



TOPIC 6 **BIM FOR PROJECT QUANTIFICATION**

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BIM FOR PROJECT QUANTIFICATION

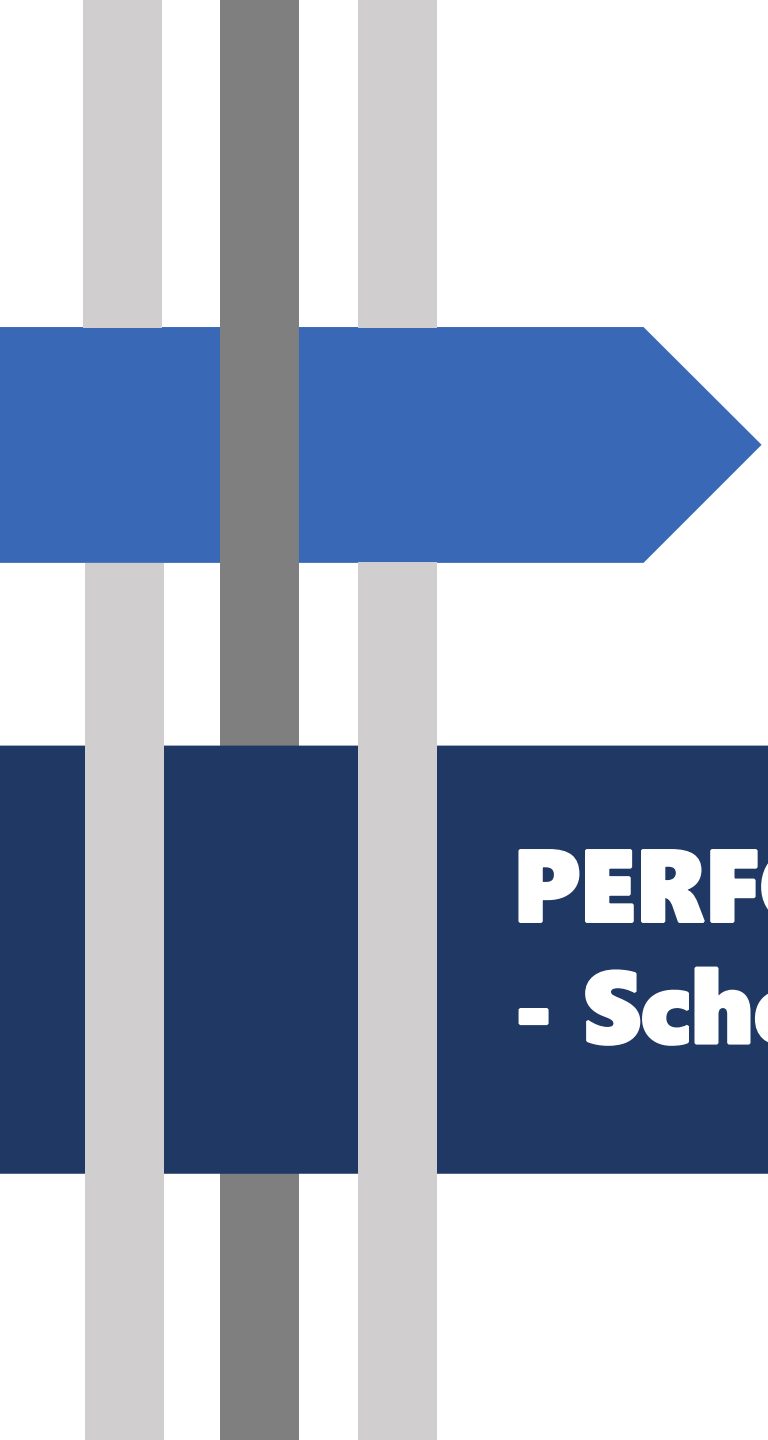
This module is prepared for the Polytechnics students to gain better understanding of the introduction to Building Information Modelling (BIM). It is structured in basic fundamental and step by step approach consist of the following:

Perform Estimation

- Creating Schedules for Architecture, Structural and MEP
- Incorporate pricing
- Cost Summary

Calculated Parameter for Quantity Extraction

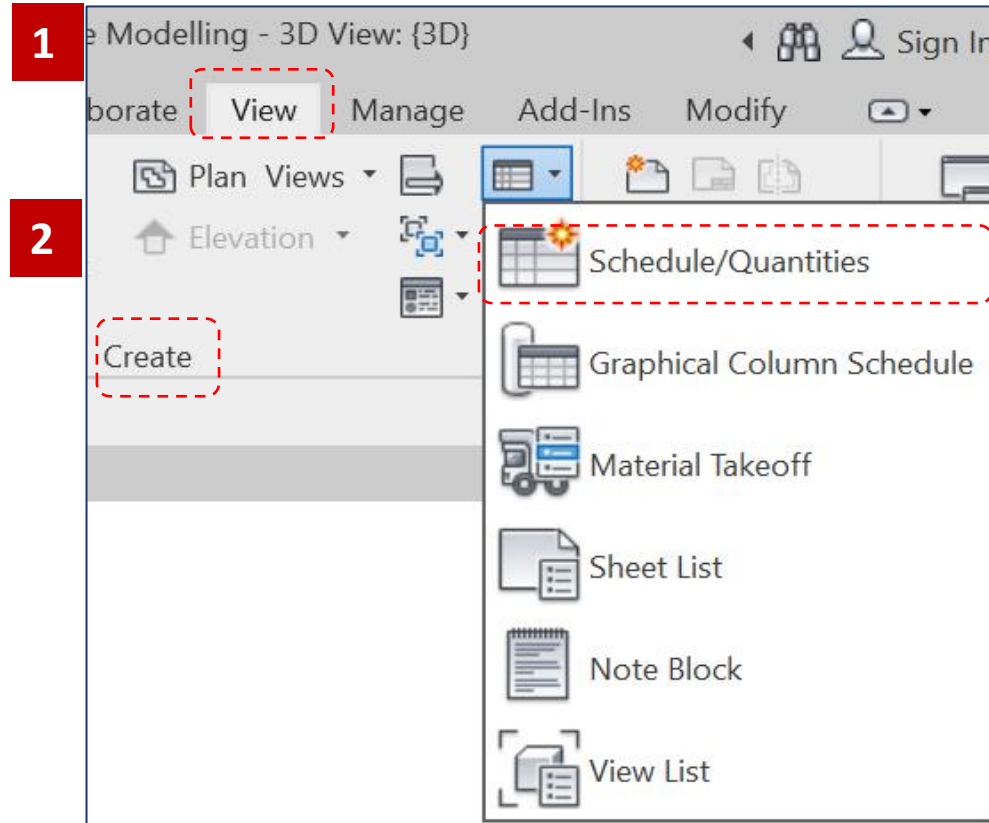
Creating Material Takeoff

The image features three vertical bars on the left side: a light gray bar, a dark gray bar, and another light gray bar. A blue arrow points to the right, partially overlapping the light gray bars. A larger dark blue arrow points to the right, overlapping the dark gray bar and extending further to the right.

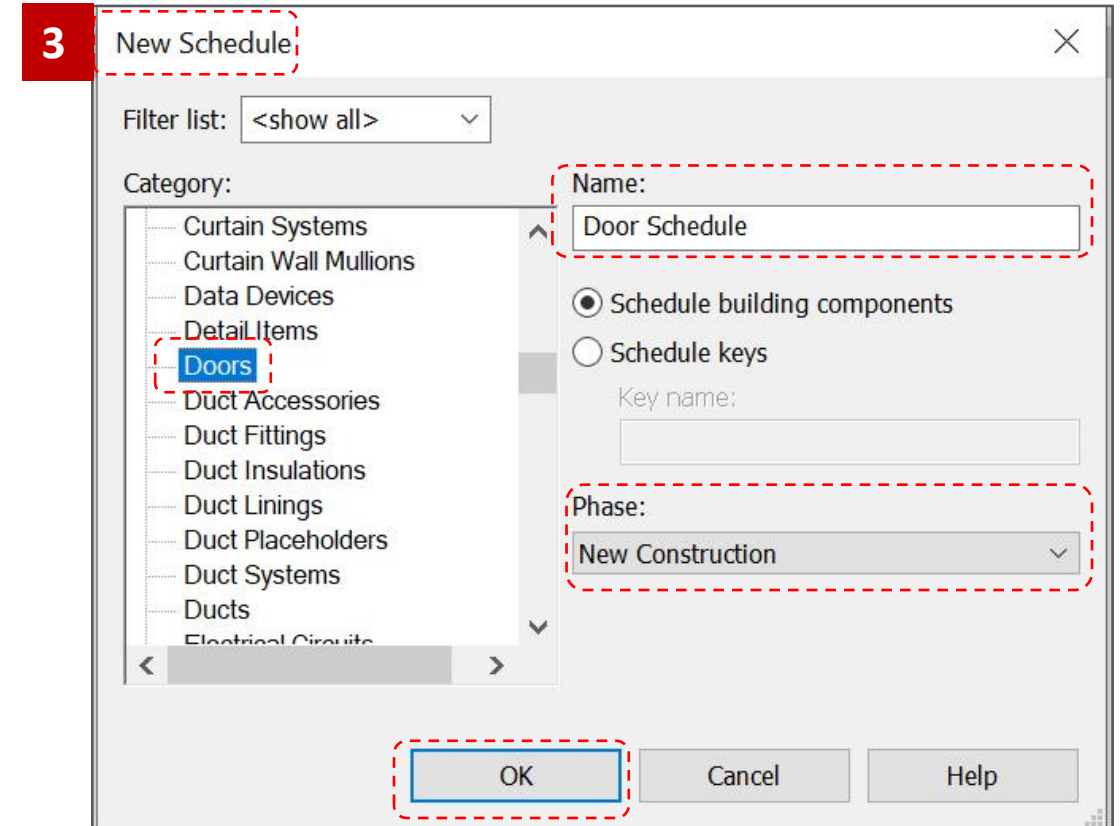
PERFORM ESTIMATION

- Schedules and Costing

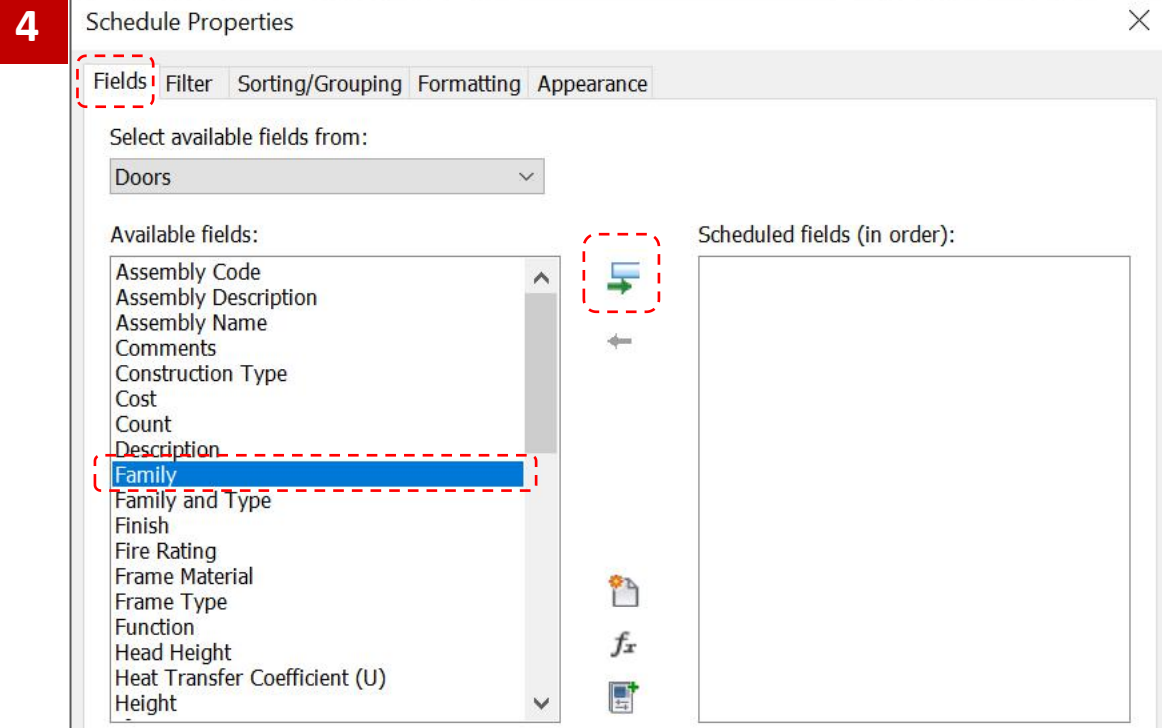
1. CREATING DOOR SCHEDULES



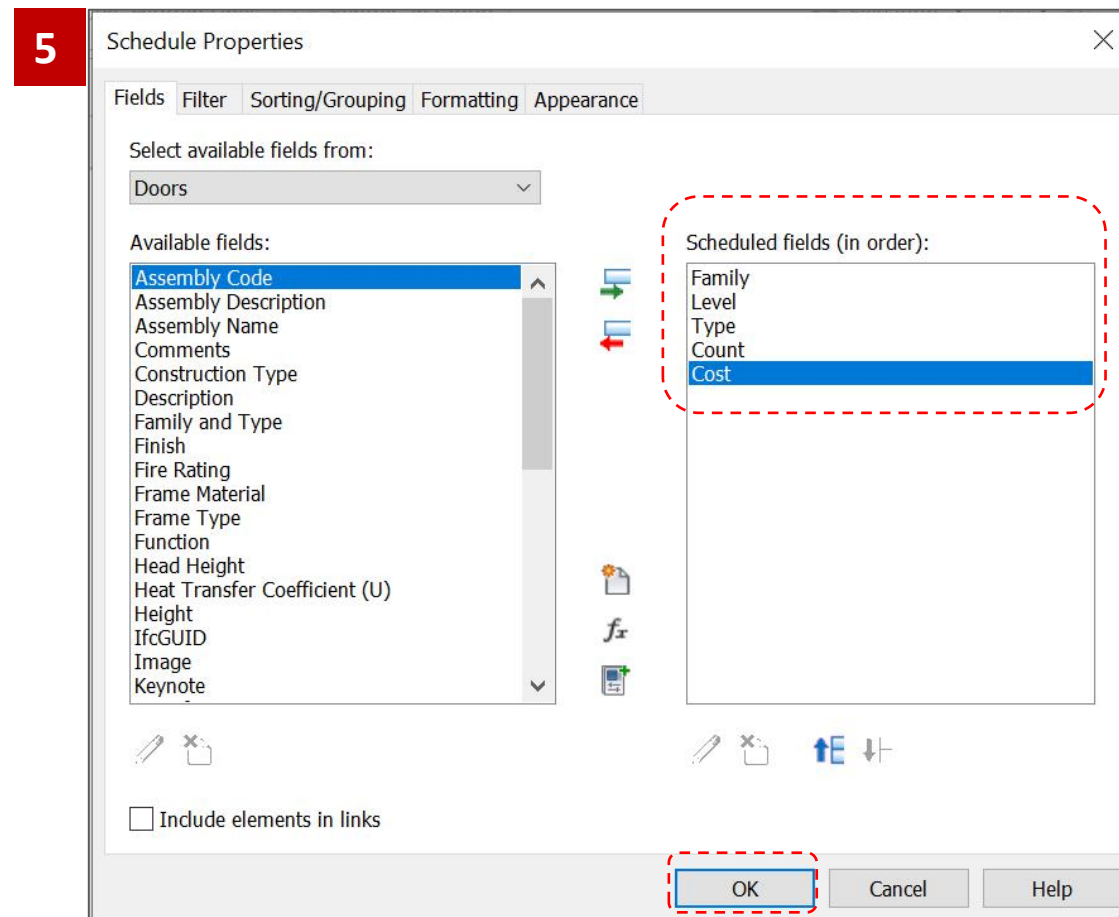
1. Open 'Architecture Modelling' file was created in Topic 2.
2. At **View Tab** go to **Create Panel**, then click **Schedules/Quantities**.



3. In **New Schedule** dialog box, click **Door** under **category**. **Name** and **Phase** using **default**.
- Then click **OK**



4. In **Schedule Properties** dialog box, on **Fields** tab under **Available fields**, click **Family**, then click **Add Parameter** icon .



5. Add all parameters as shown in figure (in order). Then, click **OK**.

6

<Door Schedule>				
A	B	C	D	E
Family	Type	Level	Count	Cost
M_Door-Curtain-Wall-Double-S	M_Door-Curtain-Wall	Level 1	1	
M_Door-Double-Flush_Panel	1700 x 2000mm	Level 1	1	
M_Door-Double-Flush_Panel	1700 x 2000mm	Level 1	1	
M_Single-Flush	0813 x 2134mm	Level 1	1	
M_Door-Overhead-Rolling	2000 x 2000mm	Level 1	1	
M_Door-Double-Flush_Panel	1700 x 2000mm	Level 1	1	
M_Door-Single-Panel	850 x 2000mm	Level 1	1	
M_Door-Curtain-Wall-Single-Gl	M_Door-Curtain-Wall	Level 1	1	
M_Door-Single-Panel	850 x 2000mm	Level 1	1	
M_Door-Single-Panel	850 x 2000mm	Level 1	1	

6. **Door Schedule** appear in **Drawing Area** as shown in figure above.

7. Under **Properties Palette** , on **Sorting/Grouping** click **Edit**.

7

Properties	
Schedule	
Schedule: Door Schedu ▾ Edit Type	
Identity Data ^	
View Template	<None>
View Name	Door Schedule
Dependency	Independent
Phasing ^	
Phase Filter	Show All
Phase	New Construction
Other ^	
Fields	Edit...
Filter	Edit...
Sorting/Grouping	Edit...
Formatting	Edit...
Appearance	Edit...

8

Schedule Properties

Fields Filter **Sorting/Grouping** Formatting Appearance

Sort by: Family ☒ Ascending ☐ Descending

☐ Header

☒ Footer: Title, count, and totals ☐ Blank line

Then by: Level ☒ Ascending ☐ Descending

☐ Header

☒ Footer: Title, count, and totals ☐ Blank line

Then by: (none) ☒ Ascending ☐ Descending

☐ Header

☐ Footer: ☐ Blank line

Then by: (none) ☒ Ascending ☐ Descending

☐ Header

☐ Footer: ☐ Blank line

☒ Grand totals: Title, count, and totals

Custom grand total title:

☐ Itemize every instance

OK Cancel Help

8. In **Schedule Properties** dialog box > **Sorting/Grouping** Tab, setting all item as shown in figure above.
- Then click **OK**.

9

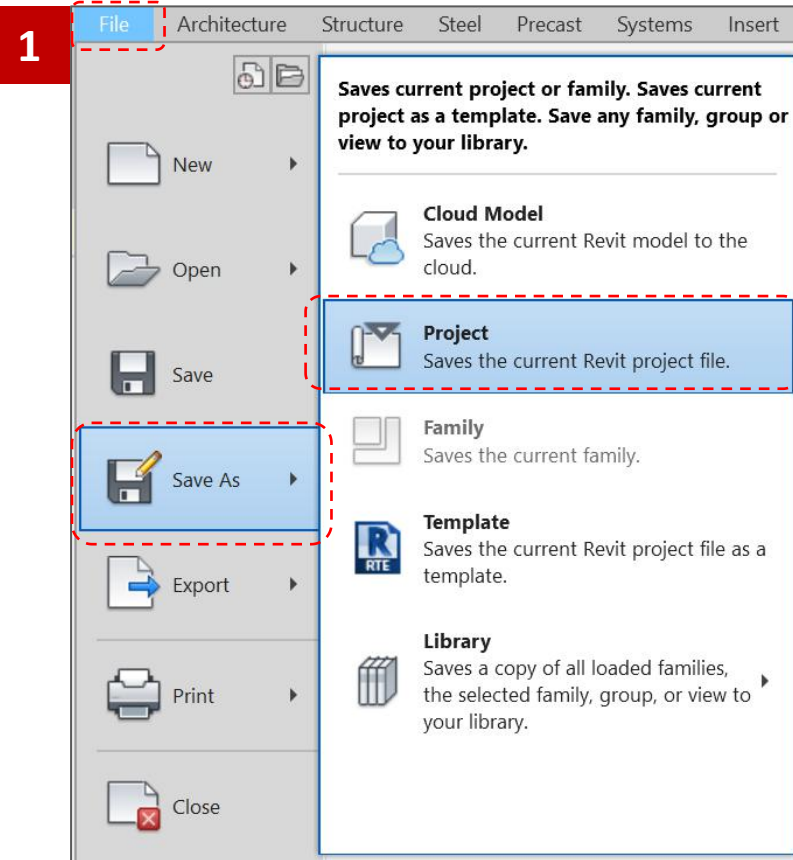
{3D} **Door Schedule** X

<Door Schedule>

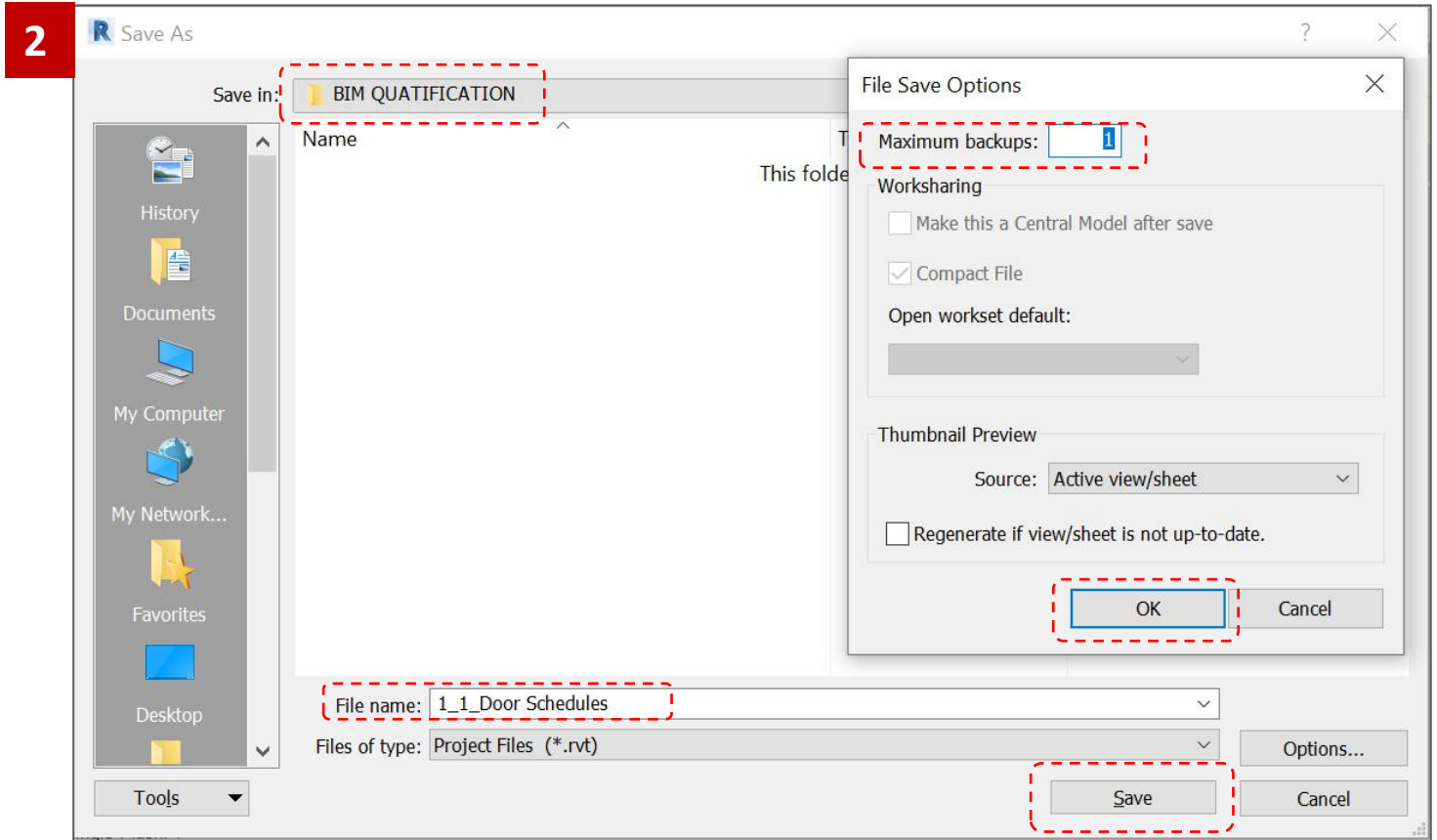
A	B	C	D	E
Family	Type	Level	Count	Cost
M_Door-Curtain-Wall-Double-S	M_Door-Curtain-Wall	Level 1	1	
Level 1: 1				
M_Door-Curtain-Wall-Double-Storefront: 1				
M_Door-Curtain-Wall-Single-Gl	M_Door-Curtain-Wall	Level 1	1	
Level 1: 1				
M_Door-Curtain-Wall-Single-Glass: 1				
M_Door-Double-Flush_Panel	1700 x 2000mm	Level 1	3	
Level 1: 3				
M_Door-Double-Flush_Panel: 3				
M_Door-Overhead-Rolling	2000 x 2000mm	Level 1	1	
Level 1: 1				
M_Door-Overhead-Rolling: 1				
M_Door-Single-Panel	850 x 2000mm	Level 1	3	
Level 1: 3				
M_Door-Single-Panel: 3				
M_Single-Flush	0813 x 2134mm	Level 1	1	
Level 1: 1				
M_Single-Flush: 1				
Grand total: 10				

9. Sorted and organized **Door Schedule** appear in **Drawing Area** as shown in above.

2. SAVING SCHEDULE FILE

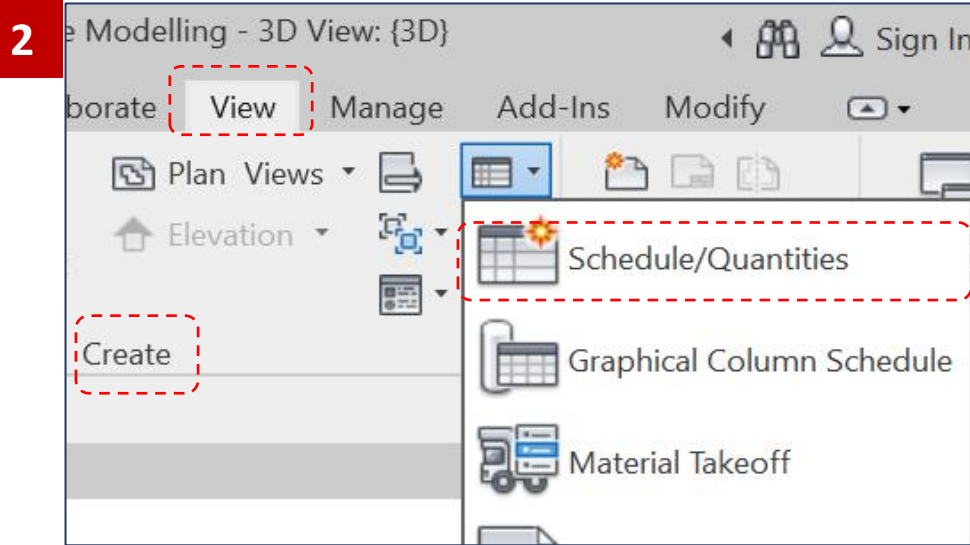


1. Go to **File** tab > **Save As** > **Project**.



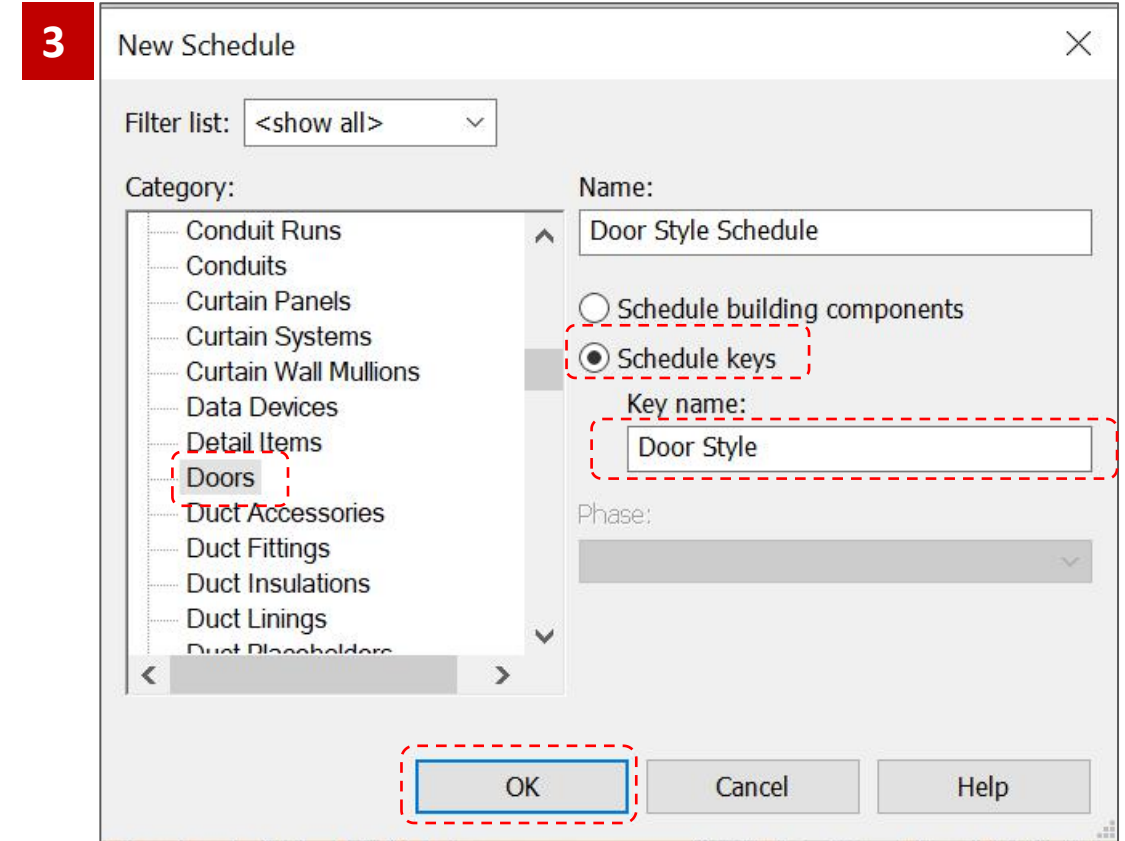
2. Save file name as **1_1_Door Schedule.rvt** with maximum backup is **1**.
- Then click **OK** and **Save**

3. CREATING SCHEDULES KEYS



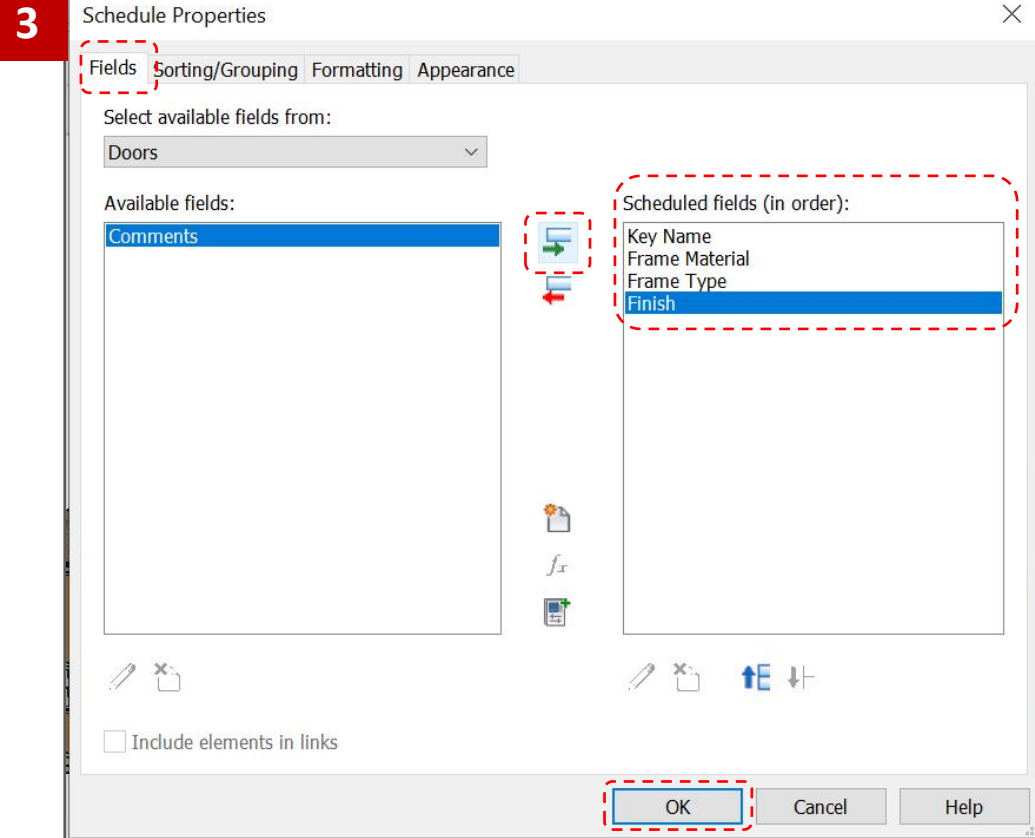
1. Open 'Architecture Modelling' file and create new **Door Schedule** consist followings fields:

- Family and Type
- Level
- Frame Type
- Frame Material
- Finish
- Count



2. At **View** tab, go to **Create Panel**, then click **Schedules/Quantities**.

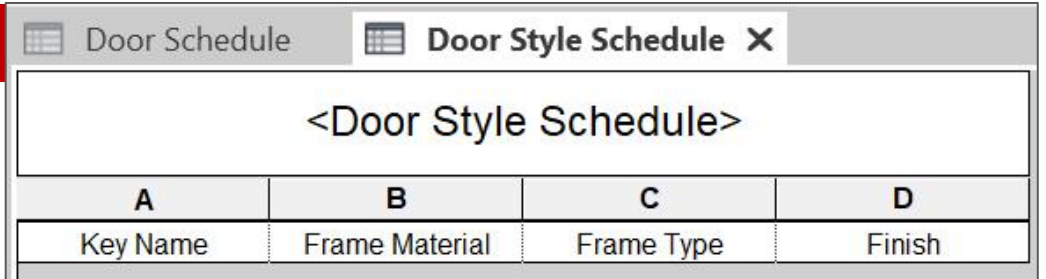
3. In **New Schedule** dialog box, click **Door** under **category**. Then click **Schedule Keys** and click **OK**.



3. In **Field** Tab, add to **Schedule** fields:

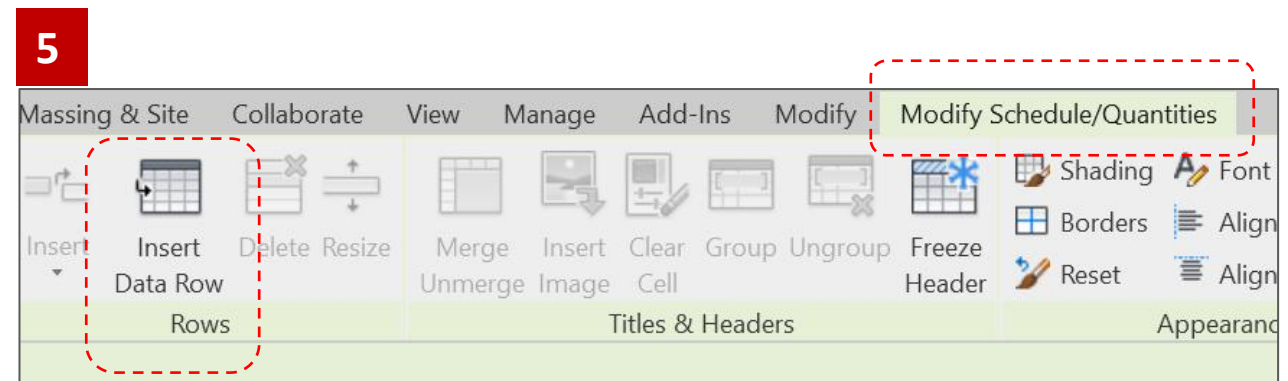
- **Key Name**
- **Frame Material**
- **Frame Type**
- **Finish** , then click **OK**

4



<Door Style Schedule>			
A	B	C	D
Key Name	Frame Material	Frame Type	Finish

4. Blank Door Style Schedule will appear as shown in figure.



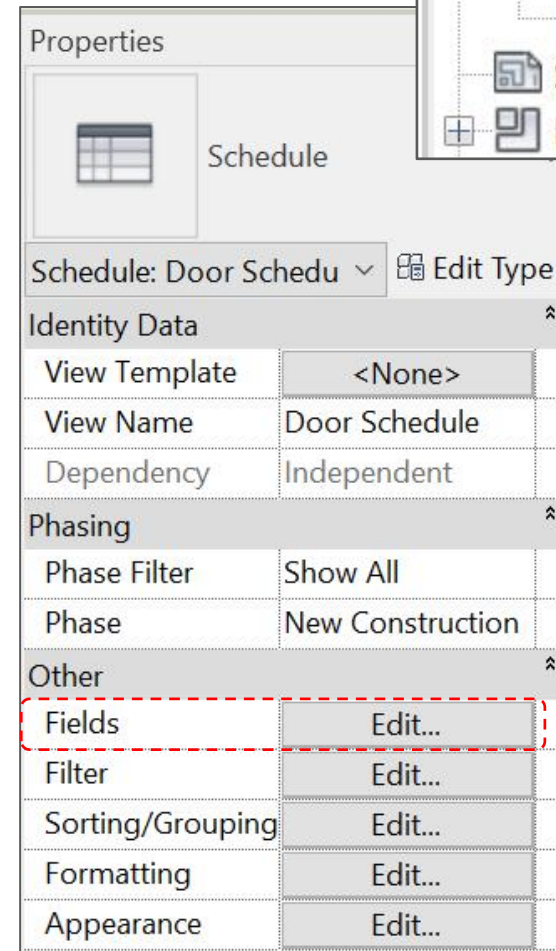
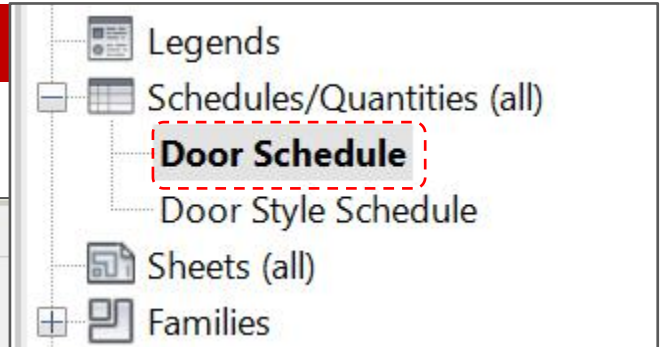
5. Click **Modify Schedule/Quantities** tab, on **Rows Panel** click **Insert Row Data** button.

6

<Door Style Schedule>			
A	B	C	D
Key Name	Frame Material	Frame Type	Finish
1	Wood	Flush	Solid Laminate
2	Aluminium	Flush	Paint/Stain
3	Wood	Panel	Paint/Stain
4	Aluminium		Paint/Stain

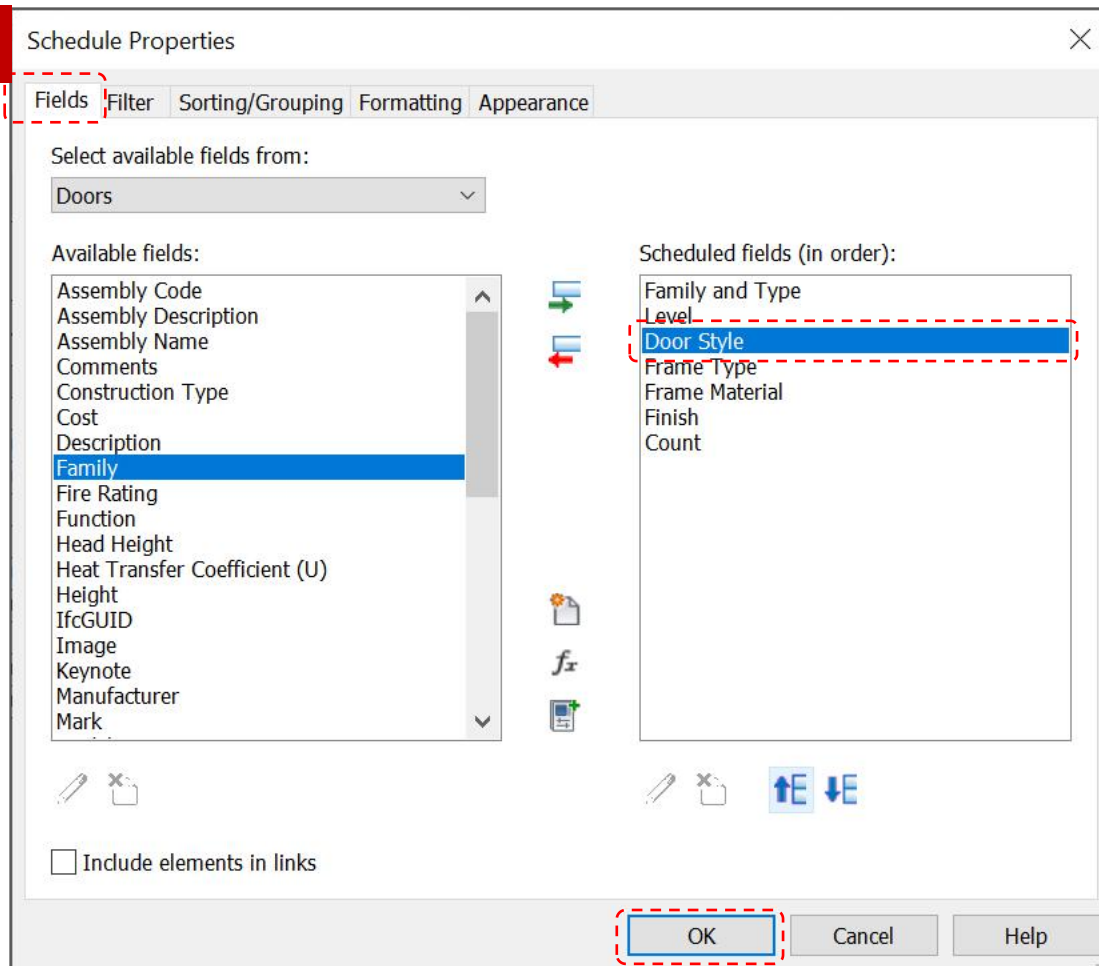
6. In new **Data Row**, key in the required information as shown in figure above.
7. On **Project Browser**, under **Schedule Quantities (all)** > double click **Door Schedule**.
8. In **Properties Palette** > under **Fields** click **Edit**.

7

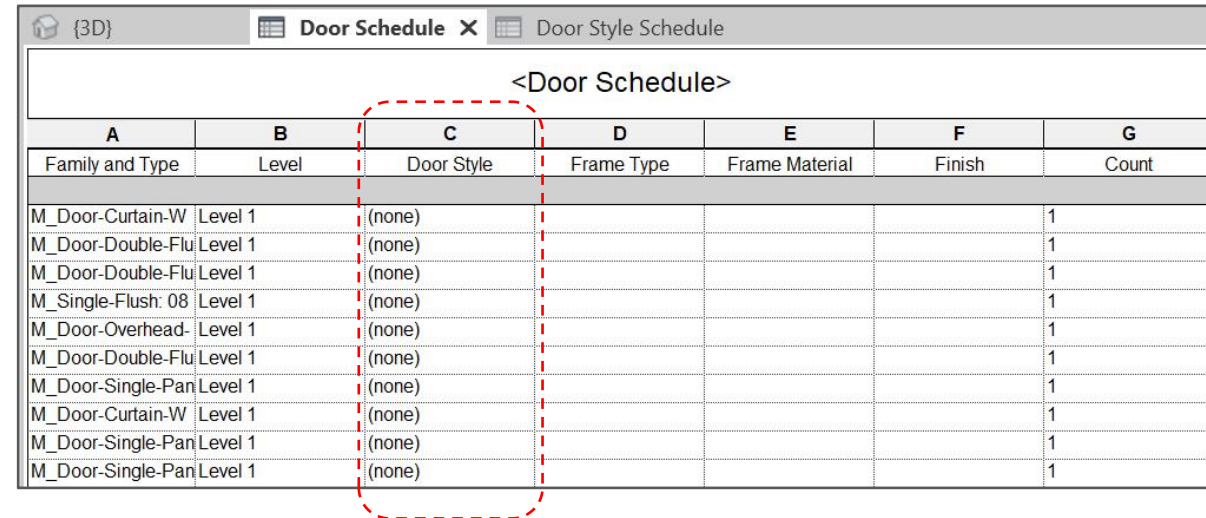


8

9



10



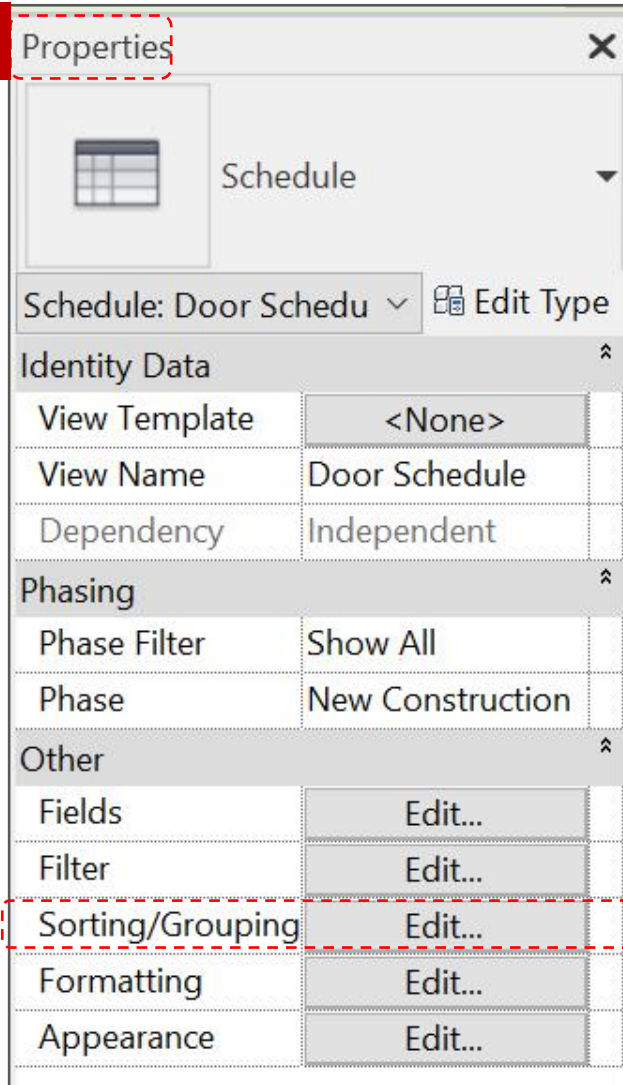
<Door Schedule>

A	B	C	D	E	F	G
Family and Type	Level	Door Style	Frame Type	Frame Material	Finish	Count
M_Door-Curtain-W	Level 1	(none)				1
M_Door-Double-Flu	Level 1	(none)				1
M_Door-Double-Flu	Level 1	(none)				1
M_Single-Flush: 08	Level 1	(none)				1
M_Door-Overhead-	Level 1	(none)				1
M_Door-Double-Flu	Level 1	(none)				1
M_Door-Single-Pan	Level 1	(none)				1
M_Door-Curtain-W	Level 1	(none)				1
M_Door-Single-Pan	Level 1	(none)				1
M_Door-Single-Pan	Level 1	(none)				1

10. In **Door Schedule**, will be appear column for door style as shown in figure.

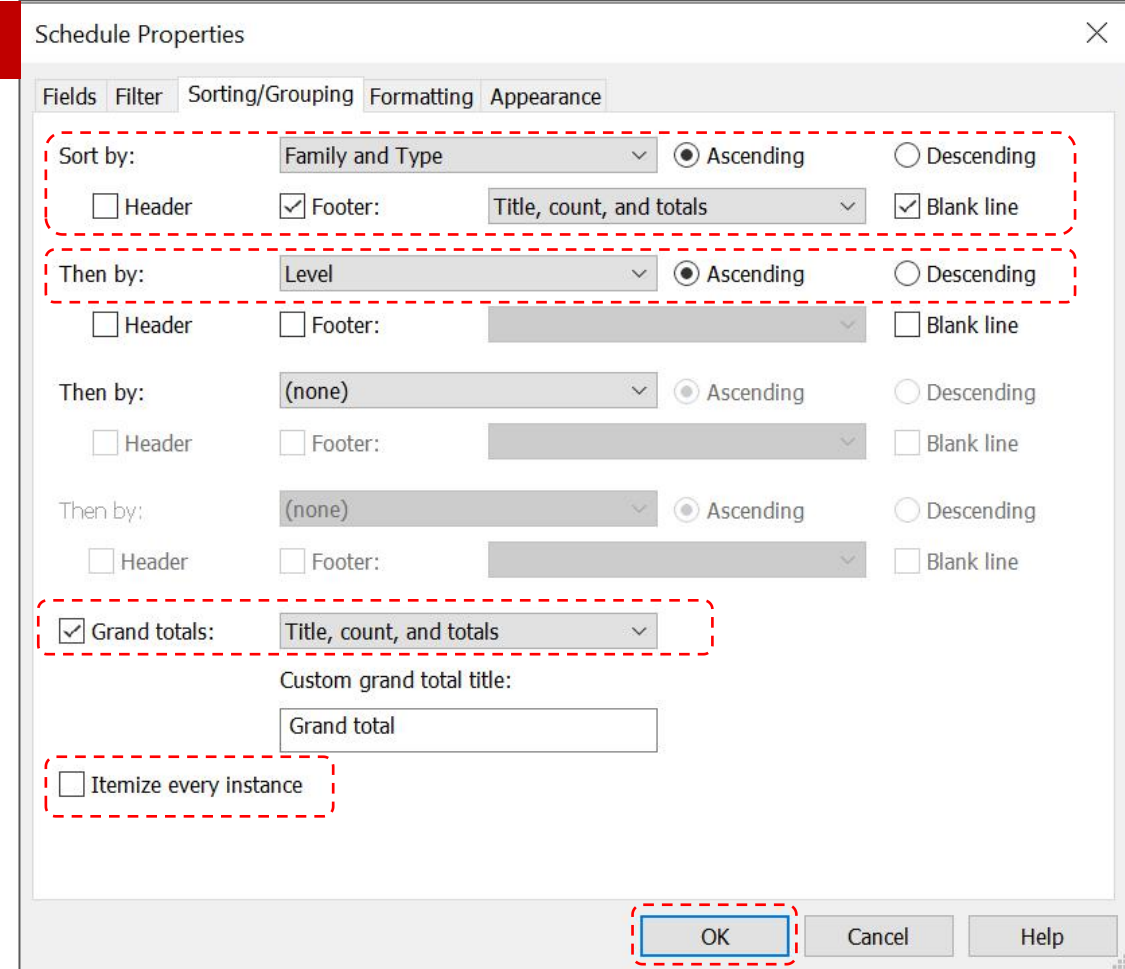
9. In **Schedule Properties** dialog box > **Fields** Tab > Select **Door Style** and click **add parameter**.
- Then click **OK**

11



11. Under **Properties Palette** , on **Sorting/Grouping** click **Edit**.

12



12. In **Schedule Properties dialog box > Sorting/Grouping Tab**, setting all item as shown in figure above. Then click **OK**.

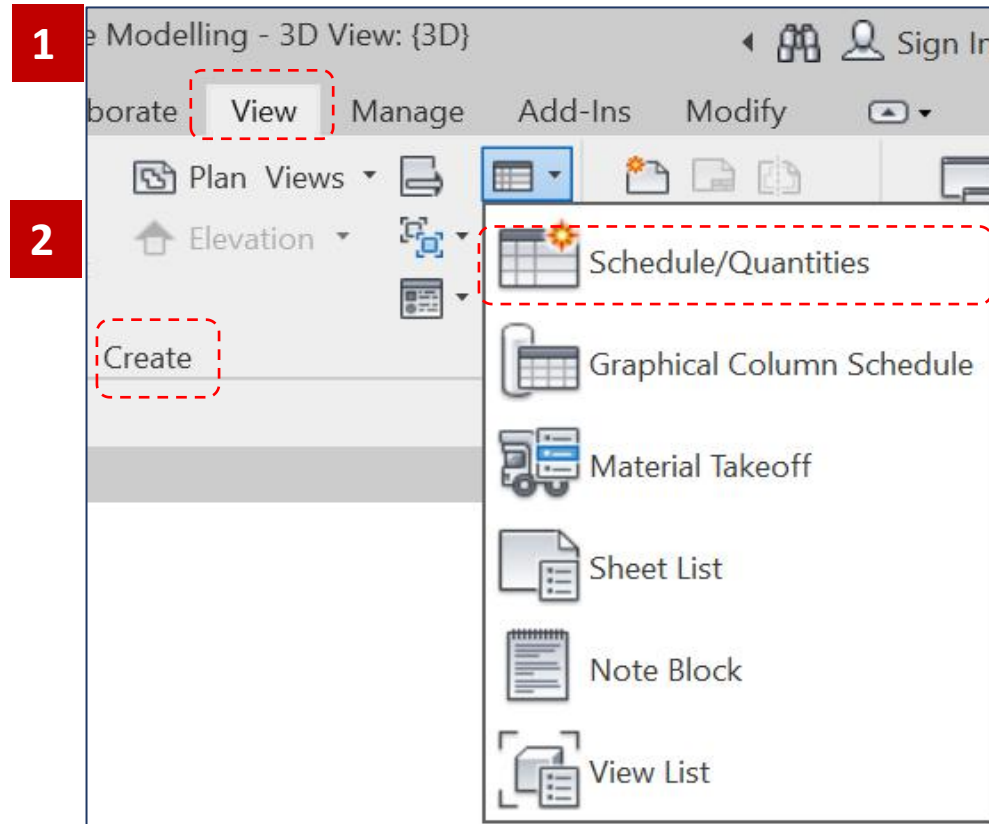
13

<Door Schedule>						
A	B	C	D	E	F	G
Family and Type	Level	Door Style	Frame Type	Frame Material	Finish	Count
M_Door-Curtain-Wall-Double-Storefront: M_Door-Curtain-Wall-Double-Storefront: 1	Level 1	4		Aluminium	Paint/Stain	1
M_Door-Curtain-Wall-Double-Storefront: M_Door-Curtain-Wall-Double-Storefront: 1						
M_Door-Curtain-Wall-Single-Glass: M_Door-Curtain-Wall-Single-Glass: 1	Level 1	4		Aluminium	Paint/Stain	1
M_Door-Curtain-Wall-Single-Glass: M_Door-Curtain-Wall-Single-Glass: 1						
M_Door-Double-Flush_Panel: 1700 x 2000mm	Level 1	2	Flush	Aluminium	Paint/Stain	3
M_Door-Double-Flush_Panel: 1700 x 2000mm: 3						
M_Door-Overhead-Rolling: 2000 x 2000mm	Level 1	4		Aluminium	Paint/Stain	1
M_Door-Overhead-Rolling: 2000 x 2000mm: 1						
M_Door-Single-Panel: 850 x 2000mm	Level 1	3	Panel	Wood	Paint/Stain	3
M_Door-Single-Panel: 850 x 2000mm: 3						
M_Single-Flush: 0813 x 2134mm	Level 1	1	Flush	Wood	Solid Laminate	1
M_Single-Flush: 0813 x 2134mm: 1						
Grand total: 10						

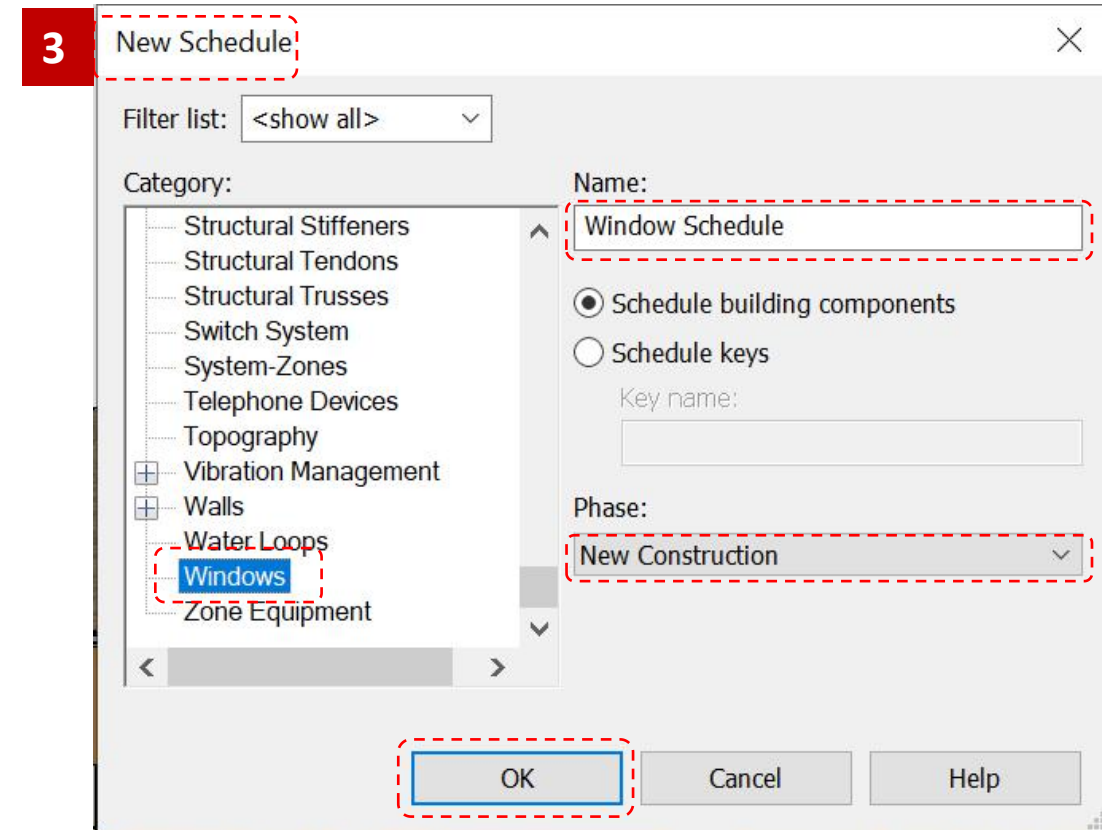
13. Fill in **Door Style** column with **Key name** from **Door Style Schedule** as shown in figure above.

14. Save the project as **1_2_DoorScheduleKey.rvt**
 - Then **Close** file.

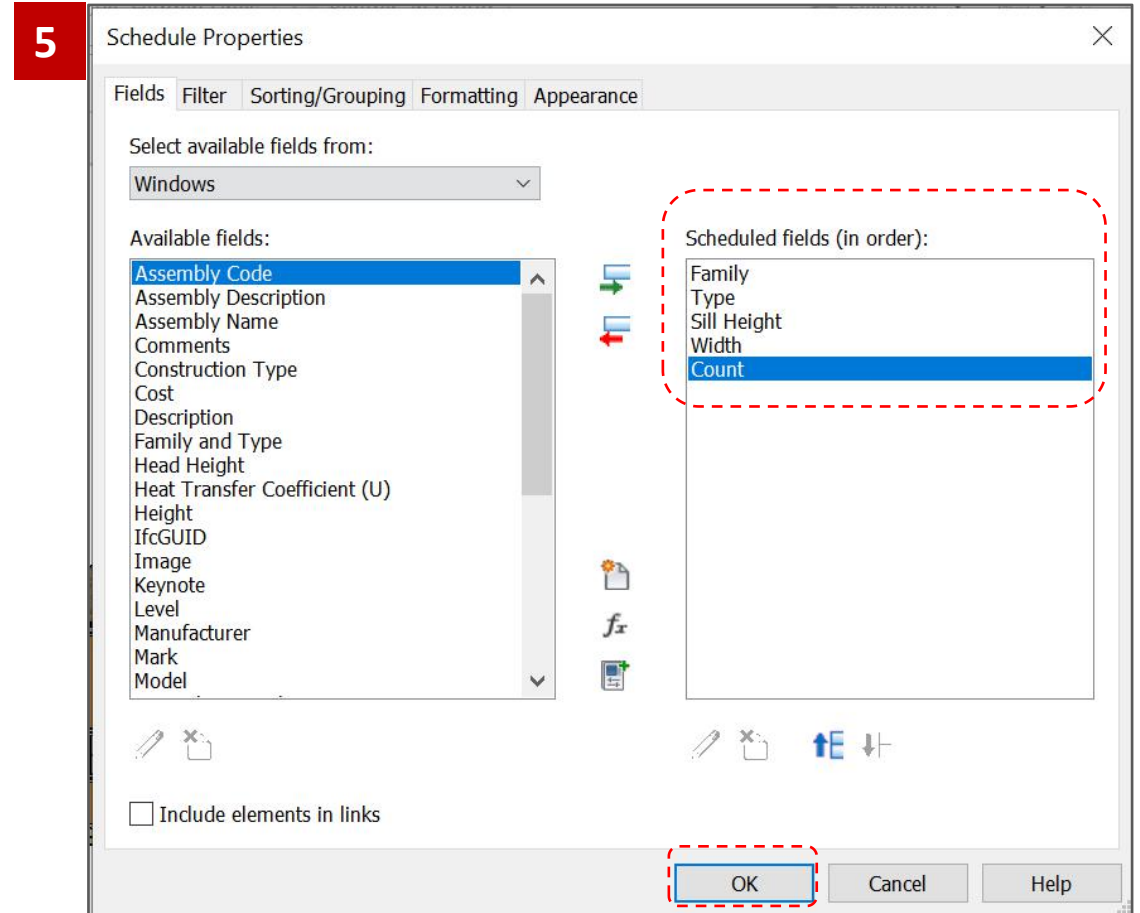
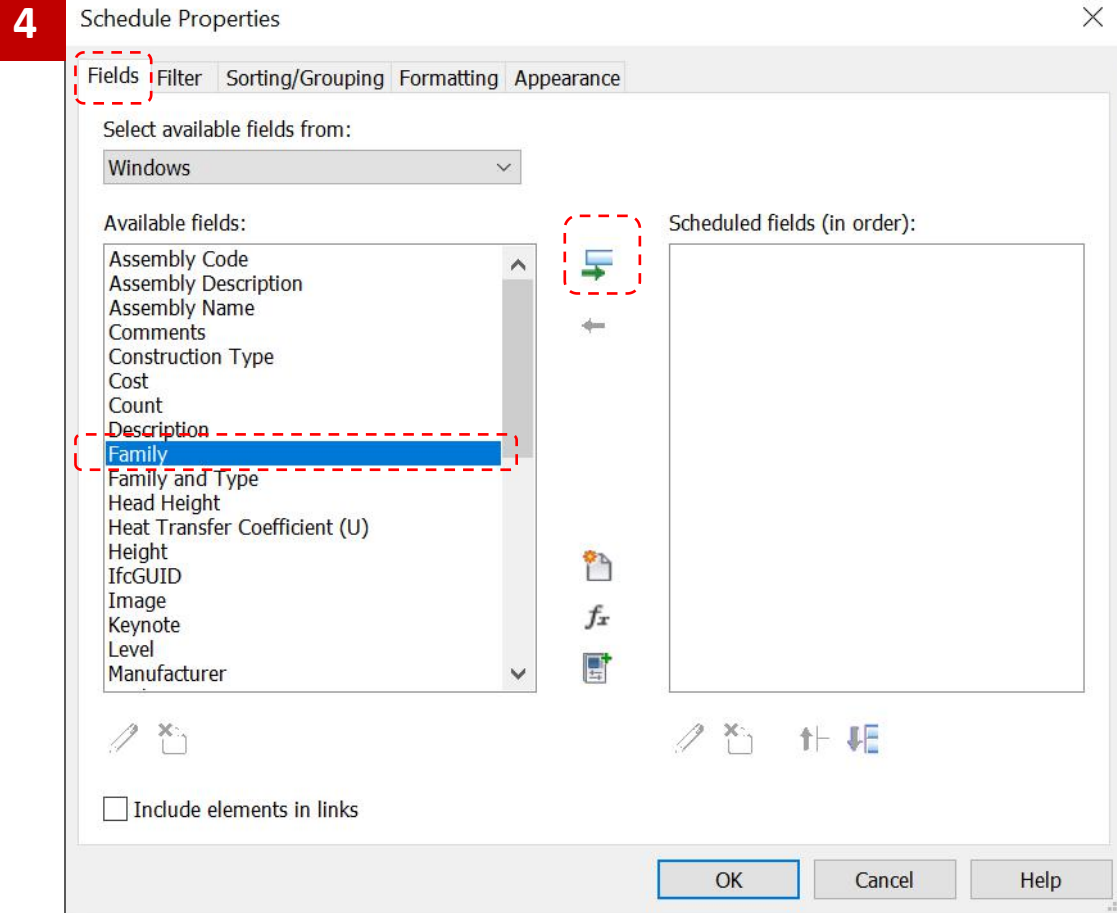
4. CREATING WINDOWS SCHEDULES



1. Open 'Architecture Modelling' file was created in Topic 2.
2. At **View Tab** go to **Create Panel**, then click **Schedules/Quantities**.



3. In **New Schedule** dialog box, click **Window** under category. **Name** and **Phase** using default.
- Then click **OK**



6

<Window Schedule>				
A	B	C	D	E
Family	Type	Sill Height	Width	Count
M_Window-Casement-Double	850 x 900mm	900	850	1
M_Window-Casement-Double	850 x 900mm	900	850	1
M_Window-Casement-Double	850 x 900mm	900	850	1
M_Window-Casement-Double	850 x 900mm	900	850	1
M_Window-Fixed-Arch-Top	900 x 1350mm	900	900	1
M_Window-Fixed-Arch-Top	900 x 1350mm	900	900	1
M_Window-Casement-Single_Left	600 x 900mm	900	600	1
M_Window-Casement-Single_Left	600 x 900mm	900	600	1
M_Window-Casement-Single_Left	600 x 900mm	900	600	1
M_Window-Casement-Single_Left	600 x 900mm	900	600	1
M_Window-Casement-Double	850 x 900mm	900	850	1
M_Window-Casement-Double	850 x 900mm	900	850	1
M_Window-Casement-Double	850 x 900mm	900	850	1
M_Window-Casement-Double	850 x 900mm	900	850	1
M_Window-Casement-Double	850 x 900mm	900	850	1
M_Window-Casement-Double	850 x 900mm	900	850	1
M_Window-Casement-Double	850 x 900mm	900	850	1
M_Fixed	0406 x 0406	2200	406	1
M_Fixed	0406 x 0406	2200	406	1

6. **Window Schedule** appear in **Drawing Area** as shown in figure above.

7. Under **Properties Palette** , on **Sorting/Grouping** click **Edit**.

7

Properties	
Schedule	
Schedule: Window Sch Edit Type	
Identity Data	
View Template	<None>
View Name	Window Schedule
Dependency	Independent
Phasing	
Phase Filter	Show All
Phase	New Construction
Other	
Fields	Edit...
Filter	Edit...
Sorting/Grouping	Edit...
Formatting	Edit...
Appearance	Edit...

8

Schedule Properties

Fields Filter **Sorting/Grouping** Formatting Appearance

Sort by: Family ☒ Ascending ☐ Descending

☐ Header ☒ Footer: Title, count, and totals ☒ Blank line

Then by: Type ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

Then by: (none) ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

Then by: (none) ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

☒ Grand totals: Title, count, and totals

Custom grand total title:

Grand total

☐ Itemize every instance

OK Cancel Help

8. In **Schedule Properties** dialog box > **Sorting/Grouping** Tab, setting all item as shown in figure above.
- Then click **OK**.

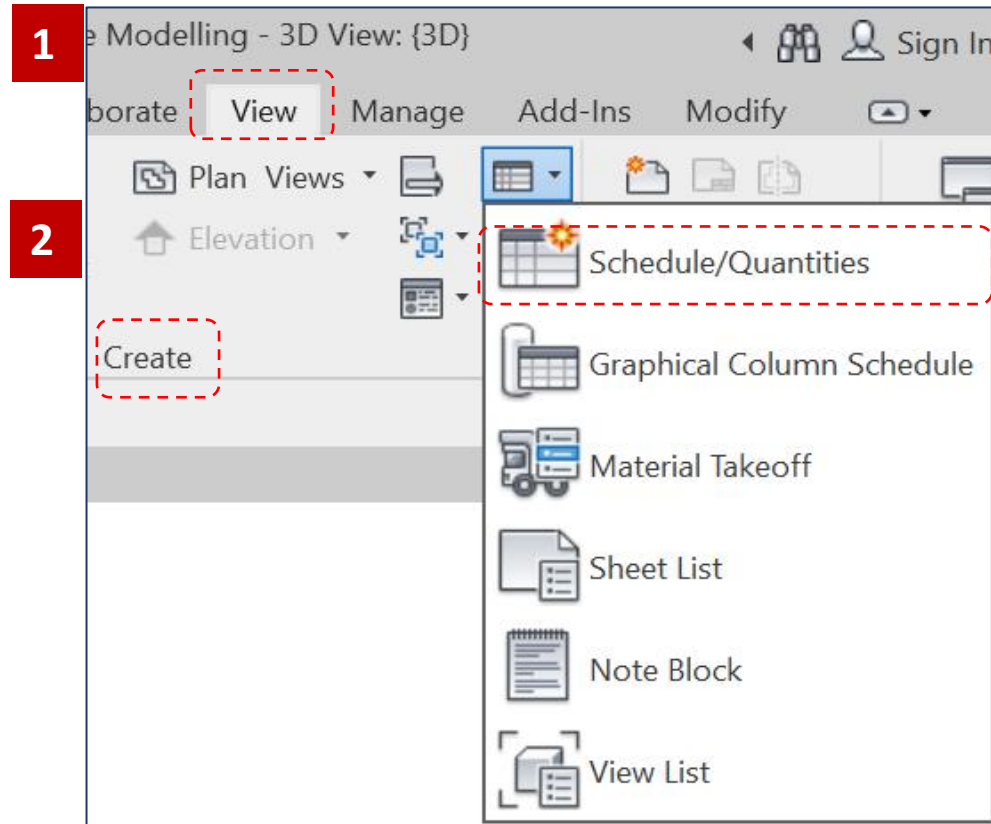
9

Window Schedule

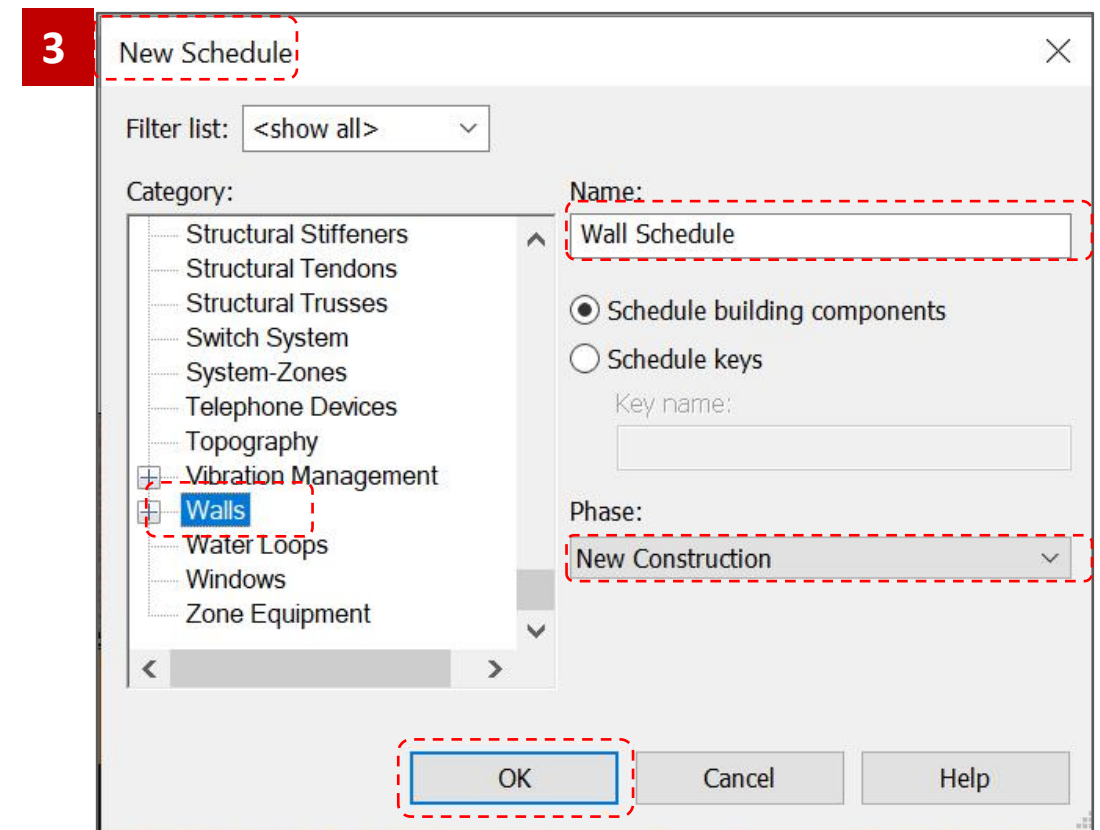
<Window Schedule>				
A	B	C	D	E
Family	Type	Sill Height	Width	Count
M_Fixed	0406 x 0406	2200	406	2
M_Fixed: 2				
M_Window-Casement-Double	850 x 900mm	900	850	12
M_Window-Casement-Double: 12				
M_Window-Casement-Single_Left	600 x 900mm	900	600	4
M_Window-Casement-Single_Left: 4				
M_Window-Fixed-Arch-Top	900 x 1350mm	900	900	2
M_Window-Fixed-Arch-Top: 2				
Grand total: 20				

9. Sorted and organized **Window Schedule** appear in **Drawing Area** as shown in above.
10. Save the project as **1_3_WindowSchedules.rvt**
- Then **Close** file.

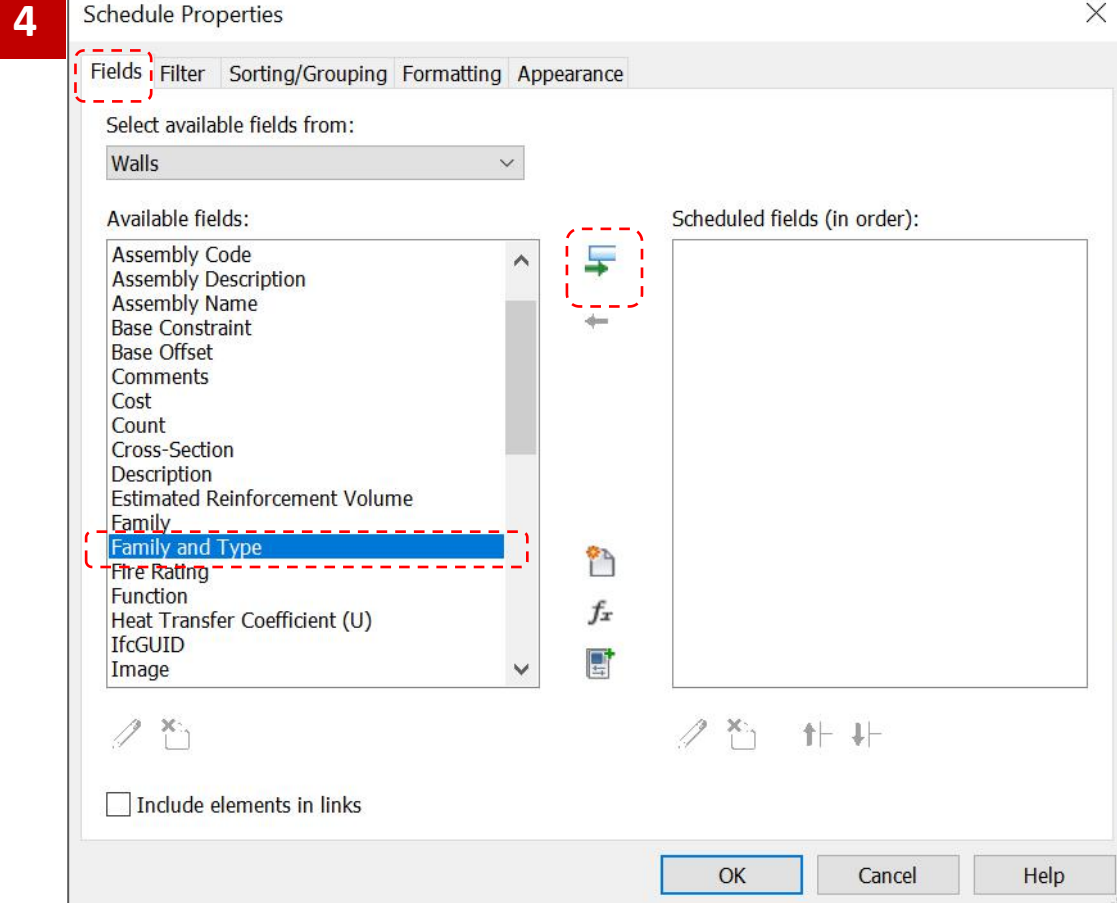
5. CREATING WALL SCHEDULES



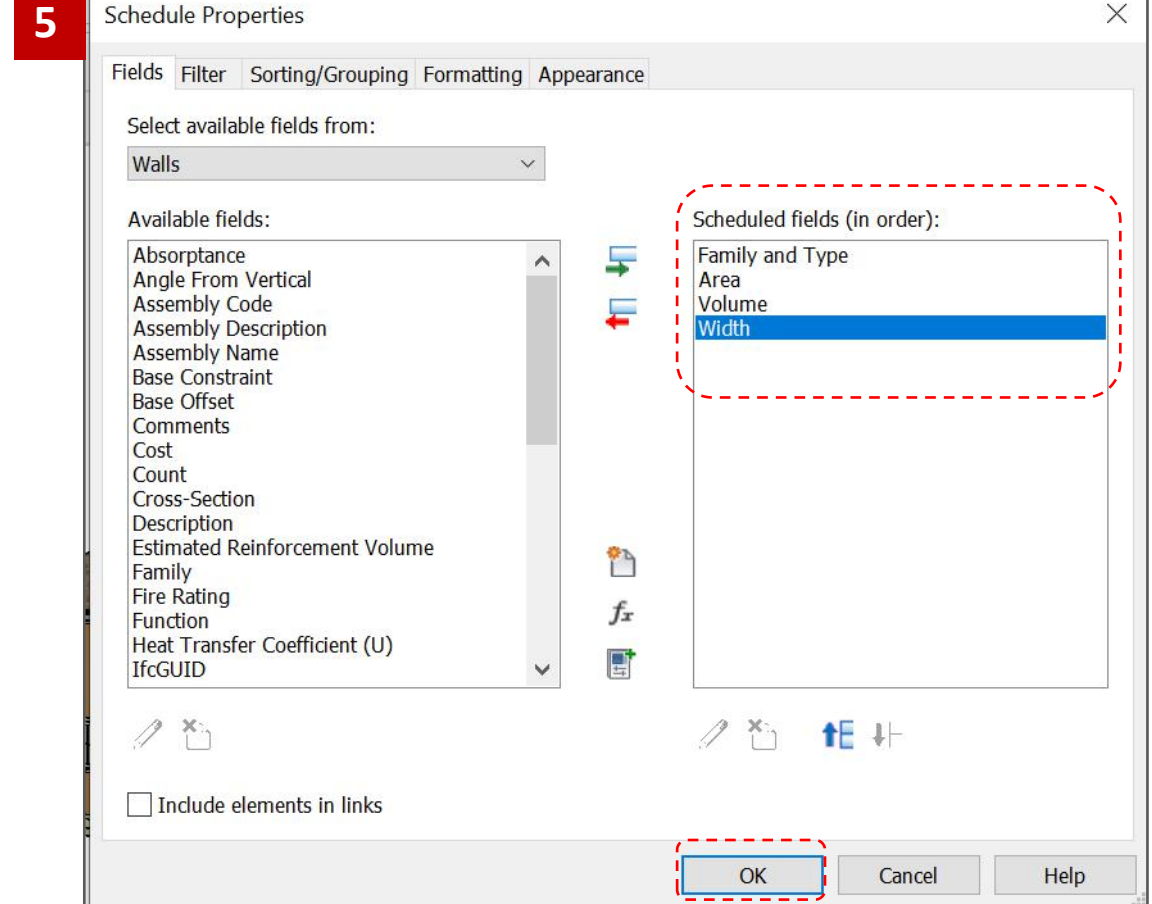
1. Open '**Architecture Modelling**' file was created in Topic 2.
2. At **View Tab** go to **Create Panel**, then click **Schedules/Quantities**.



3. In **New Schedule** dialog box, click **Walls** under category. **Name and Phase** using default.
- Then click **OK**



4. In **Schedule Properties** dialog box, on **Fields** tab under **Available fields**, click **Family and Type**, then click **Add Parameter** icon .



5. Add all parameters as shown in figure (in order). Then, click **OK**.

6

<Wall Schedule>			
A	B	C	D
Family and Type	Area	Volume	Width
Curtain Wall: 900 x 1200mm	27 m ²		
Basic Wall: Concrete Wall 150mm	29 m ²	4.30 m ³	150
Basic Wall: Concrete Wall 150mm	13 m ²	1.91 m ³	150
Basic Wall: Concrete Wall 150mm	27 m ²	4.06 m ³	150
Basic Wall: Concrete Wall 150mm	48 m ²	7.23 m ³	150
Basic Wall: Concrete Wall 150mm	66 m ²	9.90 m ³	150
Basic Wall: Concrete Wall 150mm	6 m ²	0.95 m ³	160
Basic Wall: Concrete Wall 150mm	11 m ²	1.60 m ³	150
Basic Wall: Concrete Wall 150mm	9 m ²	1.44 m ³	160
Basic Wall: Concrete Wall 150mm	11 m ²	1.65 m ³	150
Basic Wall: Concrete Wall 150mm	7 m ²	1.15 m ³	160
Basic Wall: Concrete Wall 150mm	11 m ²	1.58 m ³	150
Basic Wall: Concrete Wall 150mm	9 m ²	1.29 m ³	150
Basic Wall: Concrete Wall 150mm	19 m ²	2.91 m ³	150
Basic Wall: Concrete Wall 150mm	13 m ²	1.95 m ³	150

6. **Wall Schedule** appear in **Drawing Area** as shown in figure above.

7. Under **Properties Palette** , on **Sorting/Grouping** click **Edit**.

7

Properties	
	Schedule
Schedule: Wall Schedule ▾  Edit Type	
Identity Data ^	
View Template	<None>
View Name	Wall Schedule
Dependency	Independent
Phasing ^	
Phase Filter	Show All
Phase	New Construction
Other ^	
Fields	Edit...
Filter	Edit...
Sorting/Grouping	Edit...
Formatting	Edit...
Appearance	Edit...

8

Schedule Properties

Fields Filter **Sorting/Grouping** Formatting Appearance

Sort by: Family and Type ☒ Ascending ☐ Descending

☐ Header ☒ Footer: Title, count, and totals ☒ Blank line

Then by: Area ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

Then by: (none) ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

Then by: (none) ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

☒ Grand totals: Title, count, and totals

Custom grand total title:

Grand total

☐ Itemize every instance

OK Cancel Help

8. In **Schedule Properties** dialog box > **Sorting/Grouping** Tab, setting all item as shown in figure above.
- Then click **OK**.

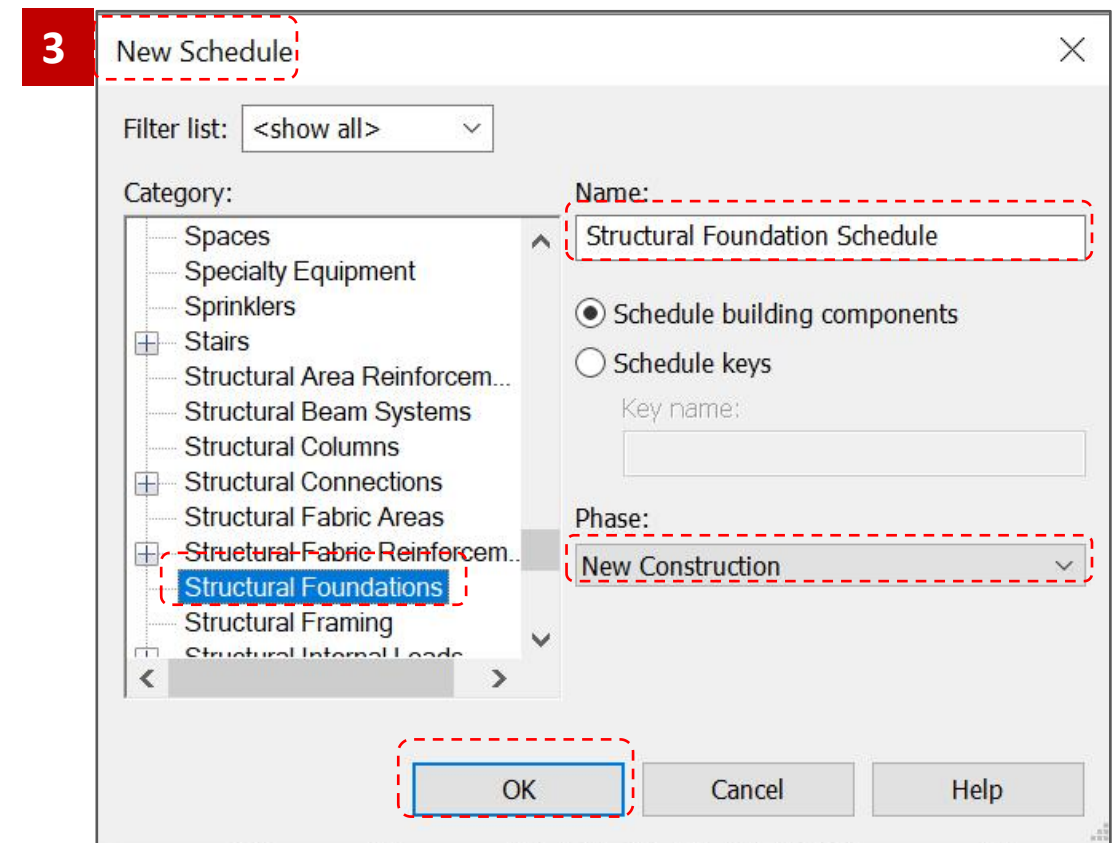
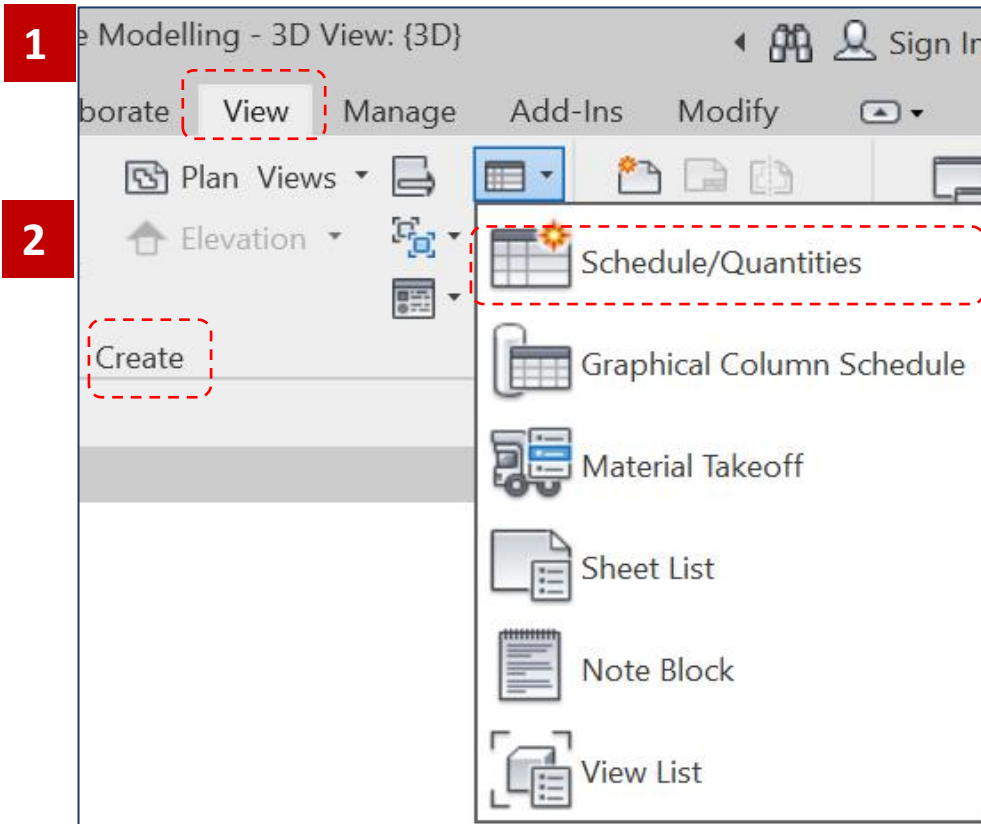
9

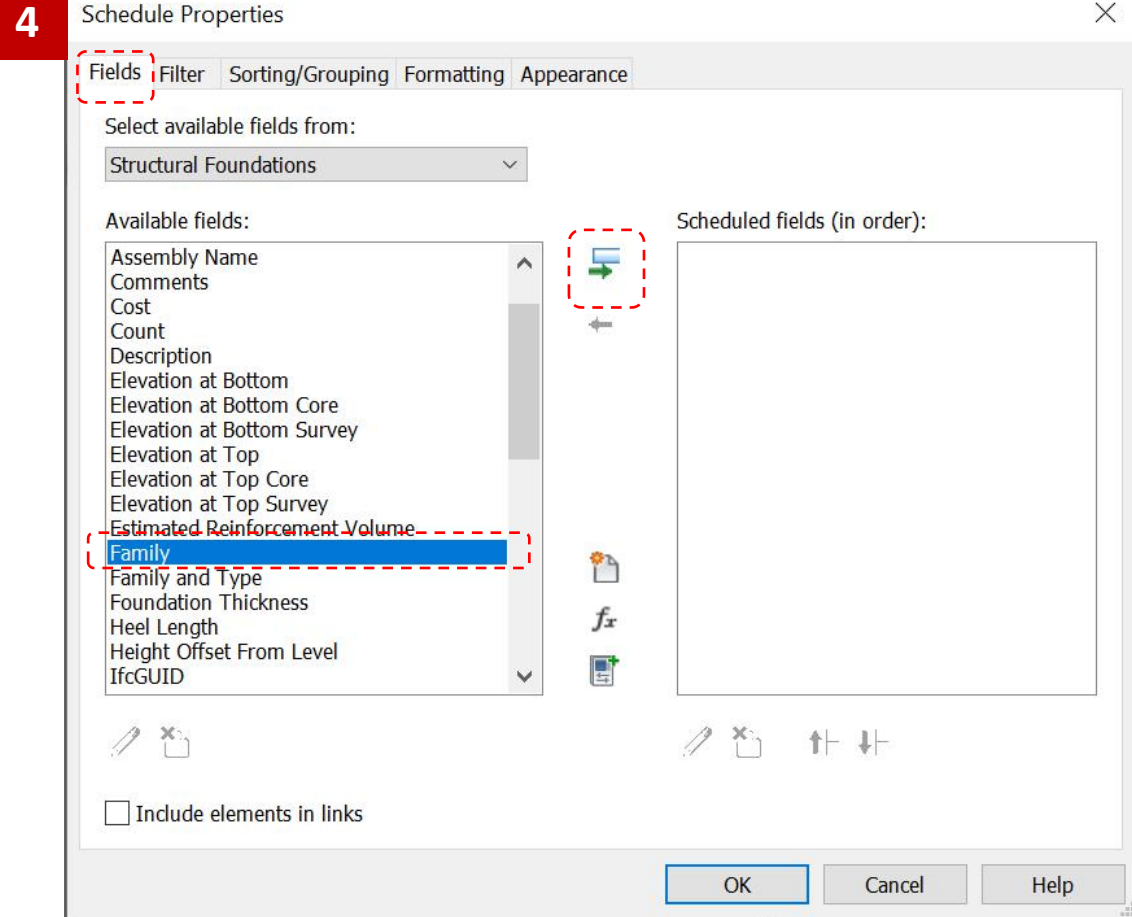
Wall Schedule

<Wall Schedule>			
A	B	C	D
Family and Type	Area	Volume	Width
Basic Wall: Concrete Wall 150mm - Conc 120mm w 15	9 m ²	1.29 m ³	150
Basic Wall: Concrete Wall 150mm - Conc 120mm w 15	11 m ²		150
Basic Wall: Concrete Wall 150mm - Conc 120mm w 15	13 m ²		150
Basic Wall: Concrete Wall 150mm - Conc 120mm w 15	19 m ²	2.91 m ³	150
Basic Wall: Concrete Wall 150mm - Conc 120mm w 15	27 m ²	4.06 m ³	150
Basic Wall: Concrete Wall 150mm - Conc 120mm w 15	29 m ²	4.30 m ³	150
Basic Wall: Concrete Wall 150mm - Conc 120mm w 15	48 m ²	7.23 m ³	150
Basic Wall: Concrete Wall 150mm - Conc 120mm w 15	66 m ²	9.90 m ³	150
Basic Wall: Concrete Wall 150mm - Conc 120mm w 15mm plaster both side: 11			
Basic Wall: Concrete Wall 150mm - Conc 120mm w 15	6 m ²	0.95 m ³	160
Basic Wall: Concrete Wall 150mm - Conc 120mm w 15	7 m ²	1.15 m ³	160
Basic Wall: Concrete Wall 150mm - Conc 120mm w 15	9 m ²	1.44 m ³	160
Basic Wall: Concrete Wall 150mm - Conc 120mm w 15mm plaster both sides n 10mm int tile: 3			
Curtain Wall: 900 x 1200mm	27 m ²		
Curtain Wall: 900 x 1200mm: 1			
Grand total: 15			

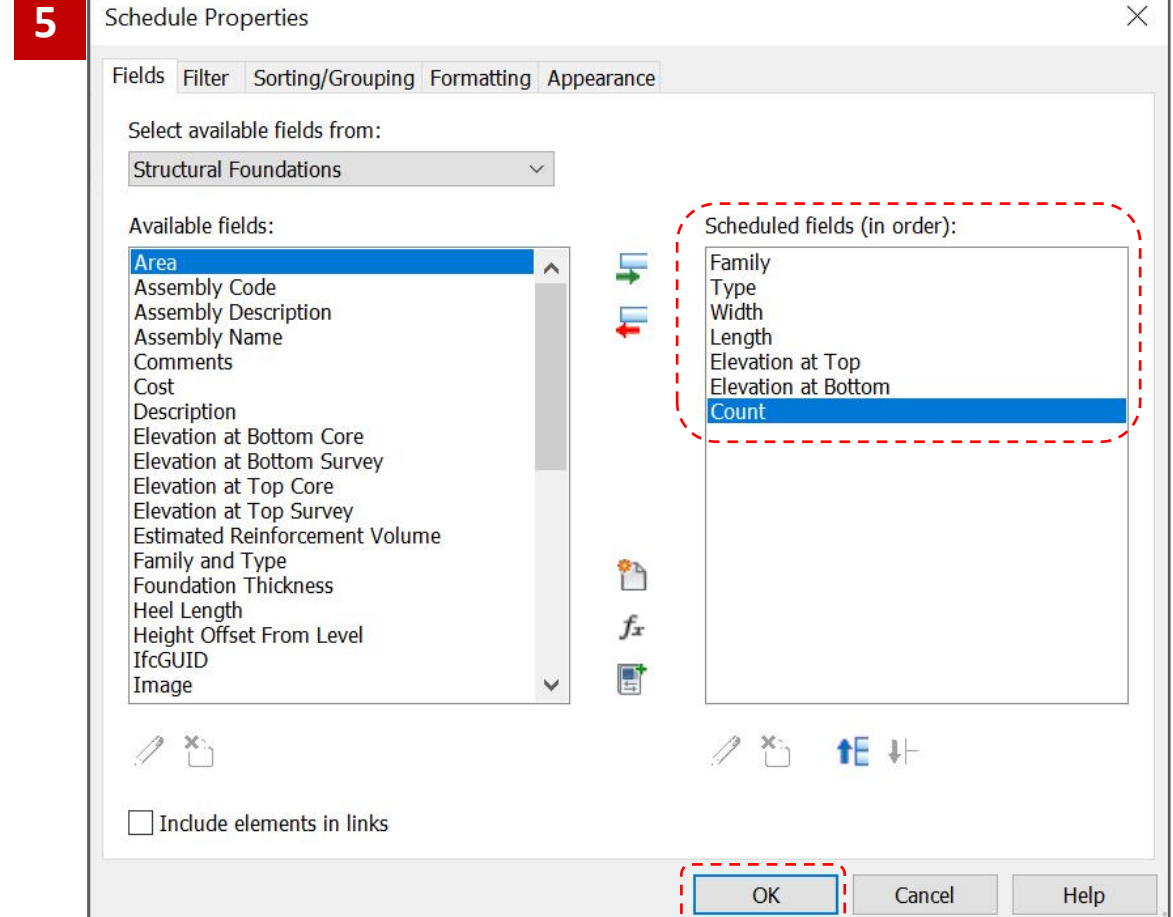
9. Sorted and organized **Wall Schedule** appear in **Drawing Area** as shown in above.
10. Save the project as **1_4_WallSchedules.rvt**
- Then **Close** file.

6. CREATING FOOTING SCHEDULES





4. In **Schedule Properties** dialog box, on **Fields** tab under **Available fields**, click **Family and Type**, then click **Add Parameter** icon .



5. Add all parameters as shown in figure (in order). Then, click **OK**.

6

<Structural Foundation Schedule>						
A	B	C	D	E	F	G
Family	Type	Width	Length	Elevation at Top	Elevation at Bottom	Count
Wall Foundation	Bearing Footing - 9	900	18300	-400	-700	1
Wall Foundation	Bearing Footing - 9	900	12700	-400	-700	1
Wall Foundation	Bearing Footing - 9	900	9000	-400	-700	1
Wall Foundation	Bearing Footing - 9	900	9000	-400	-700	1
Wall Foundation	Bearing Footing - 9	900	4000	-400	-700	1
Wall Foundation	Bearing Footing - 9	900	9000	-400	-700	1
M_Pile Cap-Rectan	1000 x 1000 x 450	1000	1000	-1000	-1450	1
M_Pile Cap-Rectan	1000 x 1000 x 450	1000	1000	-1000	-1450	1
M_Pile Cap-Rectan	1000 x 1000 x 450	1000	1000	-1000	-1450	1
M_Pile Cap-Rectan	1000 x 1000 x 450	1000	1000	-1000	-1450	1
M_Pile Cap-Rectan	1000 x 1000 x 450	1000	1000	-1000	-1450	1
M_Pile Cap-Rectan	1000 x 1000 x 450	1000	1000	-1000	-1450	1
M_Pile Cap-Rectan	1000 x 1000 x 450	1000	1000	-1000	-1450	1
M_Pile Cap-Rectan	1000 x 1000 x 450	1000	1000	-1000	-1450	1

6. **Structural Foundation Schedule** appear in **Drawing Area** as shown in figure above.

7. Under **Properties Palette** , on **Sorting/Grouping** click **Edit**.

7

Properties	
 Schedule	
Schedule: Structural Foun...  Edit Type	
Identity Data	
View Template	<None>
View Name	Structural Found...
Dependency	Independent
Phasing	
Phase Filter	Show All
Phase	New Construction
Other	
Fields	Edit...
Filter	Edit...
Sorting/Grouping	Edit...
Formatting	Edit...
Appearance	Edit...

8

Schedule Properties

Fields Filter **Sorting/Grouping** Formatting Appearance

Sort by: Family ☒ Ascending ☐ Descending

☐ Header ☒ Footer: Title, count, and totals ☒ Blank line

Then by: Type ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

Then by: (none) ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

Then by: (none) ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

☒ Grand totals: Title, count, and totals

Custom grand total title:

Grand total

☐ Itemize every instance

OK Cancel Help

8. In **Schedule Properties** dialog box > **Sorting/Grouping** Tab, setting all item as shown in figure above.
- Then click **OK**.

9

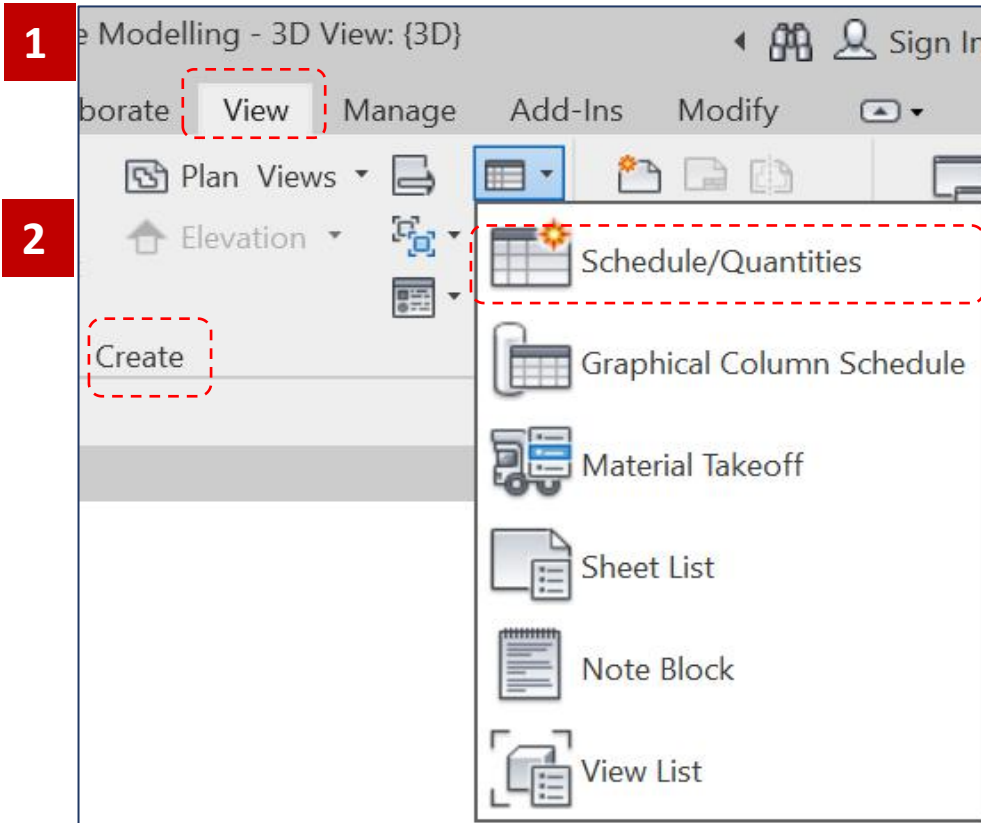
Structural Foundation Schedule

<Structural Foundation Schedule>

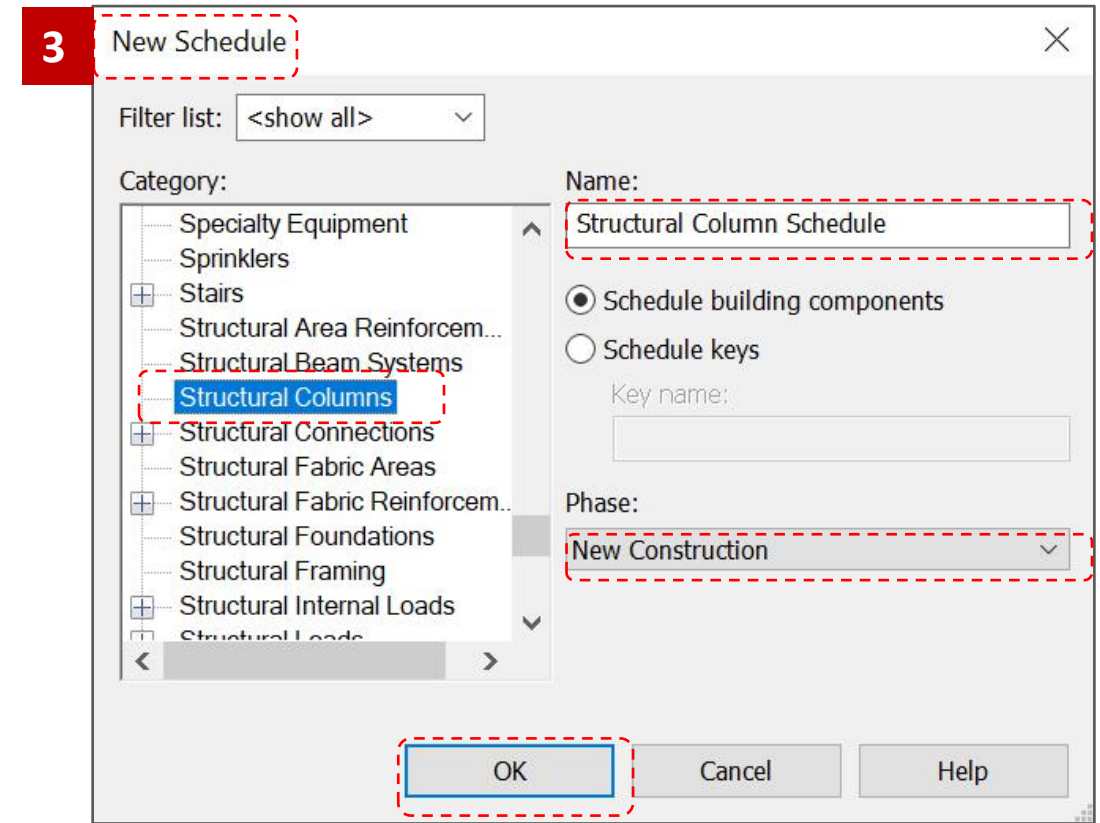
A	B	C	D	E	F	G
Family	Type	Width	Length	Elevation at Top	Elevation at Bottom	Count
M_Pile Cap-Rectan	650 x 650 x 300mm	650	650	-700	-1000	2
M_Pile Cap-Rectan	1000 x 1000 x 450	1000	1000	-1000	-1450	14
M_Pile Cap-Rectangular: 16						
Square Pile 200 x 2	Square Pile 200 x 2	300	3000	-395	-4000	2
Square Pile 200 x 200mm: 2						
Square Pile 300 x 3	Square Pile 300 x 3	300	3000	-395	-4000	14
Square Pile 300 x 300mm: 14						
Wall Foundation	Bearing Footing - 9	900		-400	-700	6
Wall Foundation: 6						
Grand total: 38						

9. Sorted and organized **Structural Foundation Schedule** appear in **Drawing Area** as shown in above.
10. Save the project as **1_5_StructuralFoundationSchedules.rvt**
- Then **Close** file.

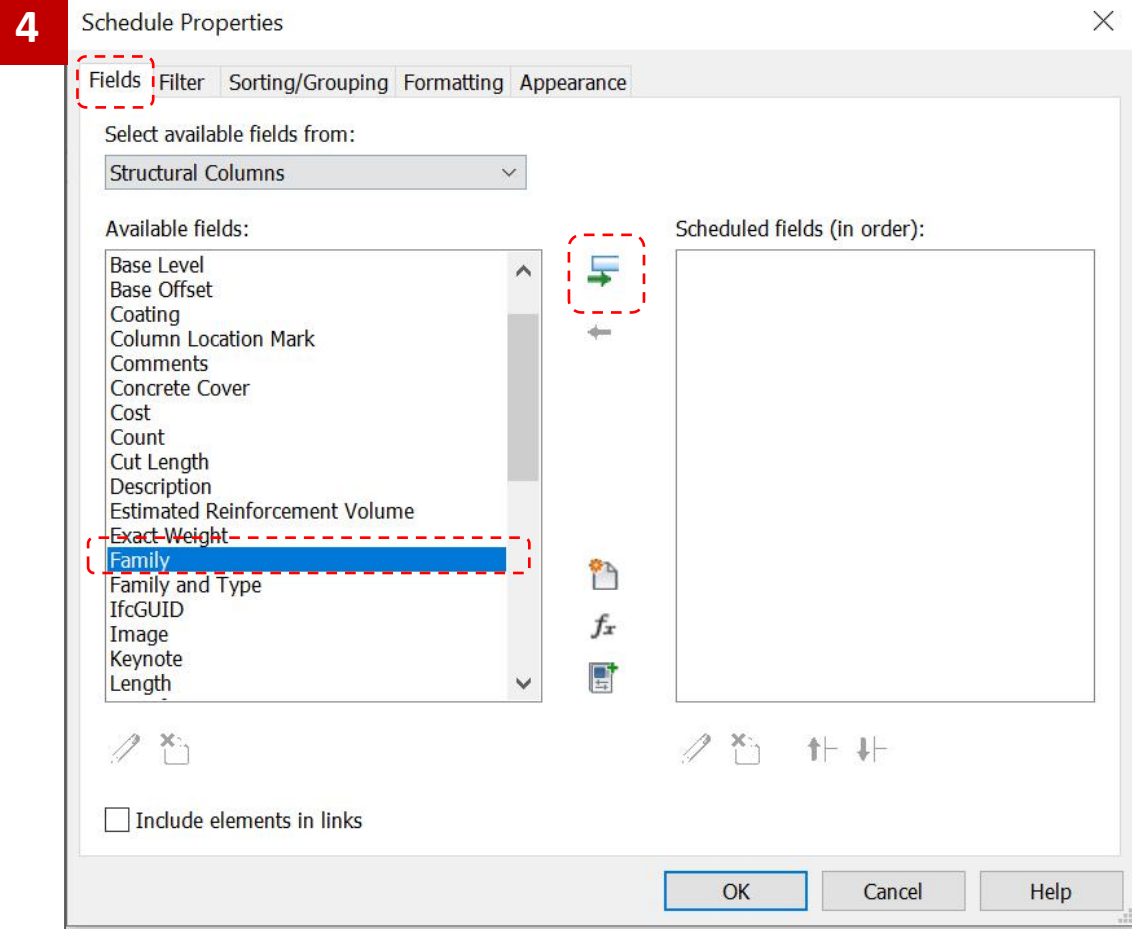
7. CREATING COLUMN SCHEDULES



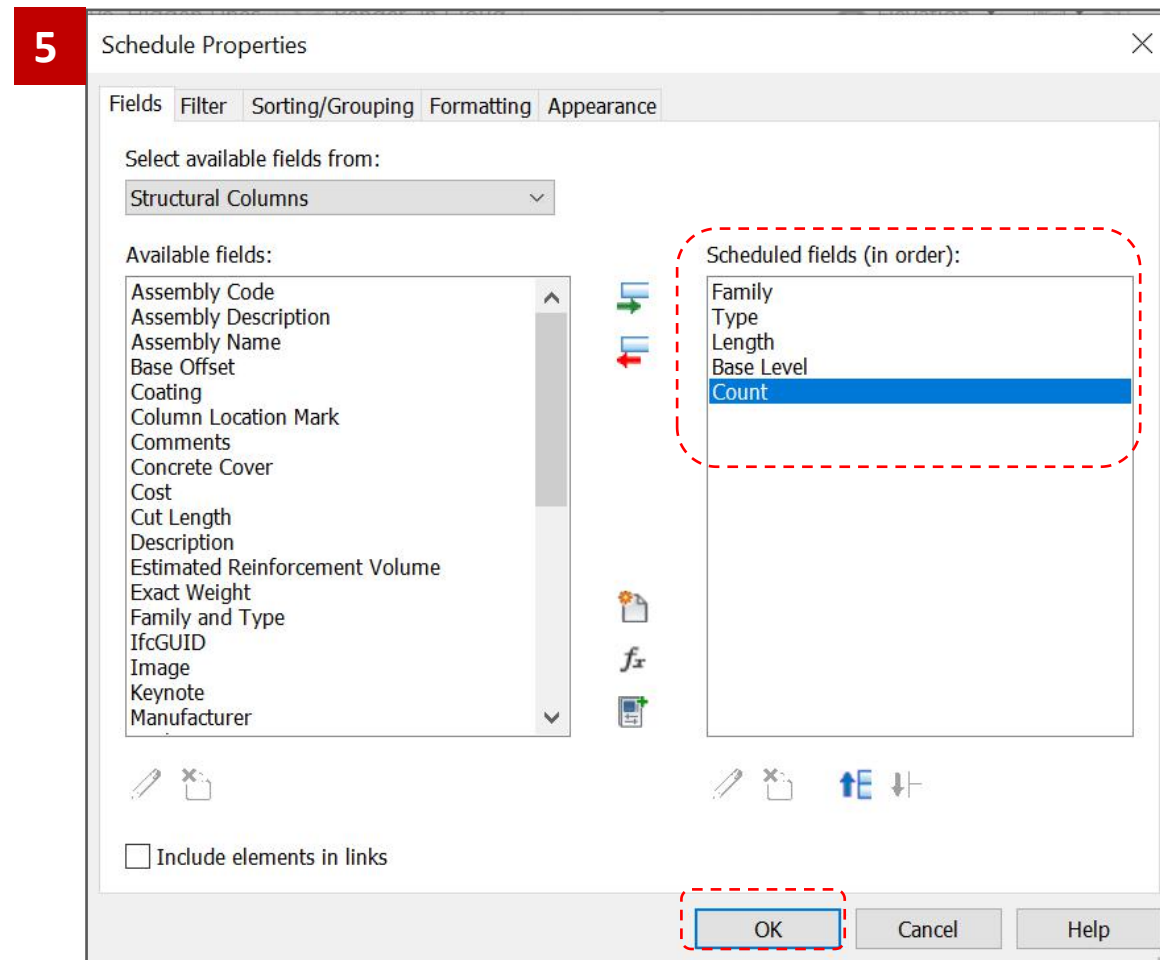
1. Open 'Structure Modelling' file was created in Topic 3.
2. At **View Tab** go to **Create Panel**, then click **Schedules/Quantities**.



3. In **New Schedule** dialog box, click **Structural Columns** under **category**. **Name** and **Phase** using default.
- Then click **OK**



4. In **Schedule Properties** dialog box, on **Fields** tab under **Available fields**, click **Family**, then click **Add Parameter** icon .



5. Add all parameters as shown in figure (in order). Then, click **OK**.

6

<Structural Column Schedule>				
A	B	C	D	E
Family	Type	Length	Base Level	Count
M_Concrete-Square-Column	300 x 300mm	4000	Level 1	1
M_Concrete-Square-Column	300 x 300mm	4000	Level 1	1
M_Concrete-Square-Column	300 x 300mm	4000	Level 1	1
M_Concrete-Square-Column	300 x 300mm	4000	Level 1	1
M_Concrete-Square-Column	300 x 300mm	4000	Level 1	1
M_Concrete-Square-Column	300 x 300mm	4000	Level 1	1
M_Concrete-Square-Column	300 x 300mm	4000	Level 1	1
M_Concrete-Square-Column	300 x 300mm	4000	Level 1	1
M_Concrete-Square-Column	300 x 300mm	4000	Level 1	1
M_Concrete-Square-Column	300 x 300mm	4000	Level 1	1
M_Concrete-Square-Column	300 x 300mm	4000	Level 1	1
M_Concrete-Square-Column	200 x 200mm	4000	Level 1	1
M_Concrete-Square-Column	200 x 200mm	4000	Level 1	1
M_Concrete-Square-Column	300 x 300mm	4000	Level 1	1

6. **Structural Column Schedule** appear in **Drawing Area** as shown in figure above.

7. Under **Properties Palette** , on **Sorting/Grouping** click **Edit**.

7

Properties


Schedule

Schedule: Structural Column Schedu
Edit Type

Identity Data

View Template
<None>

View Name
Structural Column Schedule

Dependency
Independent

Phasing

Phase Filter
Show All

Phase
New Construction

Other

Fields
Edit...

Filter
Edit...

Sorting/Grouping
Edit...

Formatting
Edit...

Appearance
Edit...

8

Schedule Properties

Fields Filter **Sorting/Grouping** Formatting Appearance

Sort by: Family ☒ Ascending ☐ Descending

☐ Header ☒ Footer: Title, count, and totals ☒ Blank line

Then by: Type ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

Then by: (none) ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

Then by: (none) ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

☒ Grand totals: Title, count, and totals

Custom grand total title:

Grand total

☐ Itemize every instance

OK Cancel Help

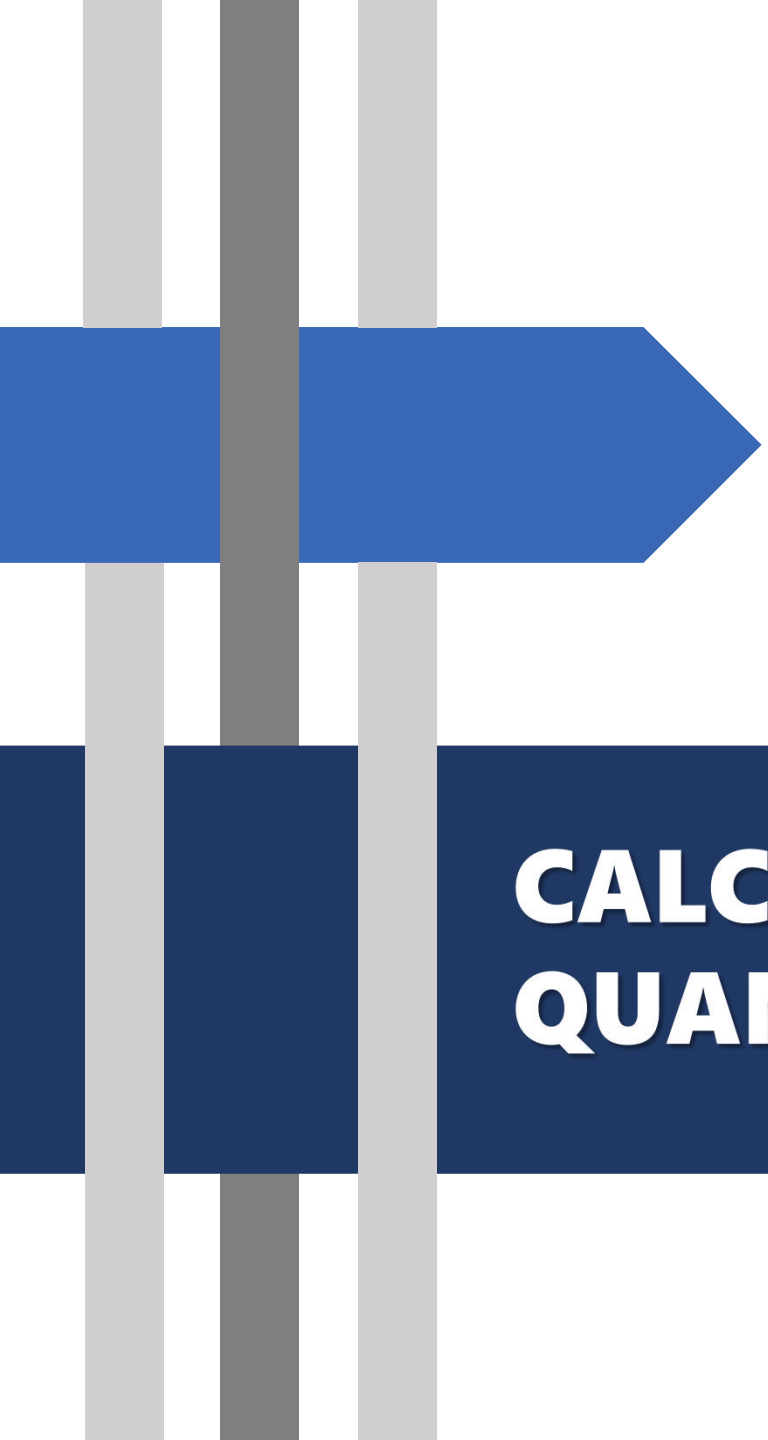
8. In **Schedule Properties** dialog box > **Sorting/Grouping** Tab, setting all item as shown in figure above.
- Then click **OK**.

9

00 Footing Level **Structural Column Schedule**

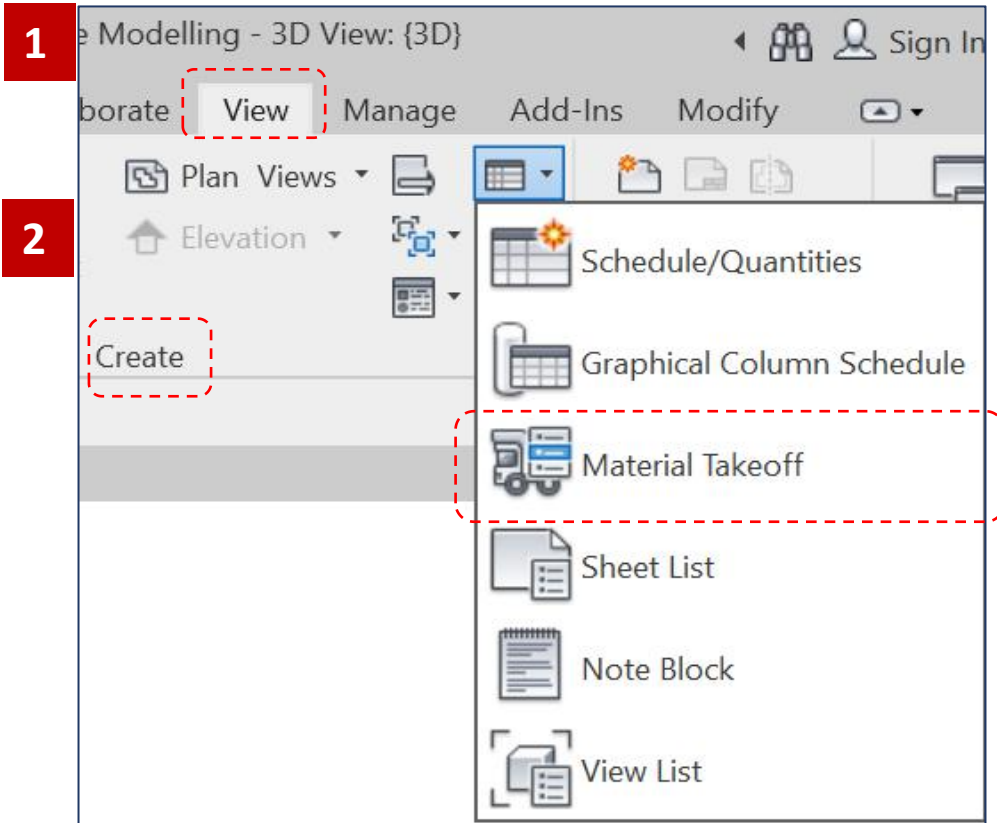
<Structural Column Schedule>				
A	B	C	D	E
Family	Type	Length	Base Level	Count
M_Concrete-Square-Column	200 x 200mm	4000	Level 1	2
M_Concrete-Square-Column	300 x 300mm	4000	Level 1	14
M_Concrete-Square-Column: 16				
Grand total: 16				

9. Sorted and organized **Structural Column Schedule** appear in **Drawing Area** as shown in above.
10. Save the project as
1_6_StructuralColumnSchedules.rvt
 - Then **Close** file.

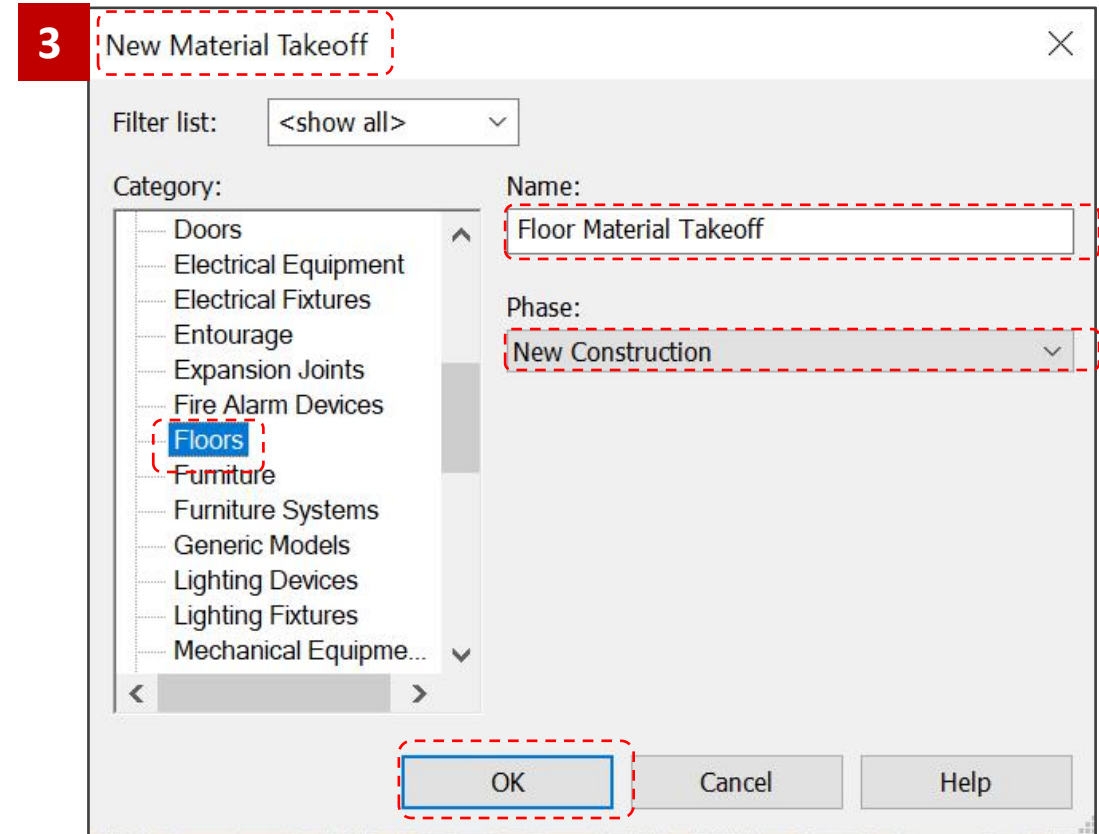
Three vertical bars of different shades (light gray, dark gray, and medium gray) are positioned on the left side of the image. A blue arrow points to the right, partially overlapping the medium gray bar. A dark blue arrow points to the right, overlapping the other two bars and containing the text.

**CALCULATED PARAMETER FOR
QUANTITY EEXTRACTION**

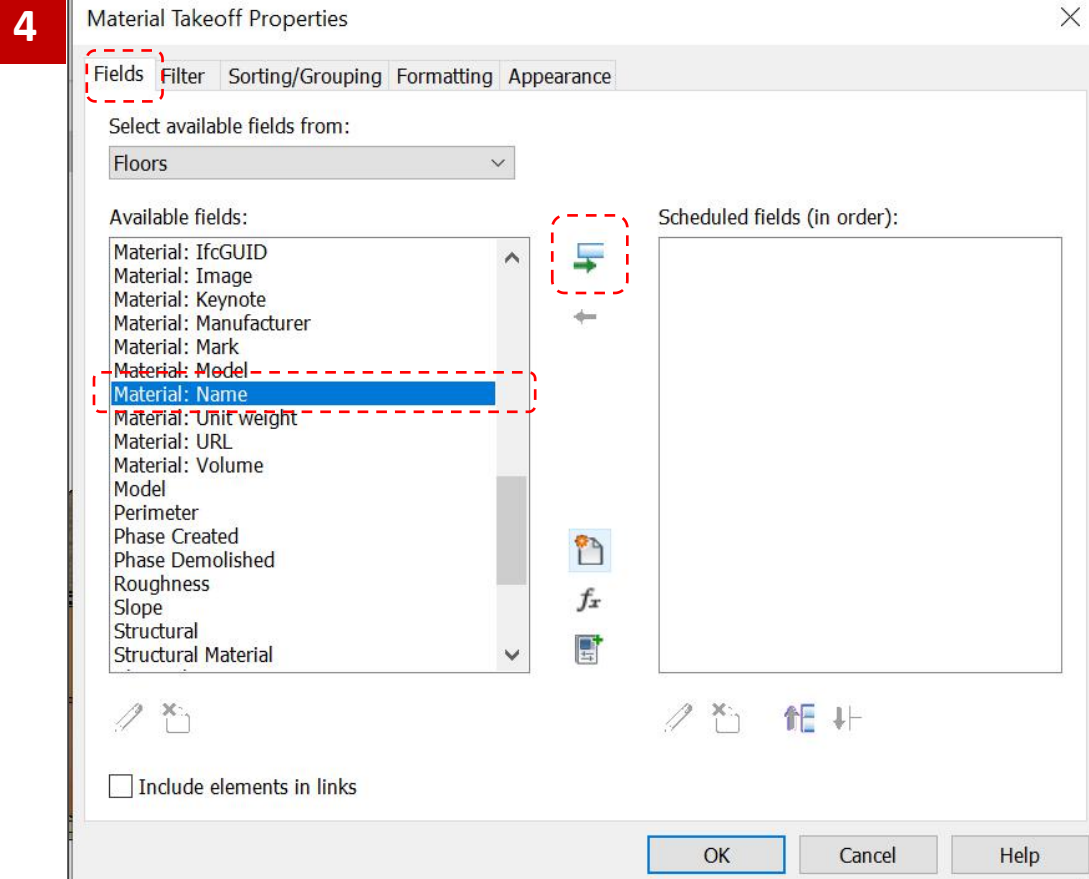
CALCULATED PARAMETERS FOR TILES



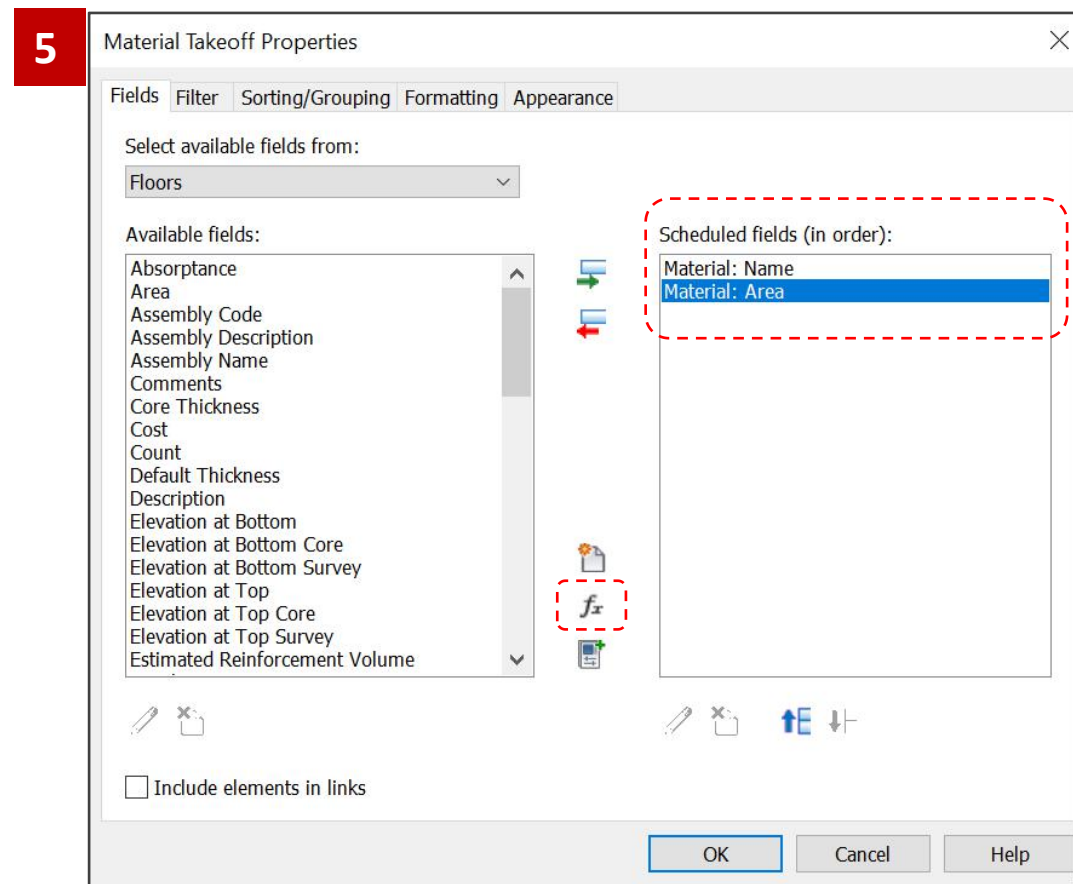
1. Open 'Architecture Modelling' file was created in Topic 2.
2. At **View Tab** go to **Create Panel**, then click **Material Takeoff**.



3. In **New Schedule** dialog box, click **Floors** under **category**. **Name** and **Phase** using default.
- Then click **OK**

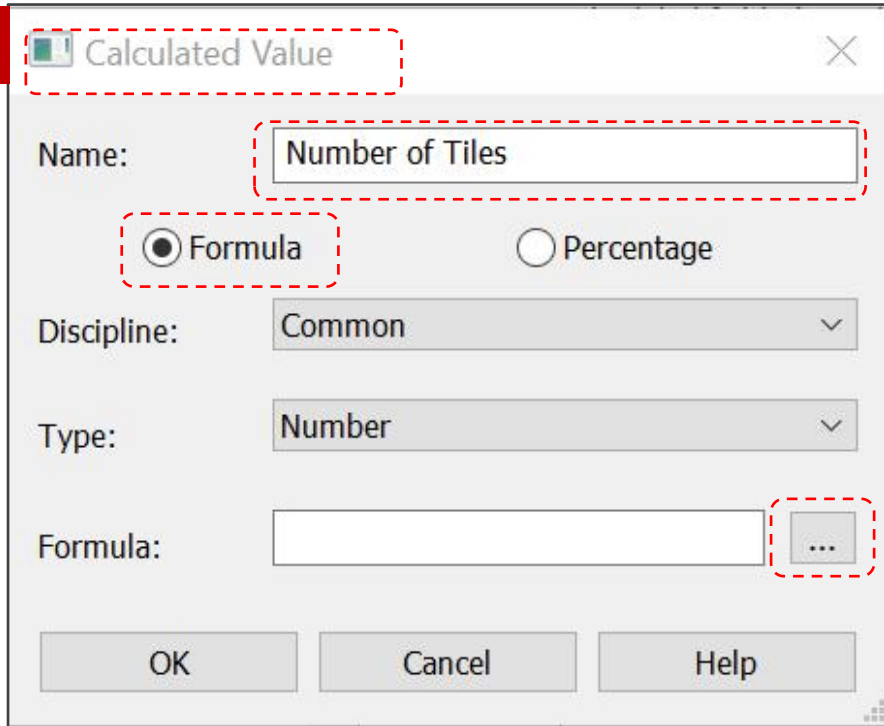


4. In **Material Takeoff Properties** dialog box, on **Fields** tab under **Available fields**, click **Material: Name**
- Then click **Add Parameter** icon



5. Add all parameters as shown in figure (in order).
Then, click **Add Calculated Parameter (fx)**.

6

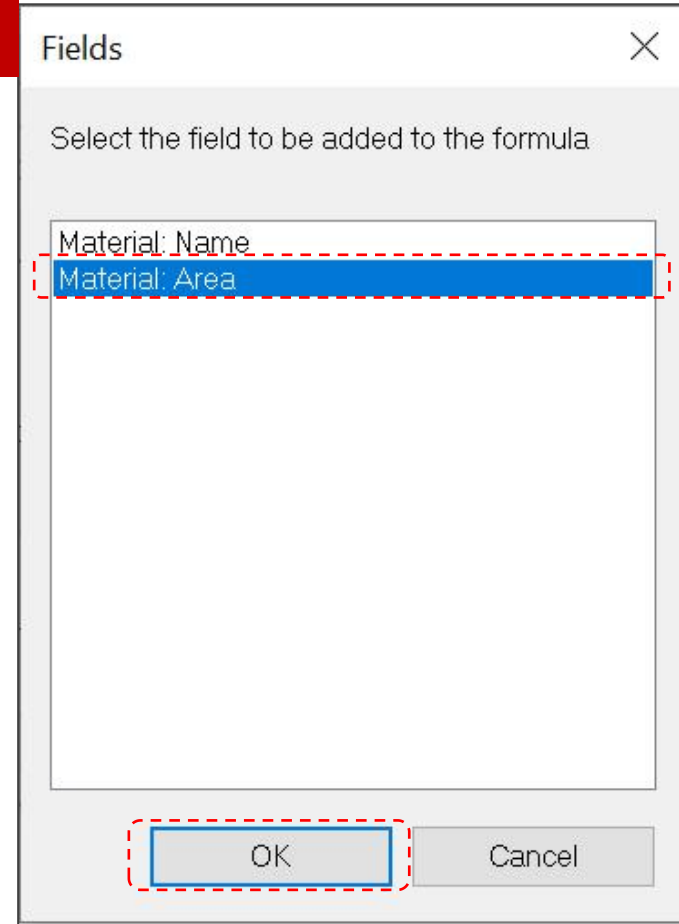


The 'Calculated Value' dialog box is shown. The 'Name' field contains 'Number of Tiles'. The 'Formula' radio button is selected. The 'Discipline' dropdown is set to 'Common' and the 'Type' dropdown is set to 'Number'. The 'Formula' field is empty, and the ellipsis button next to it is highlighted. The 'OK', 'Cancel', and 'Help' buttons are at the bottom.

6. In **Calculated Value** dialog box:

- Under **Name** > Key in **Number of Tiles**
- Tick **Formula**
- Click **Ellipses button** 

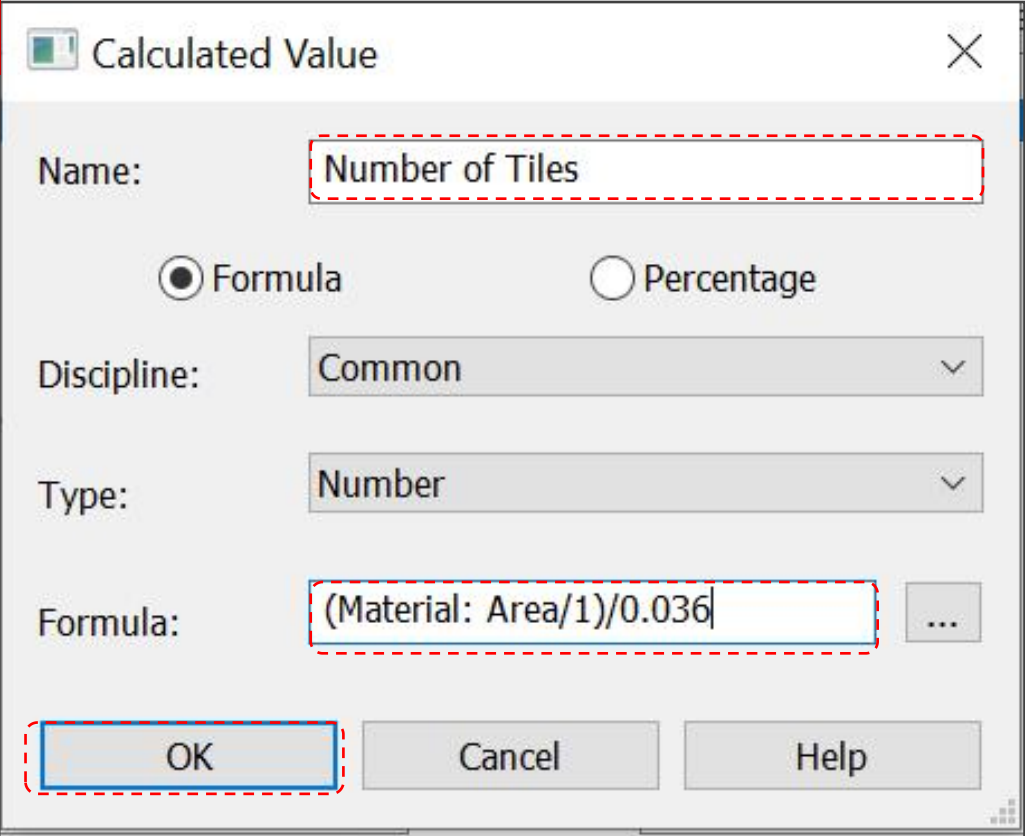
7



The 'Fields' dialog box is shown. The instruction 'Select the field to be added to the formula' is at the top. The list contains 'Material: Name' and 'Material: Area', with 'Material: Area' selected. The 'OK' button is highlighted. The 'Cancel' button is also visible.

7. In **Fields** dialog box > **select Material:Area**. Then click **OK**

8

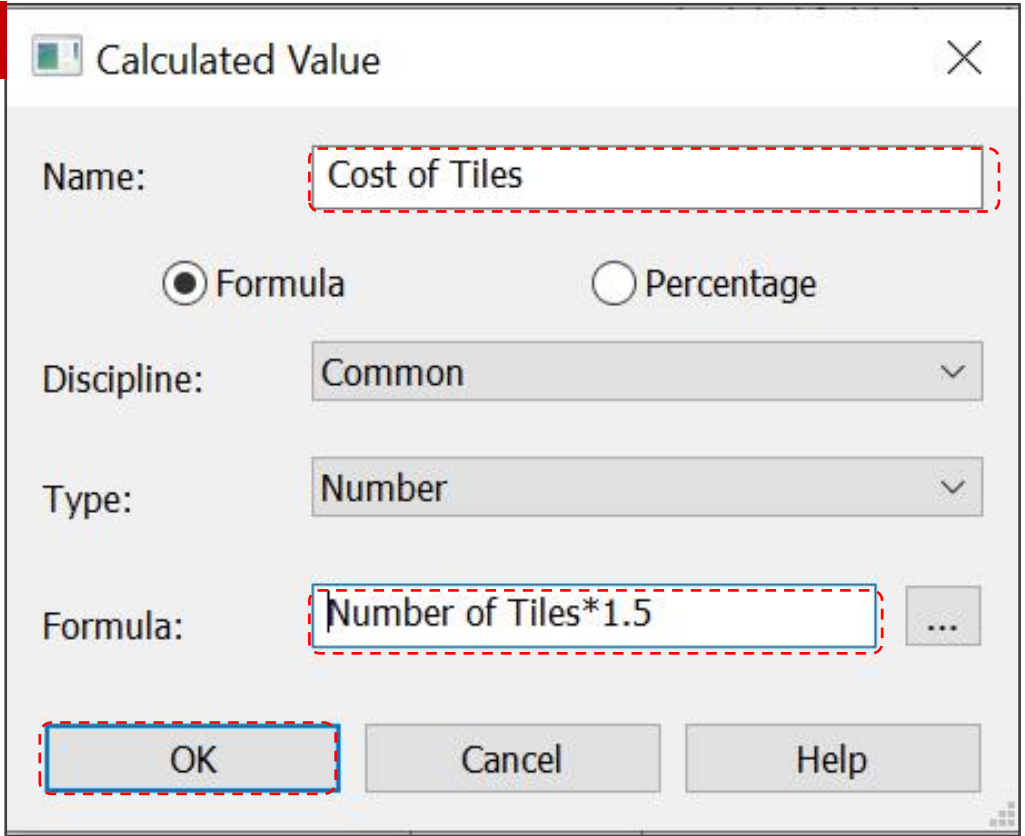


The screenshot shows the 'Calculated Value' dialog box. The 'Name' field is 'Number of Tiles'. The 'Formula' radio button is selected. The 'Discipline' is 'Common' and the 'Type' is 'Number'. The 'Formula' field contains the text $(Material: Area/1)/0.036$. The 'OK' button is highlighted with a red dashed border.

8. In **Formula** box > key in **(Material:Area/1)/0.036**.
Then click **OK**.

9. Create another **calculated parameter** for **Cost of Tiles**

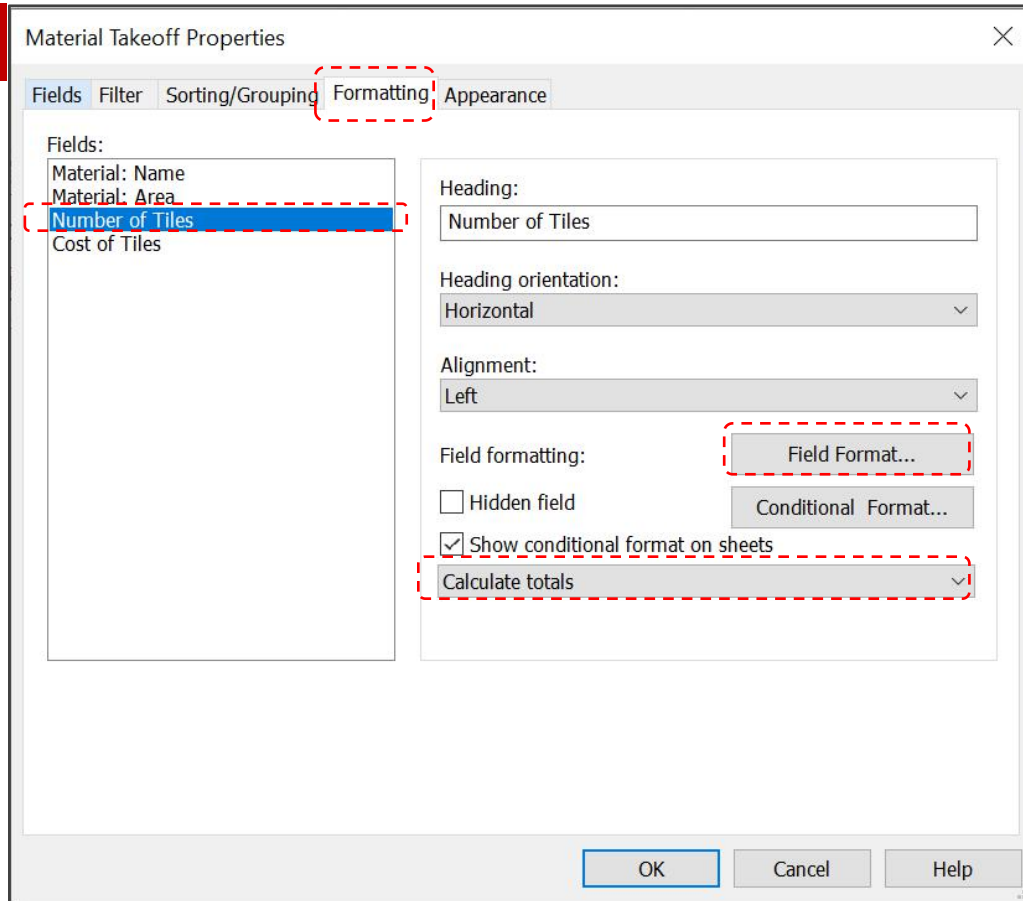
10



The screenshot shows the 'Calculated Value' dialog box. The 'Name' field is 'Cost of Tiles'. The 'Formula' radio button is selected. The 'Discipline' is 'Common' and the 'Type' is 'Number'. The 'Formula' field contains the text $Number\ of\ Tiles * 1.5$. The 'OK' button is highlighted with a red dashed border.

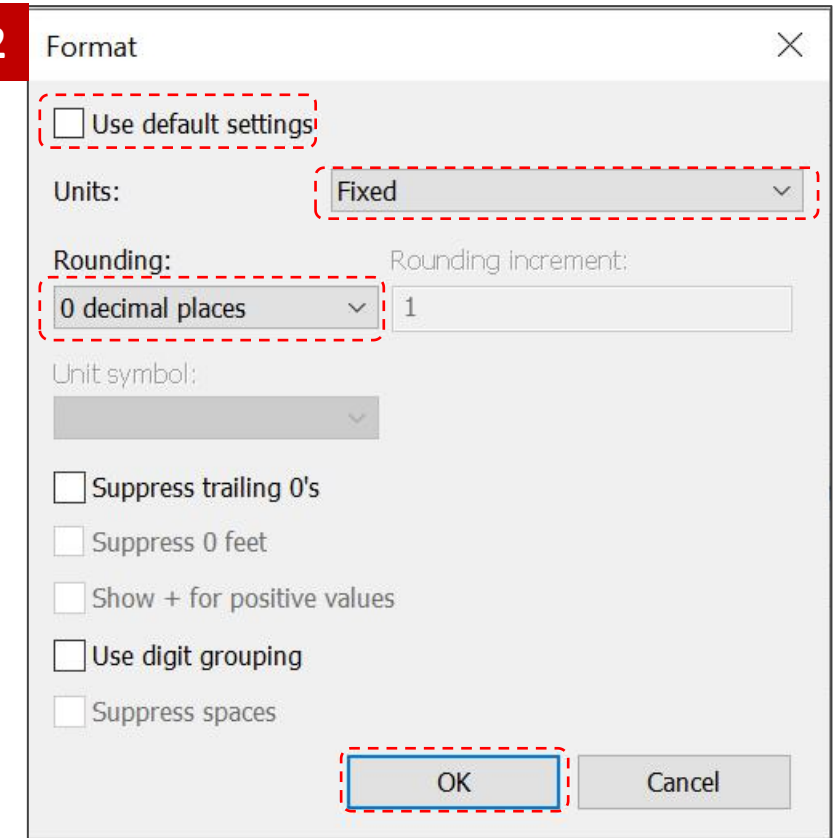
10. In the **Calculated Value** dialog box, key in **Number of Tiles*1.5** in **Formula** box.
Then click **OK**.

11



11. On **Formatting** Tab, select **Number of Tiles**, then change to **Calculate totals**

12



12. Click **Field Format**, in **Format** dialog box:

- untick **Use default settings**
- **Units** > choose **Fixed**
- **Rounding** > choose **0 decimal places**.

Then click **OK**

13. Repeat step 11 to 12 for **Cost of Tiles**
 - **Unit : Fixed**
 - **Rounding : 2 decimal places**
14. Repeat step 11 to 12 for **Material:Area**
 - **Unit : Square meters**
 - **Rounding : 2 decimal places**

16

<Floor Material Takeoff>			
A	B	C	D
Material: Name	Material: Area	Number of Tiles	Cost of Tiles
Ceramic Tile	23.40 m ²	650	975.06

16. **Floor Material Takeoff** appear in **Drawing Area** as shown in figure.

- Save the project as **2_1_FloorTakeoff.rvt**. Then **Close** file.

15

Material Takeoff Properties

Fields Filter **Sorting/Grouping** Formatting Appearance

Filter by: Material: Name equals Ceramic Tile

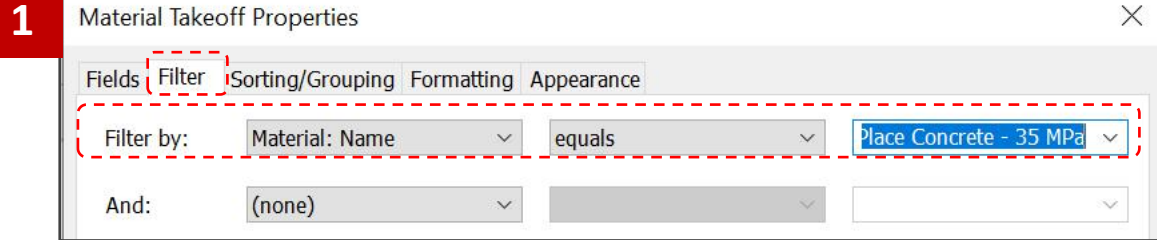
And: (none)

15. On **Filter** tab,
 - **Filter** by in drop down, select **Material:Name**
 - choose **equals**
 - choose **Ceramic Tile**

The image features a decorative graphic on the left side consisting of three vertical bars in light gray, medium gray, and dark gray. Two blue arrows point to the right, one above the other. The lower arrow is larger and contains the text 'CREATING MATERIAL TAKEOFF' in white, bold, uppercase letters.

CREATING MATERIAL TAKEOFF

1. CREATING CONCRETE MATERIAL TAKEOFF



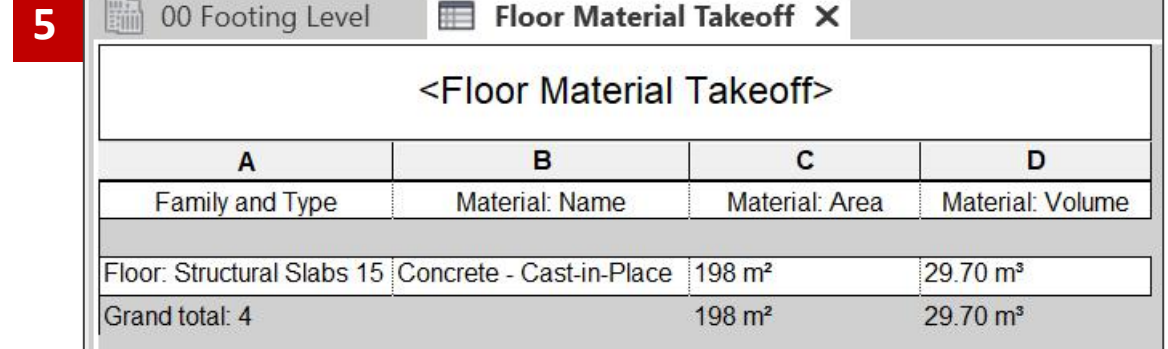
1. Open 'Structure Modelling' file was created in Topic 3.

2. Create new **Material Takeoff** for **Floor** with following parameter:

- **Family and Type**
- **Material: Name**
- **Material: Area**
- **Material : Volume**

3. On **Filter** tab,

- **Filter by Material:Name**
- **equals**
- **Concrete- Cast In Place Concrete** *(Can be change depend on project)*



<Floor Material Takeoff>			
A	B	C	D
Family and Type	Material: Name	Material: Area	Material: Volume
Floor: Structural Slabs 15	Concrete - Cast-in-Place	198 m ²	29.70 m ³
Grand total: 4		198 m ²	29.70 m ³

4. On **Fomattng** tab:

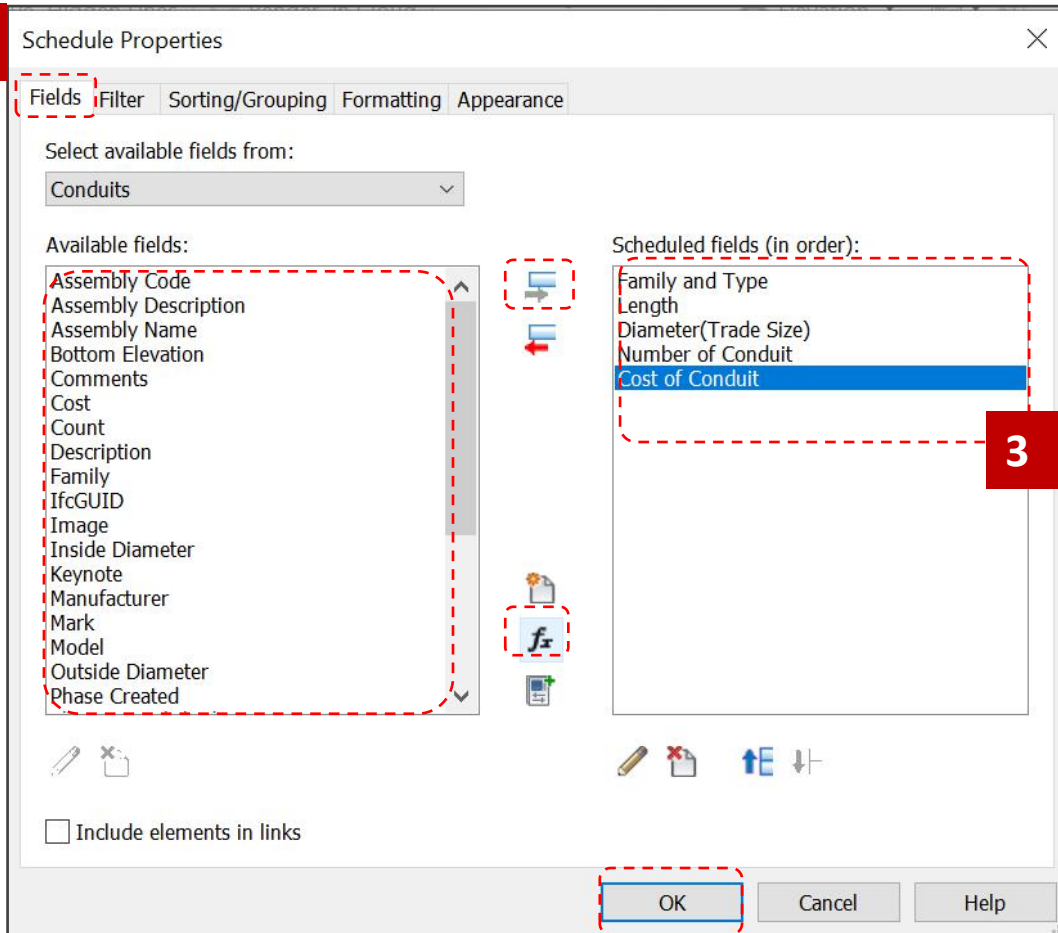
- select **Material: Area** > choose **Calculate totals**
- select **Material: Volume**
 - > choose **Calculate totals**
 - > click **Field Format**
 - > untick **Use project settings**
 - > **Units > Cubic Meters**
 - > **Rounding : 2 decimal places**
 - > click **OK**

5. **Floor Material Takeoff** appear as shown.

6. Save project as **3_1_ConcreteTakeoff.rvt**

2. CREATING CONDUIT MATERIAL TAKEOFF

2



2. Create new **Schedule/Quantities** for conduit with following parameter:

- **Family and Type**
- **Length**
- **Diameter (Trade Size)**

3. Create **calculated parameters** for;

- **Number of conduit** > Formula: $(\text{Length}/1)/6000$
- **Cost of Conduit** > Formula: $\text{Number of Conduit} * 17$

4. On **Formatting Tab** > select **Number of Conduit** > change to **calculate totals**

5. Click **Field Format** > in **Format** dialog box;

- untick **Use default settings**
- **Units : Fixed**
- **Rounding : 0 decimal places**

1. Open '**Electrical Modelling**' file was created in **Topic 4**.

6. Repeat steps 4 and 5 for **Cost of Conduit** but **Rounding** choose **2 decimal places**.

7 Schedule Properties

Fields Filter **Sorting/Grouping** Formatting Appearance

Sort by: Family and Type ☒ Ascending ☐ Descending

☐ Header ☒ Footer: Title, count, and totals ☒ Blank line

Then by: Diameter(Trade Size) ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

Then by: (none) ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

Then by: (none) ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

☒ Grand totals: Title, count, and totals

Custom grand total title:
Grand total

☐ Itemize every instance

OK Cancel Help

8

EL-Level 1 L Conduit Schedule X

<Conduit Schedule>

A	B	C	D	E
Family and Type	Length	Diameter(Trade Siz	Number of Conduit	Cost of Conduit
Conduit with Fittings: PVC	103816	21 mm	17	294.15
Conduit with Fittings: PVC: 53	103816		17	294.15
Grand total: 53	103816		17	294.15

7. On **Sorting/Grouping**;

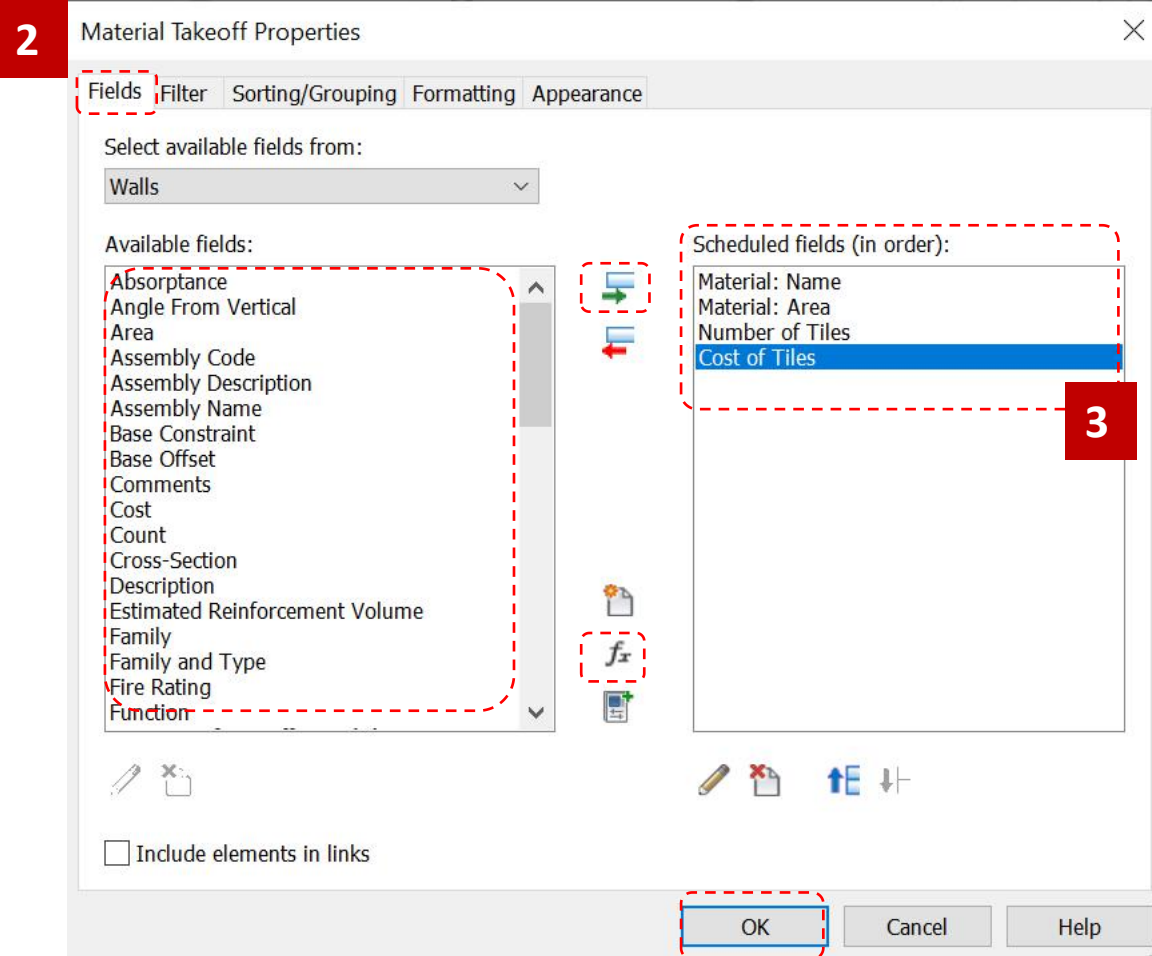
- Sort by : **Family and Type**
- Tick **Footer** and **Blank line**
- **Then by : Diameter (Trade Size)**
- Tick **Grand Total**
- untick **Itemize every instance**
- click **OK**

8. Sorted & organized **Conduit Schedule** appear in **Drawing Area** as shown in figure .

9. Save project as **3_2_ConduitTakeoff.rvt**

10. Then **Close** file.

3. CREATING WALL MATERIAL TAKEOFF



1. Open 'Architecture Modelling' file was created in Topic 2.

2. Create new **Wall Material Takeoff** with following parameter:

- **Material: Name**
- **Material: Area**

3. Create **calculated parameters** for;

- **Number of Tiles > Formula: (Material: Area/1)/0.01**
- **Cost of Tiles > Formula: Number of Tiles*1.85**

4. Filter to show only **Material:Name**, equal and **Ceramic Tile**

5. Setting **Calculate totals** for **Material:Area**, **Number of Tiles** and **Cost of Tiles**.

6. Click **Field Format >** in **Format** dialog box;

- untick **Use default settings**
- **Units : Fixed**
- **Rounding : 0 decimal places**

7. Repeat steps 4 and 5 for **Cost of Tiles** but **Rounding** choose **2 decimal places**.

8

Material Takeoff Properties

Fields Filter **Sorting/Grouping** Formatting Appearance

Sort by: Material: Name ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☒ Blank line

Then by: Material: Area ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

Then by: (none) ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

Then by: (none) ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

☒ Grand totals: Title, count, and totals ☐ Itemize every instance

Custom grand total title: Grand total

OK Cancel Help

9

{3D} **Wall Material Takeoff**

<Wall Material Takeoff>			
A	B	C	D
Material: Name	Material: Area	Number of Tiles	Cost of Tiles
Ceramic Tile	7 m ²	718.2	1328.67
Ceramic Tile	18 m ²	1801.8	3333.33
Grand total: 3	25 m ²	2520	4662

8. On **Sorting/Grouping**;

- Sort by : **Material:Name**
- Tick **Blank line**
- **Then by : Material:Area**
- Tick **Grand Total**
- untick **Itemize every instance**
- click **OK**

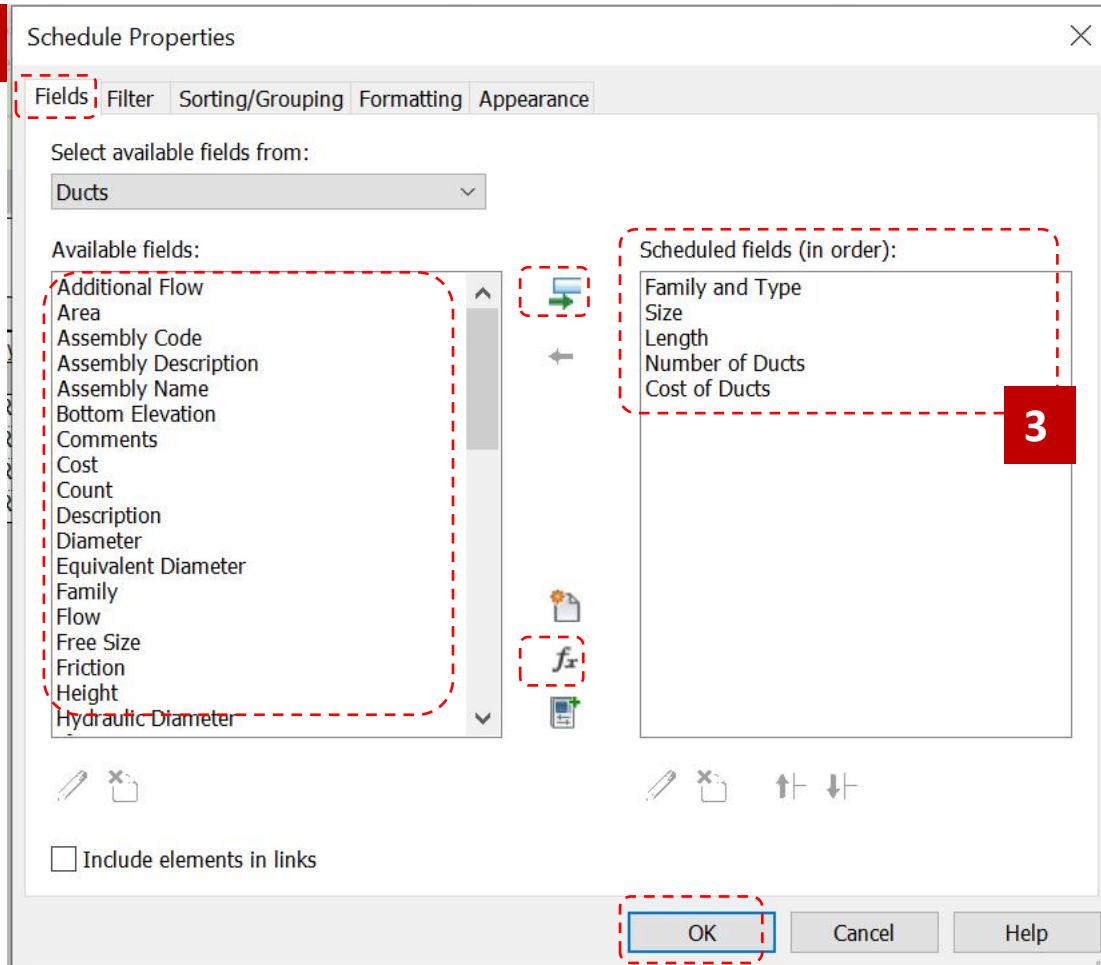
9. Sorted & organized **Wall Schedule** appear in **Drawing Area** as shown in figure .

10. Save project as **3_3_WallTileTakeoff.rvt**

11. Then **Close** file.

4. CREATING DUCT MATERIAL TAKEOFF

2



1. Open 'Mechanical Modelling' file was created in Topic 4.

2. Create new **Duct Material Schedule** with following parameter:

- **Family and Type**
- **Size**
- **Length**

3. Create **calculated parameters** for;

- **Number of Ducts** > Formula: $(\text{Length}/1\text{mm})/1000$
- **Cost of Ducts** > Formula: $\text{Number of Duct} * 50$

4. Setting **Calculate totals** for **Length**, **Number of Ducts** and **Cost of Ducts**.

5. In **Formatting** tab, select **Length**. Click **Field Format** > in **Format** dialog box;

- untick **Use default settings**
- **Units : Meter**
- **Rounding : 0 decimal places**

6. Then select **Number of Ducts**. Setting by following data;

- untick **Use default settings**
- **Units : Fixed**
- **Rounding : 0 decimal places**

8

Schedule Properties

Fields Filter **Sorting/Grouping** Formatting Appearance

Sort by: Family and Type ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☒ Blank line

Then by: Size ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

Then by: (none) ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

Then by: (none) ☒ Ascending ☐ Descending

☐ Header ☐ Footer: ☐ Blank line

☒ Grand totals: Title, count, and totals

Custom grand total title:

Grand total

☐ Itemize every instance

OK Cancel Help

7. Select **Cost of Ducts**. Setting by following data;
- untick **Use default settings**
 - **Units : Fixed**
 - **Rounding : 2 decimal places**

9

{3D} **Duct Schedule**

<Duct Schedule>

A	B	C	D	E
Family and Type	Size	Length	Number of Ducts	Cost of Ducts
Rectangular Duct: Radius Elbows / Tees	300x300	7	7	354.07
Rectangular Duct: Radius Elbows / Tees	306x356	2	2	112.68
Rectangular Duct: Radius Elbows / Tees	356x306	2	2	77.27
Rectangular Duct: Radius Elbows / Tees	559x382	8	8	408.51
Grand total: 10		19	19	952.53

8. On **Sorting/Grouping**;
- Sort by : **Family ad Type**
 - Tick **Blank line**
 - **Then by : Size**
 - Tick **Grand Total**
 - untick **Itemize every instance**
 - click **OK**
9. Sorted & organized **Duct Schedule** appear in **Drawing Area** as shown in figure .
10. Save project as **3_4_DuctMaterialTakeoff.rvt**
11. Then **Close** file.

REFERENCES

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<https://knowledge.autodesk.com/support/revit/learn-explore>. Autodesk.

Yori R.et al., (2020). Mastering Autodesk® Revit® 2020. John Wiley & Sons, Inc.tart

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THANK YOU