

# MEP PORTFOLIO

By Mohamed Dhansir

Er.Mohamed Dhansir

MEP Design & Drafting Portfolio



FCU-SIT-1-KIT & FCU-SIT-2-KIT  
2Nos. Ceiling Ducted FCU Model DB 40-6R  
CAPACITY: 44.5KW /29KW (Ht/Hs)  
AIR QTY : 2243 l/s  
DIM: 1702x1267x765(LxWxH)



## Mohamed Dhansir.B B.E., (Mech)

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### Educational qualification

B.E., Mechanical Engineering May 2020

K.S.K College of Engineering And Technology, Darasuram,  
Tamilnadu

### About me :

- Father's Name : Bakrudeen Ali M
- Date of Birth : 30-04-1999
- Sex : Male
- Nationality : Indian
- Marital Status : Unmarried
- Language : English, Tamil

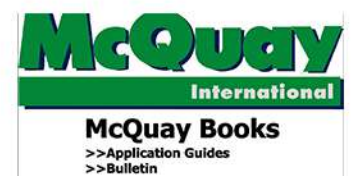
### Experience 01 :

Company : Eye design solutions, Kumbakonam  
Job description : Junior Design Cum Draftsman  
Duration : Jan 2021 - Till now

### Job responsibilities :

- To carry out the design/drafting of Mechanical-Electrical-Plumbing-Fire Fighting service using latest Revit MEP & Auto Cad and MEP works for Residential, Commercial, Industrial and Application.
- Loading with MEP Engineering to gather information and requirements applicable for MEP Design.
- Preparing Revit BIM Model & Checking for clash detection with other service.
- Prepares final drawing by studying MEP sketches and supporting documents developing layout.
- Preparing 3D Model and visualization.
- Preparing of layout accounting to local and international standards.
- Able to read/check drawing pick up quality from drawings.
- Create and modify drawing for all existing and new project under general supervision.
- Create detailing MEP Design drawing using Auto Cad and Revit program.
- Able to perform draft SLD and basic calculation .Preparing presentation drawing in Auto Cad.
- Preparing of fabrication drawing and developing the plan room layout and sectional detail.
- Problem solved by manual and software. Receiving Emergency work and Finishing in time
- To prepare all tender document and BOQ with priced and unpriced.

### Software Known :





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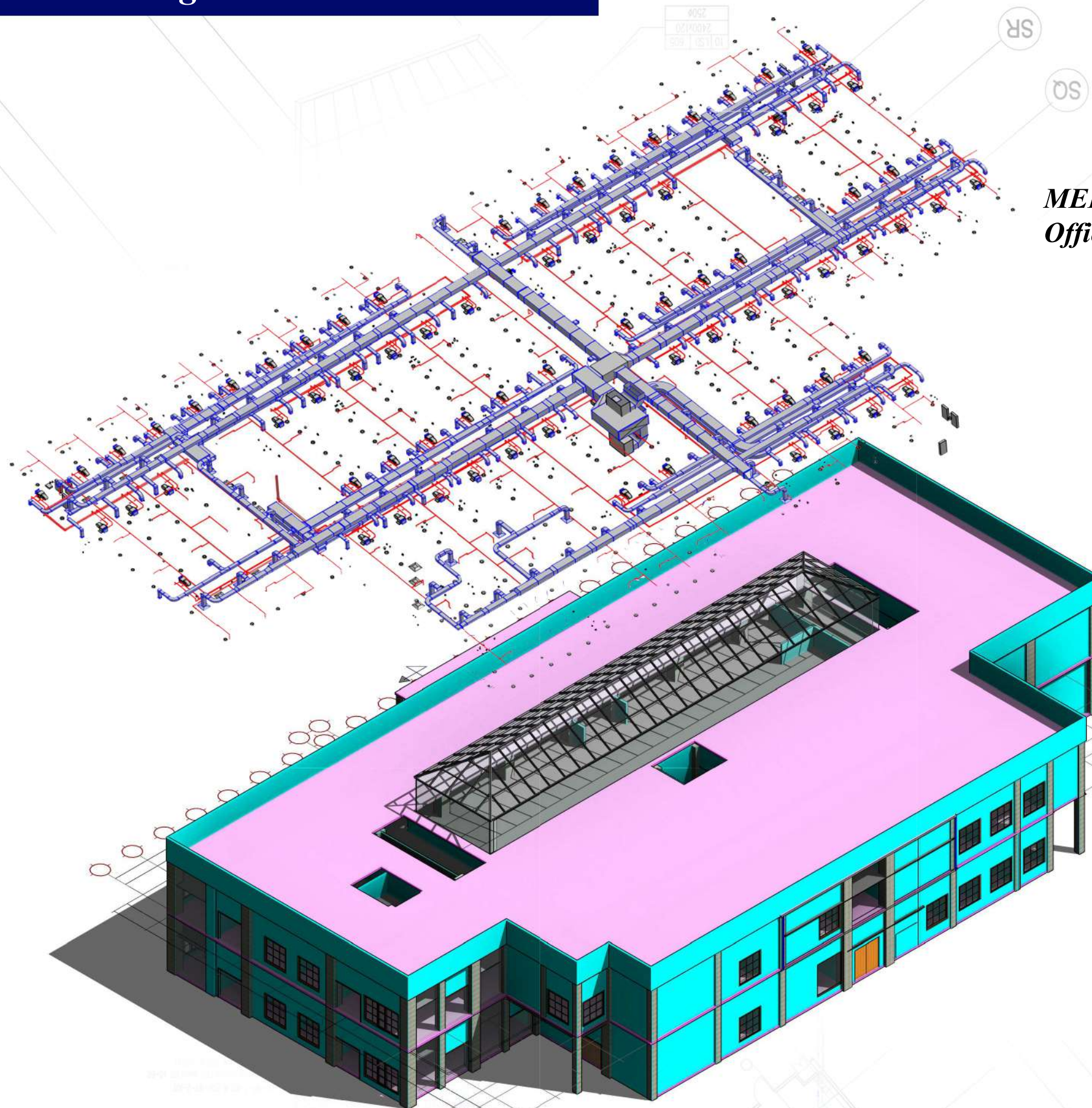
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## *Revit MEP - Overall building 3D model*

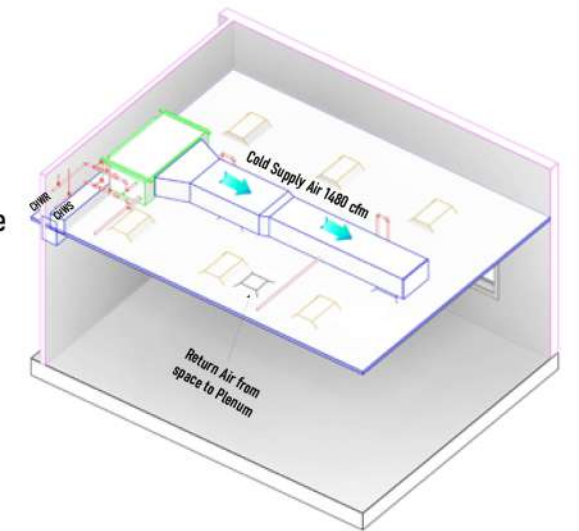
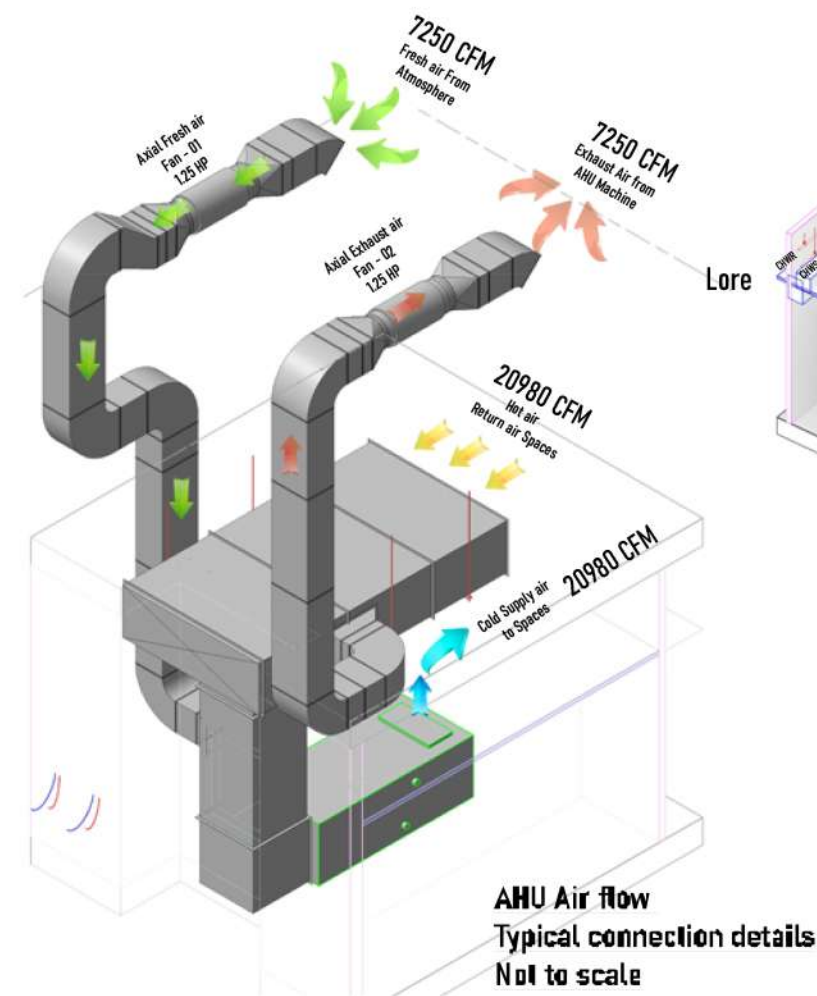
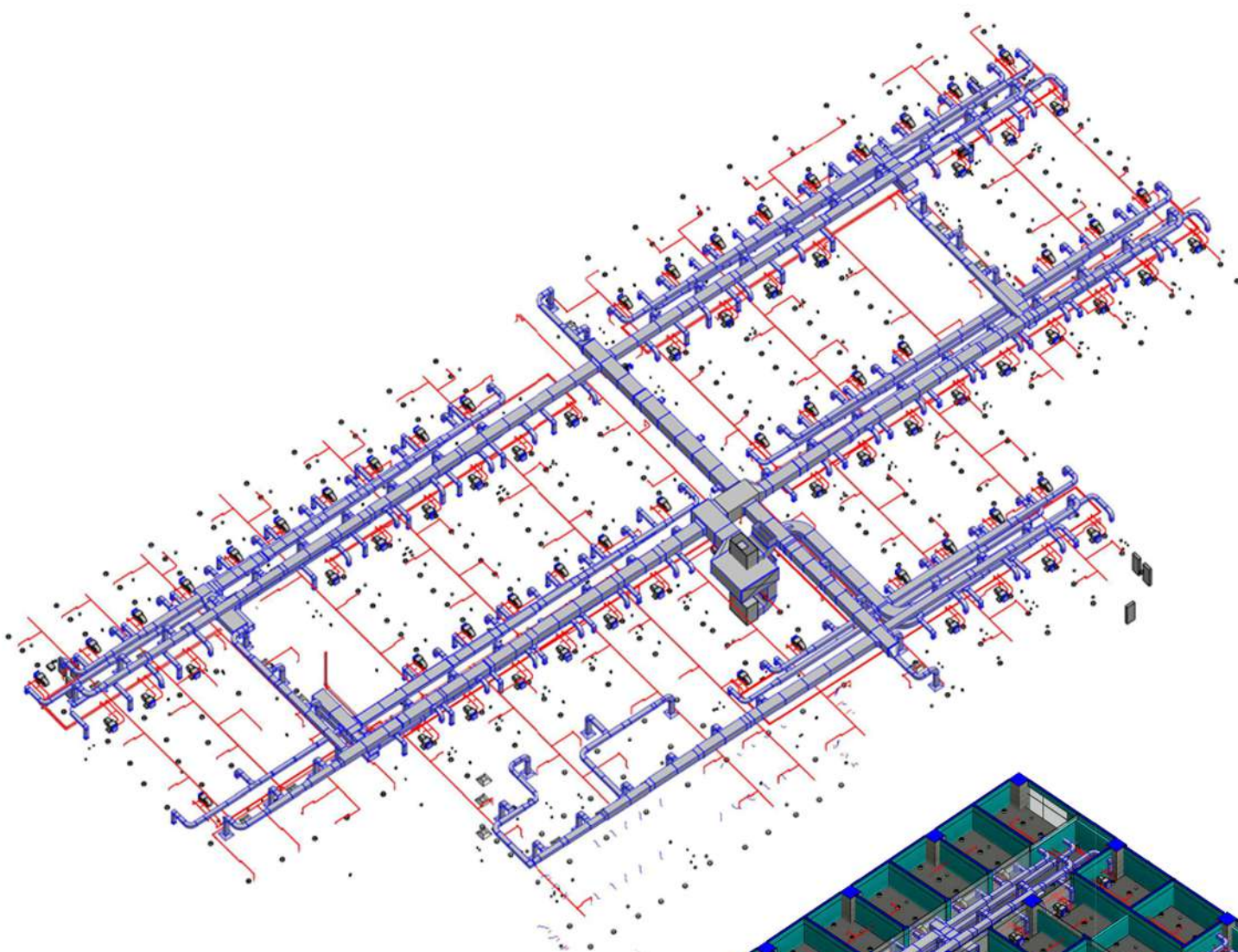


*MEP 3D model  
Office building*

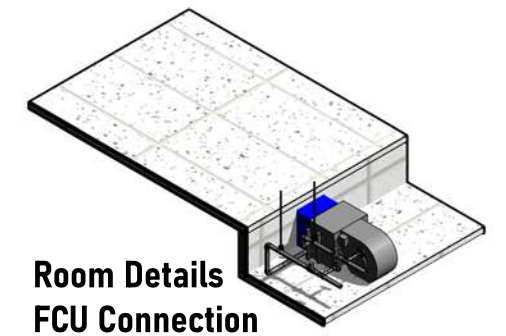
*Architectural model  
Office building*



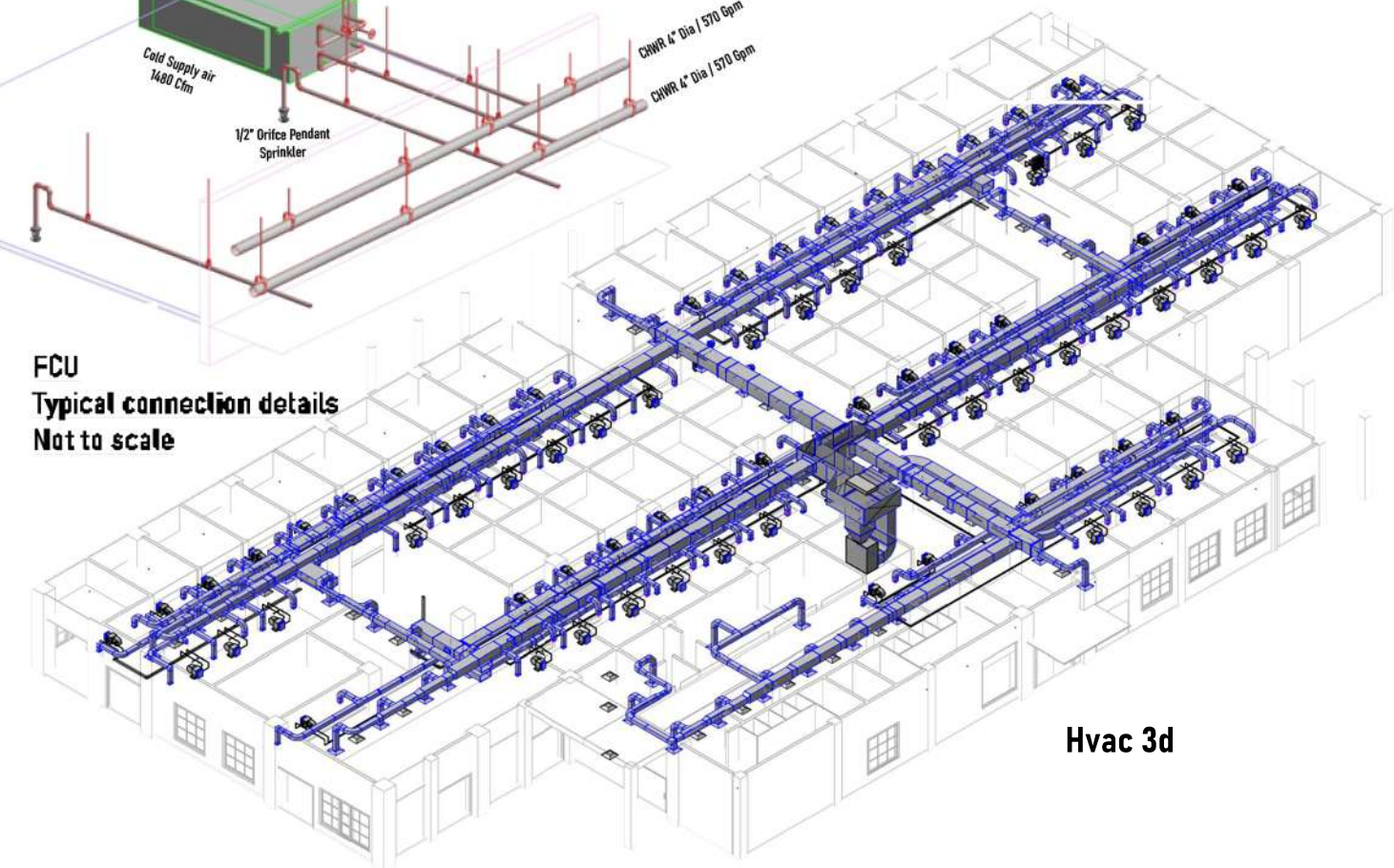
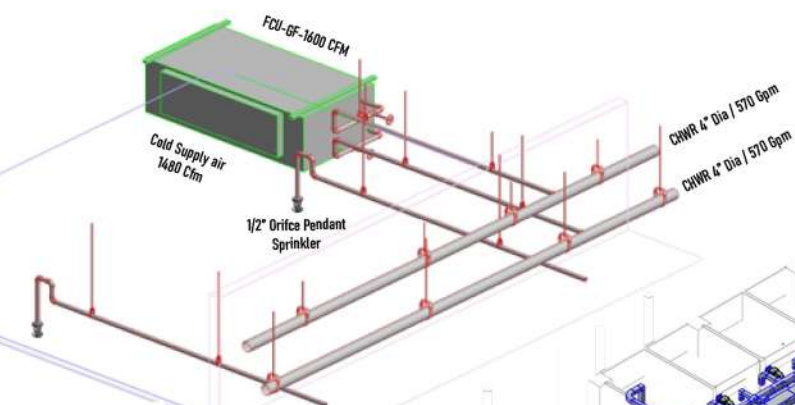
# Revit MEP - Overall building HVAC details



**FCU Air flow**  
Typical connection details  
Not to scale

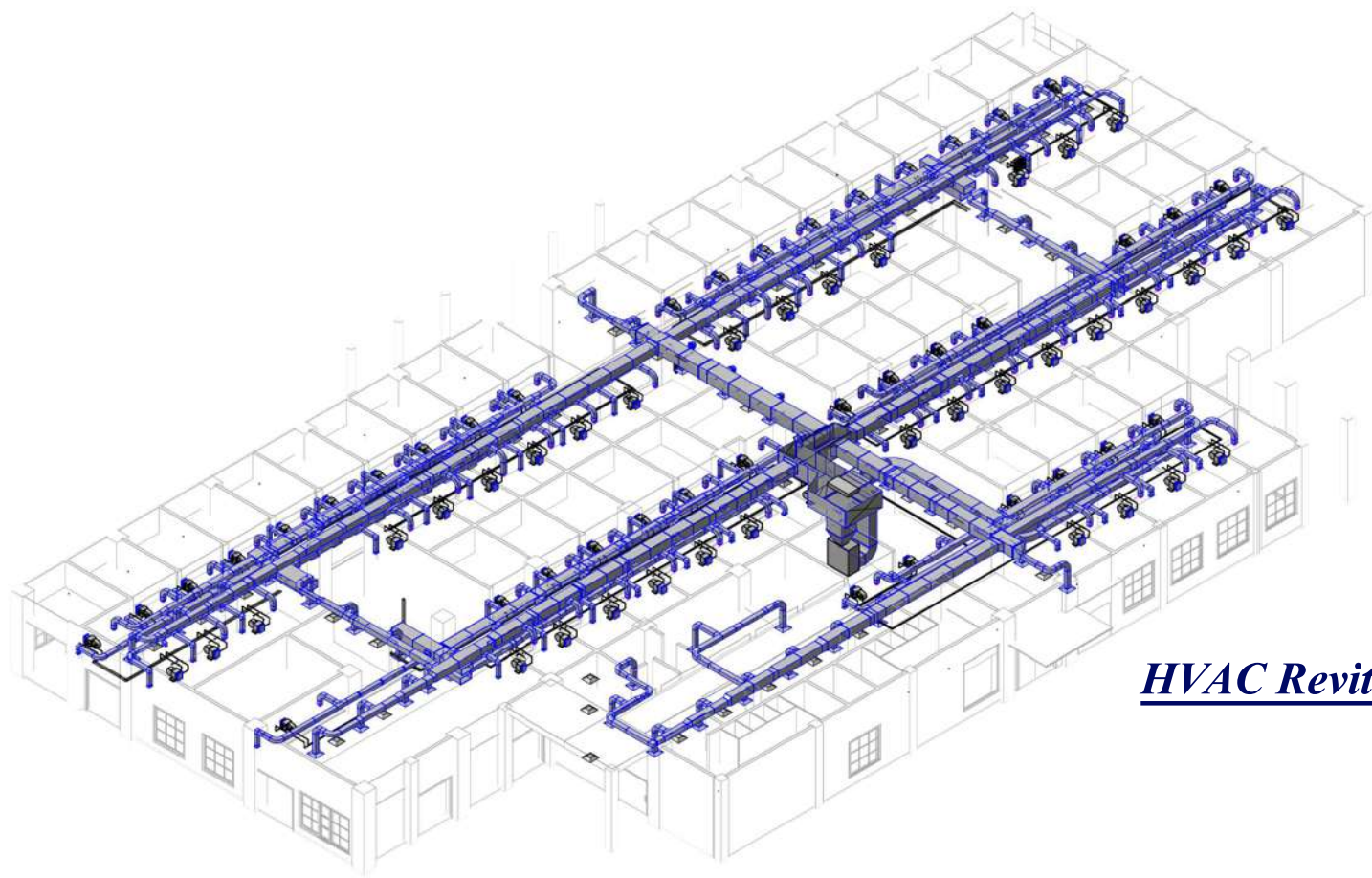


**Room Details**  
FCU Connection

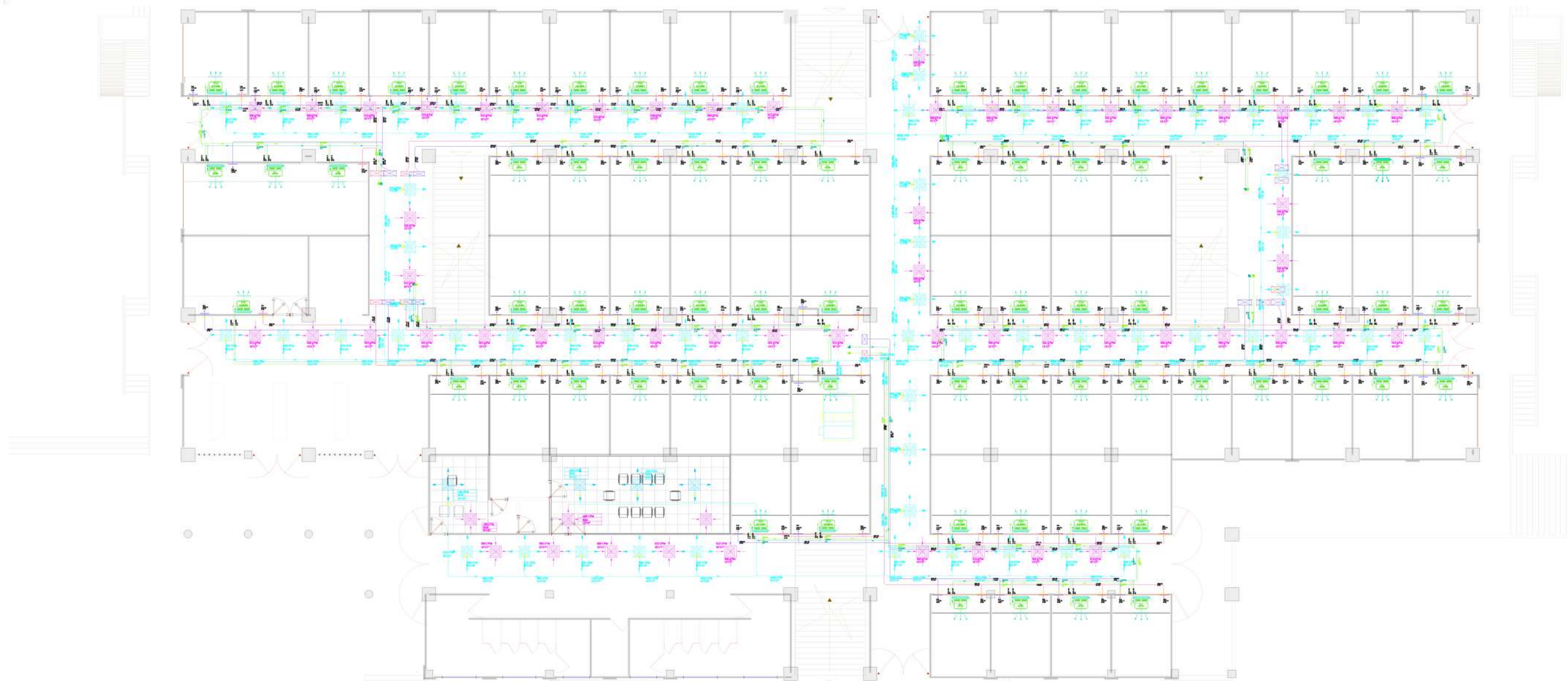


Hvac 3d



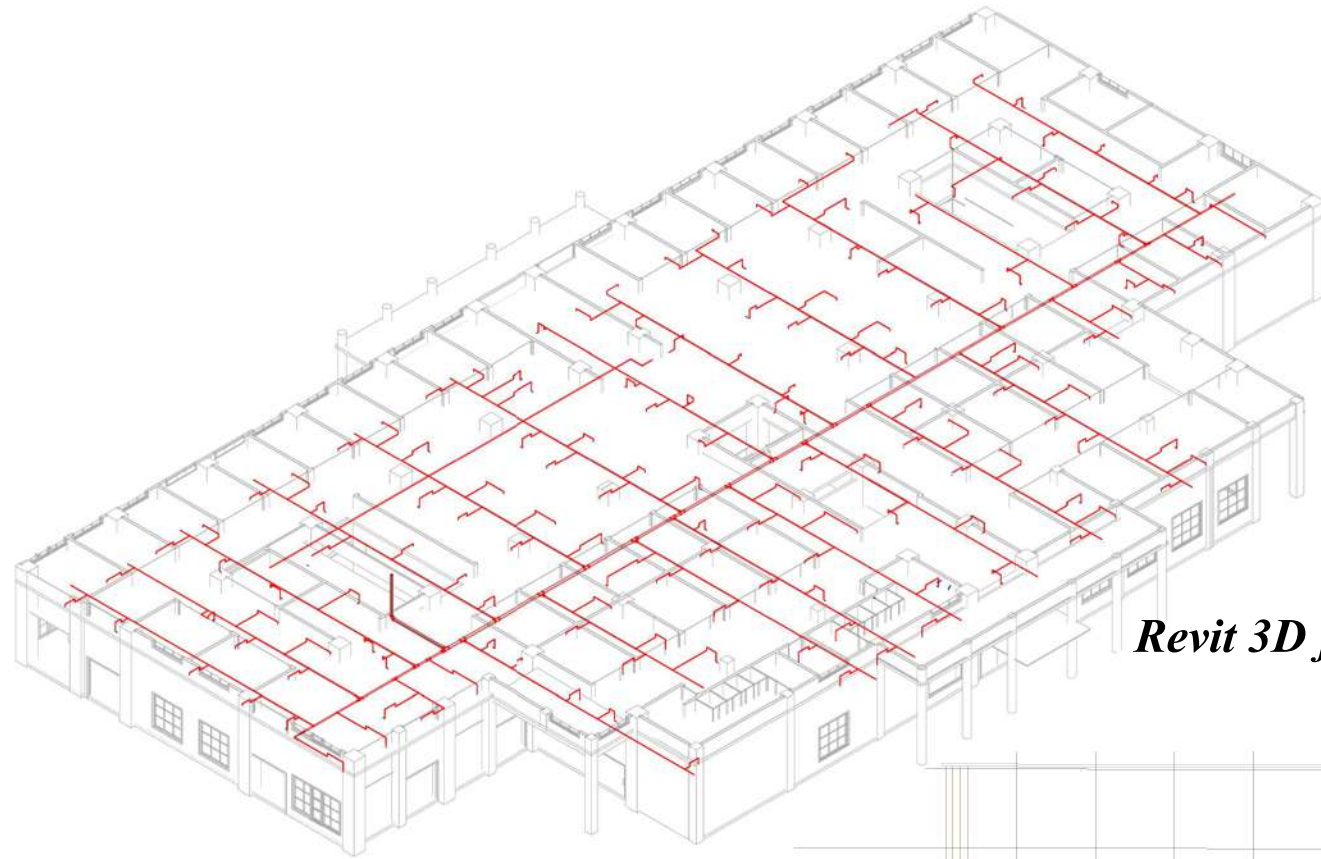


*HVAC Revit model*

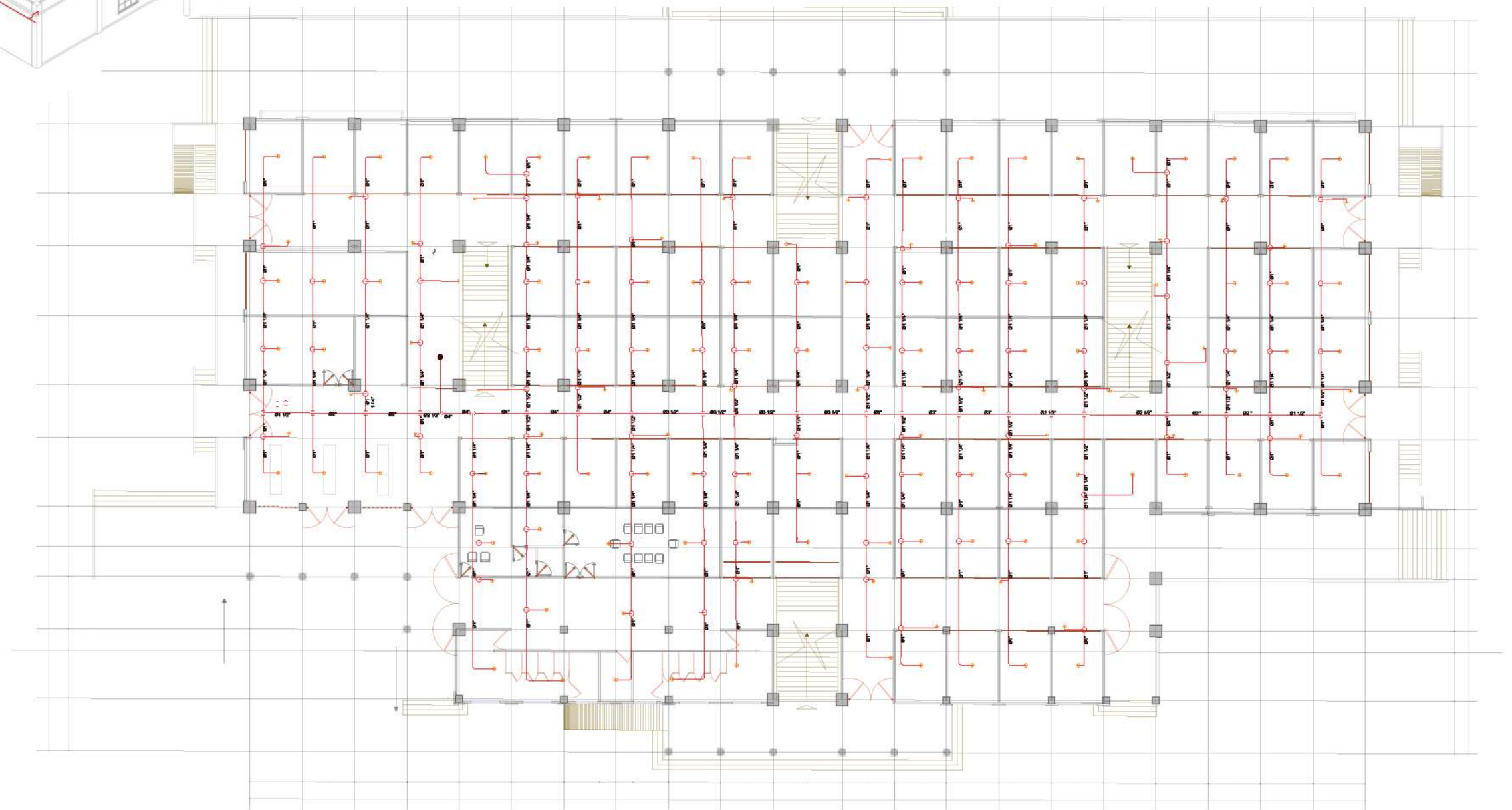


*HVAC single line Drawing*





*Revit 3D fire fighting model*



*AutoCAD 2D fire fighting model*

## *AutoCAD - Overall building electrical load schedule*



# AutoCAD - Electrical load schedule & Panel Schedule

3CX240sq.mm XLPE/SWA/PVC/Cu  
11kv MV CABLE FROM MEDC SUPPLY  
INCOMING SOURCE - 01  
(SARUJ 2 PRIMARY S/S)

3CX120sq.mm XLPE/SWA/PVC/Cu  
2CX2.5sq.mm XLPE/SWA/PVC/Cu

Location : Roof  
TRANSFORMER  
200KVA  
DRYTYPE/AF  
11KV/433V

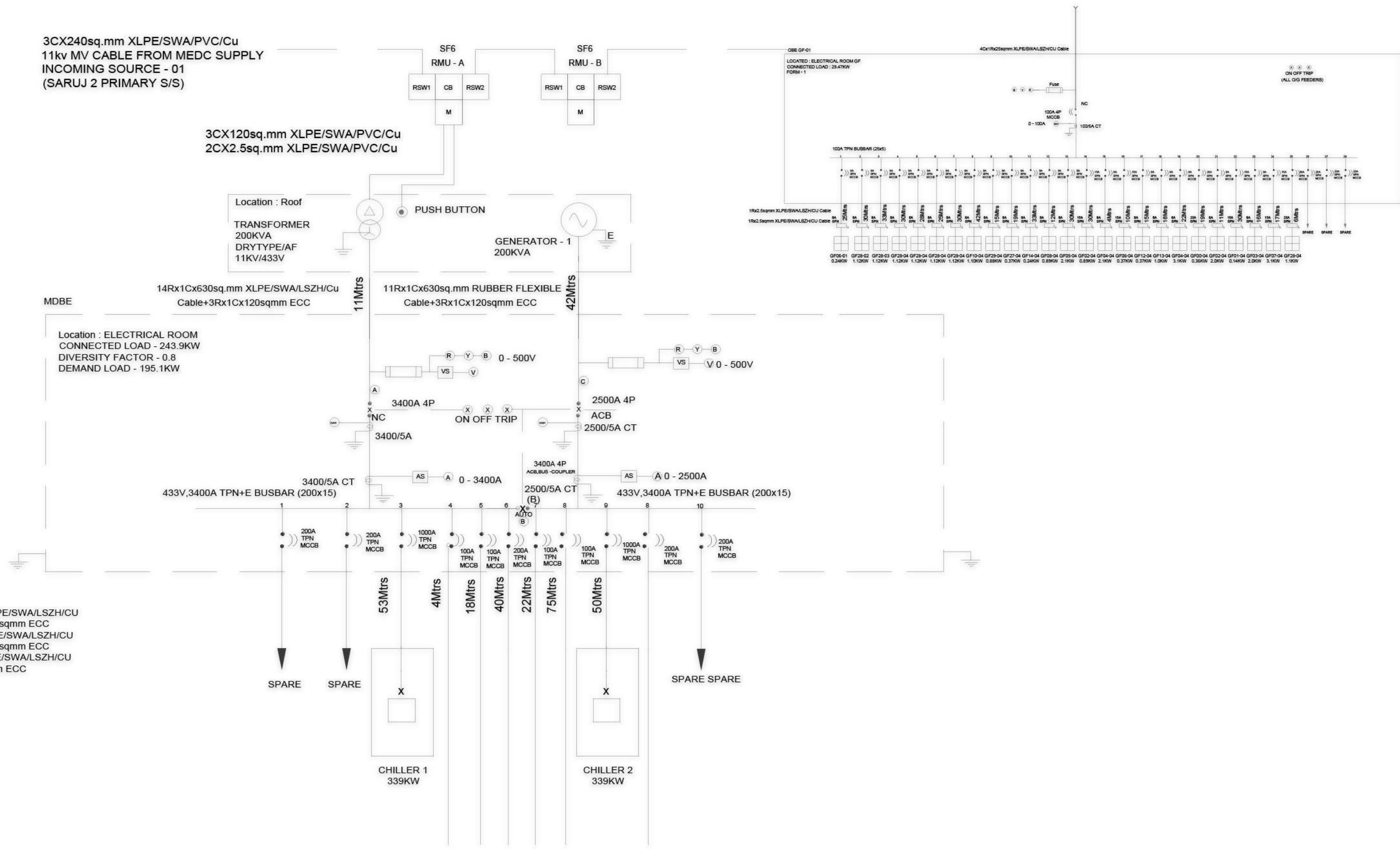
GENERATOR - 1  
200KVA

MDBE  
14Rx1Cx630sq.mm XLPE/SWA/LSZH/Cu  
Cable+3Rx1Cx120sqmm ECC

11Rx1Cx630sq.mm RUBBER FLEXIBLE  
Cable+3Rx1Cx120sqmm ECC

Location : ELECTRICAL ROOM  
CONNECTED LOAD - 243.9KW  
DIVERSITY FACTOR - 0.8  
DEMAND LOAD - 195.1KW

2Rx4Cx240sqmm XLPE/SWA/LSZH/CU  
Cable+2Rx1Cx120sqmm ECC  
4Rx3Cx25sqmm XLPE/SWA/LSZH/CU  
Cable+2Rx1Cx120sqmm ECC  
1Rx3Cx50sqmm XLPE/SWA/LSZH/CU  
Cable+1Cx25sqmm ECC





# Revit MEP - Electrical load schedule & Panel layout

## Electrical fixtures floor plan

The screenshot displays the Autodesk Revit 2020 interface for a floor plan (GF(3)). The ribbon includes tabs for File, Architecture, Structure, Steel, Systems, Insert, Annotate, Analyze, Massing & Site, Collaborate, View, Manage, Add-Ins, Lumion®, and Modify. The Properties panel on the left shows the 'Floor Plan' type with various graphics and underlay settings. The main view shows a floor plan with electrical symbols (S for switch, P for panel) and a vertical busbar. A blue arrow points from the 'Electrical fixtures floor plan' label to the floor plan view. Another blue arrow points from the 'Electrical load schedule' label to the overlaid table.

**Location:**  
Supply From:  
Mounting: Recessed  
Enclosure: Type 1

**Volts:** 120/208 Wye  
**Phases:** 3  
**Wires:** 4

**A.I.C. Rating:** 100A  
**Mains Type:** Three phase panel  
**Mains Rating:** 100 A  
**MCB Rating:** 1 A

**Notes:**

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	Lighting - Dwelling Unit	20 A	1	62 VA	248 VA		1	20 A	Lighting - Dwelling Unit	2
3	Lighting - Dwelling Unit	20 A	1		124 VA	180 VA	1	20 A		4
5		20 A	1			180 VA	310 VA	1	20 A	6
7		20 A	1	360 VA	479 VA			1	20 A	8
9		20 A	1		1080 VA	124 VA		1	20 A	10
11		20 A	1			720 VA	124 VA	1	20 A	12
13	Lighting - Dwelling Unit	20 A	1	124 VA	124 VA			1	20 A	14
15	Lighting - Dwelling Unit	20 A	1		124 VA	124 VA		1	20 A	16
17	Lighting - Dwelling Unit	20 A	1			124 VA	124 VA	1	20 A	18
19	Lighting - Dwelling Unit	20 A	1	124 VA	124 VA			1	20 A	20
21	Lighting - Dwelling Unit	20 A	1		124 VA	360 VA		1	20 A	22
23	Lighting - Dwelling Unit	20 A	1			124 VA	360 VA	1	20 A	24
25		20 A	1	360 VA	360 VA			1	20 A	26
27		20 A	1		360 VA	360 VA		1	20 A	28
29		20 A	1			360 VA	360 VA	1	20 A	30
31		20 A	1	360 VA	372 VA			1	20 A	32
33	Lighting - Dwelling Unit	20 A	1		372 VA	540 VA		1	20 A	34
35	Lighting - Dwelling Unit	20 A	1			372 VA	540 VA	1	20 A	36
37		20 A	1	540 VA						38
39										40
41										42
<b>Total Load:</b>				3600 VA	3835 VA	3658 VA				
<b>Total Amps:</b>				30 A	32 A	31 A				

**Legend:**

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Lighting - Dwelling Unit	3472 VA	91.16%	3165 VA	
Other	0 VA	0.00%	0 VA	
Receptacle	7740 VA	100.00%	7740 VA	
				<b>Total Conn. Load:</b> 11092 VA
				<b>Total Est. Demand:</b> 10792 VA

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



# Hap - Hourly Analysis Program - Heat load calculation E20 format

Space Properties - [CONFIRANCE]

General | Internals | Walls, Windows, Doors | Roofs, Skylights | Infiltration | Floors | Partitions

Name: CONFIRANCE

Floor Area: 357.0 ft²

Avg Ceiling Height: 9.0 ft

Building Weight: 70.0 lb/ft²

Light

OA Ventilation Requirements

Space Usage: OFFICE: Office space

OA Requirement 1: 5.0 CFM/person

OA Requirement 2: 0.06 CFM/ft²

Space usage defaults: ASHRAE Std 62.1-200  
Defaults can be changed via View/Preference

OK

**Air System Sizing Summary for SAD**

Project Name: Untitled  
Prepared by: SARAN  
10/20/2021 04:31PM

**Air System Information**

Air System Name: SAD  
Equipment Class: CW AHU  
Air System Type: VAV

Number of zones: 1  
Floor Area: 357.0 ft²  
Location: Chennai, India

**Sizing Calculation Information**

Calculation Months: Jan to Dec  
Sizing Data: Calculated

**Central Cooling Coil Sizing Data**

Total coil load: 3.8 Tons  
Total coil load: 45.8 MBH  
Sensible coil load: 39.7 MBH  
Coil CFM at Aug 1600: 1591 CFM  
Max block CFM at Aug 1900: 1698 CFM  
Sum of peak zone CFM: 1698 CFM  
Sensible heat ratio: 0.865  
ft²/Ton: 93.5  
BTU/(hr-ft²): 128.4  
Water flow @ 10.0 °F rise: 9.17 gpm

Load occurs at: Aug 1600  
OA DB / WB: 100.6 / 76.9 °F  
Entering DB / WB: 78.1 / 63.7 °F  
Leaving DB / WB: 55.0 / 53.7 °F  
Coil ADP: 52.4 °F  
Bypass Factor: 0.100  
Resulting RH: 46 %  
Design supply temp: 55.0 °F  
Zone T-stat Check: 1 of 1 OK  
Max zone temperature deviation: 0.0 °F

**Preheat Coil Sizing Data**

No heating coil loads occurred during this calculation.

**Supply Fan Sizing Data**

Actual max CFM at Aug 1900: 1698 CFM  
Standard CFM: 1694 CFM  
Actual max CFM/ft²: 4.76 CFM/ft²

Fan motor BHP: 0.00 BHP  
Fan motor kW: 0.00 kW  
Fan static: 0.00 in wg

**Outdoor Ventilation Air Data**

Design airflow CFM: 121 CFM  
CFM/ft²: 0.34 CFM/ft²

CFM/person: 7.78 CFM/person

Space Settings

Heat load result



# ELite fire - Hydraulic calculation as per NFPA standard

**General Project Data**

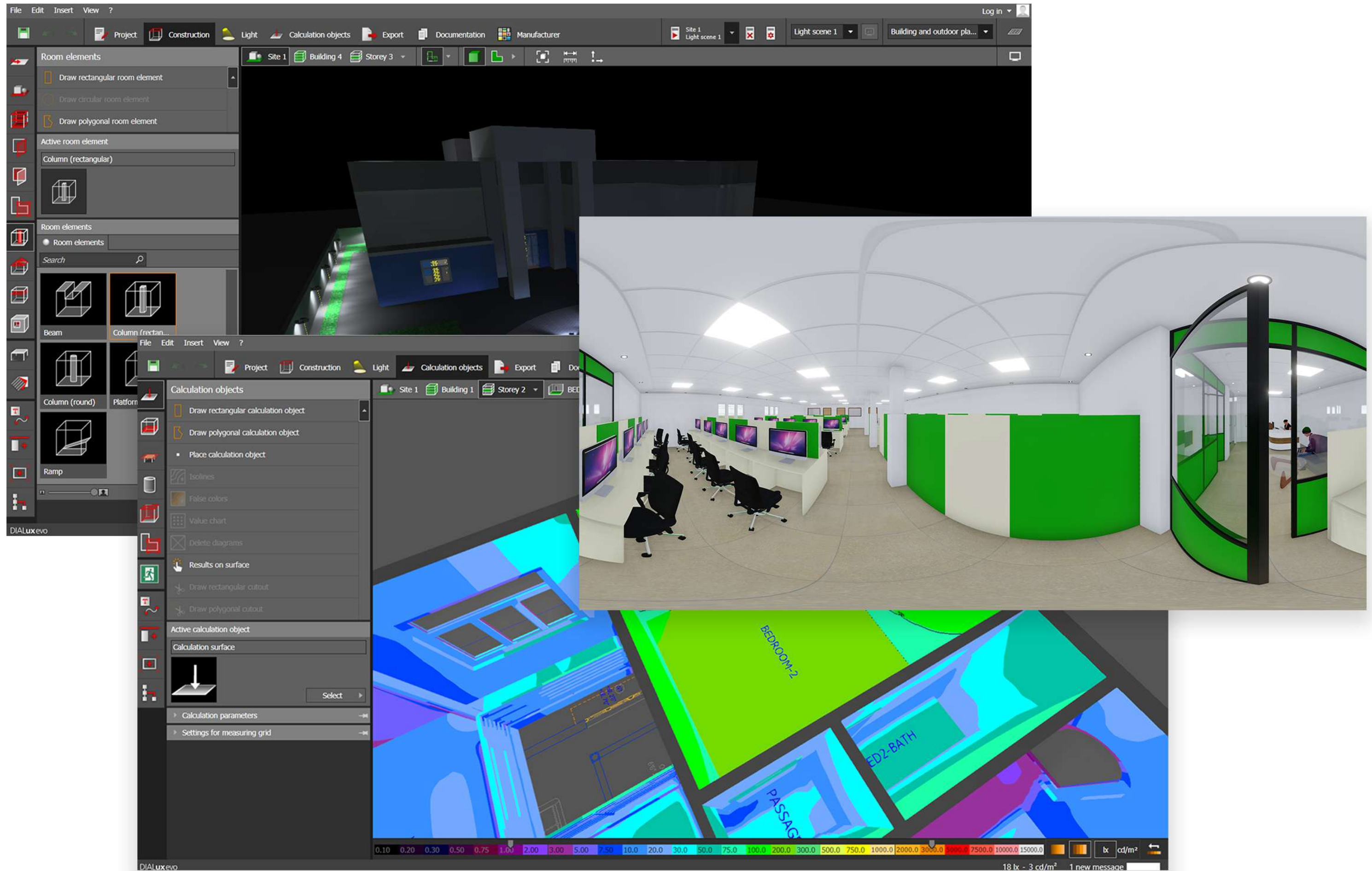
Project Data	Client Data	Company Data	Building Data	System Data
In Rack Sprinkler Allow gpm	0	Hazard Description	Ordinary 1	
Inside Hose Stream Allow gpm	50	Min Desired Density gpm/ft²	0.15	
Outside Hose Strm Allow gpm	250	Sprinkler System Type:	Wet	
Default Pipe Material:	4	Area of Sprinkler Operation ft²	1500	
Default K-Factor:	K 5.6	Max Area Per Sprinkler ft²	130	
Sprinkler Model:	FW2	Hydrant Test Date:		
Sprinkler Make:	Fahad Waseem Itc	Source of Info.:		
Temperature Rating:	F 155	Hydrant ID:		
Sprinkler Size:	1/2"	Hydrant Elevation ft	0	
Labor Rate \$/hr	0	<input type="checkbox"/> Exterior Hose Flow gpm	500	
Other Labor Hours hr	0	Test Static Pressure psi	0	
Other Material Costs \$	0	Test Residual Pressure psi	0	
Primary Type of Discharge	Sprinkler	Test Flow Rate gpm	0	
Comment:				
<input type="checkbox"/> Include this comment on reports				
Calculated Demand Pressure psi	87.59			
Calculated Demand Flow Rate gpm	298.88			

Pipe Data				Global Editor				Tree Builder				Grid Builder			
Add Pipe	Delete Pipe	Sort Pipe	Clear Pipe	Mark Inflow Node	Unmark Inflow Node	CPLD									
Beg	Mat	Dia	inch	KFact	K	Sprk	Press	Sprk	Area	NSprk	Std Fit	Eq Len	ft	Status	
End	Loss	psi	Len	ft	Dfll=5.59	Elev	ft	psi	Area	ft²	Flow	gpm	NStd	ft	P Type
1	4	1.0	5.6	90.0	12.13	0.0			0.0	E	14.0	Active			
2		12.0	5.6	90.0	13.86	0.0			0.0	0.0	0				
2	4	1.0	5.6	90.0	13.86	0.0			0.0	T	17.0	Active			
3		12.0	5.6	90.0	21.97	0.0			0.0	0.0	0				
3	4	1.25	5.6	90.0	21.97	0.0			0.0	T	18.0	Active			
4		12.0	5.6	90.0	27.68	0.0			0.0	0.0	0				
4	4	1.5	5.6	90.0	27.68	0.0			0.0	T	14.0	Active			
5		6.0	0.0	90.0	31.81	0.0			0.0	0.0	0				
5	4	2.0	0.0	90.0	31.81	0.0			0.0	T	22.0	Active			
10		12.0	0.0	90.0	33.73	0.0			0.0	0.0	0				
6	4	1.0	5.6	90.0	12.9	0.0			0.0	E	14.0	Active			
7		12.0	5.6	90.0	14.74	0.0			0.0	0.0	0				

5	0.00	90.00	0.00	31.81	1.50	0.00	0.29469	6.00	4.126
	SCHED 40 WET STEEL				1.610	96.06		8.00	0.000
					120	15.14	0	14.00	4.126
6	5.60	90.00	20.11	12.90	1.00	0.00	0.13155	12.00	1.842
7	5.60	90.00	21.50	14.74	1.049	20.11	E	2.00	0.000
	SCHED 40 WET STEEL				120	7.47	0	14.00	1.842
7	5.60	90.00	21.50	14.74	1.00	0.00	0.50500	12.00	8.585
8	5.60	90.00	27.05	23.33	1.049	41.61	T	5.00	0.000
	SCHED 40 WET STEEL				120	15.45	0	17.00	8.585
8	5.60	90.00	27.05	23.33	1.25	0.00	0.33541	12.00	6.037
9	5.60	90.00	30.35	29.36	1.380	68.66	T	6.00	0.000
	SCHED 40 WET STEEL				120	14.73	0	18.00	6.037
5	0.00	90.00	0.00	31.81	2.00	0.00	0.08728	12.00	1.920
10	0.00	90.00	0.00	33.73	2.067	96.06	T	10.00	0.000
	SCHED 40 WET STEEL				120	9.18	0	22.00	1.920
9	5.60	90.00	30.35	29.36	1.50	0.00	0.31160	6.00	4.362
10	0.00	90.00	0.00	33.73	1.610	99.00	T	8.00	0.000
	SCHED 40 WET STEEL				120	15.60	0	14.00	4.362
11	5.60	90.00	21.12	14.22	1.00	0.00	0.14399	12.00	2.016
12	5.60	90.00	22.57	16.24	1.049	21.12	E	2.00	0.000
	SCHED 40 WET STEEL				120	7.84	0	14.00	2.016
12	5.60	90.00	22.57	16.24	1.00	0.00	0.55253	12.00	9.393
13	5.60	90.00	28.35	25.63	1.049	43.69	T	5.00	0.000
	SCHED 40 WET STEEL				120	16.22	0	17.00	9.393
13	5.60	90.00	28.35	25.63	1.25	0.00	0.36658	12.00	6.598
14	5.60	90.00	31.79	32.23	1.380	72.04	T	6.00	0.000
	SCHED 40 WET STEEL				120	15.45	0	18.00	6.598
10	0.00	90.00	0.00	33.73	2.50	0.00	0.13620	12.00	3.269
15	0.00	90.00	0.00	37.00	2.469	195.06	T	12.00	0.000
	SCHED 40 WET STEEL				120	13.07	0	24.00	3.269



# Dialux Evo - Indoor & Outdoor Lighting design





*Mcquay Ductsizer and Pipesizer*

DesignTools DuctSizer Version...

Exit Print Clear Units About

68°F Air STP

Fluid density 0.075 lb/ft³  
Fluid viscosity 0.0432 lb/ft·h  
Specific Heat 0.24 Btu/lb·F  
Energy factor 1.08 Btu/h·F·cfm

☒ Flow rate 1280 cfm  
☒ Head loss 0.08 in.WC/100 ft  
☐ Velocity 924.6 fpm  
☐ Equivalent diameter 15.9 in

Duct size 14 in X 15 in

Equivalent Diameter 15.84 in  
Flow Area 1.3683 ft²  
Fluid velocity 935.5 ft/min  
Reynolds Number 128,620  
Friction factor 0.01984  
Velocity Pressure 0.0545 in.WC  
Head Loss 0.082 in.WC/100 ft

**McQuay**  
Air Conditioning

www.mcquay.com

*Mcquay Ductsizer*

DesignTools PipeSizer Version 6.2

Exit Print About

Sch 40 Steel

3"

50°F Water

151.8 USgpm

Outside Diameter 3.5 in  
Wall Thickness 0.216 in  
Inside Diameter 3.068 in  
Inside Area 7.393 in²  
Cross Section Area 2.23 in²  
Section Modulus 1.725 in³  
Moment of Inertia 3.018 in⁴  
Radius Gyration 1.16 in  
Weight of Pipe 7.576 lb/ft  
Weight Pipe + Fluid 10.788 lb/ft

Fluid density 62.411 lb/ft³  
Fluid viscosity 3.1667 lb/ft·h  
Specific Heat 1.002 Btu/lb·F  
Energy factor 501.6 Btu/h·F·gpm

Fluid velocity 6.59 ft/s  
Reynolds Number 119,504  
Friction factor 0.02025  
Head Loss 5.341 ft/100 ft  
Elbow loss 0.236 ft

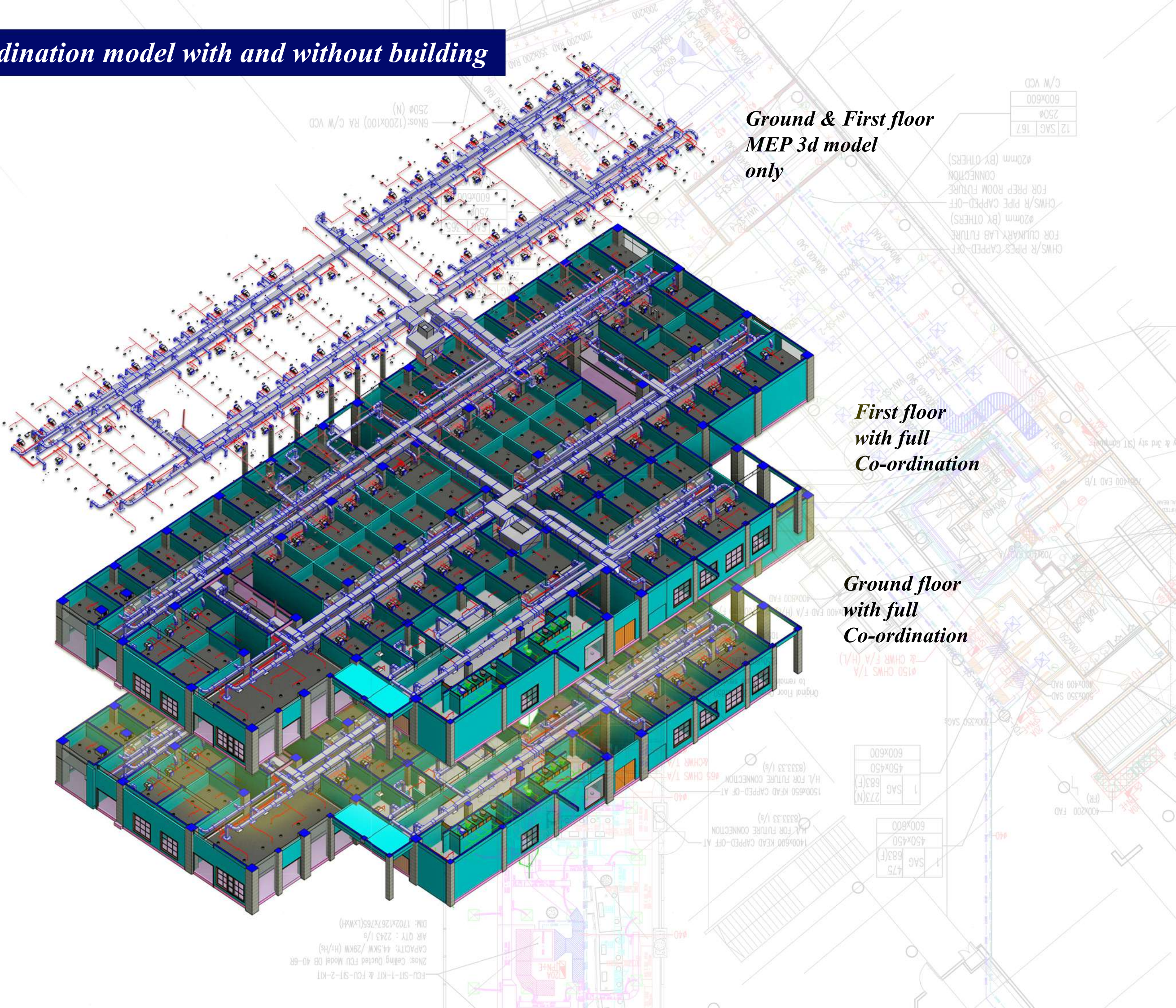
**McQuay**  
Air Conditioning

www.mcquay.com

*Mcquay Pipesizer*



*Revit MEP - Co-ordination model with and without building*



*Ground & First floor  
MEP 3d model  
only*

*First floor  
with full  
Co-ordination*

*Ground floor  
with full  
Co-ordination*

12	SAG	167
250		
600x600		
C/W VCD		

CHWS/R PIPES CAPPED-OFF  
FOR CULINARY LAB FUTURE  
Ø20mm (BY OTHERS)  
CHWS/R PIPE CAPPED-OFF  
FOR PREP ROOM FUTURE  
CONNECTION  
Ø20mm (BY OTHERS)

1	SAG	273(N)
683(F)		
450x450		
600x600		

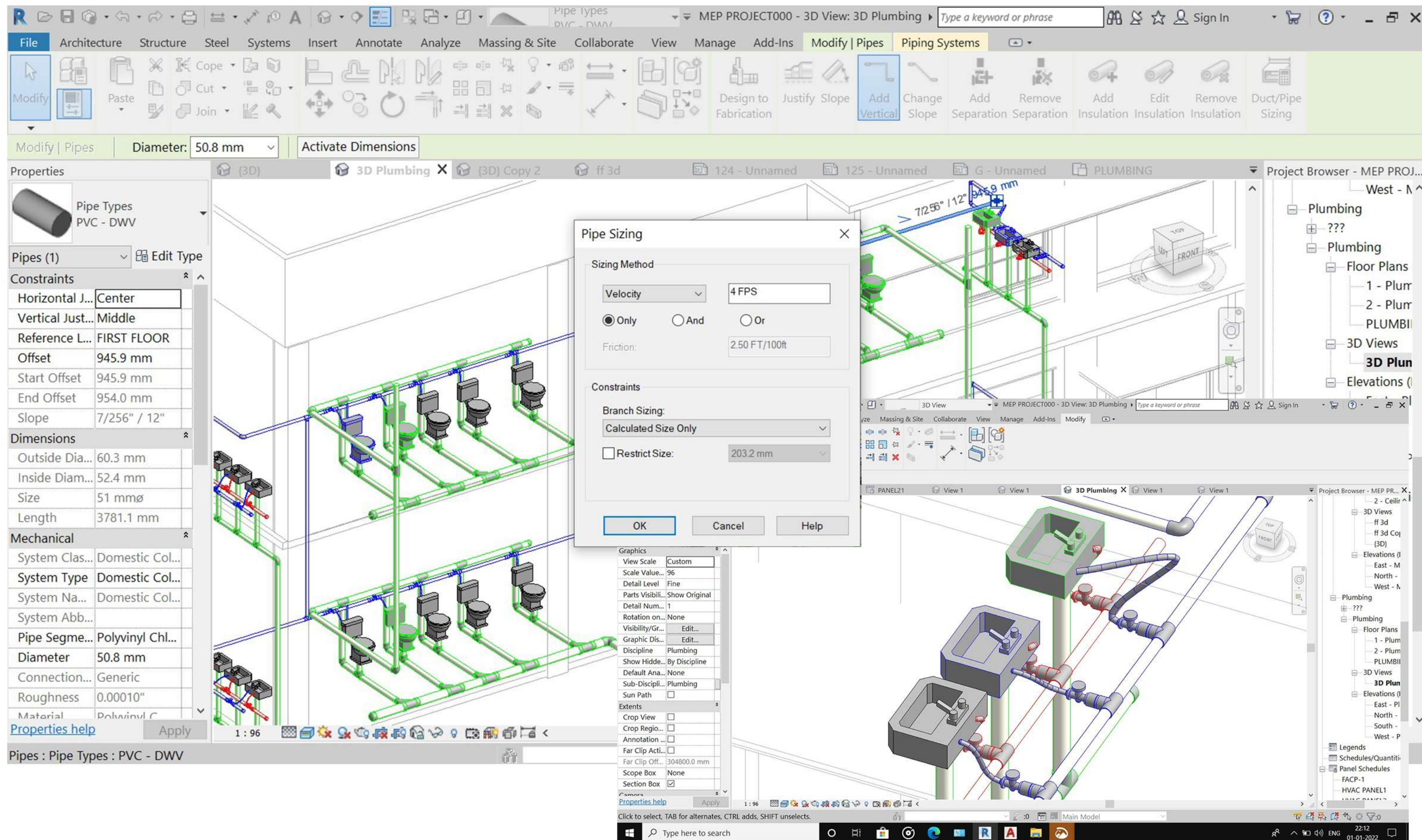
1	SAG	475
683(F)		
450x450		
600x600		

FCU-SIT-1-KIT & FCU-SIT-2-KIT  
2Nos: Ceiling Ducted FCU Model DB 40-6R  
CAPACITY: 44.5KW / 29KW (Ht/Hs)  
AIR QTY : 2243 l/s  
DMM: 1702x1267x765(LxWxH)

1400x600 KEAD CAPPED-OFF AT  
H/L FOR FUTURE CONNECTION  
(Ø333.33 I/s)  
1500x650 KEAD CAPPED-OFF AT  
H/L FOR FUTURE CONNECTION  
(Ø333.33 I/s)  
#65 CHWS T/A  
& CHWR T/A



## ***Revit MEP - Domestic Cold Water pipe sizing using velocity limitation***





# Revit MEP - Duct Sizing using Equal friction method

The screenshot displays the Revit MEP interface with a 3D plumbing model in the background. The 'Duct Sizing' dialog box is open, showing the following settings:

- Sizing Method:** Equal Friction (selected), 0.08 in-wg/100ft
- Velocity:** 1000 FPM
- Constraints:**
  - Branch Sizing: Calculated Size Only
  - ☒ Restrict Height: 203
  - ☐ Restrict Width: 965

The dialog box has 'OK', 'Cancel', and 'Help' buttons at the bottom.

**Properties Panel (Left):**

- Sheet: Unnamed
- Graphics: Visibility/Graphics (Edit...), Scale
- Identity Data:
  - Dependency: Independent
  - Referencing... (multiple entries)
  - Current Rev... (multiple entries)
  - Approved By: Approver
  - Designed By: Designer
  - Checked By: Checker
  - Drawn By: Author
  - Sheet Num...: 125
  - Sheet Name: Unnamed
  - Sheet Issue ...: 12/31/21
  - Appears In ...: ☒
  - Revisions o...: Edit...

**Project Browser (Right):**

- North - ^
- South - ^
- West - P
- Legends
- Schedules/Quantities
- Panel Schedules:
  - FACP-1
  - HVAC PANEL1
  - HVAC PANEL2
  - PANEL21
  - PANEL31
  - PANEL32
  - PANEL 11
  - PANEL 12
  - PANEL 22
- Sheets (all):
  - 124 - Unnamed
    - 3D View: ff 3
  - 125 - Unnamed**
    - 3D View: {3D}
  - A102 - Unnamed
- Families
- Groups
- Revit Links:
  - PV ROONIE.rvt
  - shoping mall123
  - shoping mall123
  - shoping mall.rvt

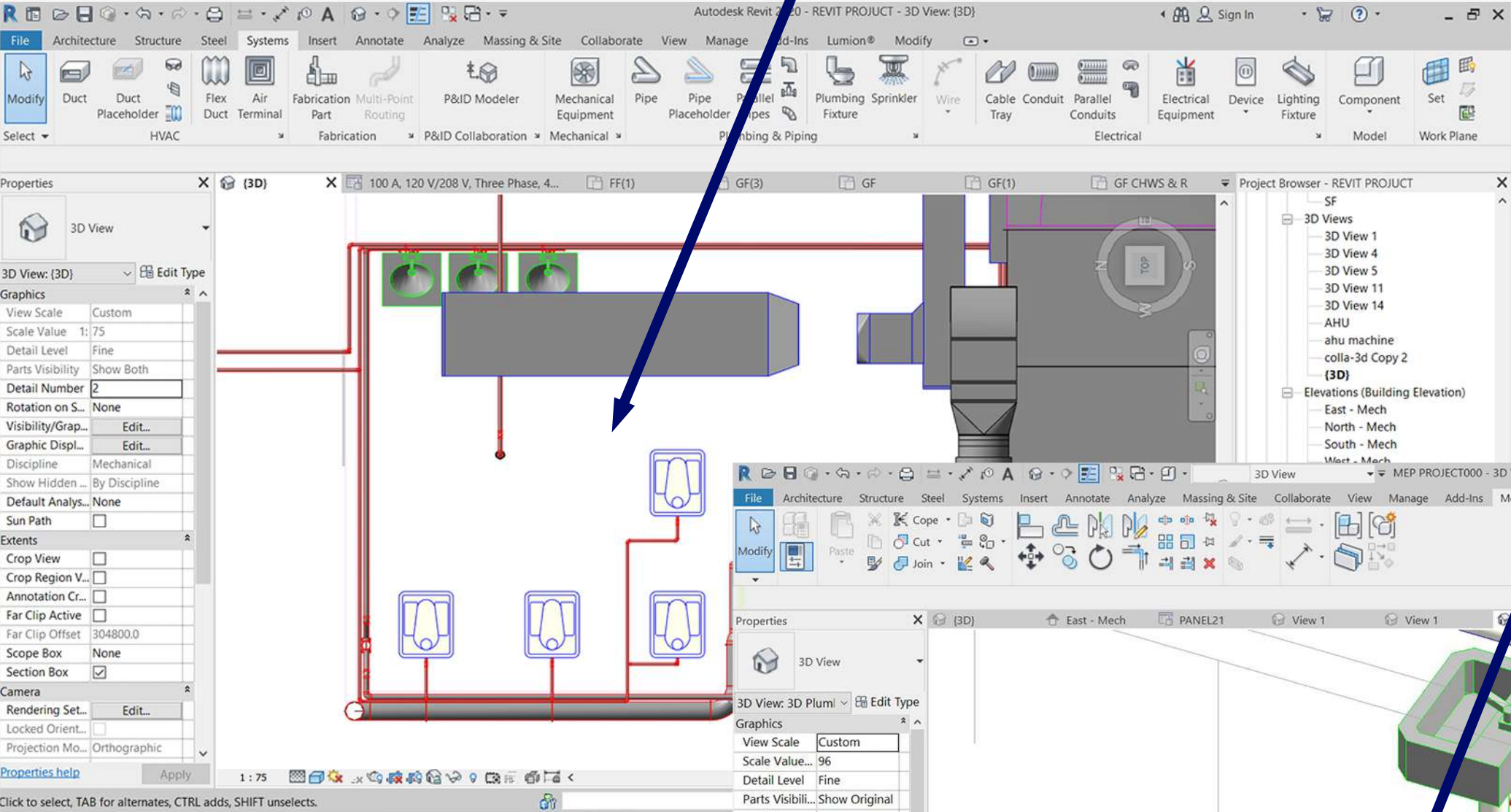
**Viewports (Bottom):** Viewport : Viewport 1

**Taskbar (Bottom):** Windows taskbar with search bar and various application icons.

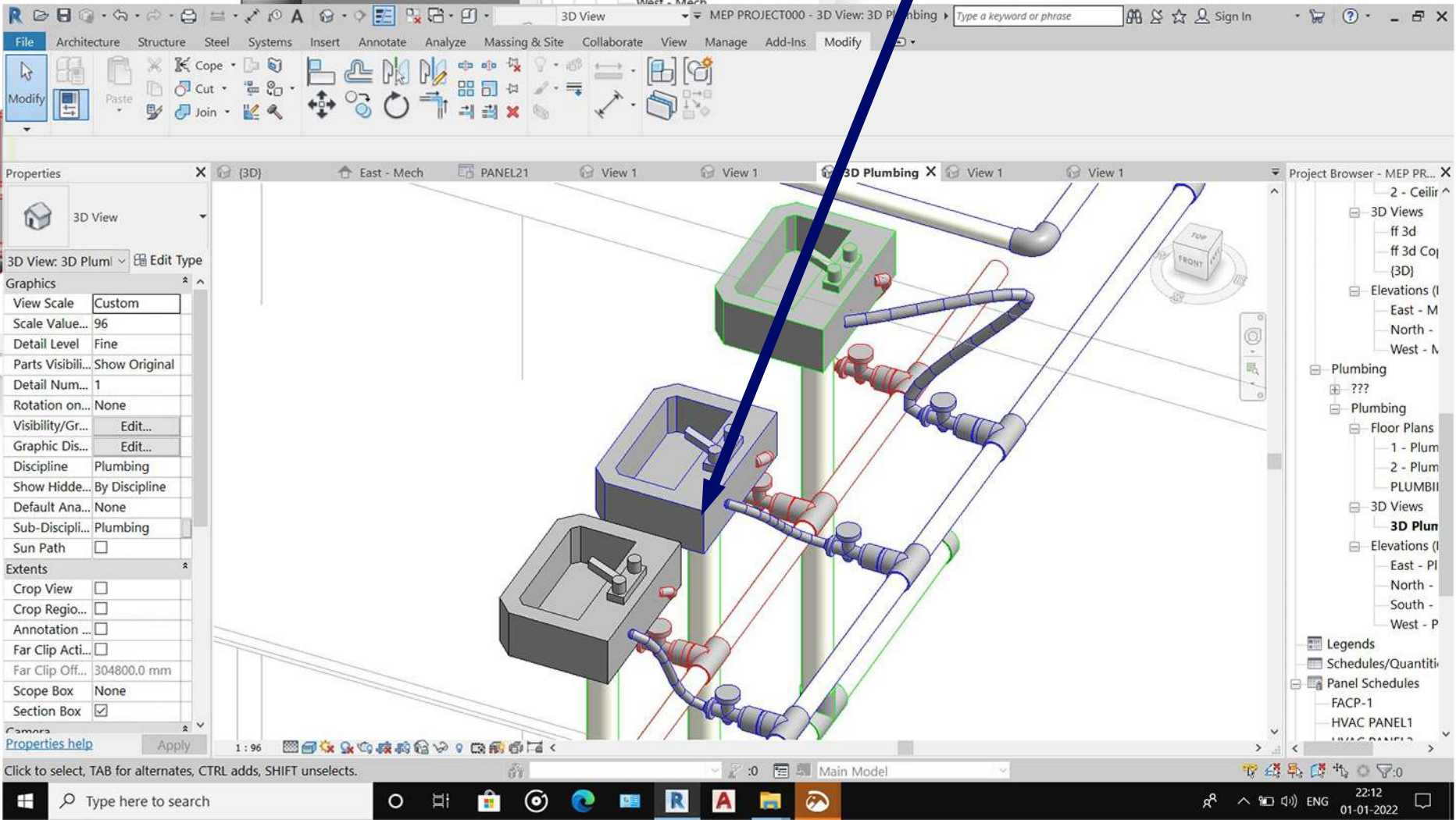


# Revit MEP - Plumbing model

Plumbing Plan view



Laboratory Connection detail





# Revit MEP - Electrical BOQ

Cable Tray Fitting BOQ		
Family and Type	Count	Size

Channel Reducer: Standard	1	6"x6"-2"x2"
Channel Reducer: Standard	1	6"x6"-6"x4"
Channel Horizontal Tee: 12" Radius	1	24"x6"-6"x6"-6"x6"

Grand total: 3                      3

ELECTRICAL FIXTURES BOQ	
Family and Type	Count

Duplex Receptacle: Standard	98
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Grand total: 98                      98

LIGHTING FIXTURES DETAILS		
Count	Family and Type	Type

159	Plain Recessed Lighting Fixture: 600 X 600 - 120 V	600 X 600 - 120 V
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159

PANEL BOQ	
Family and Type	Count

Ethernet Switch: Standard	1
Lighting and Appliance Panelboard - 208V MLO: 100 A	2
Lighting and Appliance Panelboard - 208V MLO: 225 A	1

Grand total: 4                      4

CABLE TRAY BOQ			
Family and Type	Length	Size	Count

Cable Tray with Fittings: Channel Cable Tray	14046	2"x2"	1
Cable Tray with Fittings: Channel Cable Tray	41783	6"x4"	1
Cable Tray with Fittings: Channel Cable Tray	4148	24"x6"	1

Grand total: 3                      59977                      3

Lighting Device Schedule	
Count	Family and Type

198	Lighting Switches: Single Pole
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198

Fire Alarm Device Schedule	
Count	Family and Type

17	M_Fire Alarm Horn - Wall Mounted: Standard
45	M_Fire Alarm Strobe Speaker - Ceiling Mounted: Standard
17	M_Manual Pull Station: Standard
56	M_Smoke Detector: Plain

135