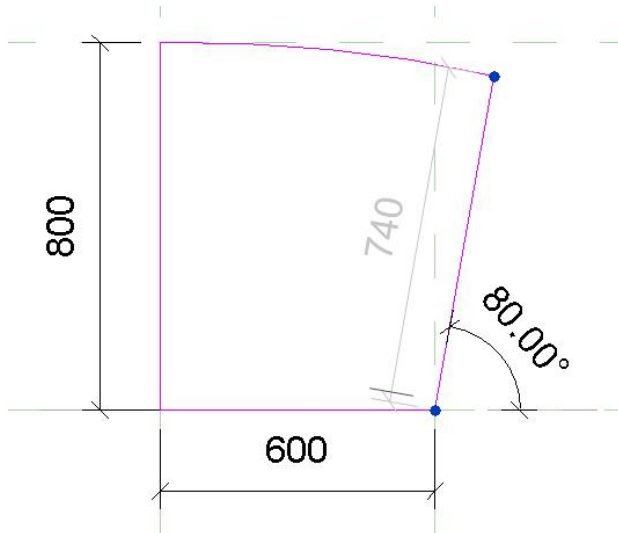
3. On **Create Tab**, click the “**Reference Plane**”.
4. Draw the **Reference Plane** as shown in diagram. Draw the **dimension**.

CREATING FAMILY : Water Tank

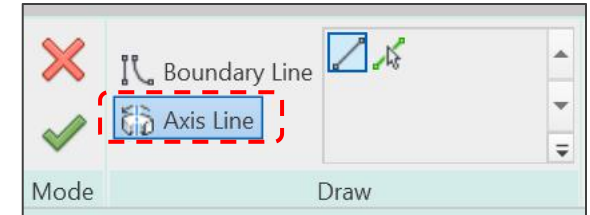
5



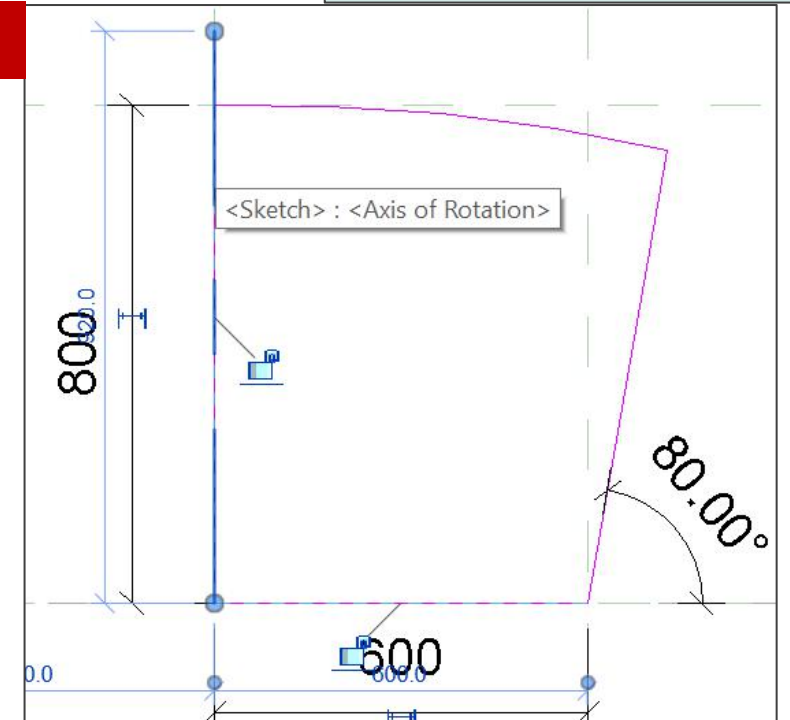
5. By using **Revolve Tool** in **Create** Tab, sketch layout of water tank as shown in figure below.



6. Then click **Axis line Tool**. Create axis line at the center of vertical reference line as shown.

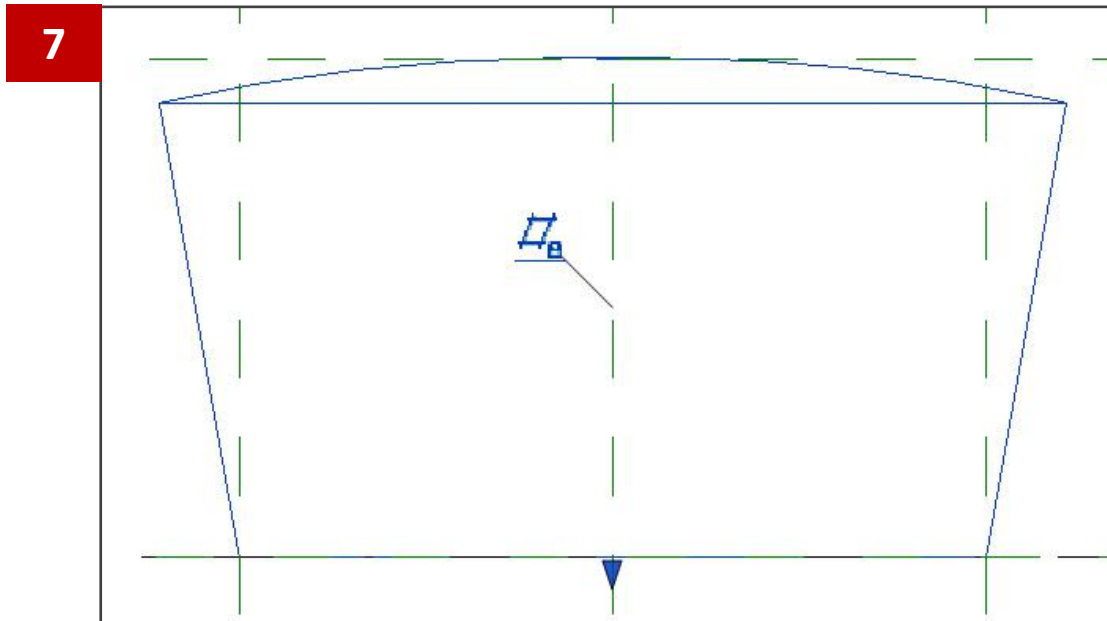


6

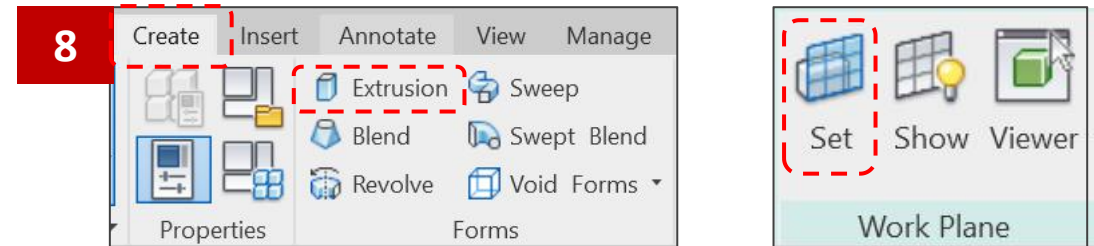


CREATING FAMILY : **Water Tank**

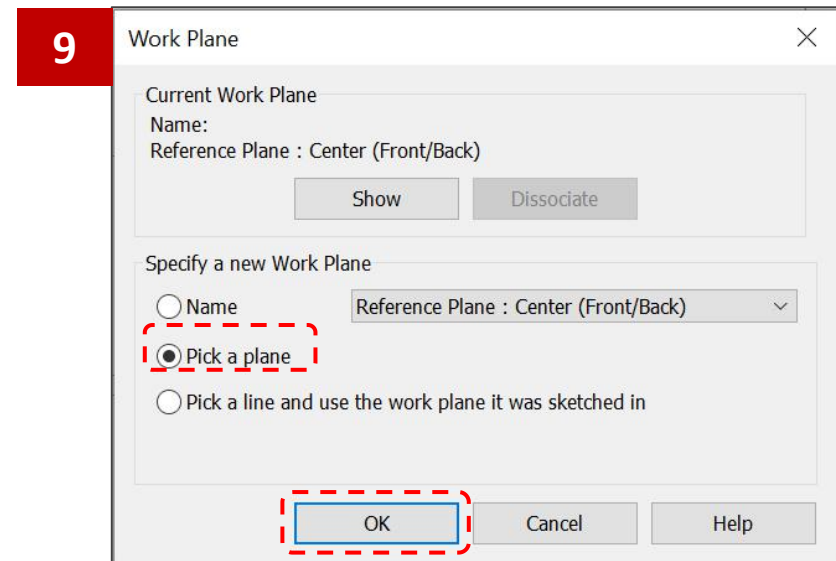
7. Then click **Finish Edit Mode**.



8. Go to **Create Tab**, click **Extrusion Tool**. Then click **Set** in **Work Plane Panel**.

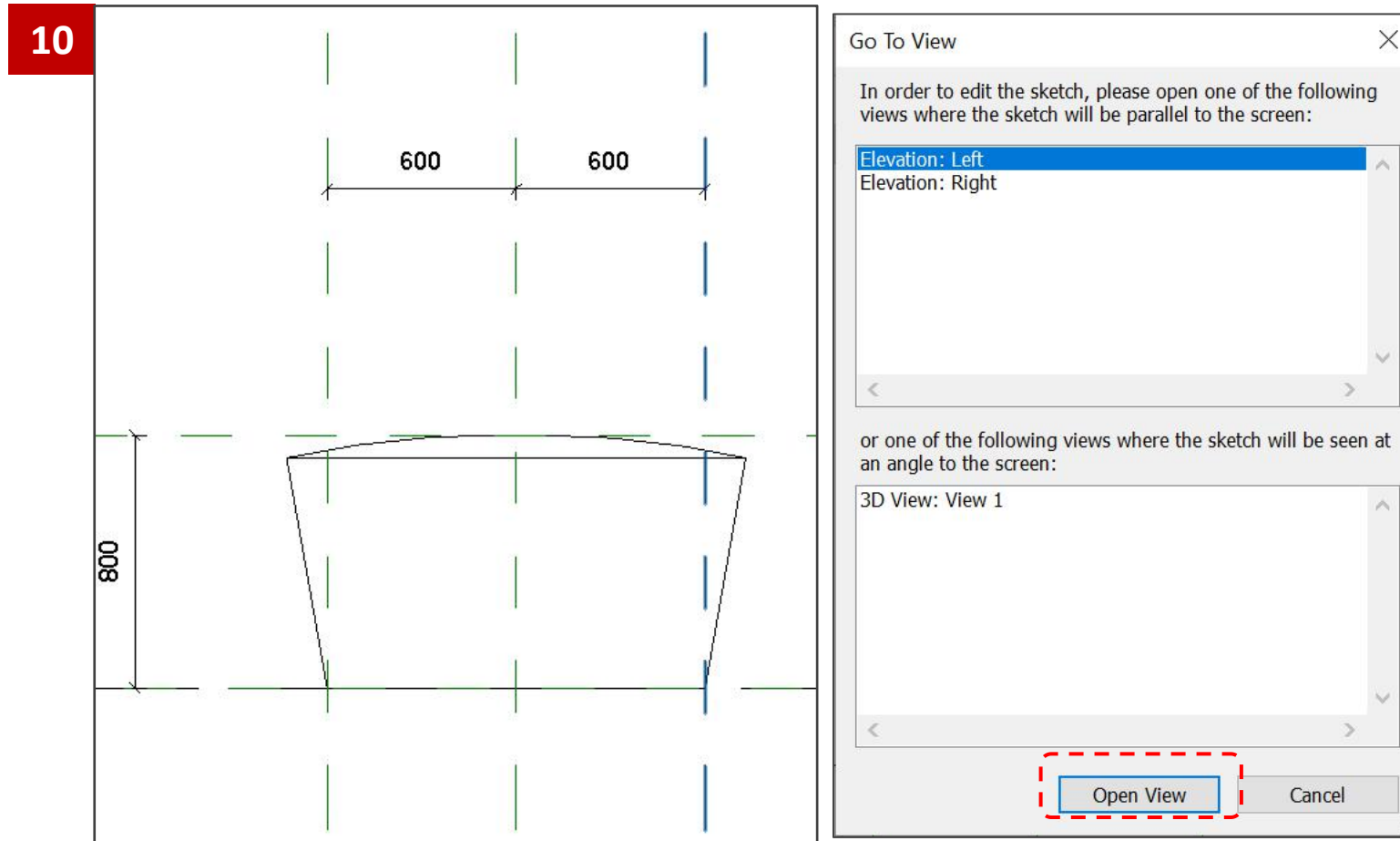


9. Choose **Pick a plane**. Then click **OK**.

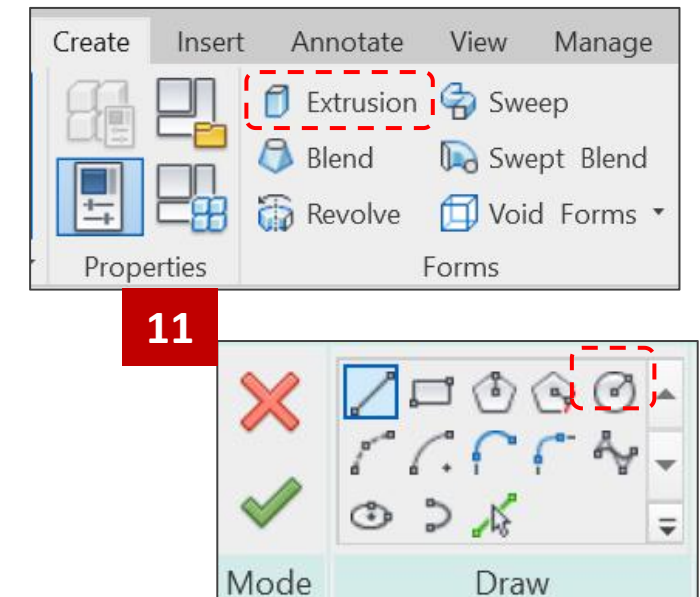


CREATING FAMILY : **Water Tank**

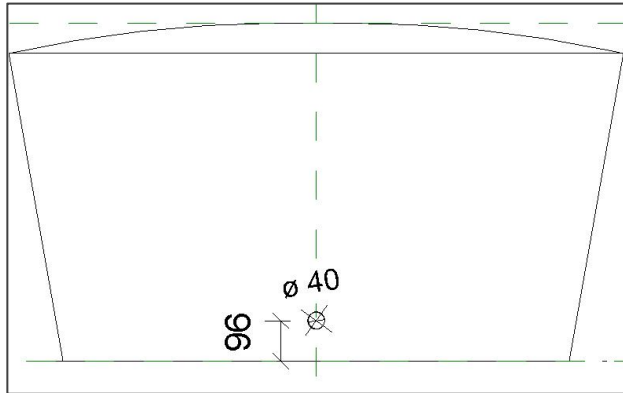
10. Select reference plan was needed. Then **Open** any view was suggested.



11. Click **Extrusion Tool**. Select **Circle tool** in **Draw Panel**.



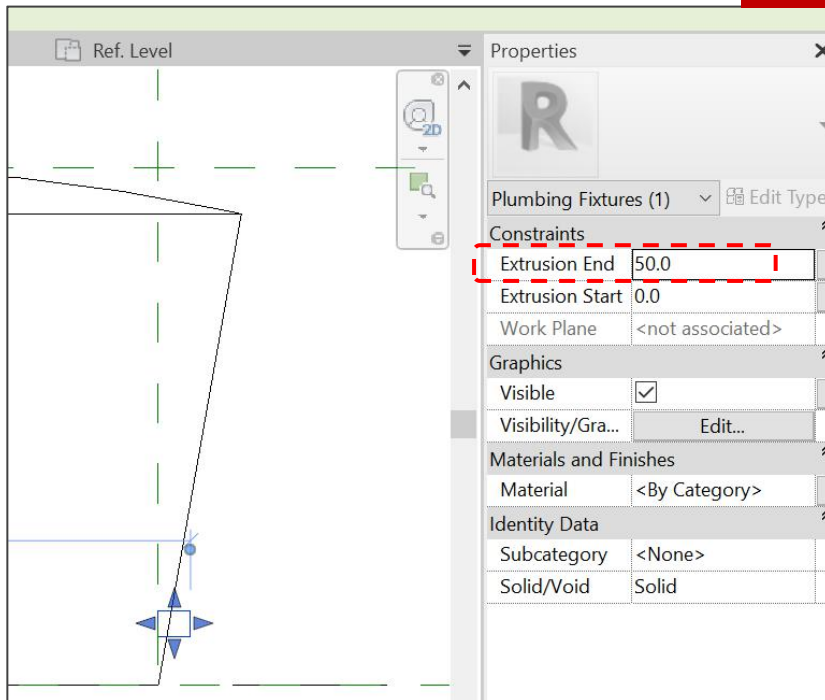
CREATING FAMILY : Water Tank



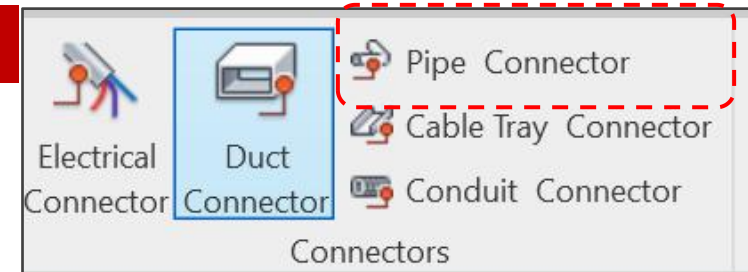
12

12. Create Outlet piping with draw **40mm diameter circle** at selected plane. Then click **Finish Mode**. Click again to the outlet pipe and change **Extrusion End** to **50mm** in **properties palette**.

13. After finish create piping at water tank, open **3D view plan**. Then, go to **Create Tab**. Select **Pipe Connector** under **Connectors Panel**.

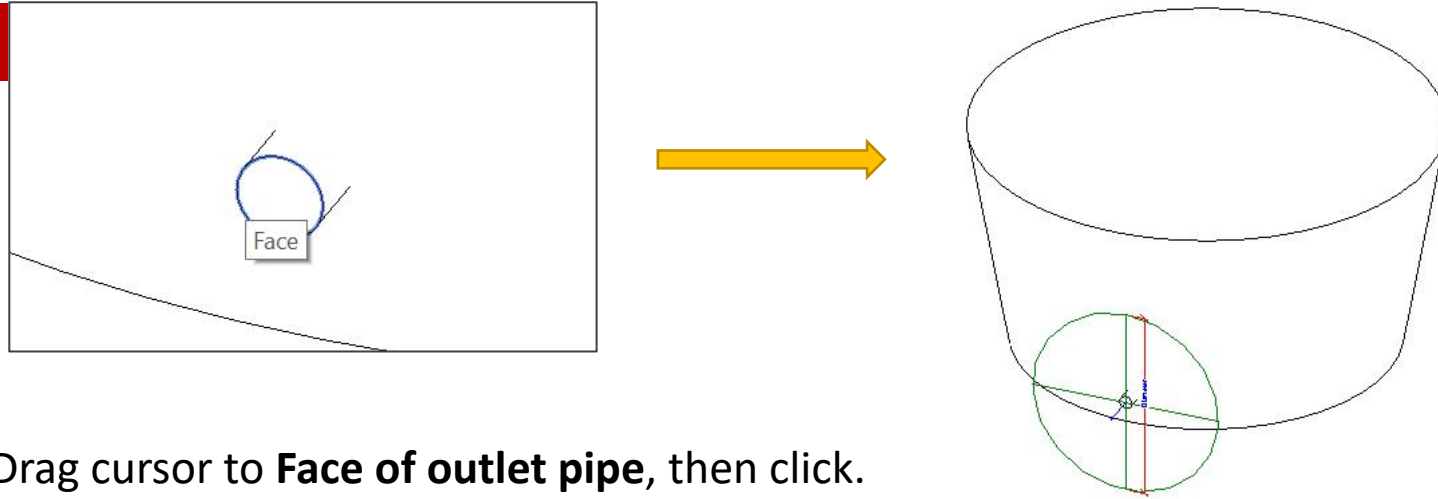


13



CREATING FAMILY : Water Tank

14

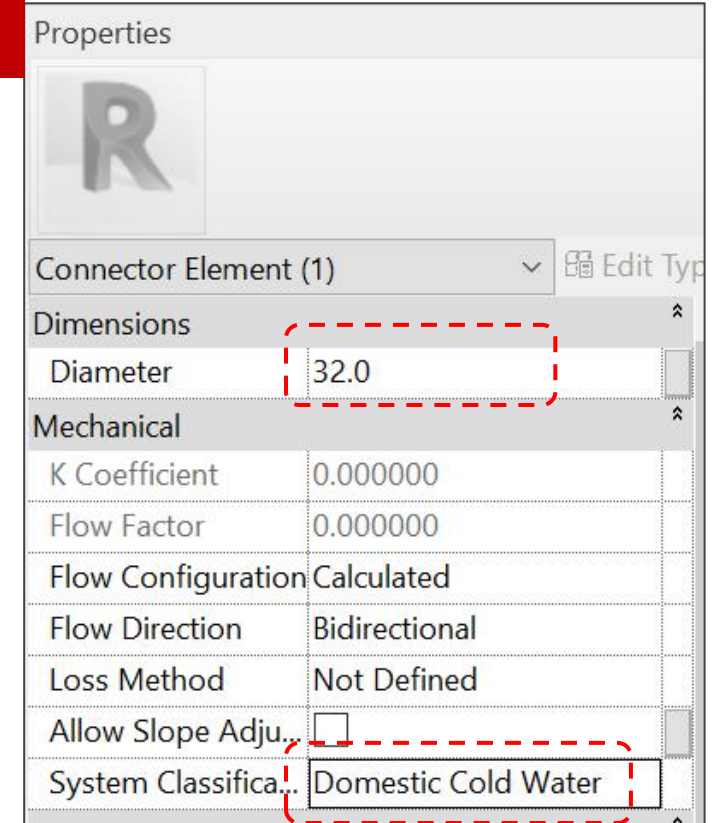


14. Drag cursor to **Face of outlet pipe**, then click.
After that, press **ESC**.

15. Click connector was created, than change the **Diameter** in Properties Palette as **32mm** and under **System Classification** change to **Domestic Cold Water**.

16. Repeat **step 7** until **15** to create **Inlet pipe** and **connector**.

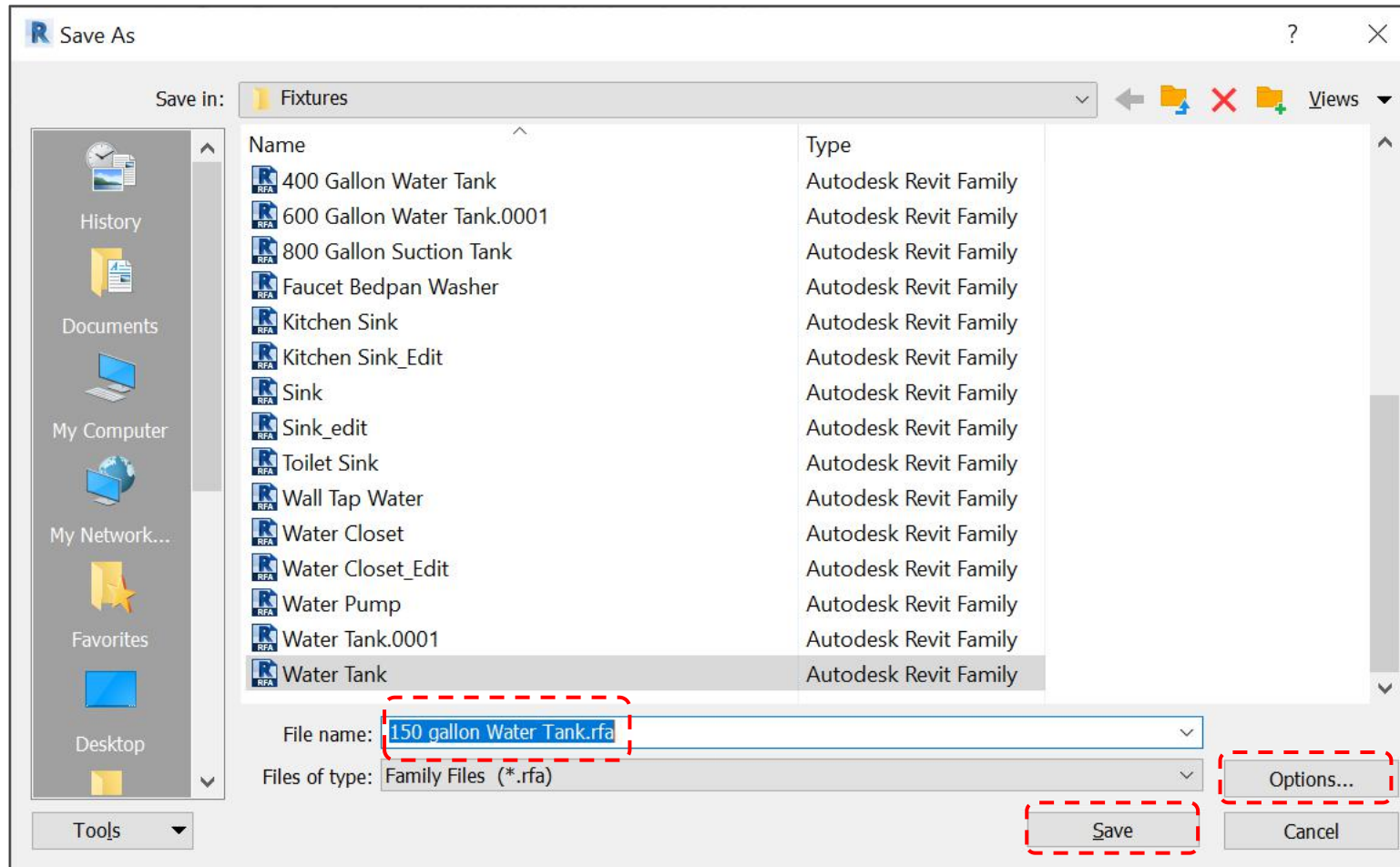
15



Note: For Inlet pipe...

Extrusion End	-150.0
Extrusion Start	-60.0

CREATING FAMILY : Water Tank



Backup = 1

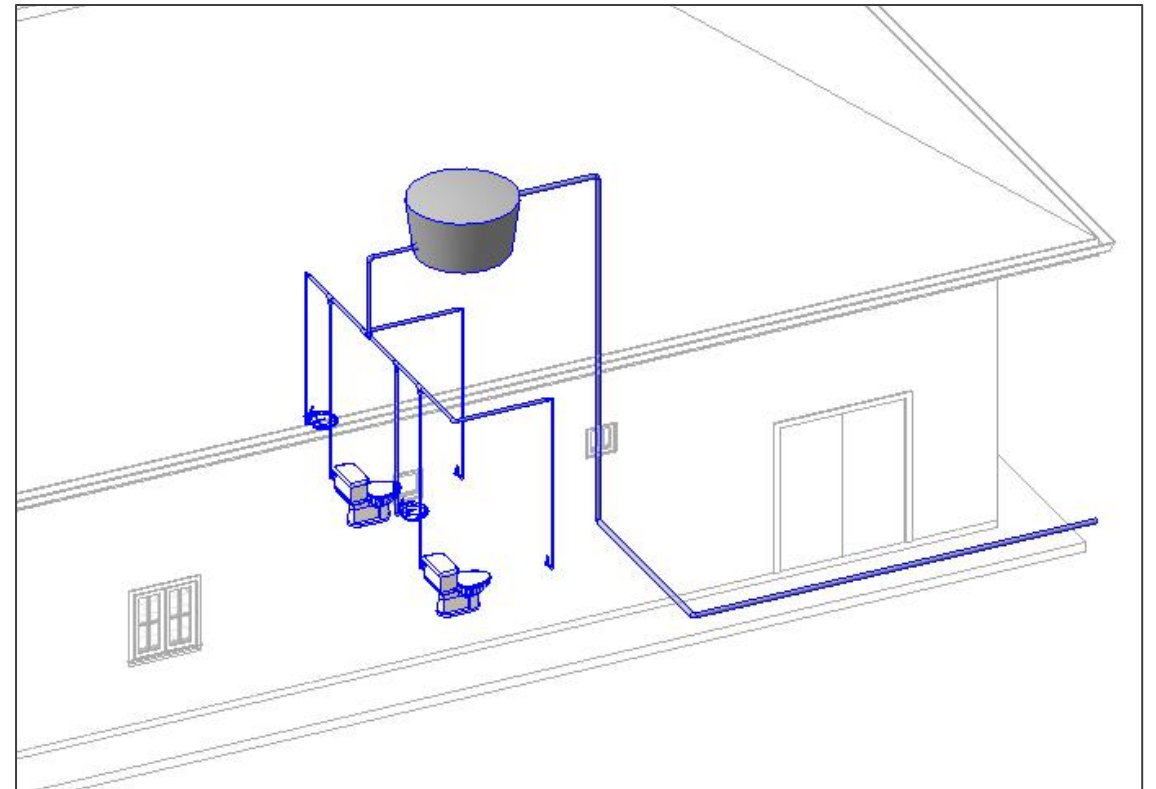
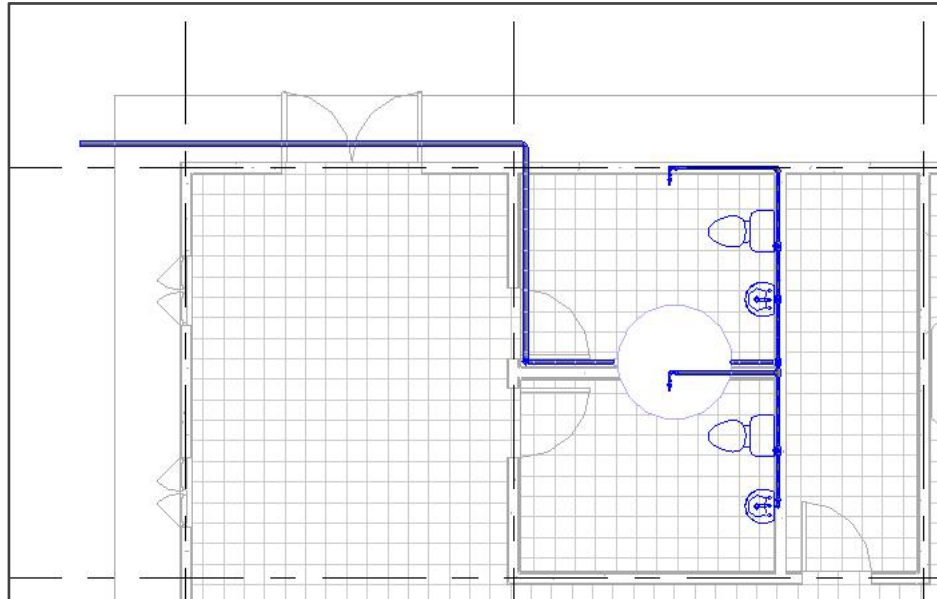
17. Click the **Application Menu** and **"Save As"** followed by **"Family Files"**. Save the file name as **"150 gallon Water Tank"**.

PLACING & ROUTING COMPONENTS (PIPING)

EXERCISE 2 : Placing and routing Cold Water System components (piping).

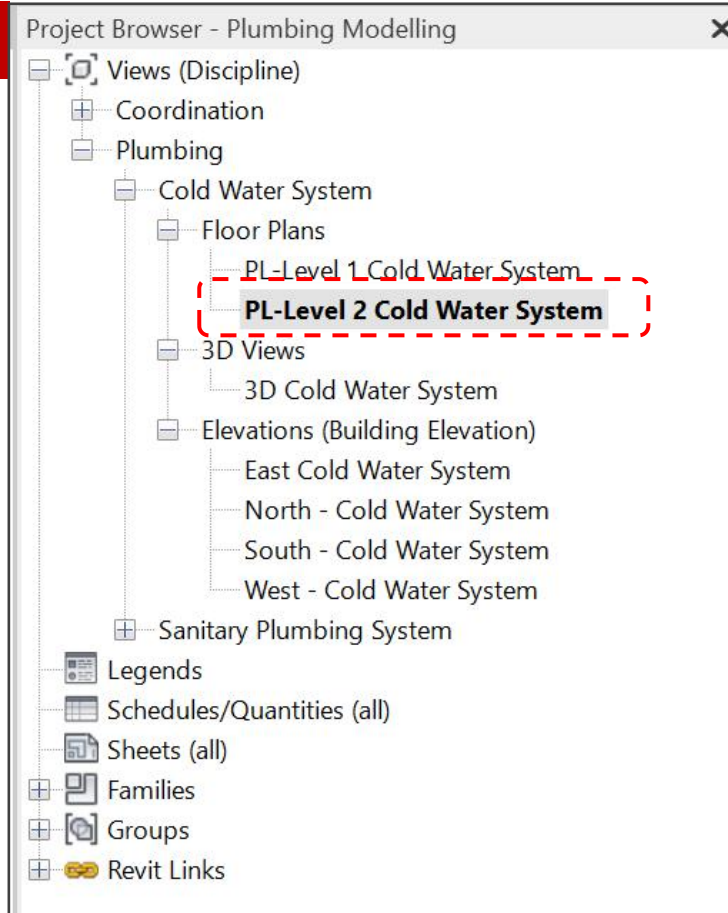
E.g:

- 150 gallon water tank : 1 unit
- Water Closet : 2 units
- Wash Basin : 2 units
- Water Tap : 2 units



PLACING & ROUTING COMPONENTS (PIPING)

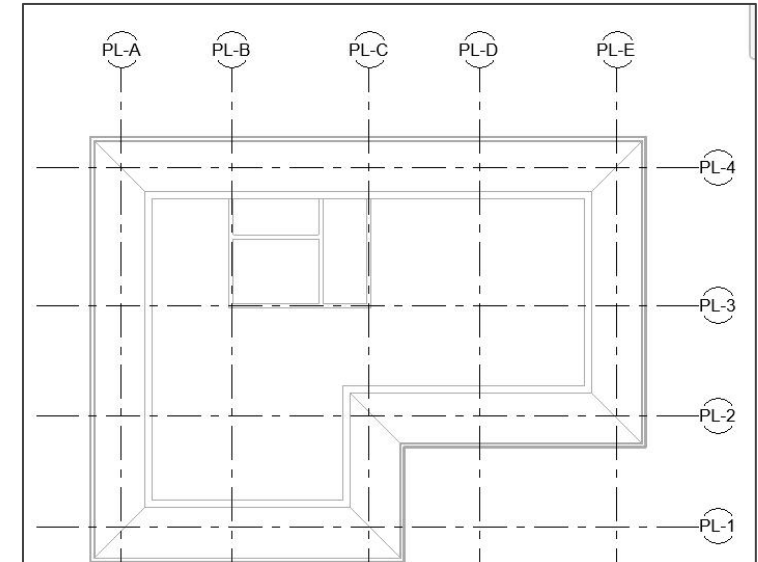
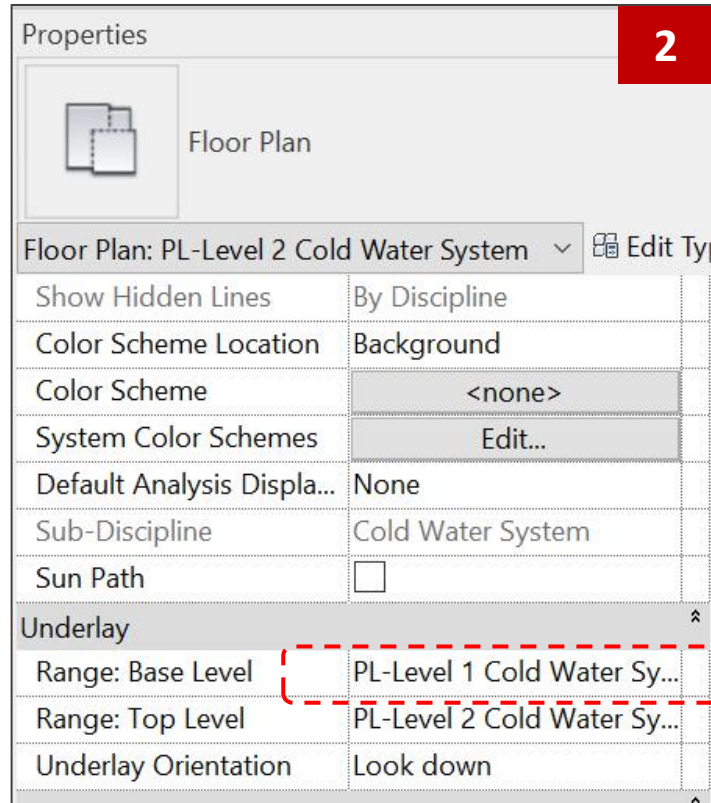
1



STEPS for Placing:

1. Go to **Project Browser**, double-click **PL-Level 2 Cold Water System**
2. On **Properties Palette**, under **Underlay** change **Base Level** to **PL-Level 1 Cold Water System**

2



PLACING & ROUTING COMPONENTS (PIPING)

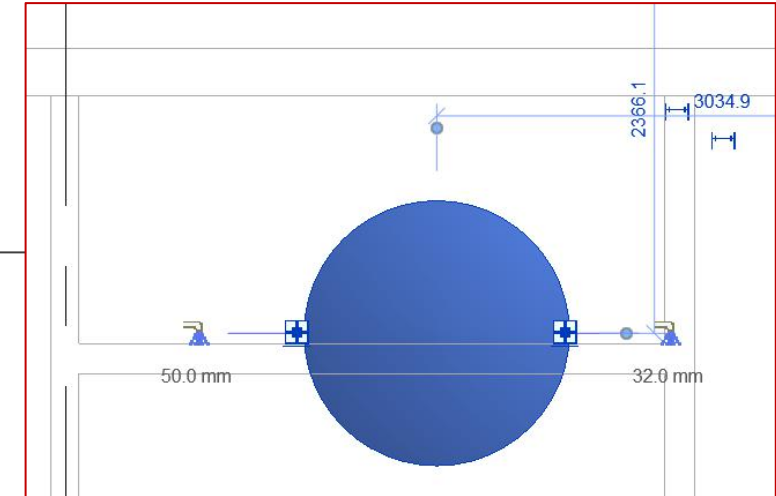
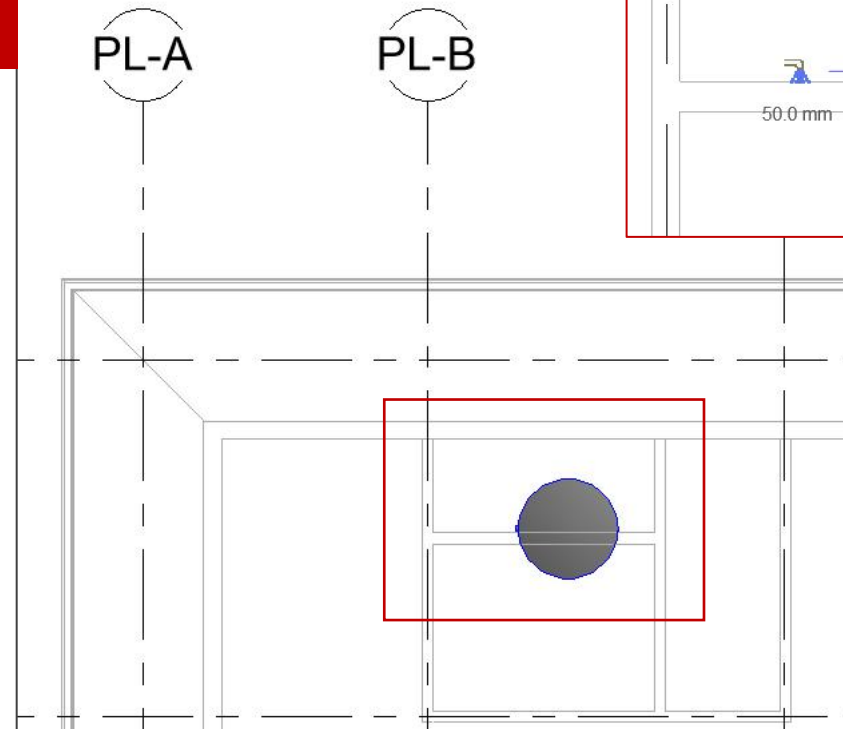
3



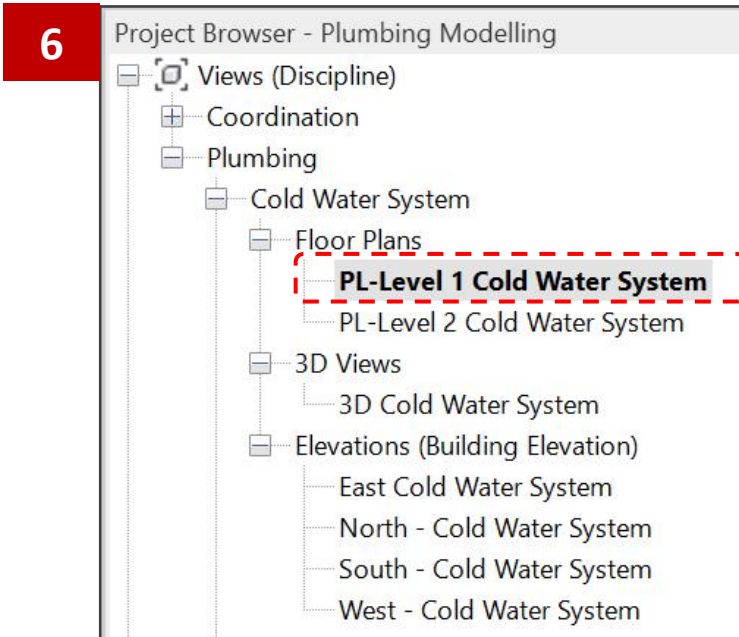
3. Go to **System Tab**, click **Plumbing Fixture**.
4. On Properties Palette, choose **150 gallon water tank**
5. Then placing a **150 gallon water tank** as shown in figure.

Note: Water tank location can be change, but must be consider appropriate condition for piping routing.

5



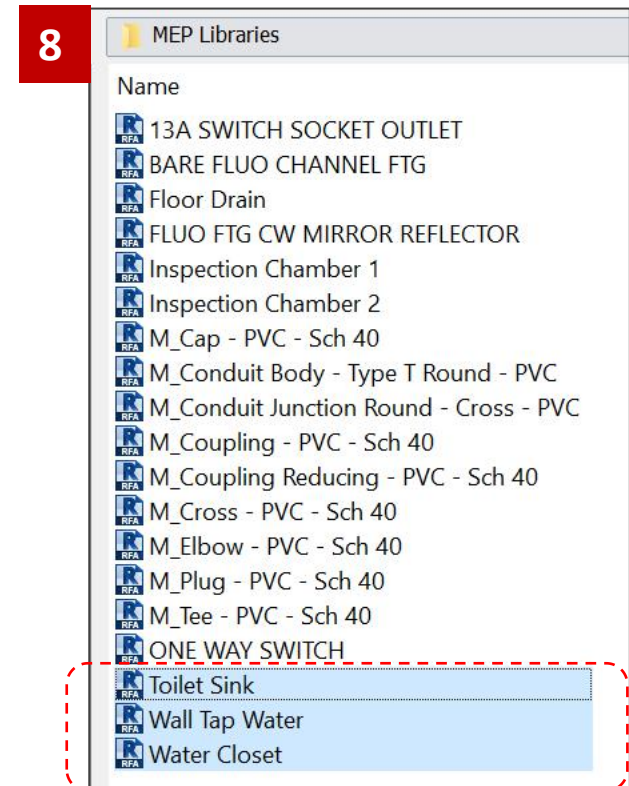
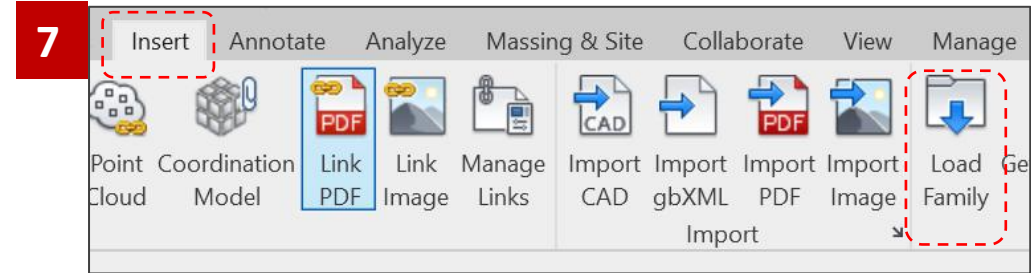
PLACING & ROUTING COMPONENTS (PIPING)



6. Go to **Project Browser**, double-click **PL-Level 1 Cold Water System**

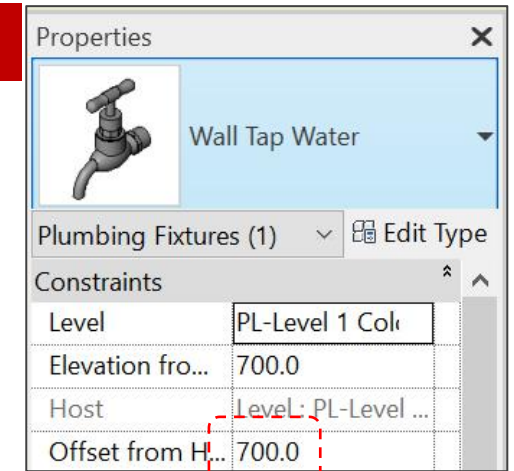
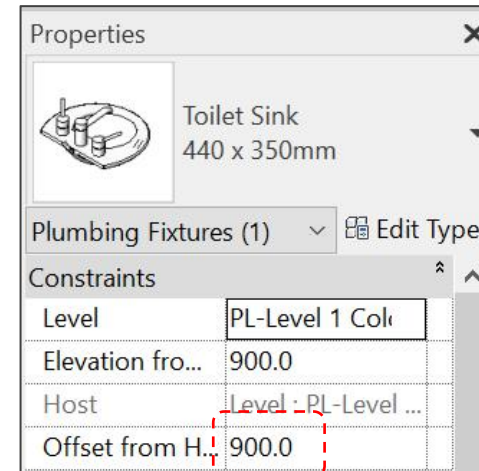
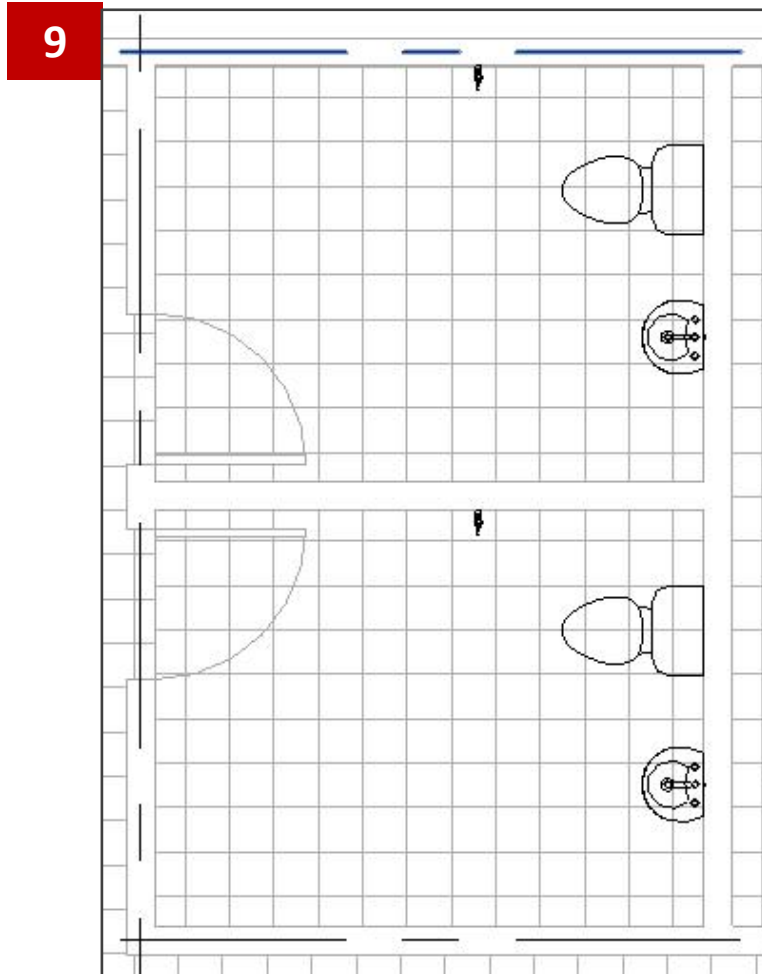
7. Go to **Insert** tab, at **Load from Library** panel, click **Load Family**.

8. Select Revit Families file **Toilet Sink**, **Wall Tap Water** and **Water Closet** from **MEP libraries** folder given.

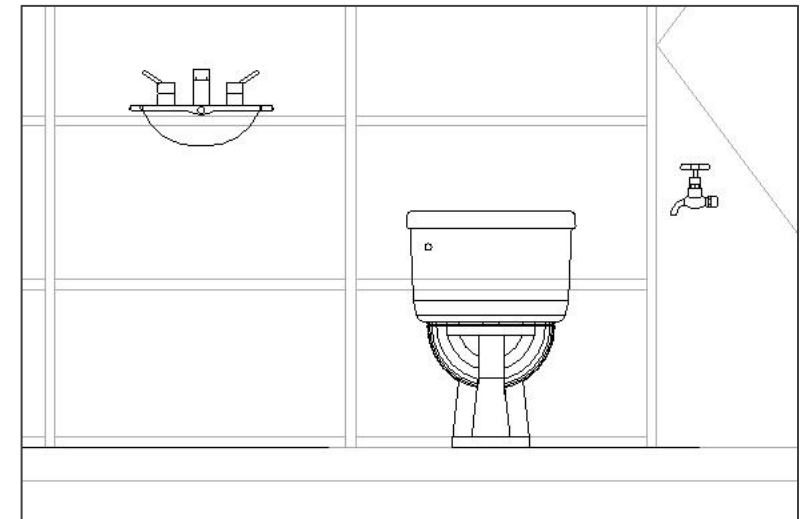


PLACING & ROUTING COMPONENTS (PIPING)

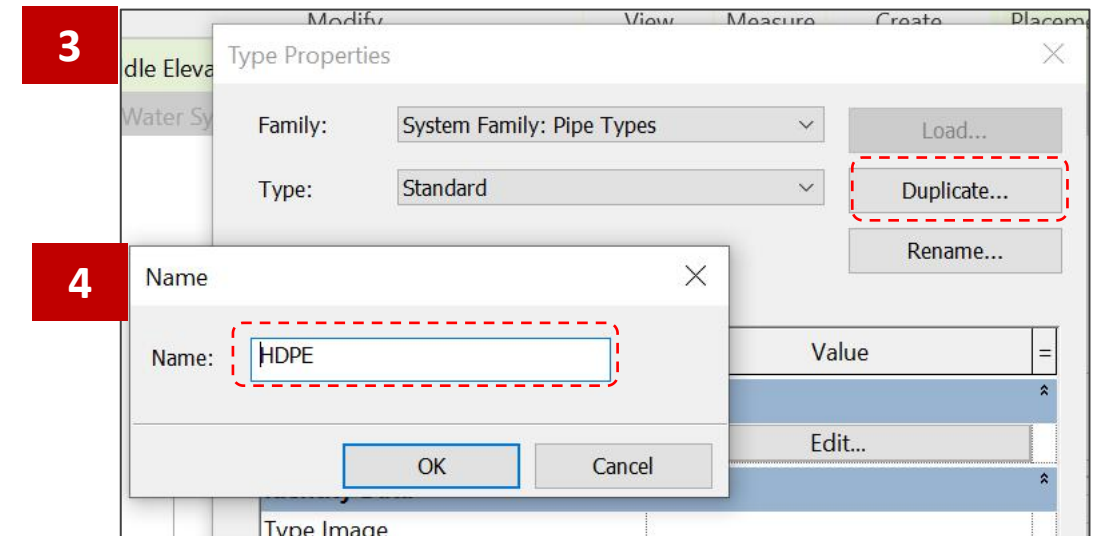
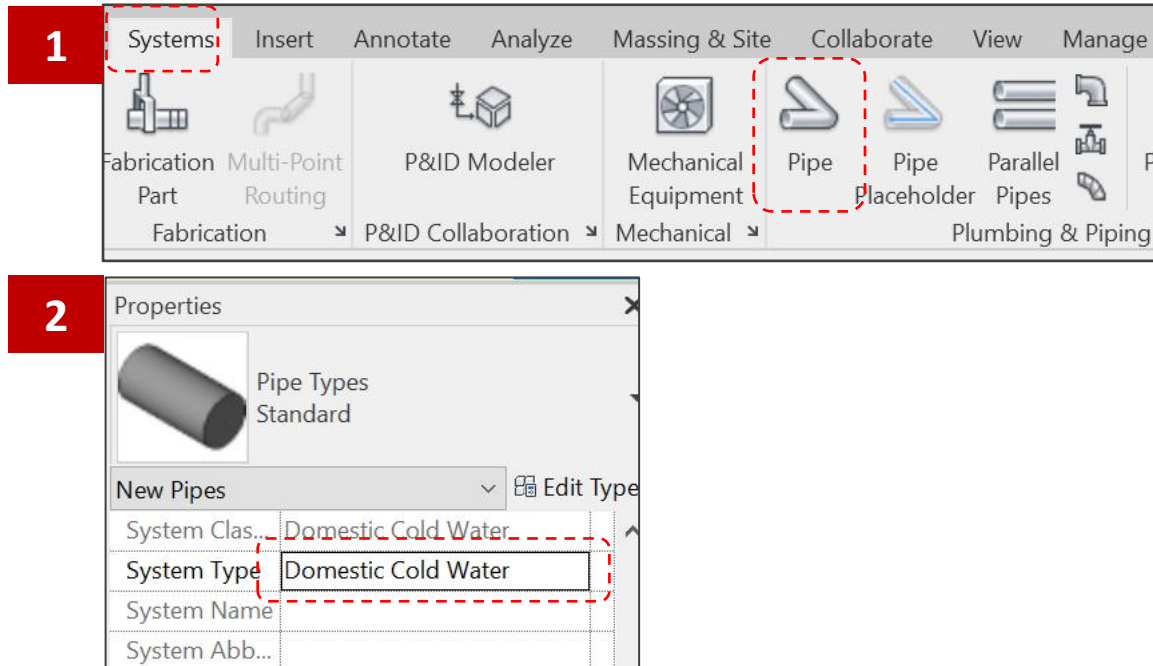
9. Placing all components as shown in figure.



10. Set offset for Toilet Sink and Wall Tap Water as shown in figure.



PLACING & ROUTING COMPONENTS (PIPING)

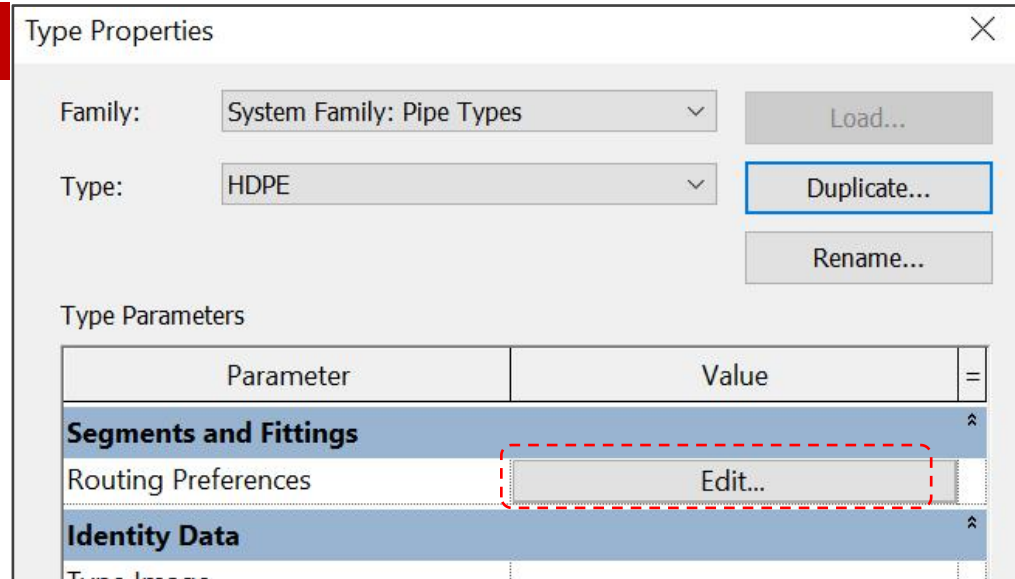


STEPS for Create new Pipe Segment (HDPE):

1. Select **PL-Level 1 Cold Water System** floor plan
 - On **Systems** tab, click **Pipe**
2. On **Properties** Palette, change the **System Type** to **Domestic Cold Water**
 - click **Edit Type**.
3. On **Type Properties** dialog box, create new type by clicking **Duplicate**
4. On **Name** dialog box, rename the new pipe type as '**HDPE**'. Then, click **OK**.

PLACING & ROUTING COMPONENTS (PIPING)

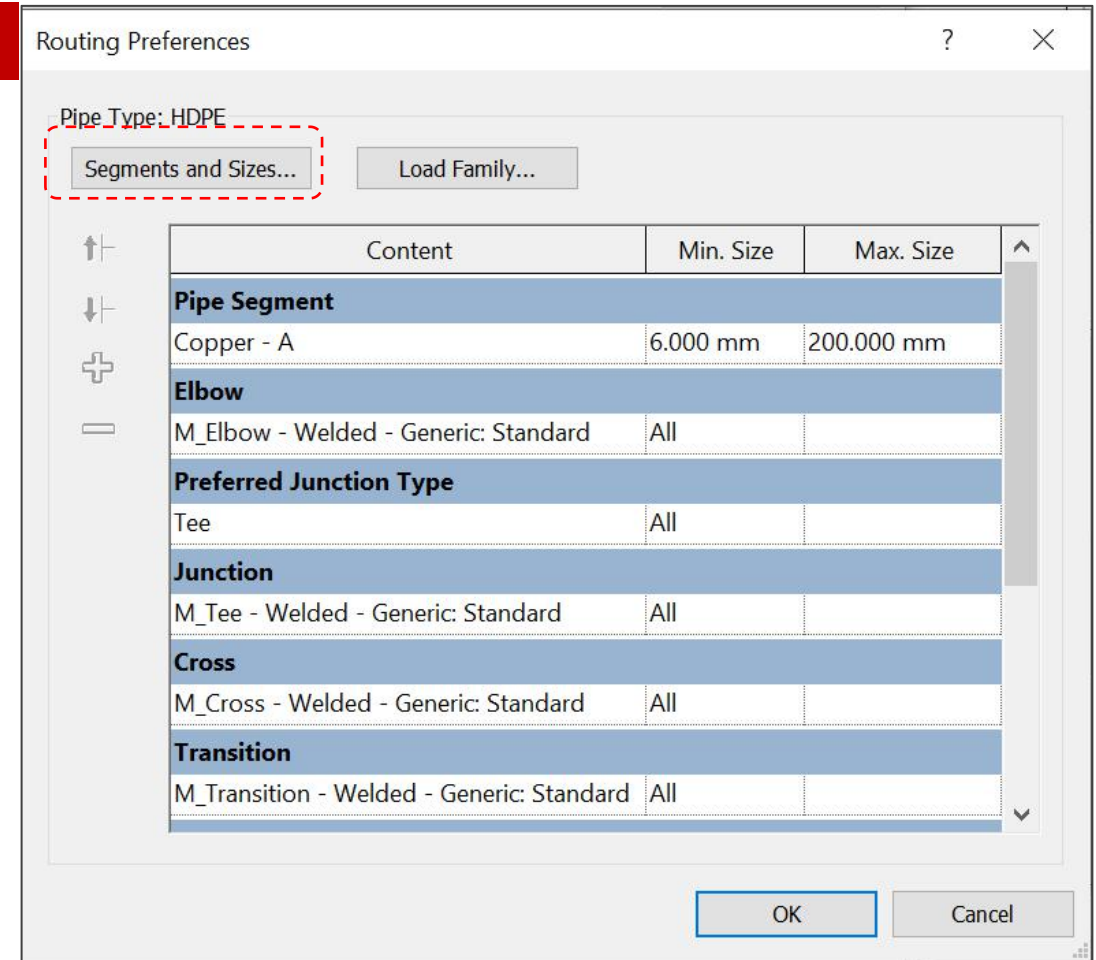
5



5. On **Routing Preferences**, click **Edit**.

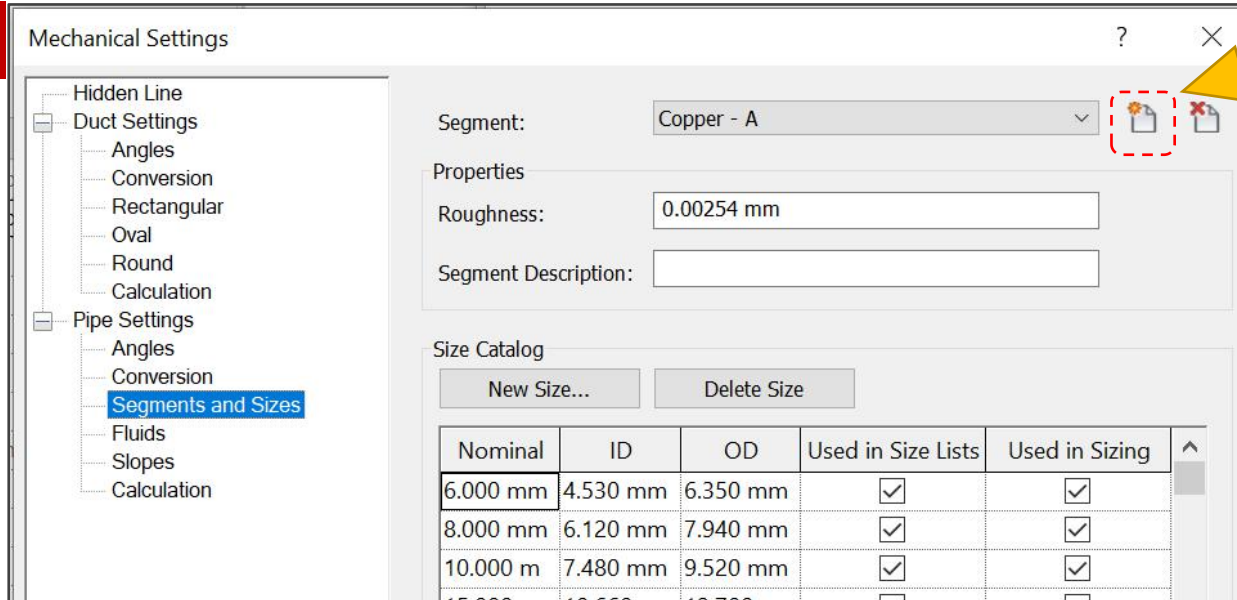
6. In **Routing Preferences** dialog box, click **Segments and Sizes..**

6



PLACING & ROUTING COMPONENTS (PIPING)

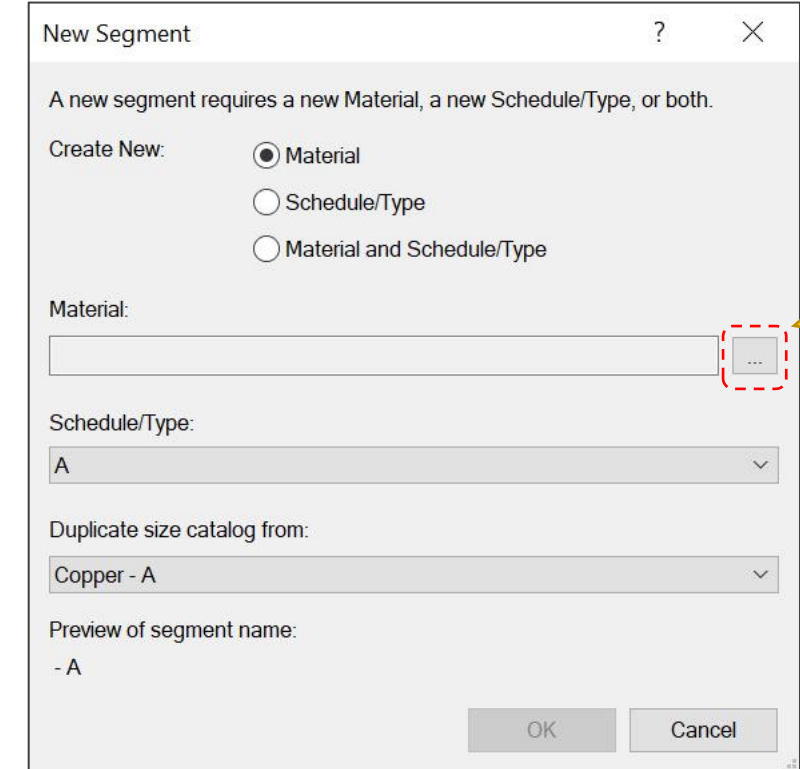
7



7. Under **Mechanical Settings** dialog box, click **Create New Pipe Segment** as marked in figure.

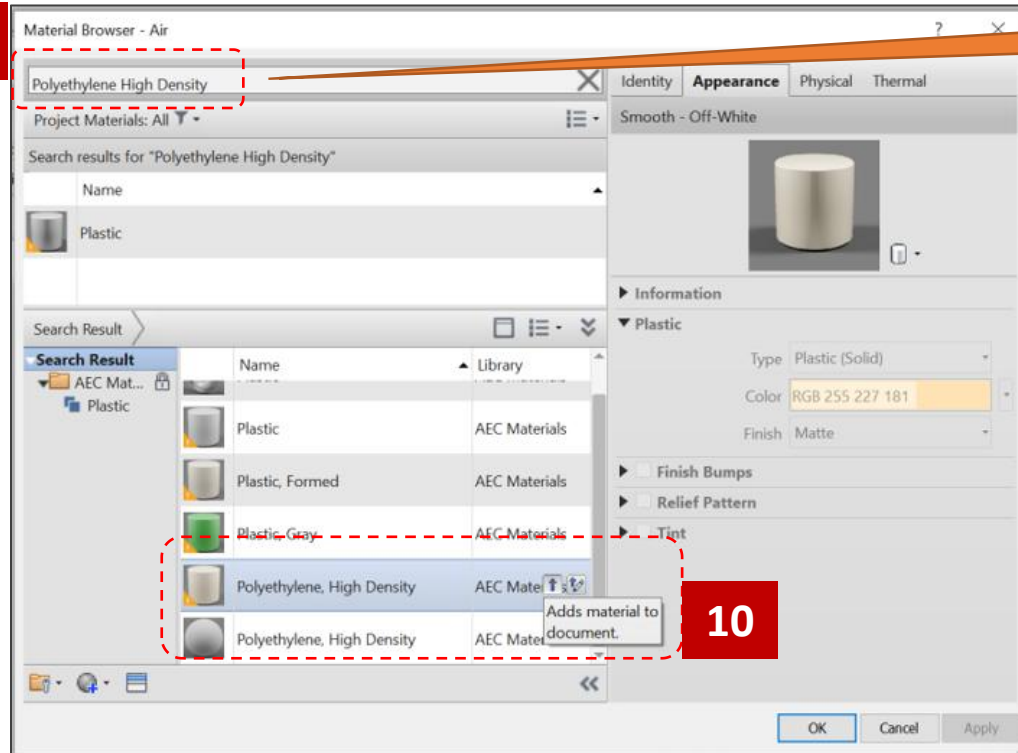
8. On **New Segment** dialog box, under Material category, click add material for the new pipe segment by clicking the **ellipsis button** as marked in figure.

8



PLACING & ROUTING COMPONENTS (PIPING)

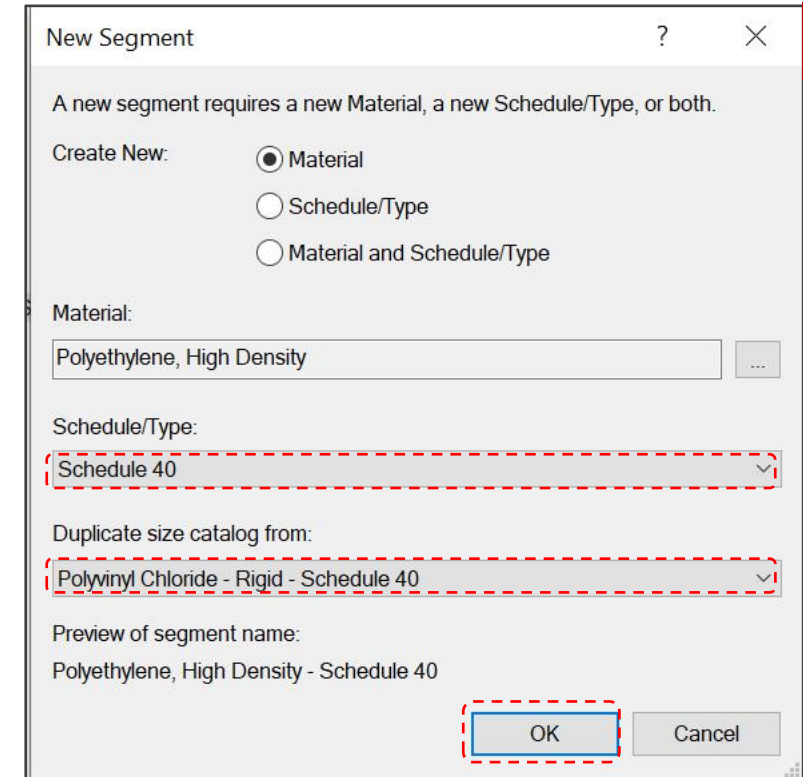
9



Typing here

9. On **Material Browser** dialog box, **New Segment** dialog box, search for **Polyethylene, High Density (HDPE)** material by typing the query into the search box.
10. On library tree, click **Polyethylene High Density**, then click **Adds material to document** button. Click **OK**.
- Then **OK**.

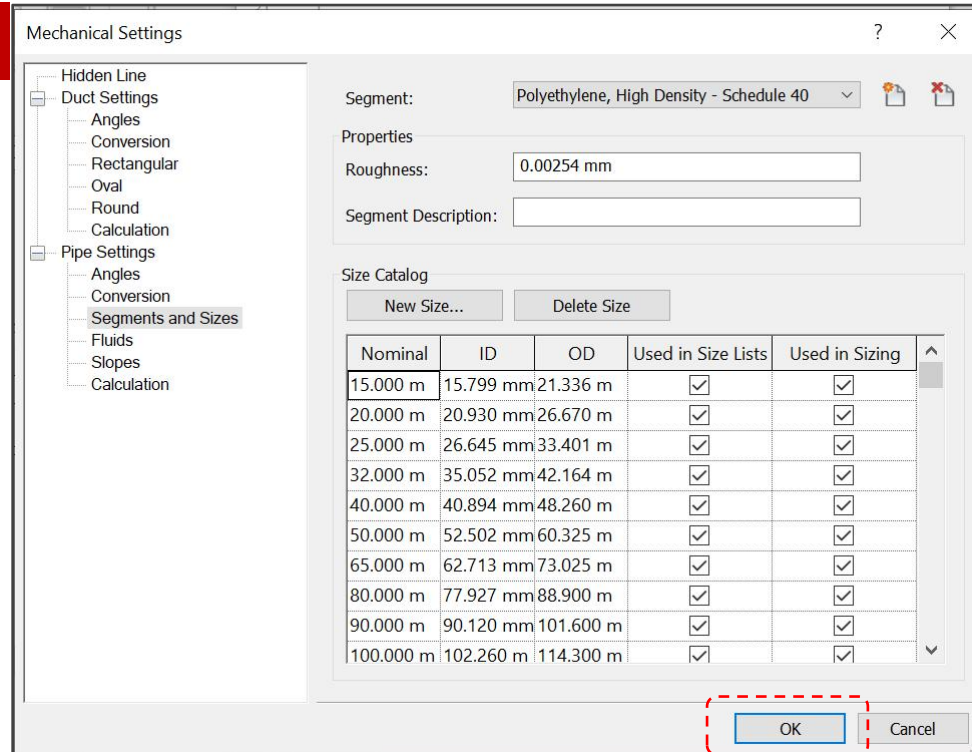
11



11. On **New Segment** dialog box, change **Schedule Type** and **Duplicate size catalog from** as shown in figure.
- Then **OK**.

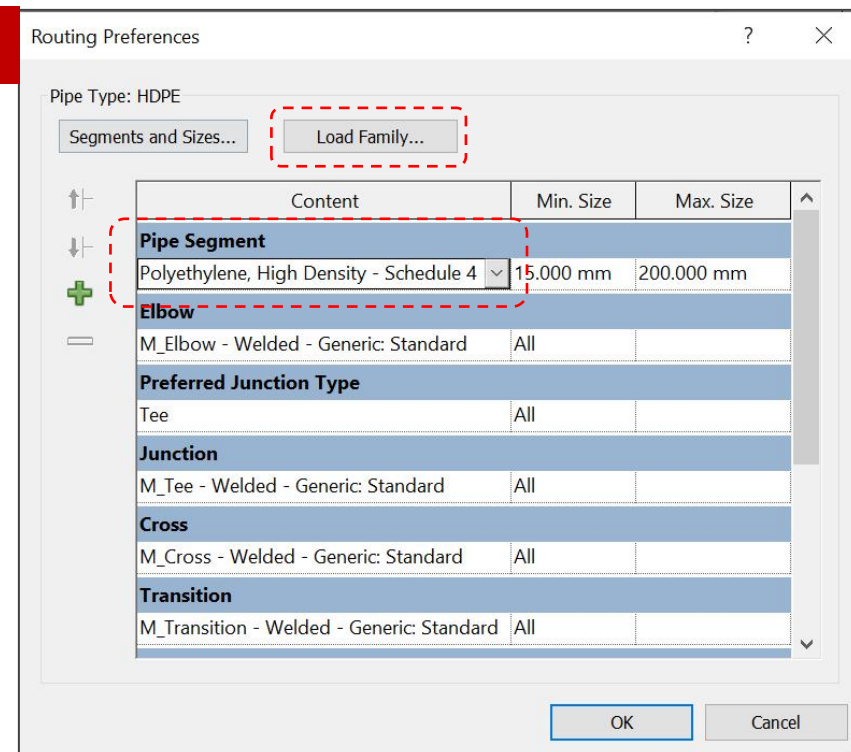
PLACING & ROUTING COMPONENTS (PIPING)

12



12. On **Mechanical Settings** dialog box, on **Segment category**, select **Polyethylene, High Density - Schedule 40**.
- Then click **OK**

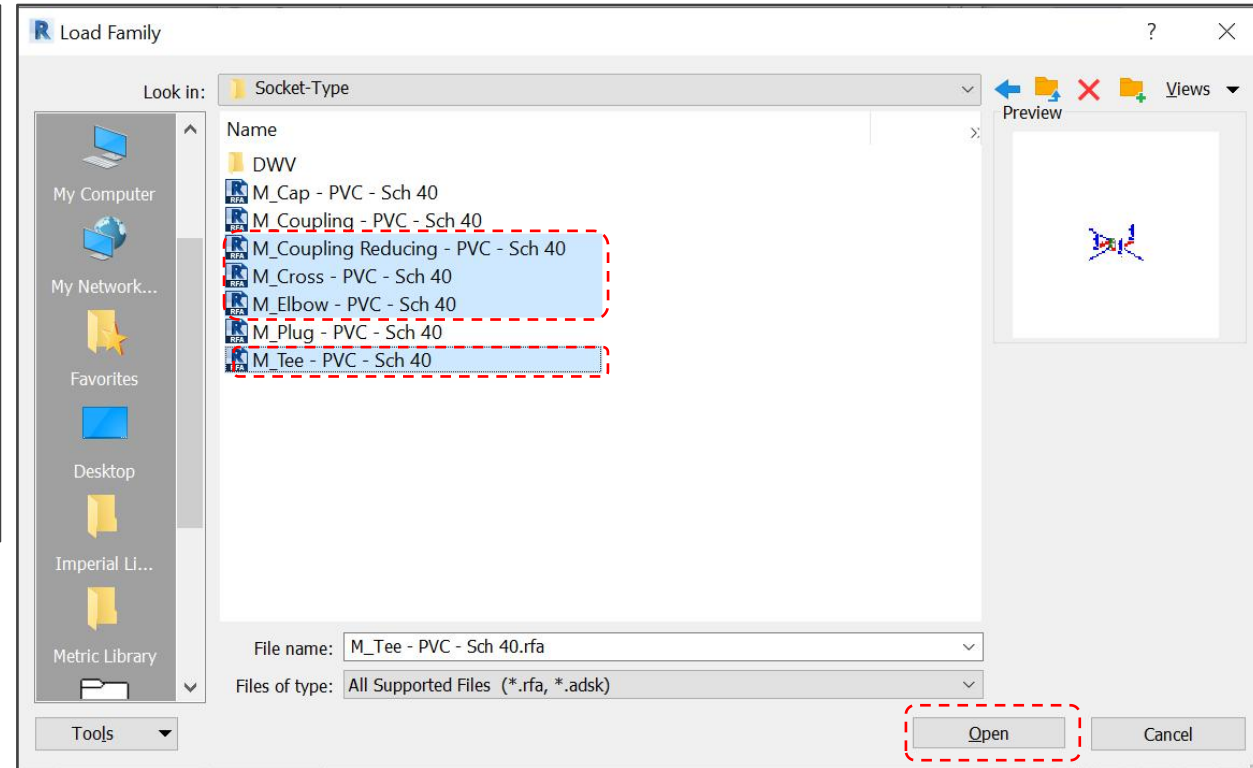
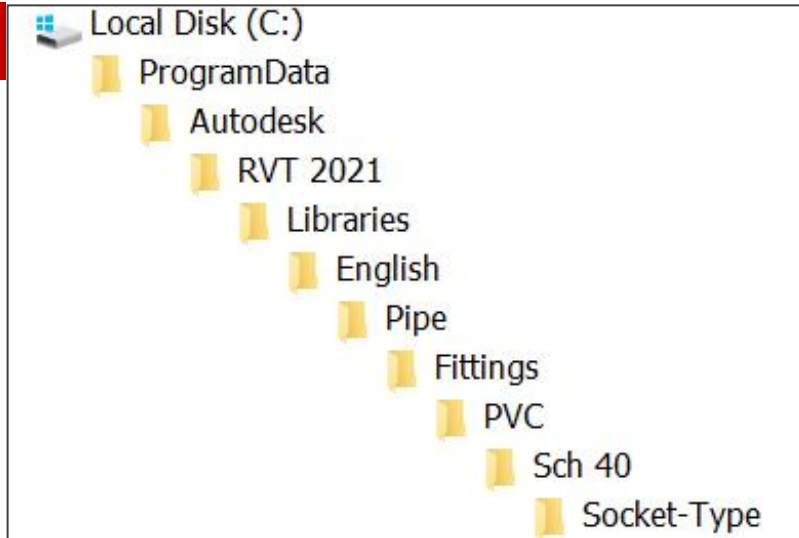
13



13. On **Routing Preferences** dialog box, change **pipe segments** to **Polyethylene, High Density - Schedule 40**.
- Click **Load Family**

PLACING & ROUTING COMPONENTS (PIPING)

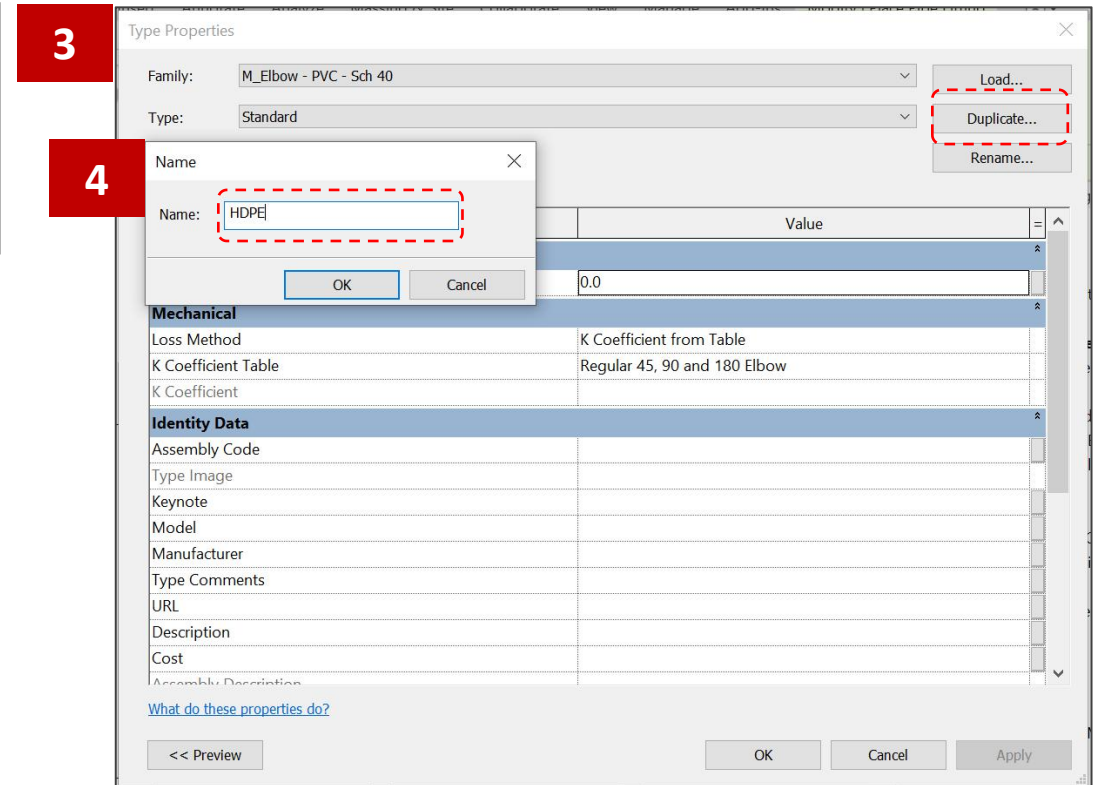
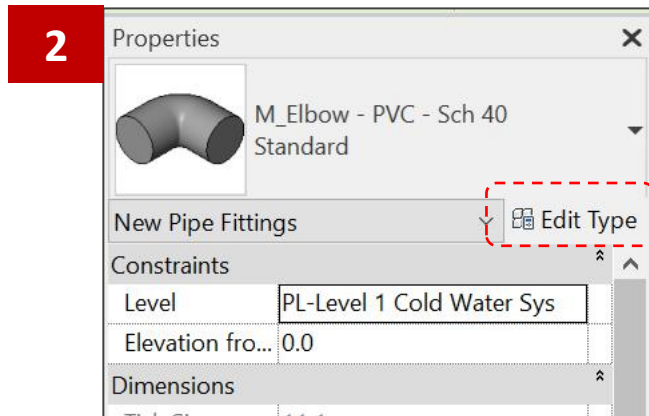
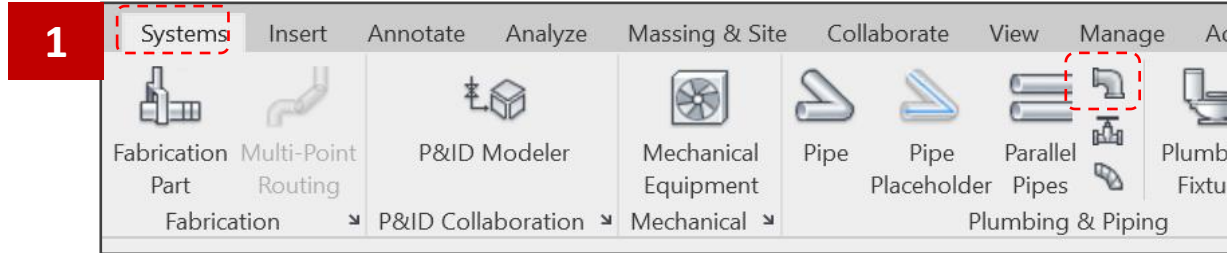
14



14. Select the CWS pipe fitting from libraries (as shown in figure)
- click **Open**
 - On **Routing Preferences** dialog box click **OK**

15. On **Type Properties** dialog box, click **OK**

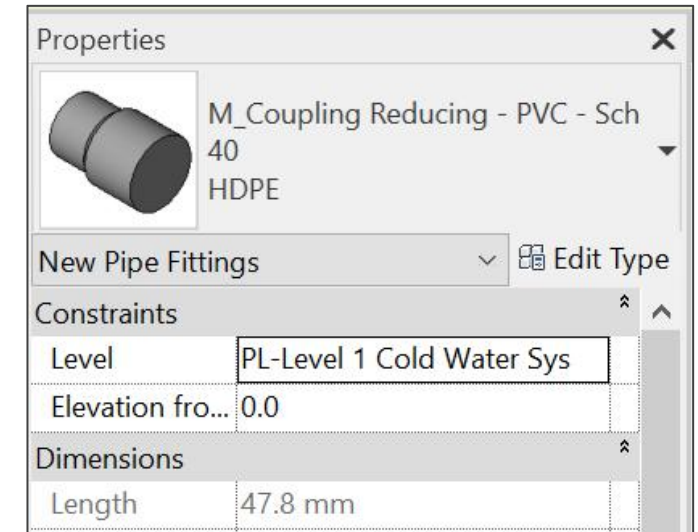
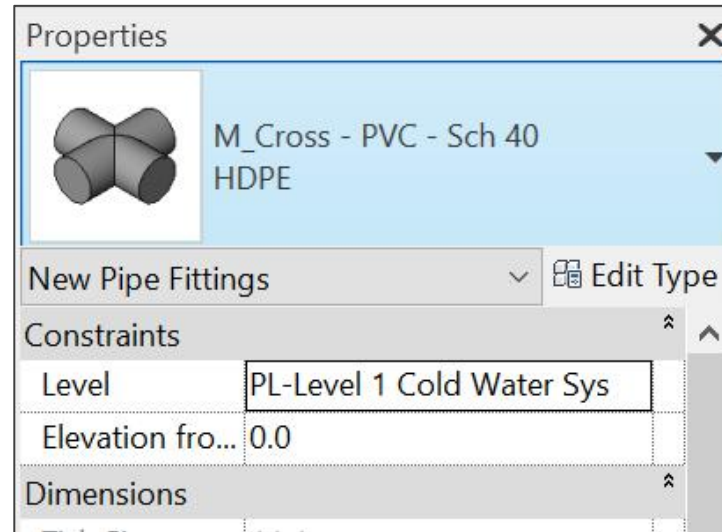
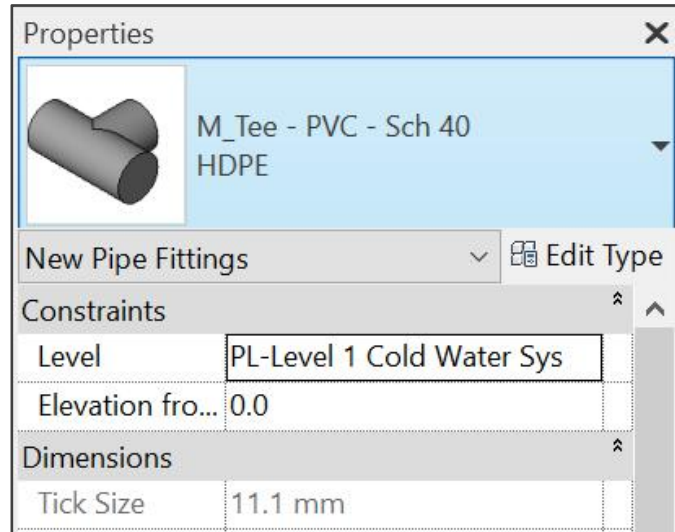
PLACING & ROUTING COMPONENTS (PIPING)



STEPS for Create new Elbow (HDPE):

1. On **System** tab > **Plumbing and Piping** Panel, click **Pipe Fitting**.
2. On **Type Selector** search for **M_Elbow-PVC-Sch 40 Standard**. Then click **Edit Type**.
3. The **Type Properties** dialog box will appear, click **Duplicate**.
4. On **Name** dialog box, rename elbow as '**HDPE**'. Then, click **OK**.

PLACING & ROUTING COMPONENTS (PIPING)



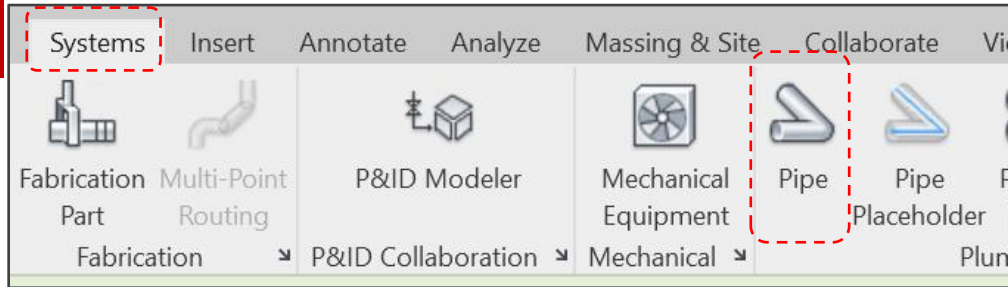
Create new Junction, Cross and Transition (HDPE) for pipe routing.

Notes:

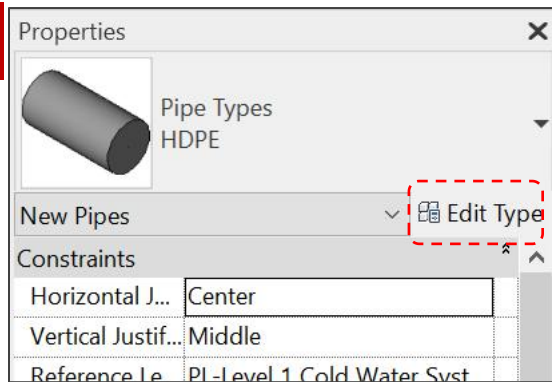
Repeat steps 1 to 4 on page 117 to create new Junction, Cross and Transition for HDPE as shown in figures.

PLACING & ROUTING COMPONENTS (PIPING)

1



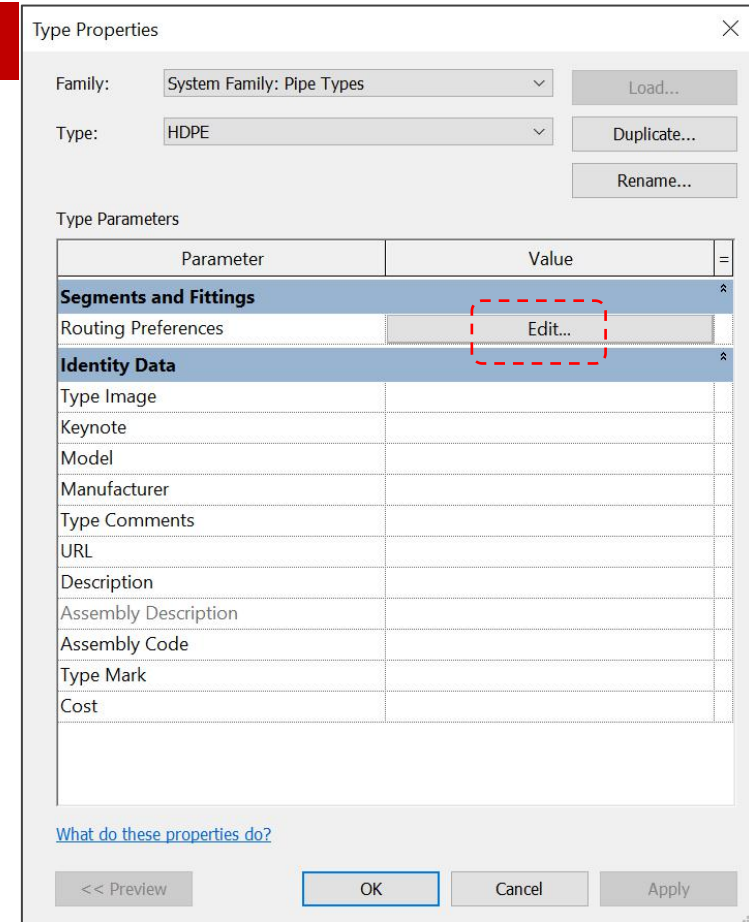
2



STEPS for Edit Routing Preferences:

1. On **System** tab> **Plumbing and Piping** Panel, click **Pipe**.
2. On the **Type Selector**, select **Pipe Types HDPE**, click **Edit Type**.

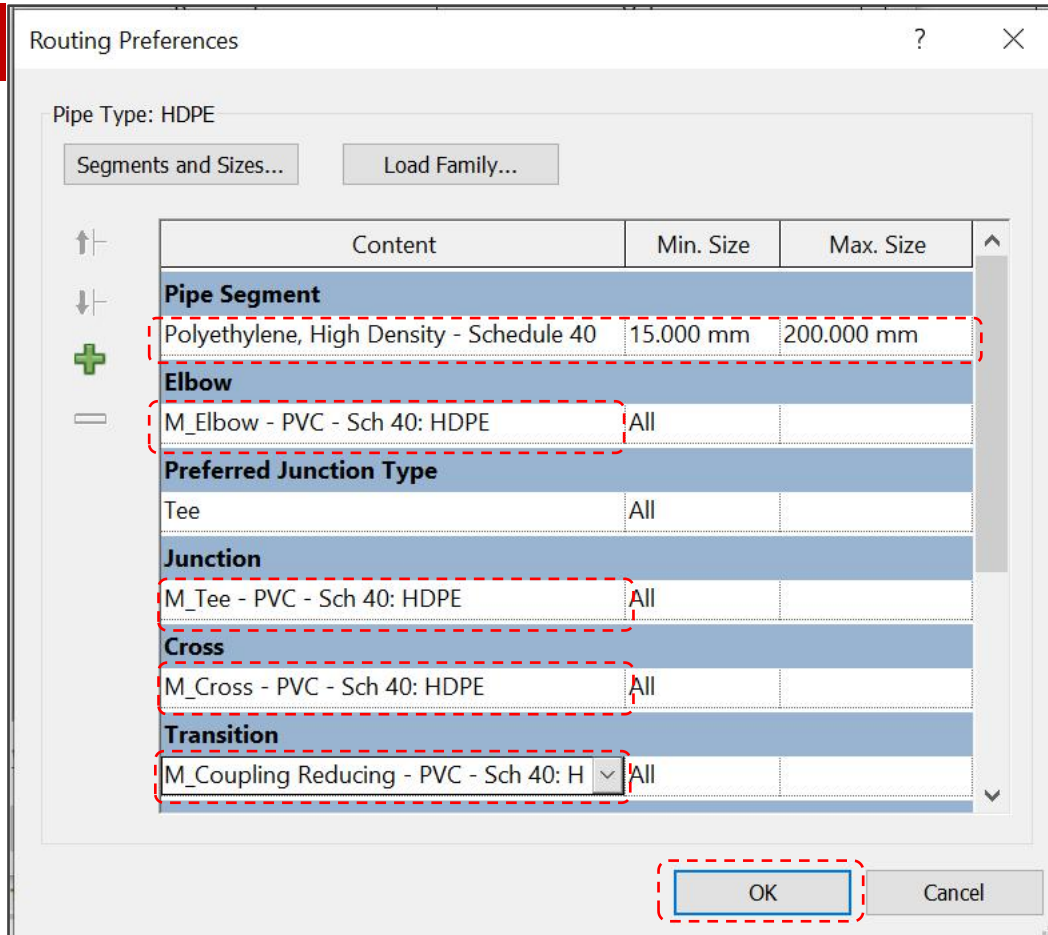
3



3. On **Type Properties** dialog box, on **Routing Preferences** parameter, click **Edit**.

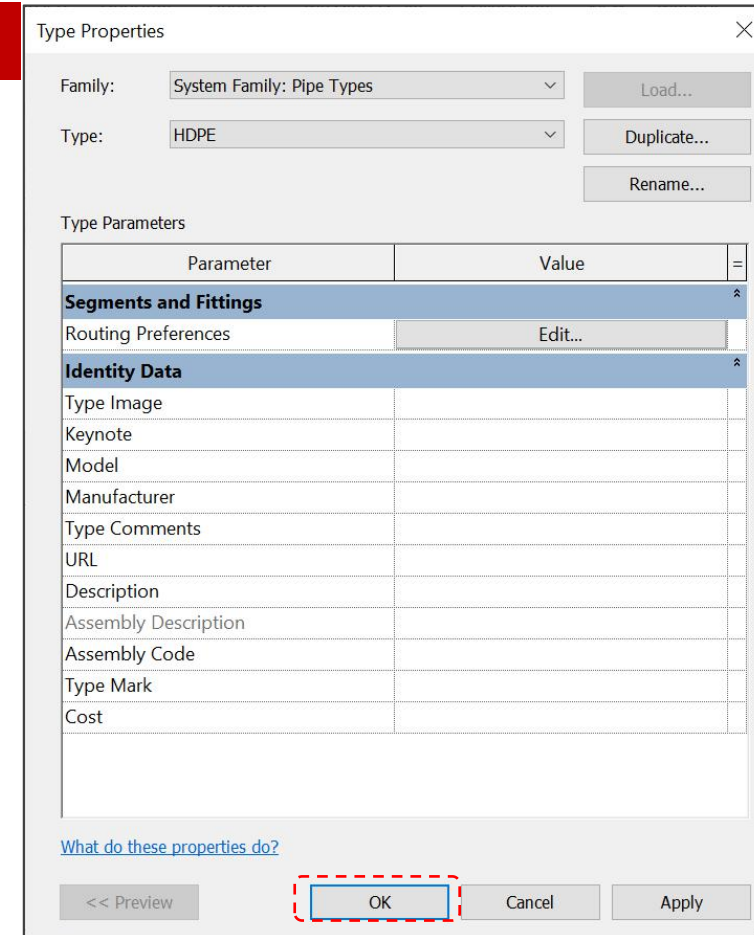
PLACING & ROUTING COMPONENTS (PIPING)

4



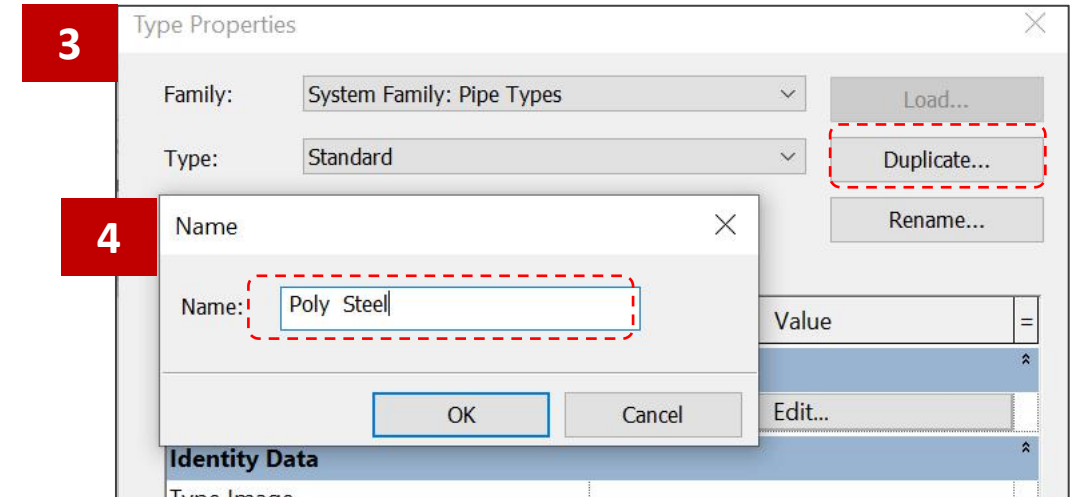
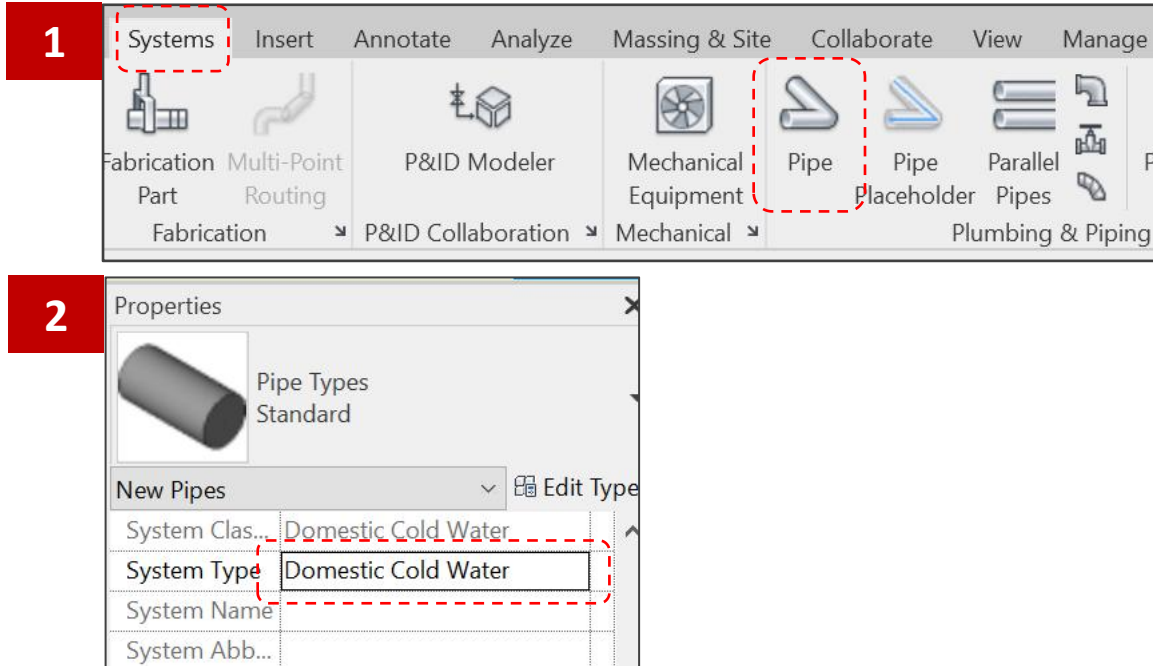
4. On **Routing Preferences** dialog box, set all the fitting as shown in figure.

5



5. On **Type Properties** dialog box, click **OK**.

PLACING & ROUTING COMPONENTS (PIPING)

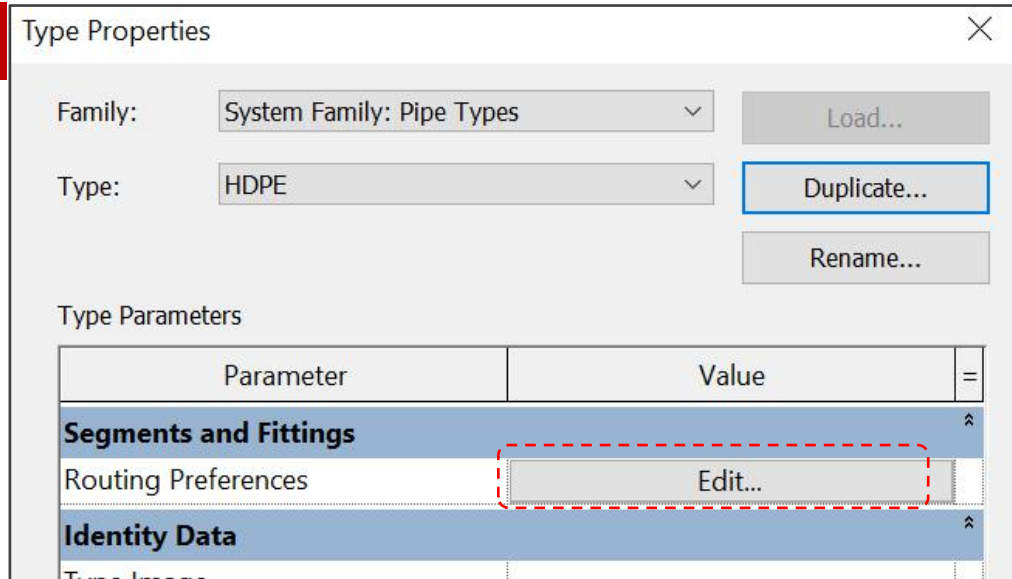


STEPS for Create new Pipe Segment (Poly Steel):

1. Select **PL-Level 1 Cold Water System** floor plan
 - On **Systems** tab, click **Pipe**
2. On **Properties** Palette, change the **System Type** to **Domestic Cold Water**
 - click **Edit Type**.
3. On **Type Properties** dialog box, create new type by clicking **Duplicate**
4. On **Name** dialog box, rename the new pipe type as '**Poly Steel**'. Then, click **OK**.
 - On **Type Properties** dialog box, click **OK**

PLACING & ROUTING COMPONENTS (PIPING)

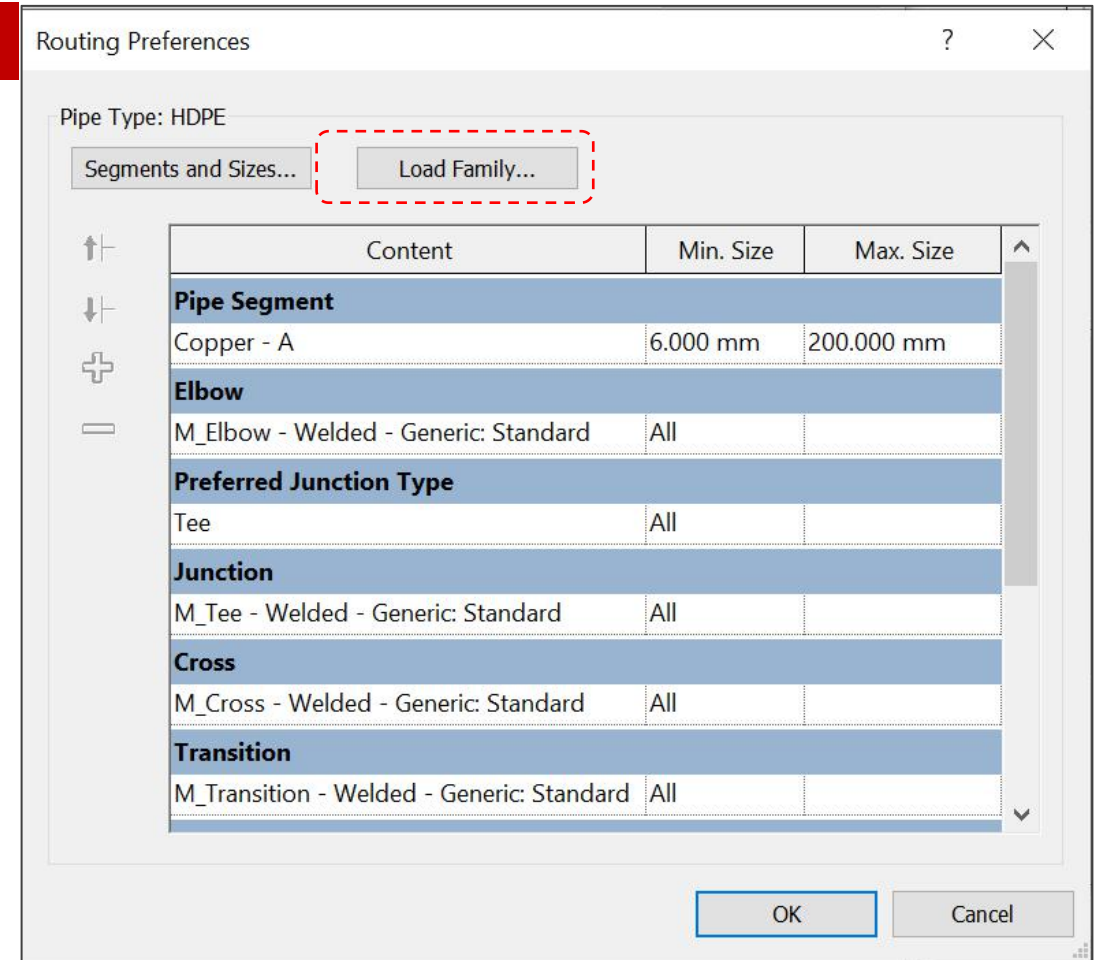
5



5. On **Routing Preferences**, click **Edit**.

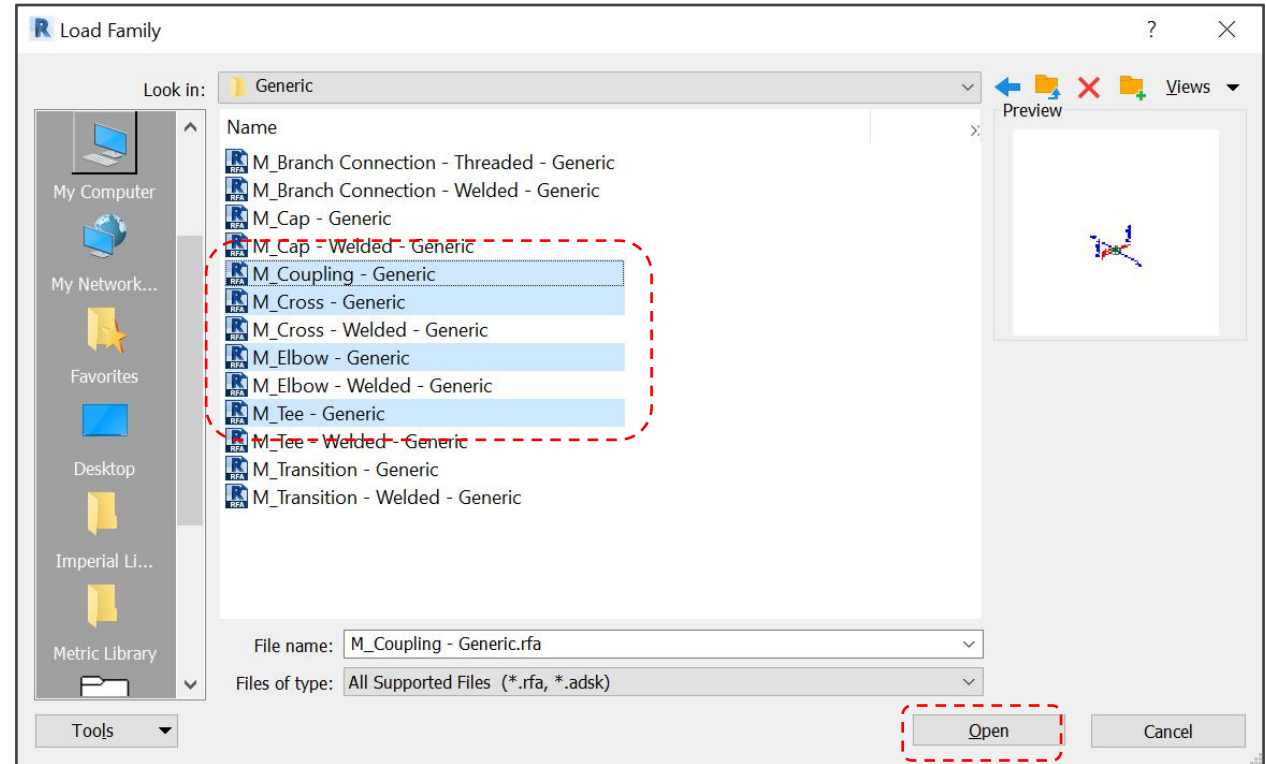
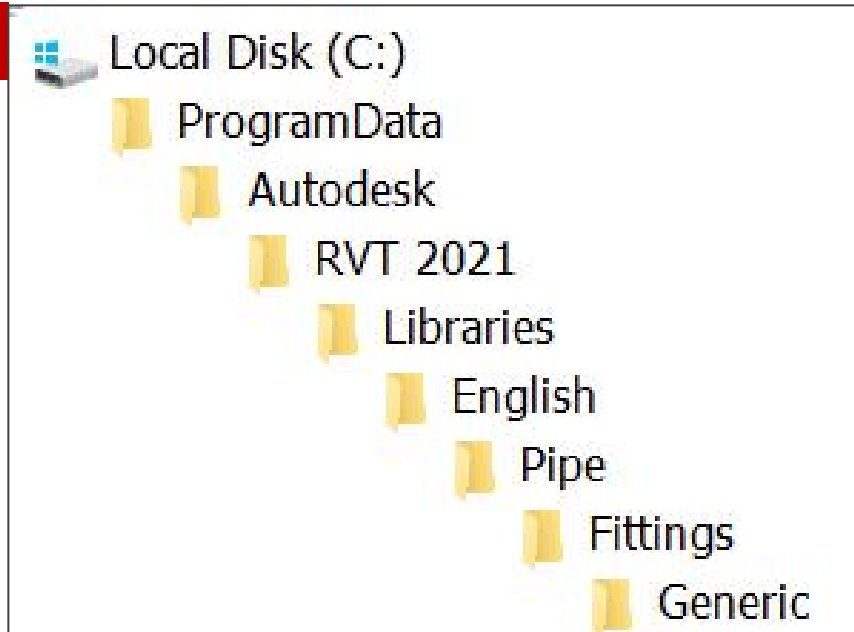
6. In **Routing Preferences** dialog box, click **Load Family**.

6



PLACING & ROUTING COMPONENTS (PIPING)

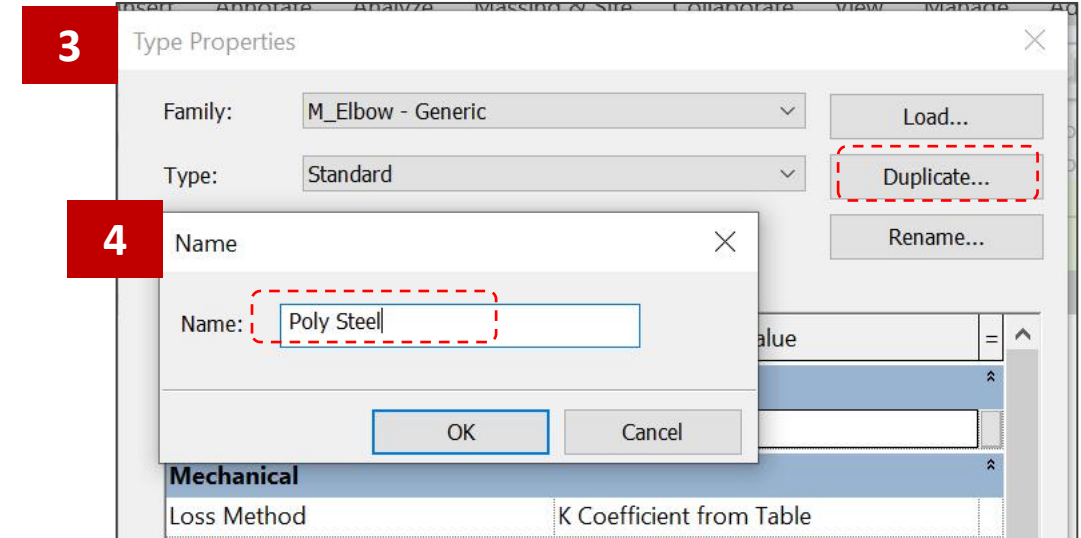
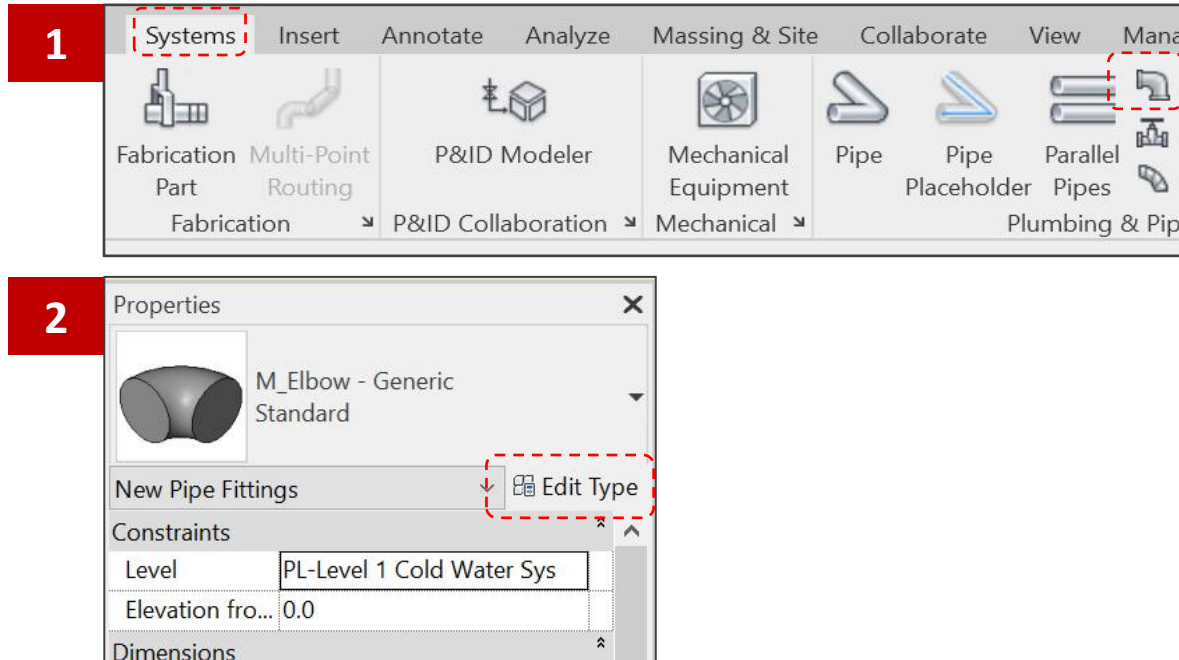
14



14. Select the CWS pipe fitting from libraries (as shown in figure)
- click **Open**
 - On **Routing Preferences** dialog box click **OK**

15. On **Type Properties** dialog box, click **OK**

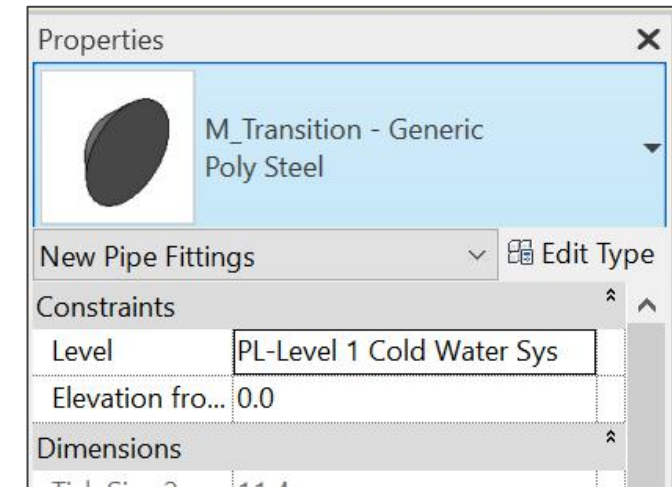
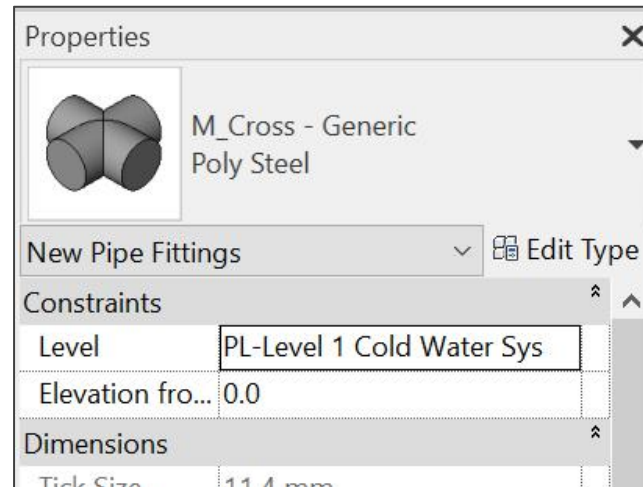
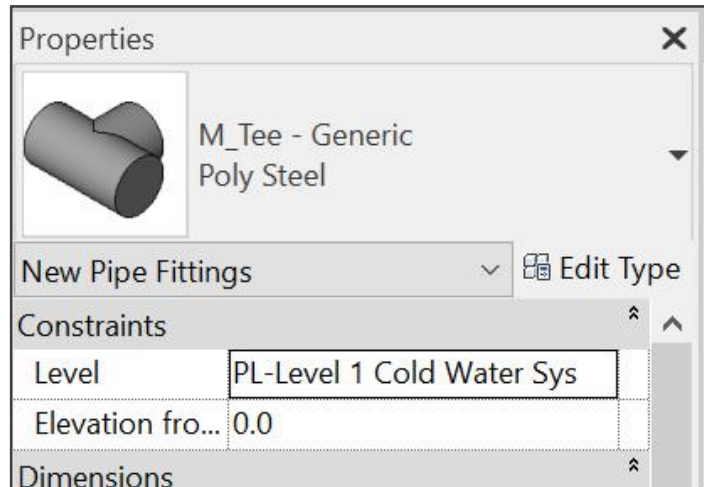
PLACING & ROUTING COMPONENTS (PIPING)



STEPS for Create new Elbow (HDPE):

1. On **System** tab > **Plumbing and Piping** Panel, click **Pipe Fitting**.
2. On **Type Selector** search for **M_Elbow-Generic**. Then click **Edit Type**.
3. The **Type Properties** dialog box will appear, click **Duplicate**.
4. On **Name** dialog box, rename elbow as '**Poly Steel**'. Then, click **OK**.

PLACING & ROUTING COMPONENTS (PIPING)



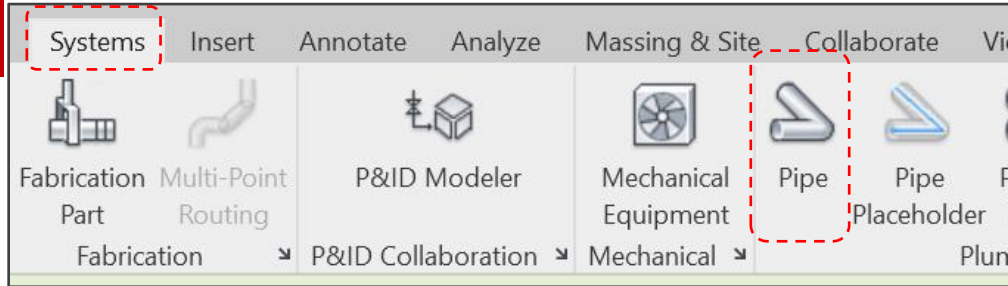
Create new Junction, Cross and Transition (Poly Steel) for pipe routing.

Notes:

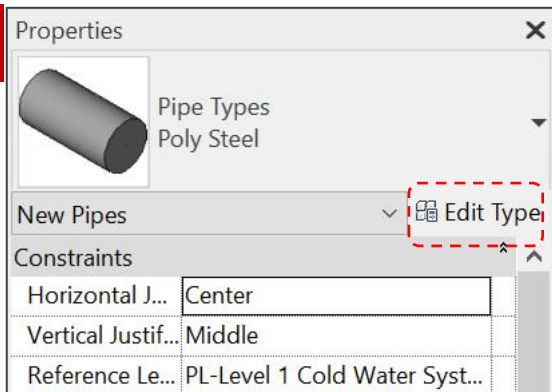
Repeat steps 1 to 4 on page 124 to create new Junction, Cross and Transition for Poly Steel as shown in figures.

PLACING & ROUTING COMPONENTS (PIPING)

1



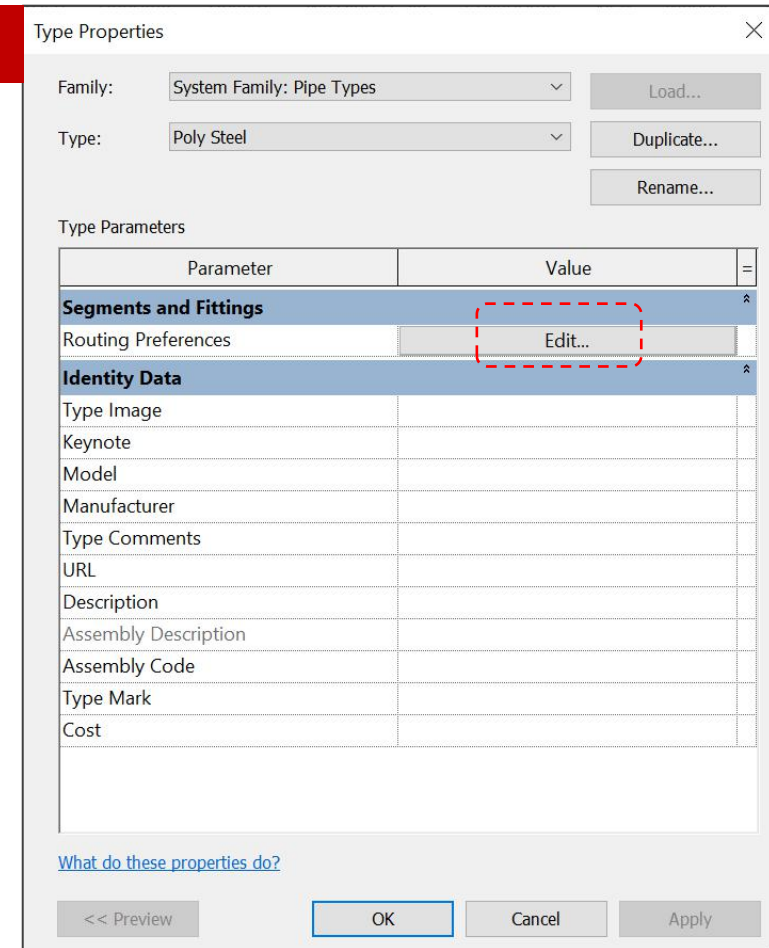
2



STEPS for Edit Routing Preferences:

1. On **System** tab> **Plumbing and Piping** Panel, click **Pipe**.
2. On the **Type Selector**, select **Pipe Types Poly Steel**, click **Edit Type**.

3



3. On **Type Properties** dialog box, on **Routing Preferences** parameter, click **Edit**.

PLACING & ROUTING COMPONENTS (PIPING)

4

Routing Preferences

Pipe Type: Poly Steel

Segments and Sizes... Load Family...

Content	Min. Size	Max. Size
Pipe Segment		
Steel, Carbon - Schedule 40	15.000 mm	200.000 mm
Elbow		
M_Elbow - Generic: Poly Steel	All	
Preferred Junction Type		
Tee	All	
Junction		
M_Tee - Generic: Poly Steel	All	
Cross		
M_Cross - Generic: Poly Steel	All	
Transition		
M_Transition - Generic: Poly Steel	All	

OK Cancel

4. On **Routing Preferences** dialog box, set all the fitting as shown in figure.

5

Type Properties

Family: System Family: Pipe Types Load...

Type: Poly Steel Duplicate... Rename...

Type Parameters

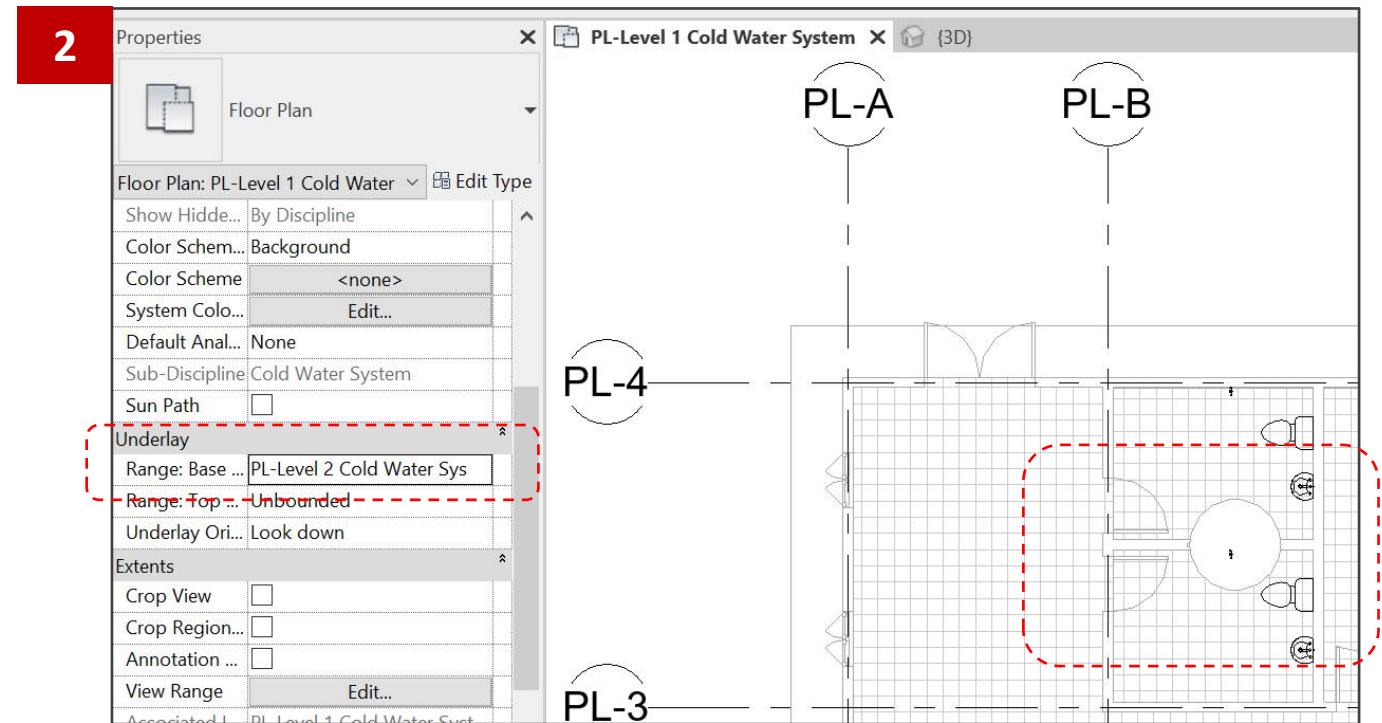
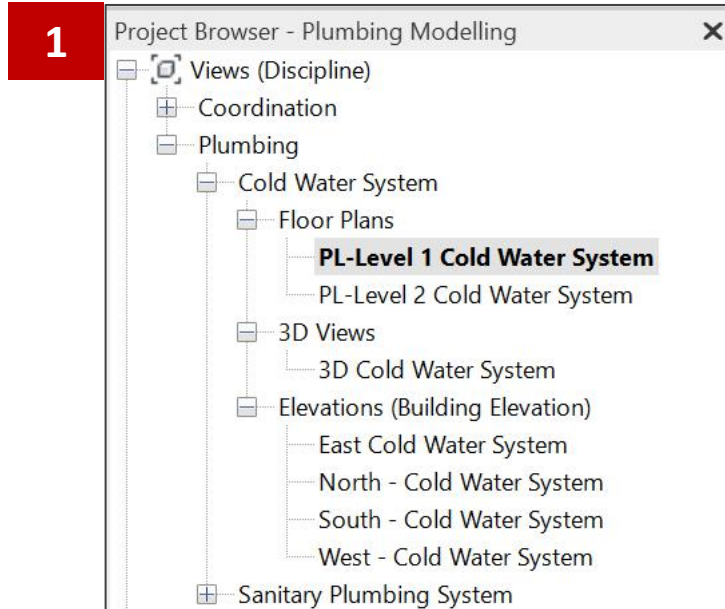
Parameter	Value	=
Segments and Fittings		
Routing Preferences	Edit...	
Identity Data		
Type Image		
Keynote		
Model		
Manufacturer		
Type Comments		
URL		
Description		
Assembly Description		
Assembly Code		
Type Mark		
Cost		

[What do these properties do?](#)

<< Preview OK Cancel Apply

5. On **Type Properties** dialog box, click **OK**.

PLACING & ROUTING COMPONENTS (PIPING)



STEPS for Routing:

1. Open **PL-Level 1 Cold Water System** floor plan
2. On **Properties Palette**, under **Underlay** change **Base Level** to **PL-Level 2 Cold Water System** (*to show water tank location*)

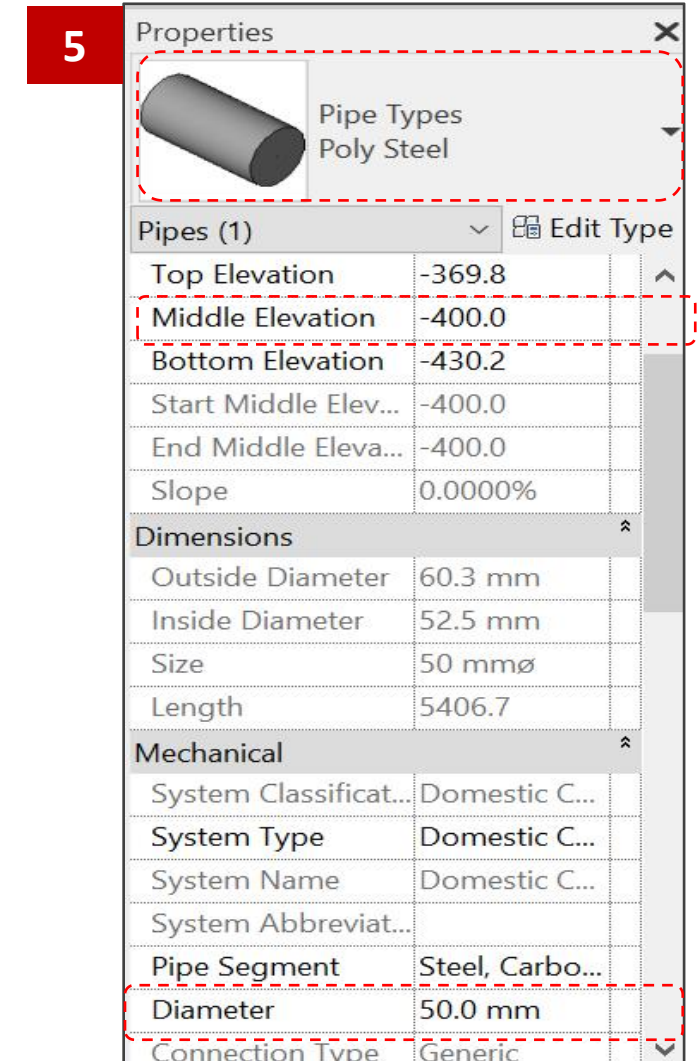
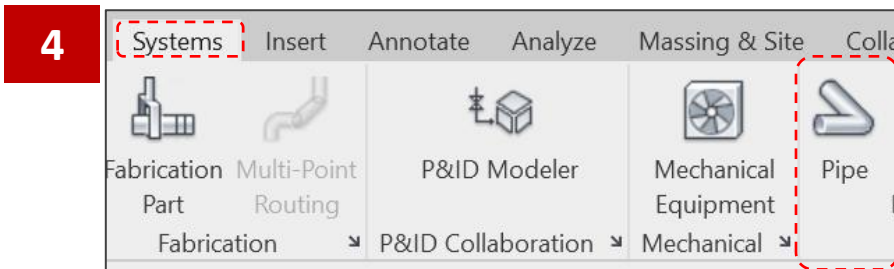
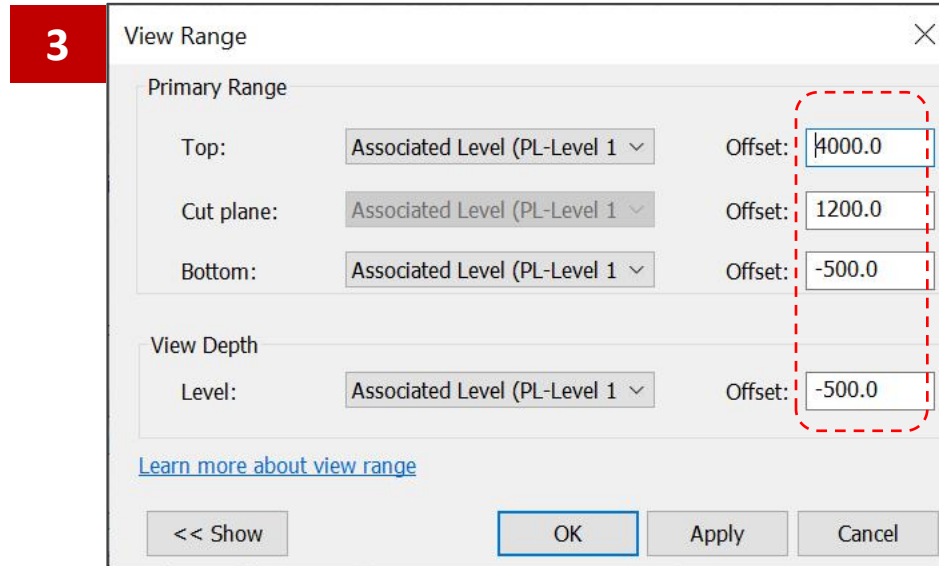
PLACING & ROUTING COMPONENTS (PIPING)

3. On **Properties Palette**, change **View Range** as shown on figure.

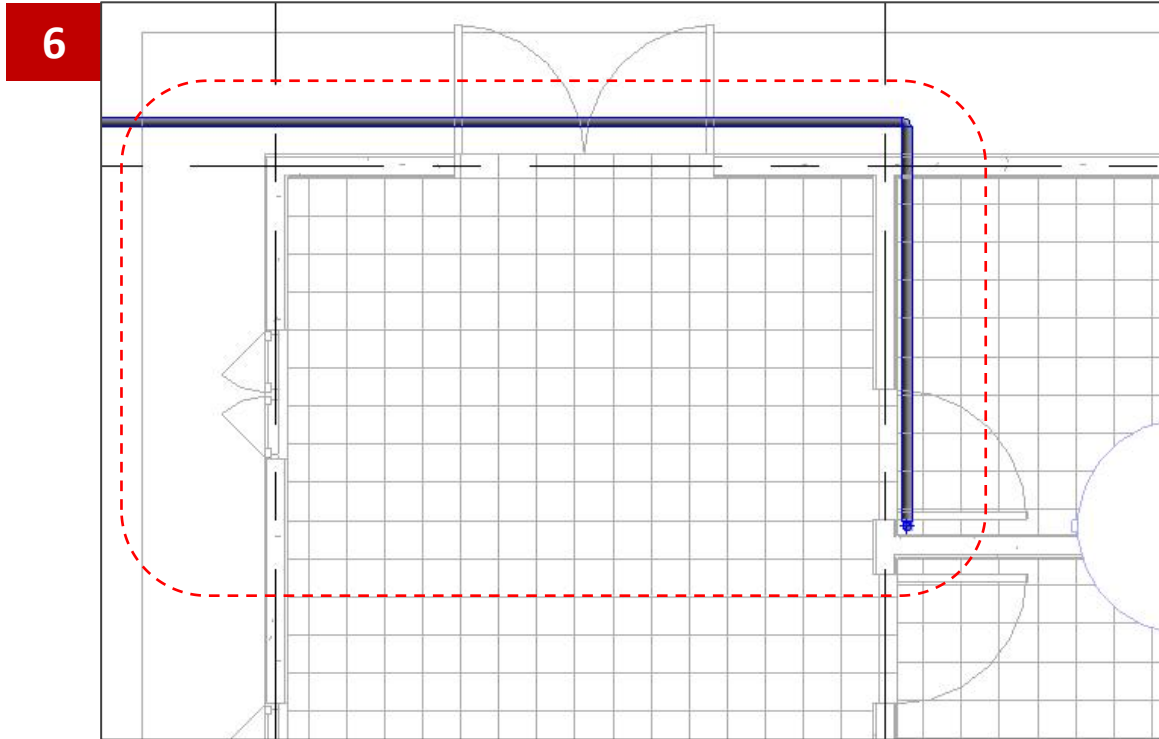
4. On **System** tab > **Plumbing and Piping** Panel, click **Pipe**.

5. On **Type Selector** select **Pipe Poly Steel**. Set:

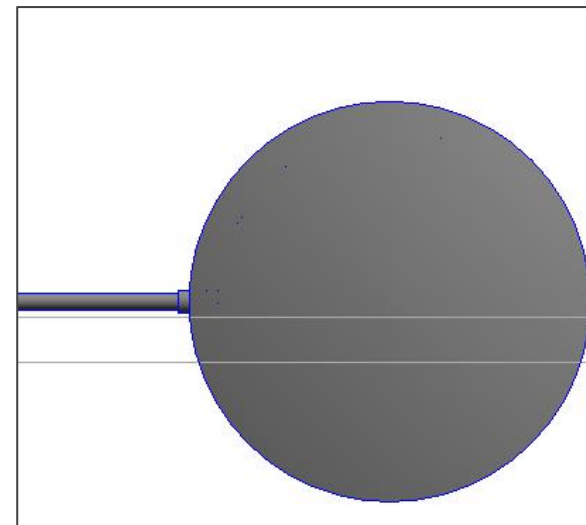
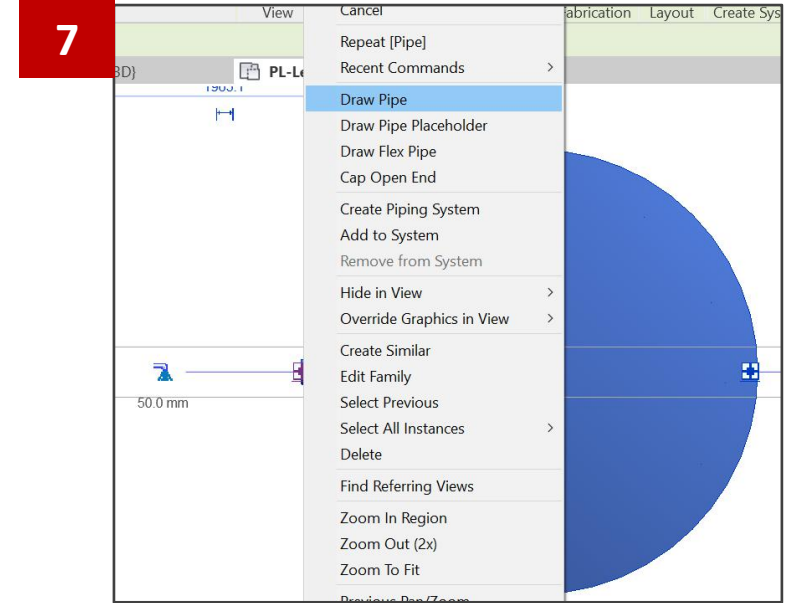
Offset/Middle Elevation: -400mm
Diameter: 50mm



PLACING & ROUTING COMPONENTS (PIPING)



7. Open **PL-Level 2 Cold Water System** floor plan, and continue draw pipe from water tank connector.
- Click Inlet connector, right click and select **Draw Pipe**.



PLACING & ROUTING COMPONENTS (PIPING)

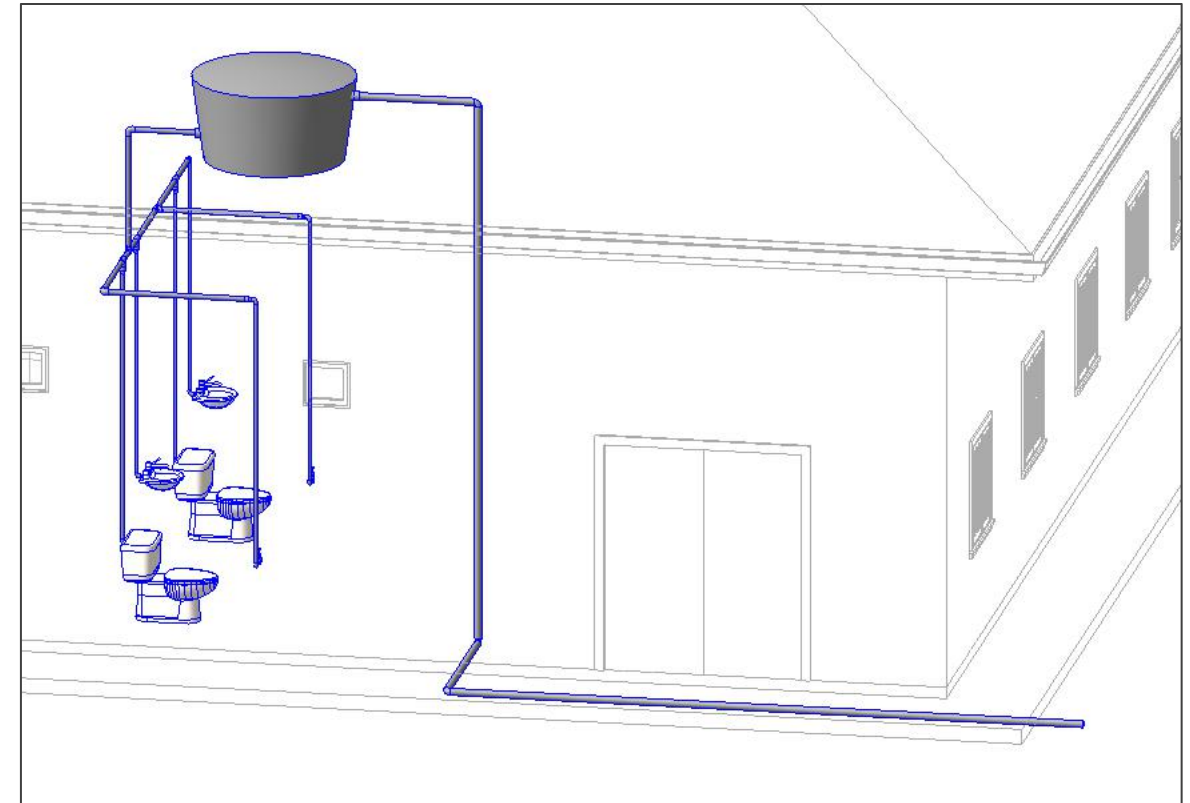
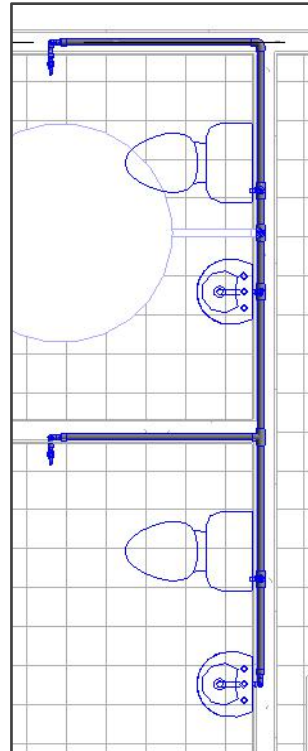
8

Properties

Pipe Types
HDPE

Pipes (1) Edit Type

Top Elevation	3121.1
Middle Elevation	3100.0
Bottom Elevation	3078.9
Start Middle Elev...	3100.0
End Middle Eleva...	3100.0
Slope	0.0000%
Dimensions	
Outside Diameter	42.2 mm
Inside Diameter	35.1 mm
Size	32 mmø
Length	3169.2
Mechanical	
System Classificat...	Domestic C...
System Type	Domestic C...
System Name	Domestic C...
System Abbreviat...	
Pipe Segment	Polyethylen...
Diameter	32.0 mm
Connection Type	Generic



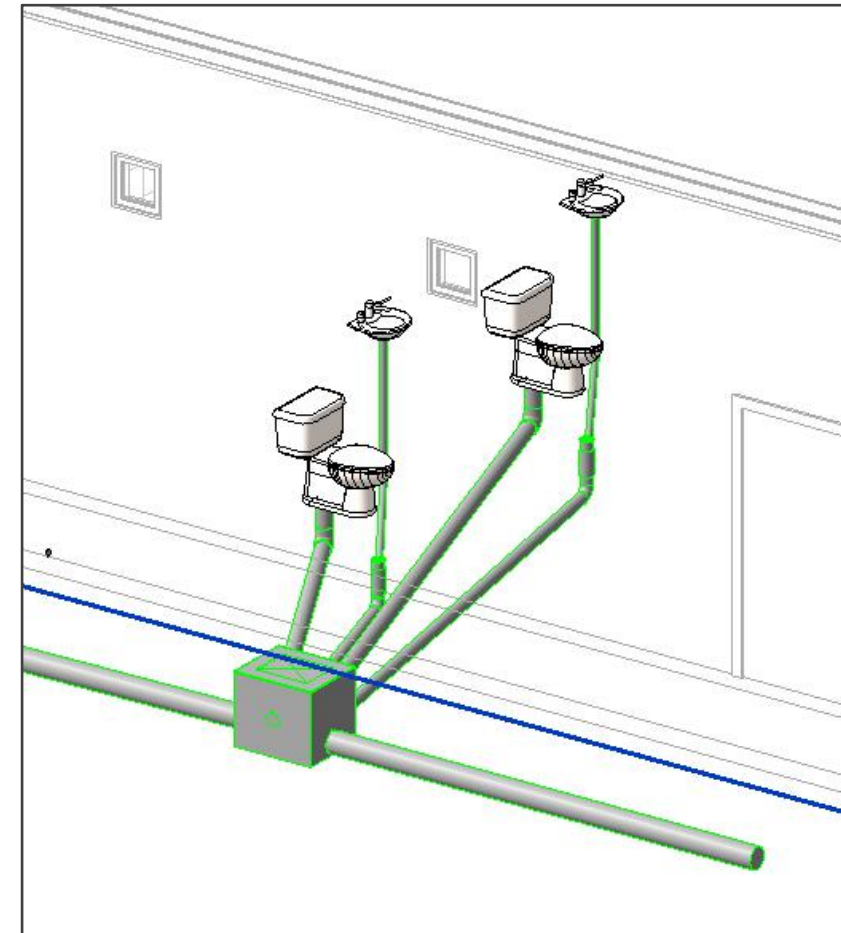
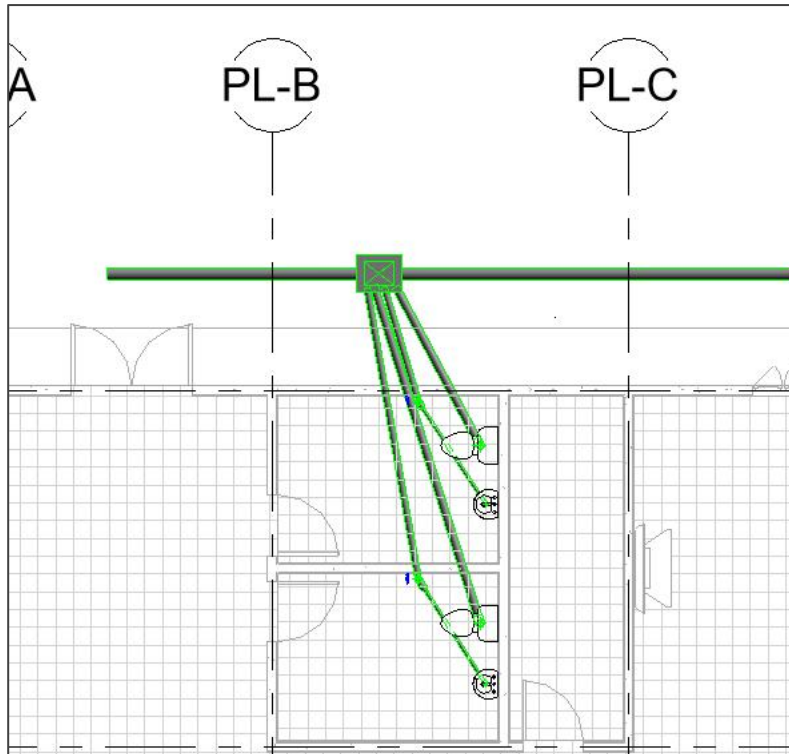
8. Set **Offset/Middle Elevation 3100mm** and **diameter 32mm** for HDPE pipe routing
9. Complete routing for CWS pipe as shown in figure.

PLACING & ROUTING COMPONENTS (PIPING)

EXERCISE 3 : Placing and routing **Sanitary Plumbing System** components (piping).

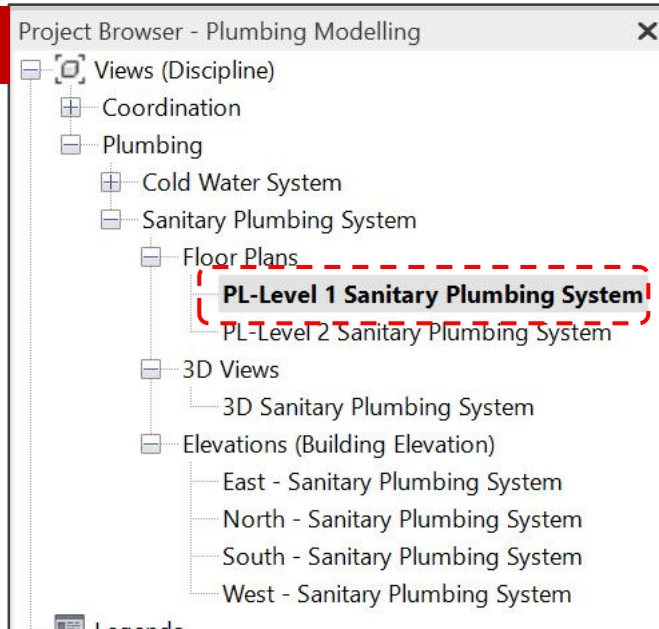
E.g:

- Chamber : 1 unit
- Floor Drain : 2 units



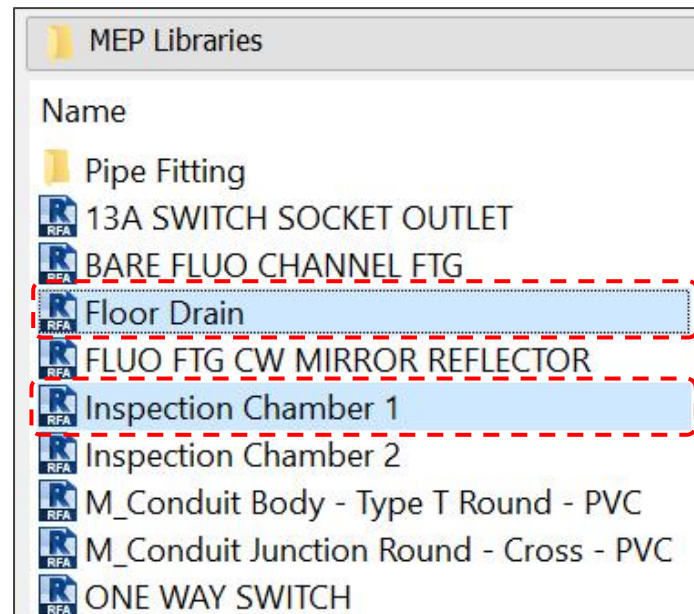
PLACING & ROUTING COMPONENTS (PIPING)

1

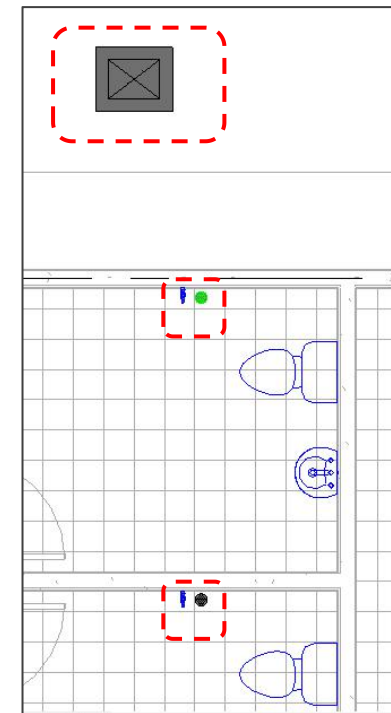


STEPS for Placing:

1. Go to **Project Browser**, double-click **PL-Level 1 Sanitary Plumbing System**
2. Go to **Insert** tab, **Load Family**. Select **Floor Drain** and **Inspection Chamber 1** from **MEP Libraries** folder given.
3. Go to **System Tab > Plumbing Fixtures** and placing as shown in figure.

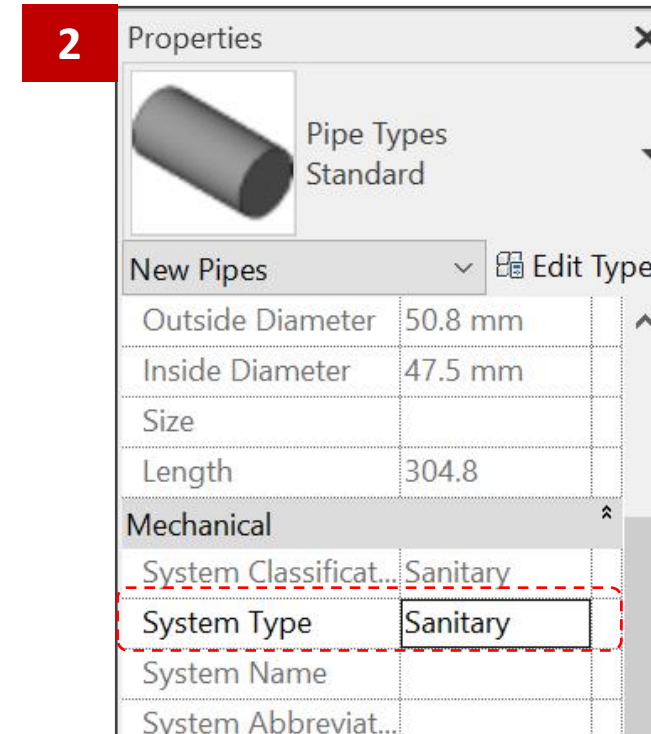
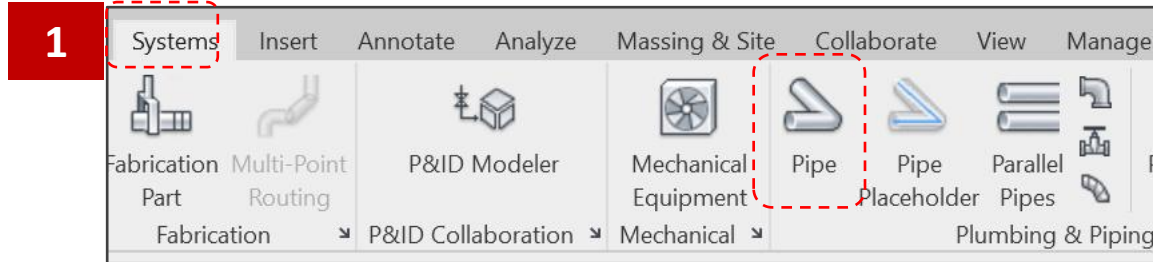


2



3

PLACING & ROUTING COMPONENTS (PIPING)



STEPS for Routing SPS Pipe (uPVC and VCP):

1. Select **PL-Level 1 Sanitary Plumbing System** floor plan
 - On **Systems** tab, click **Pipe**

2. On Properties Palette, change the **System Type** to **Sanitary**.

3. To create new pipe segment, elbow, junction, cross and transition for SPS, user can apply similar steps as for CWS. Create two types of pipe:-

uPVC and VCP

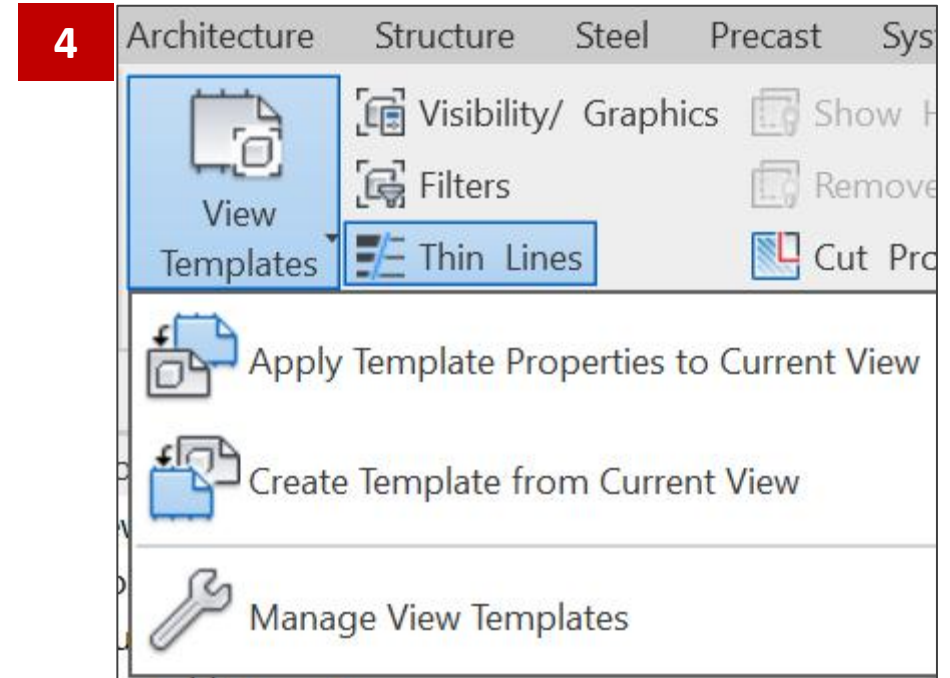
PLACING & ROUTING COMPONENTS (PIPING)

3. For each type, refer the following fitting information:

Pipe Segment : Polyvinyl Chloride - Rigid - Schedule 4
Elbow : M_Elbow-PVC-Sch 40
Junction : M_Tee-PVC-Sch 40
Cross : M_Cross-PVC-Sch 40
Transition : M_Coupling Reducing -PVC-Sch 40

STEPS for Manage View Template:

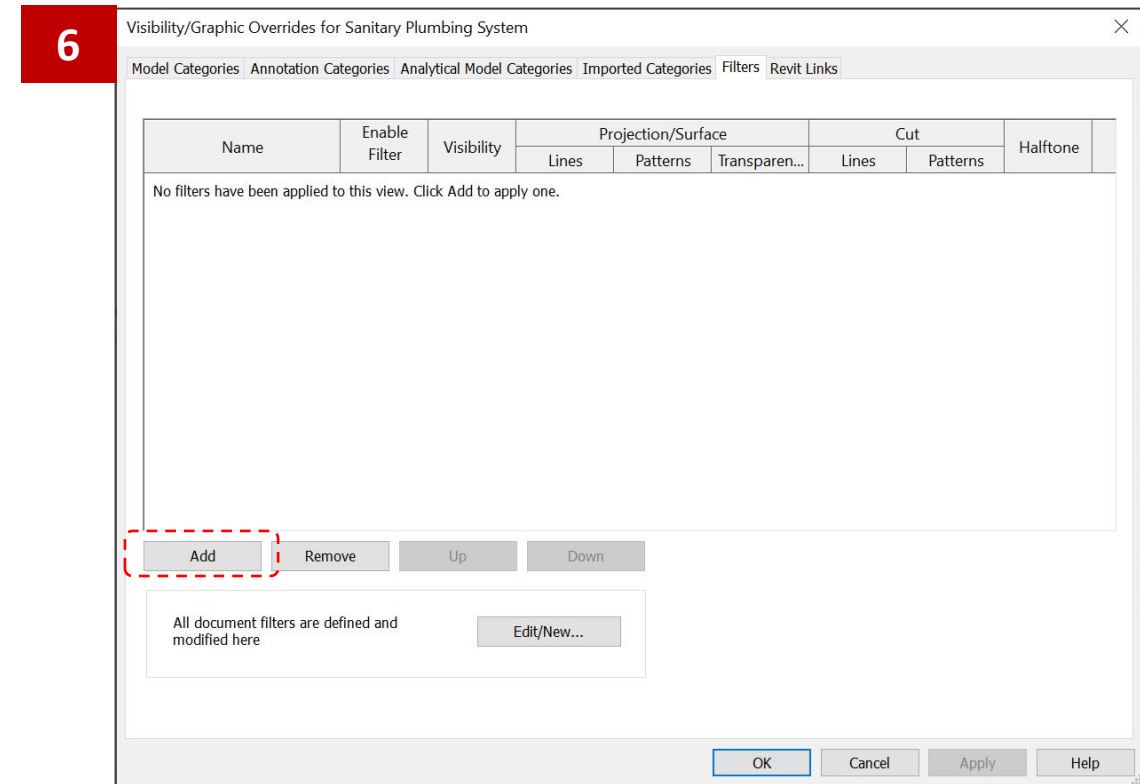
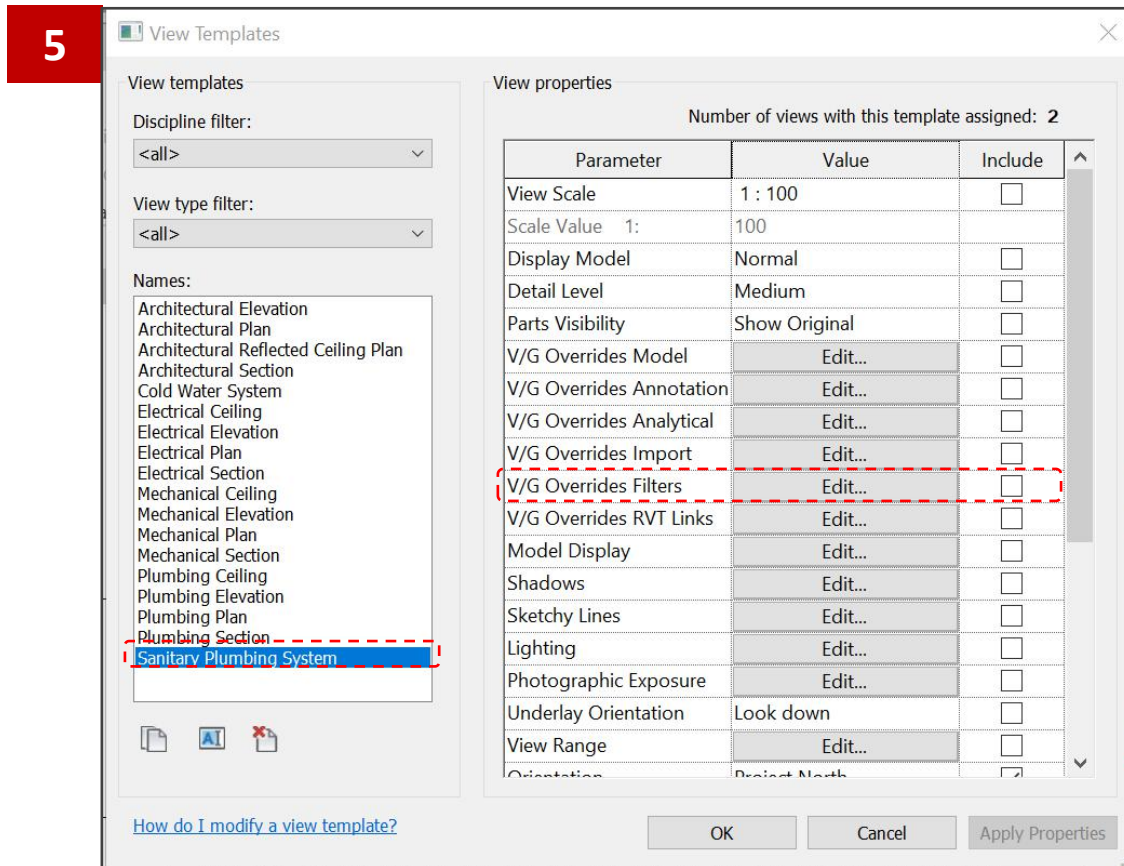
4. To avoid confusion, uncheck the visibility of the CWS pipe routing.
- On **View** tab, click **View Template**
 - Under **View Template** dropdown, click **Manage View Templates**



PLACING & ROUTING COMPONENTS (PIPING)

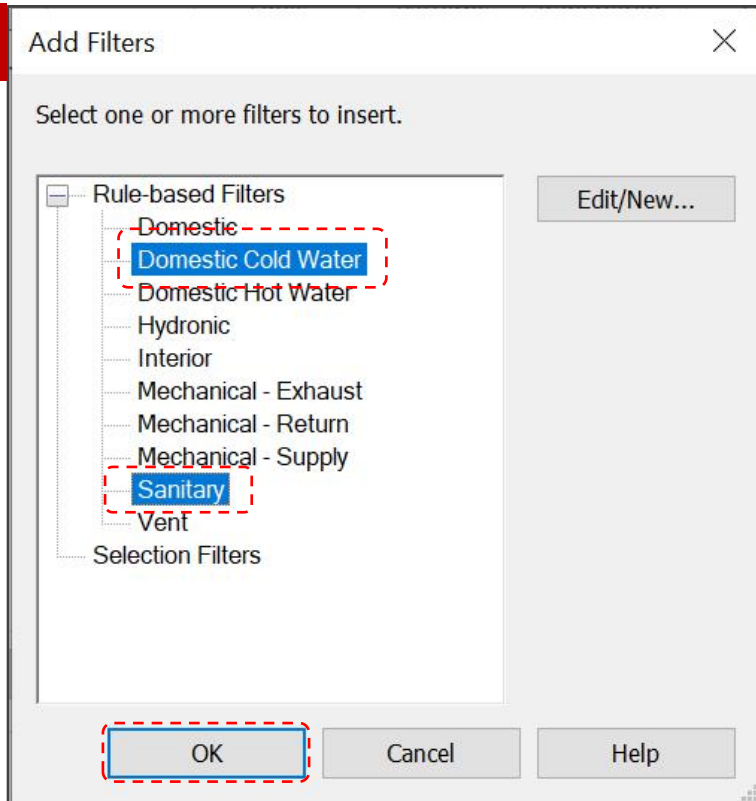
- On **View Template** dialog box, click **Sanitary Plumbing System**. Click **Edit..** on V/G Overrides Filters parameter.

- On **V/G Overrides for Sanitary Plumbing System** dialog box, click **Add**.

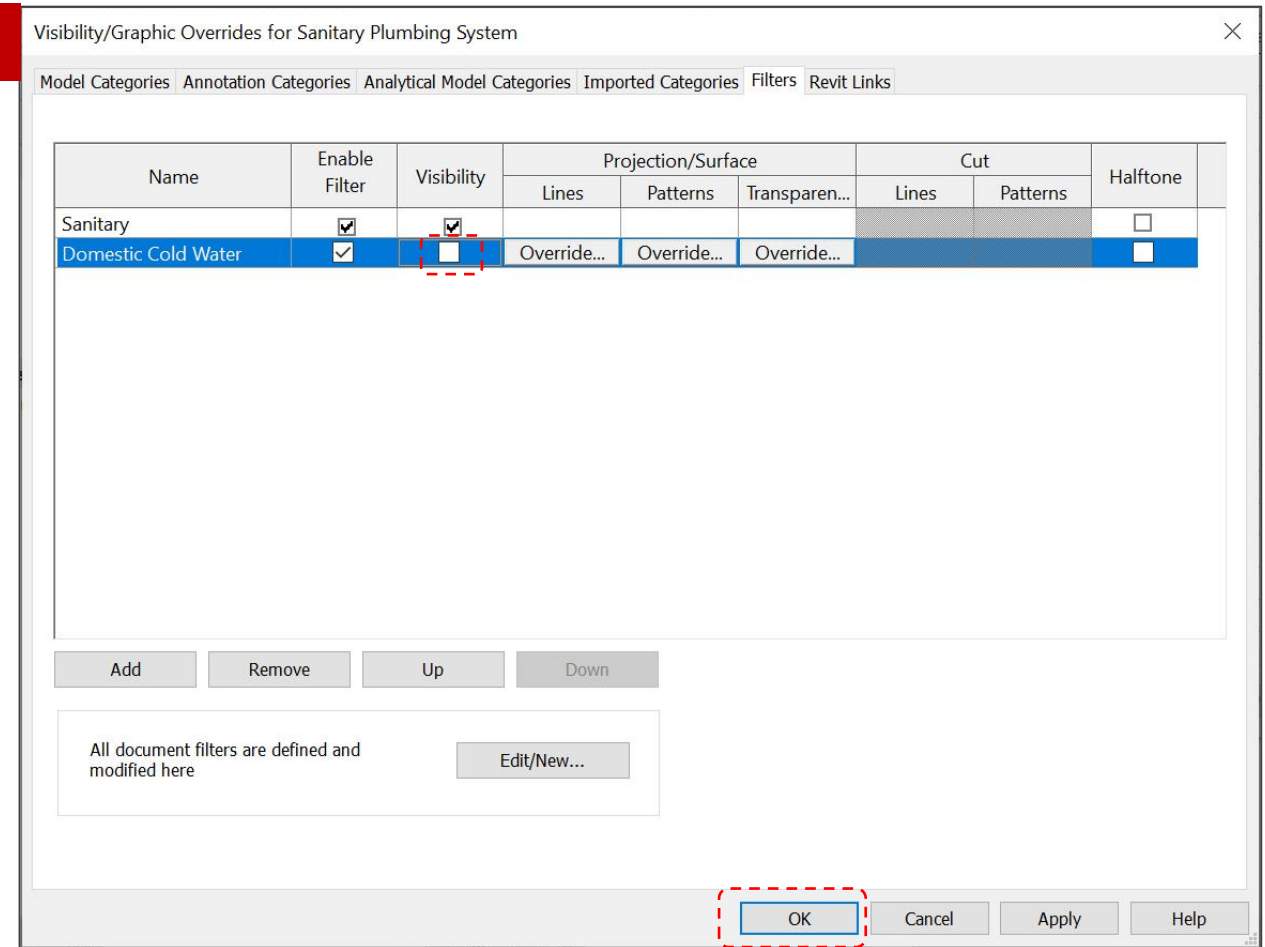


PLACING & ROUTING COMPONENTS (PIPING)

7

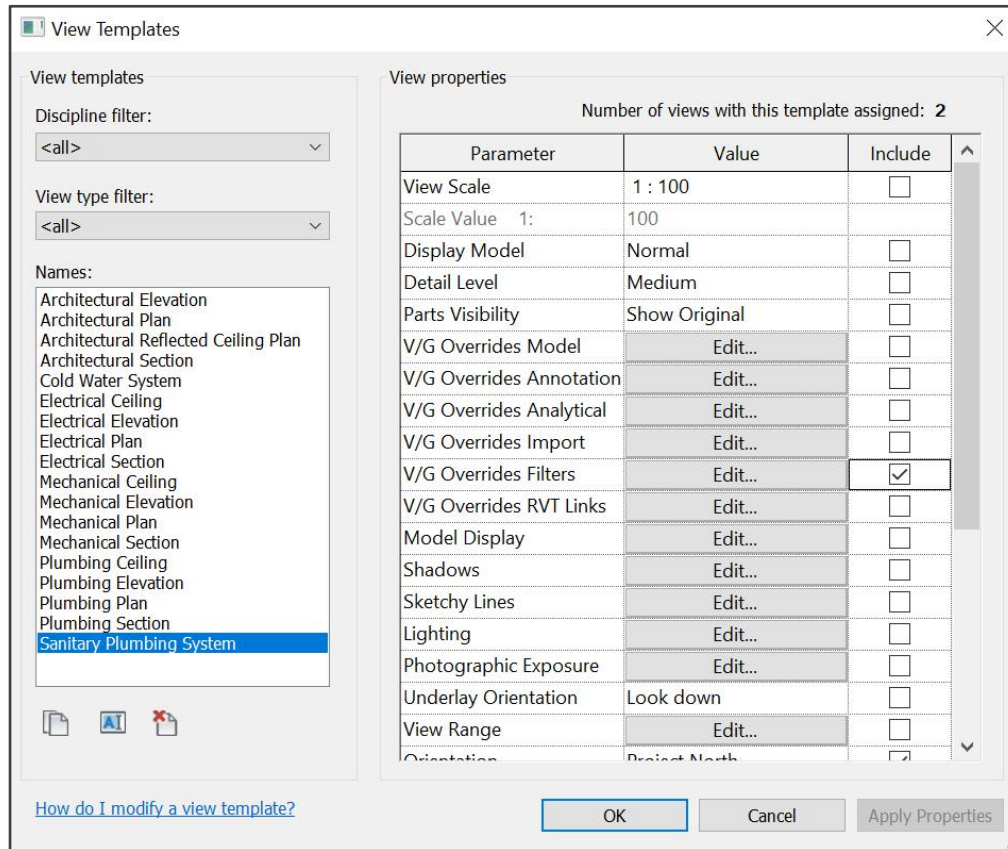


8



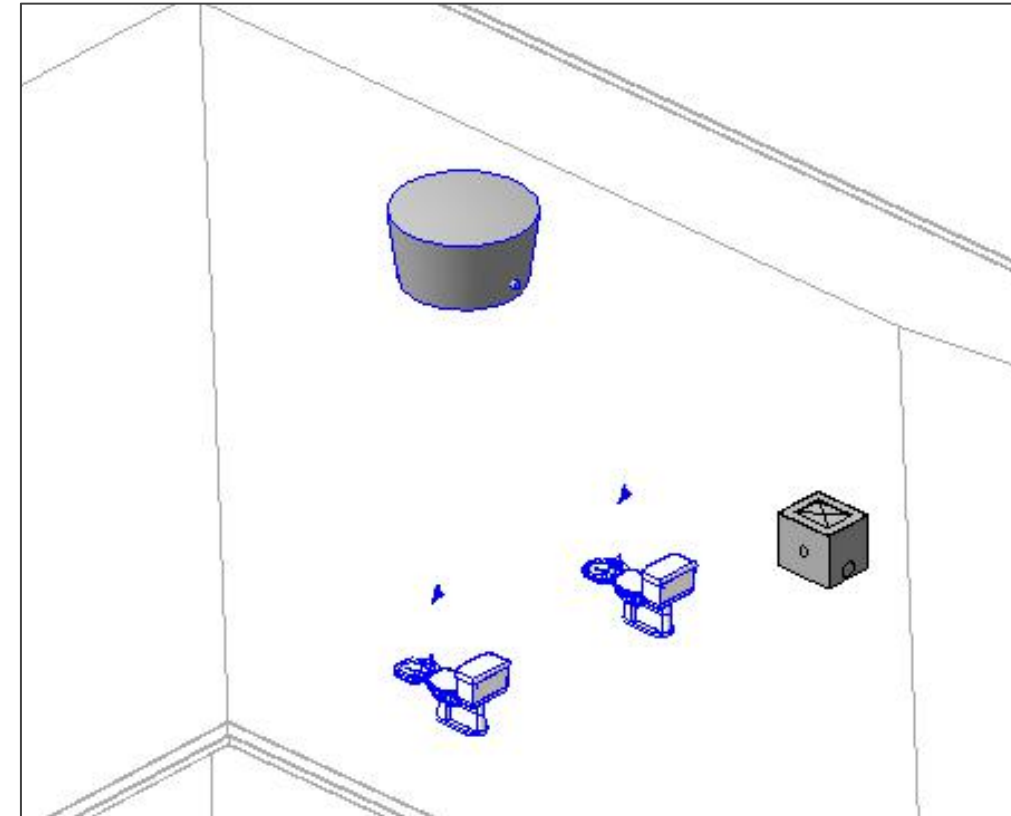
- On **Add Filters** dialog box, select **Domestic Cold Water** and **Sanitary**. Click **OK**
- Uncheck the **visibility** for **Domestic Cold Water (CWS)**. Then click **OK**

PLACING & ROUTING COMPONENTS (PIPING)



9

9. On **View Template** dialog box, check the **V/G Overrides Filters** parameter. Click **OK**



10

10. CWS pipe are no longer visible in the view.

PLACING & ROUTING COMPONENTS (PIPING)

View Range

Primary Range

Top: Associated Level (PL-Level 1) Offset: 2300.0

Cut plane: Associated Level (PL-Level 1) Offset: 1200.0

Bottom: Associated Level (PL-Level 1) Offset: -500.0

View Depth

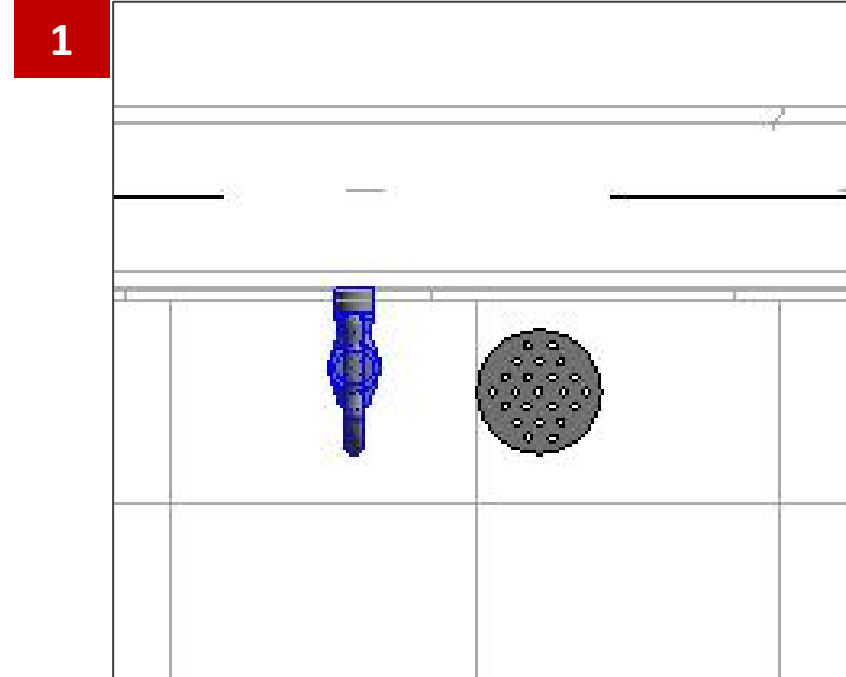
Level: Associated Level (PL-Level 1) Offset: -500.0

[Learn more about view range](#)

<< Show OK Apply Cancel

Before start pipe routing, change View Range value as shown in figure for **PL-Level 1 Sanitary Plumbing System** floor plan.

Note: Recommended to start pipe routing from the plumbing fixtures.

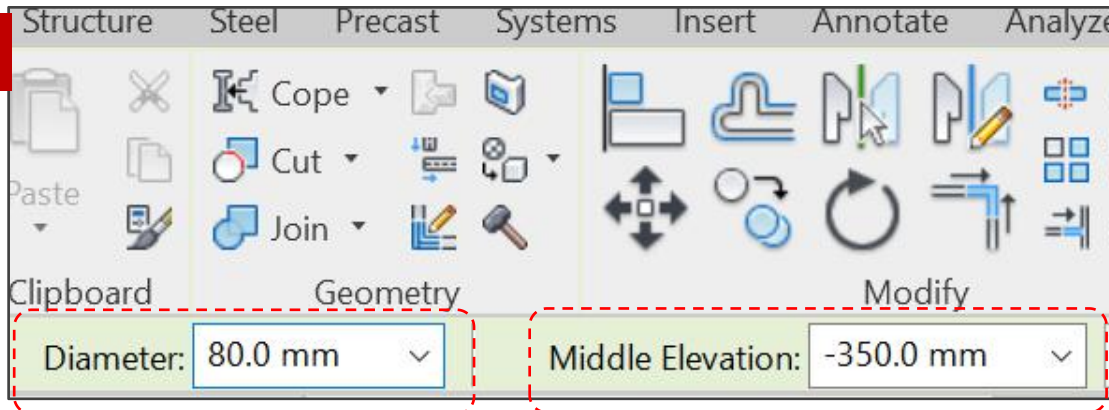


STEPS for SPS Pipe Routing:

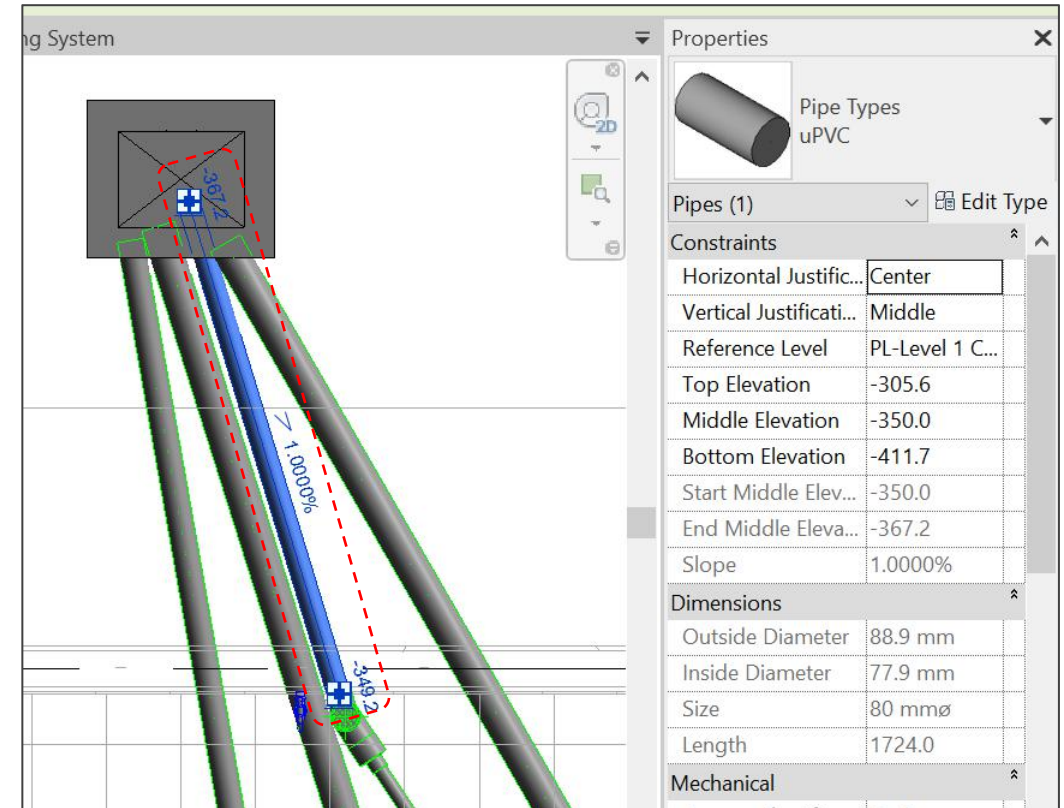
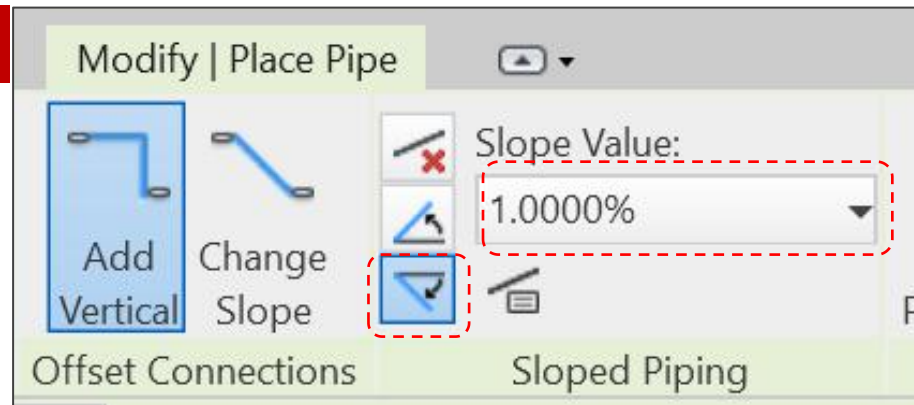
1. Click at the **Floor Drain/Trap** as shown in figure. **Right-click** on the **pipe connector** and **Draw pipe (using uPVC pipe)**

PLACING & ROUTING COMPONENTS (PIPING)

2



3



2. Set **Diameter** to **80mm** and **Offset** to **-350mm**

3. On **Modify|Place Pipe** tab, click **Slope Down** - Select Slope Value of **1.0000 %**

PLACING & ROUTING COMPONENTS (PIPING)

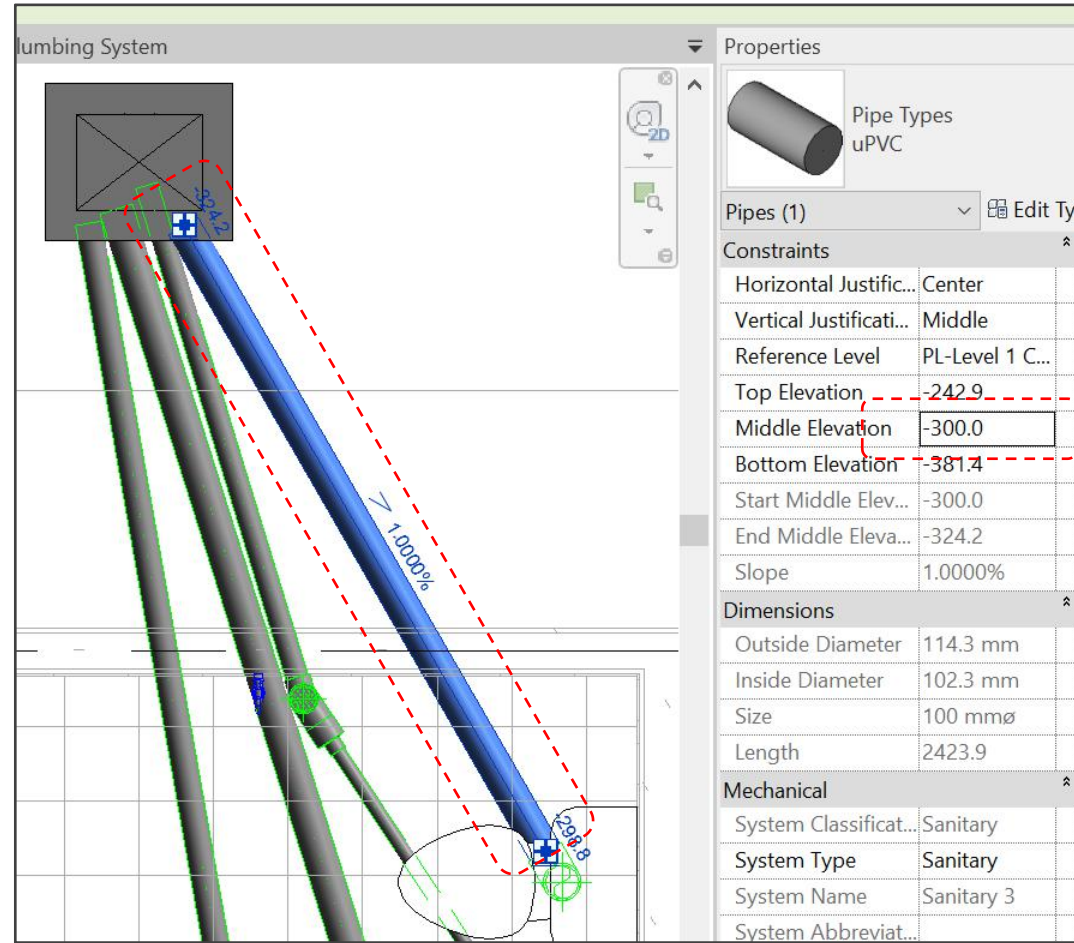
4. Complete all the routing for piping regarding to data in Properties Palette.

Pipe Type: uPVC

Diameter :100mm

Offset/Middle Elevation : -350

- On **Modify|Place Pipe** tab, click **Slope Down**.
- Then, select **Slope Value** of **1.0000 % (Down)**



The screenshot displays a 3D model of a plumbing system with a blue pipe being routed from a grey square fixture to a circular sink. A red dashed line indicates the slope of the pipe, labeled with '1.0000%'. The Properties palette on the right is open, showing the following data:

Properties	
Pipe Types uPVC	
Pipes (1) Edit Ty	
Constraints	
Horizontal Justific...	Center
Vertical Justificati...	Middle
Reference Level	PL-Level 1 C...
Top Elevation	-242.9
Middle Elevation	-300.0
Bottom Elevation	-381.4
Start Middle Elev...	-300.0
End Middle Eleva...	-324.2
Slope	1.0000%
Dimensions	
Outside Diameter	114.3 mm
Inside Diameter	102.3 mm
Size	100 mmø
Length	2423.9
Mechanical	
System Classificat...	Sanitary
System Type	Sanitary
System Name	Sanitary 3
System Abbreviat...	

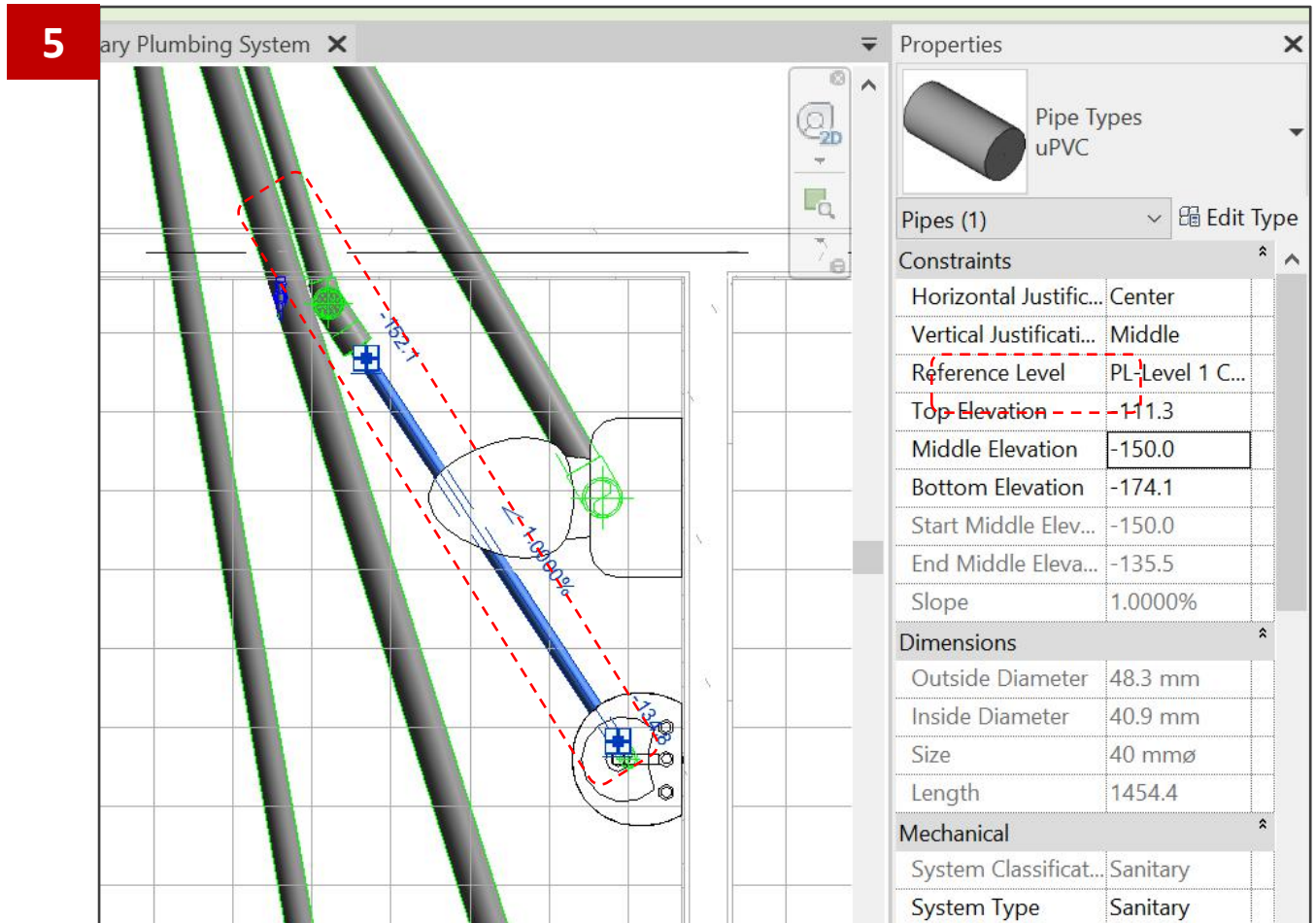
PLACING & ROUTING COMPONENTS (PIPING)

5. Pipe Type: uPVC

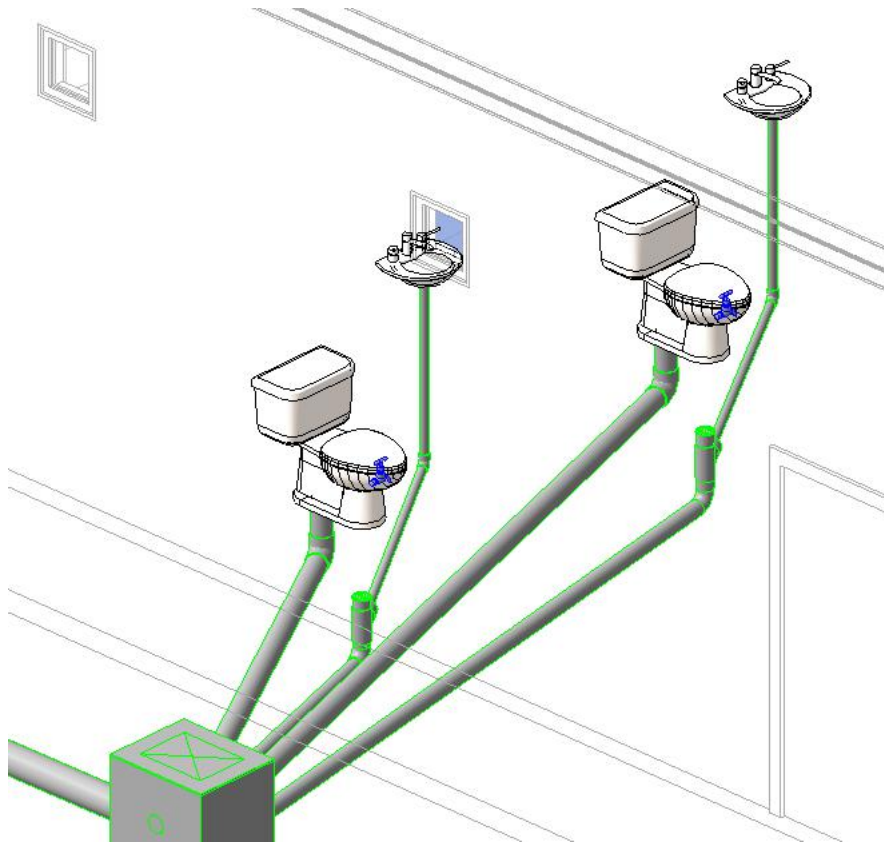
Diameter :100mm

Offset/Middle Elevation : -150mm

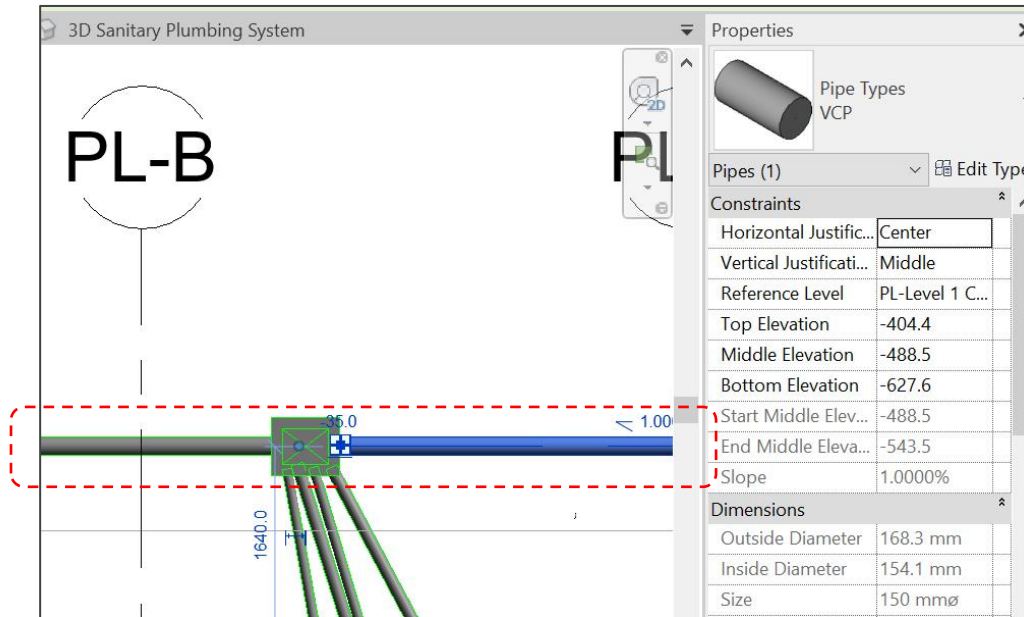
- On **Modify|Place Pipe** tab, click **Slope Down**.
- Then, select **Slope Value** of **1.0000 % (Down)**



PLACING & ROUTING COMPONENTS (PIPING)



PLACING & ROUTING COMPONENTS (PIPING)

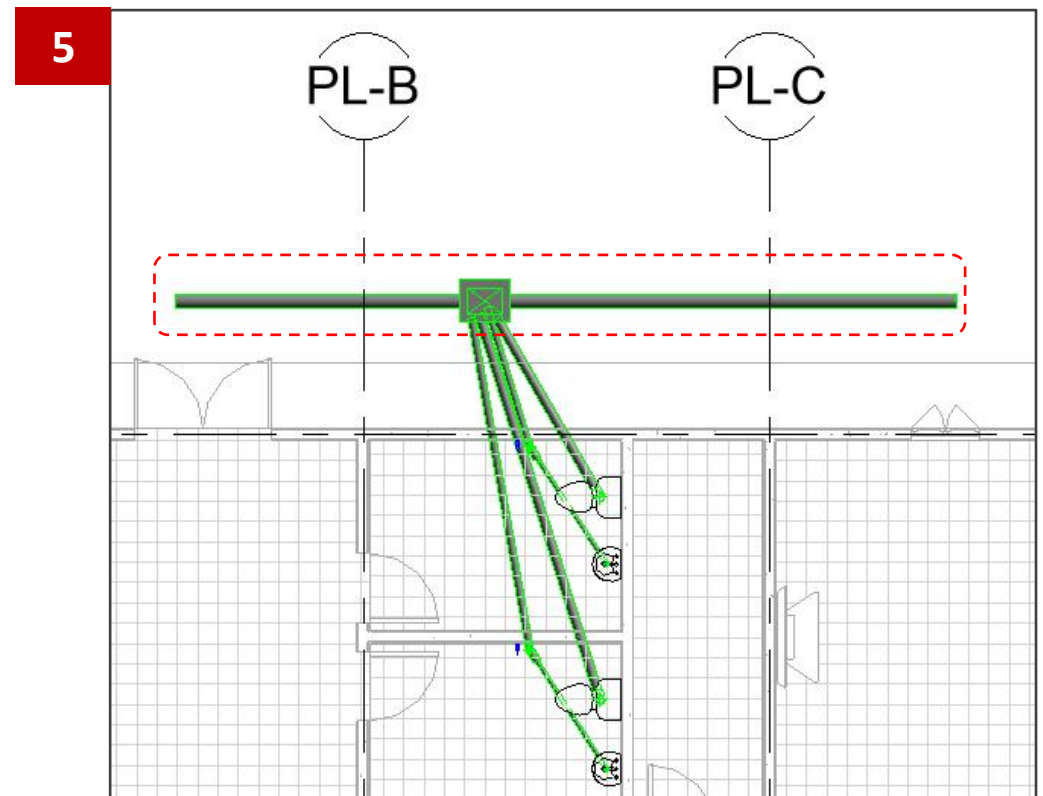


6. Pipe Type: VCP

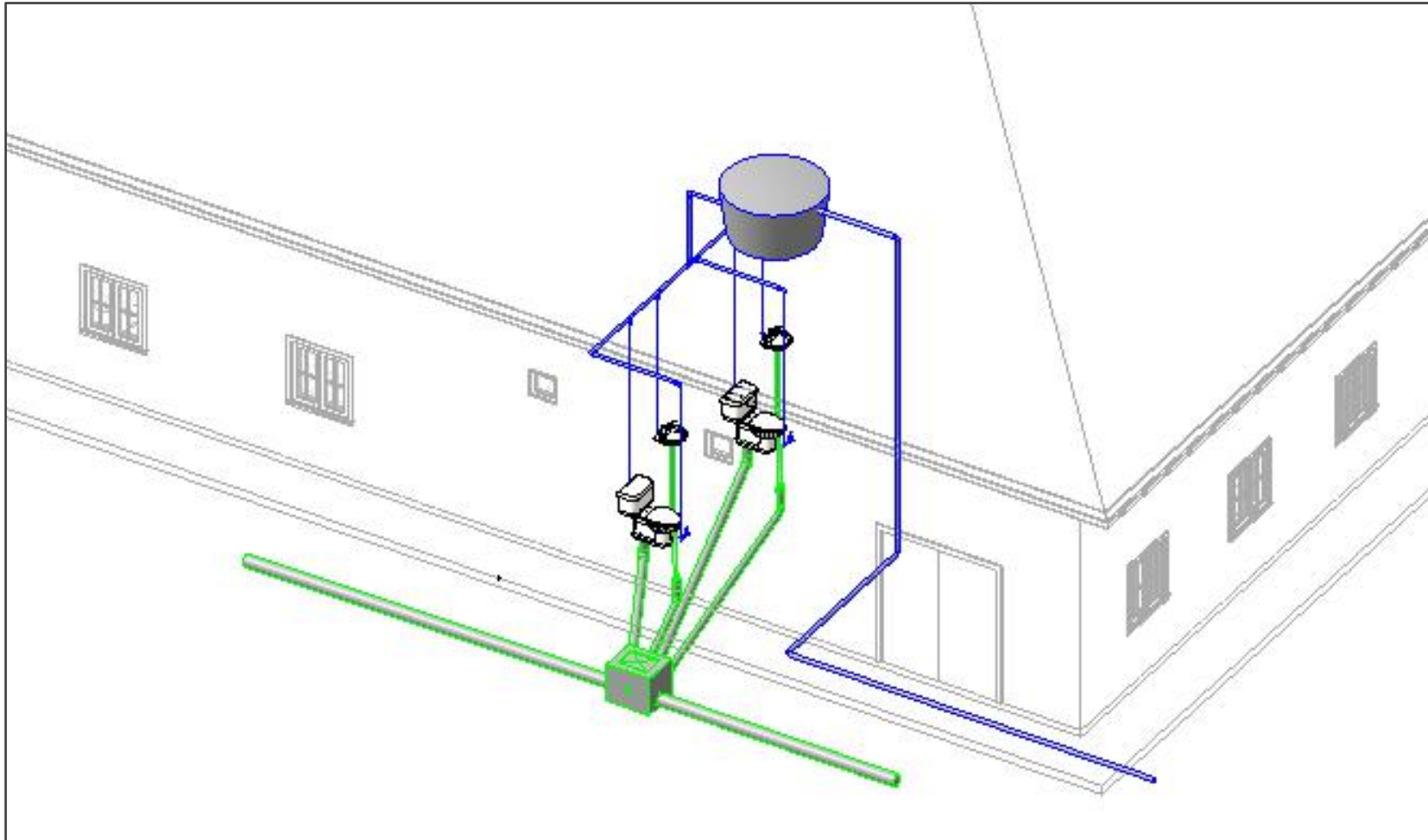
Diameter :150mm

Offset/Middle Elevation : -488.5mm

- On **Modify | Place Pipe** tab, click **Slope Down**.
- Then, select **Slope Value** of **1.0000 % (Down)**



PLACING & ROUTING COMPONENTS (PIPING)



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THANK YOU