Politechnico di Milano

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Task 1

Solar radiation

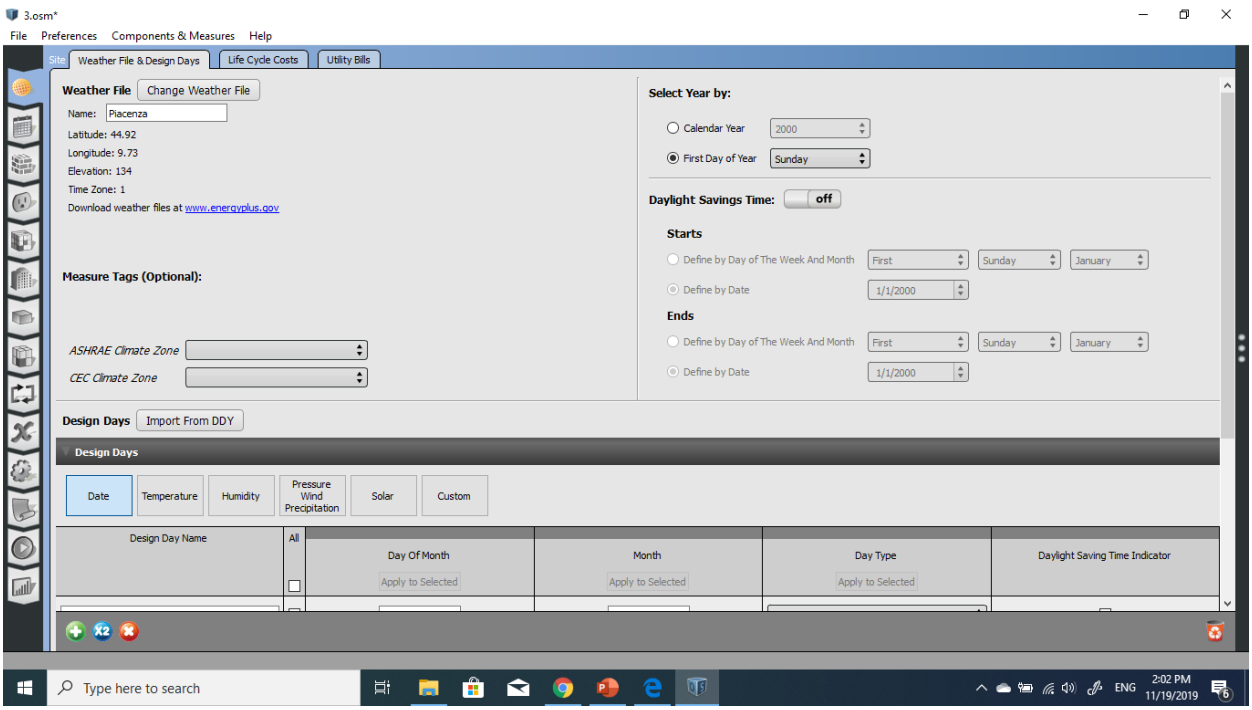
Solar constant is the maximum solar radiation density during the year which is 1367 W/m2 and solar radiation is electromagnetic energy which is separated to spectral distribution and irradiance.

Absorption bands is the specific wavelength which some atmospheric components namely ozone, water and carbon dioxide absorb radiation.

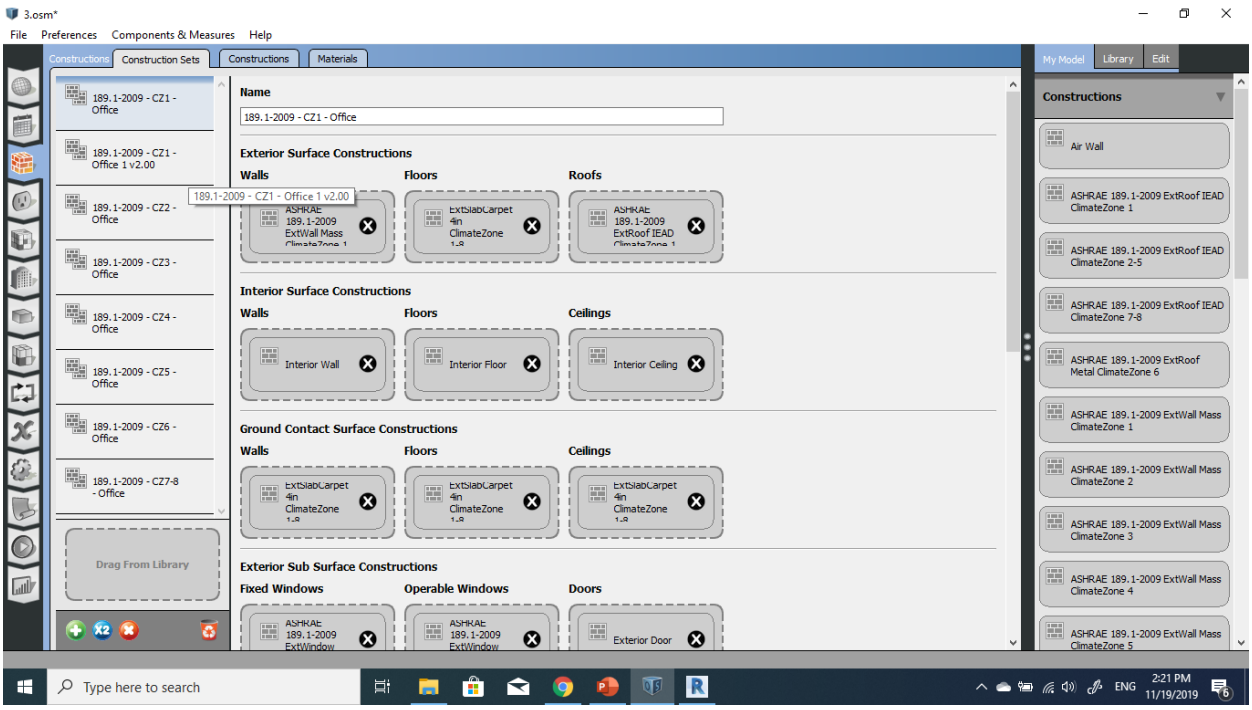
The energy that we gather from the sun depends on:

The altitude and azimuth of the sun, the weather condition which means atmosphere clearness, the site altitude over the sea level and sunshine hours.

Task 2



Construction set



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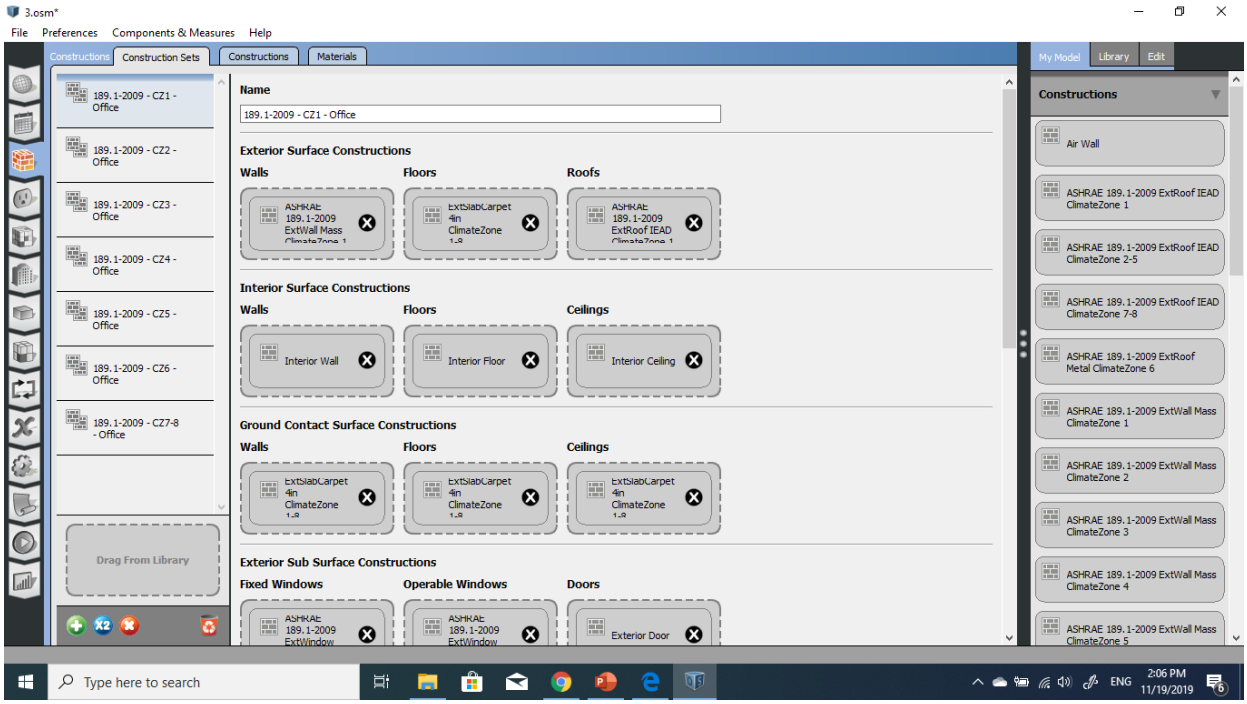
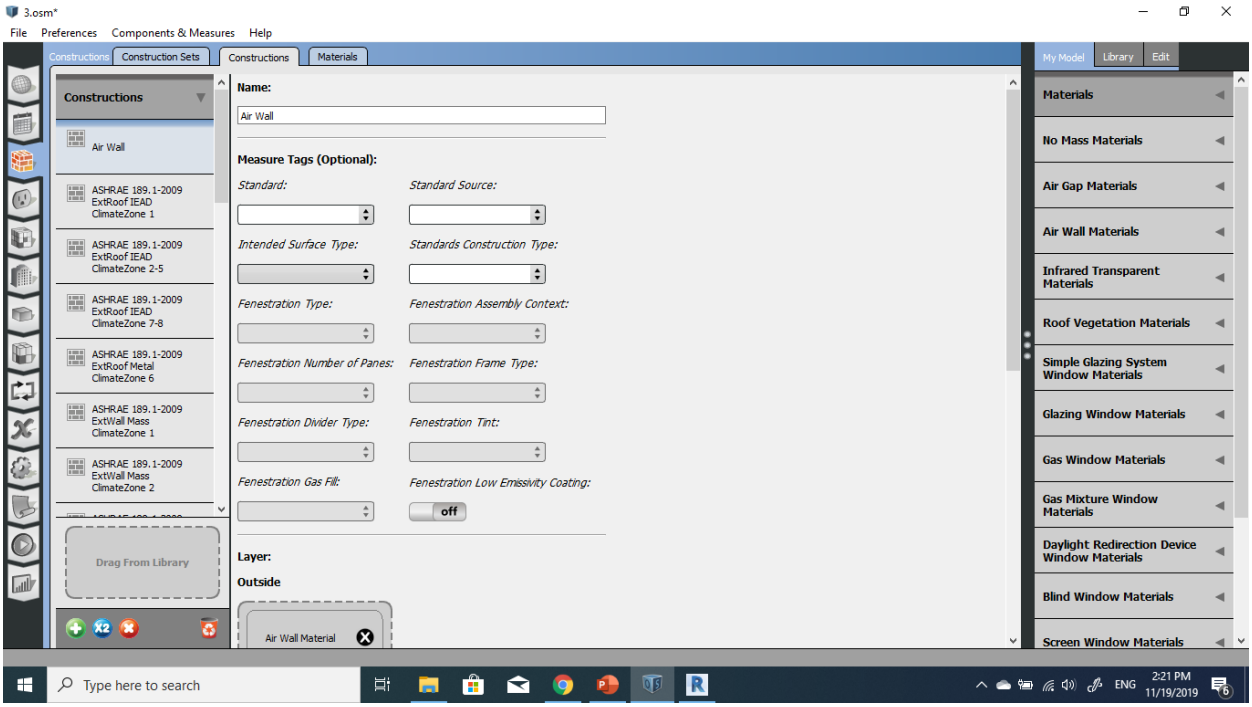
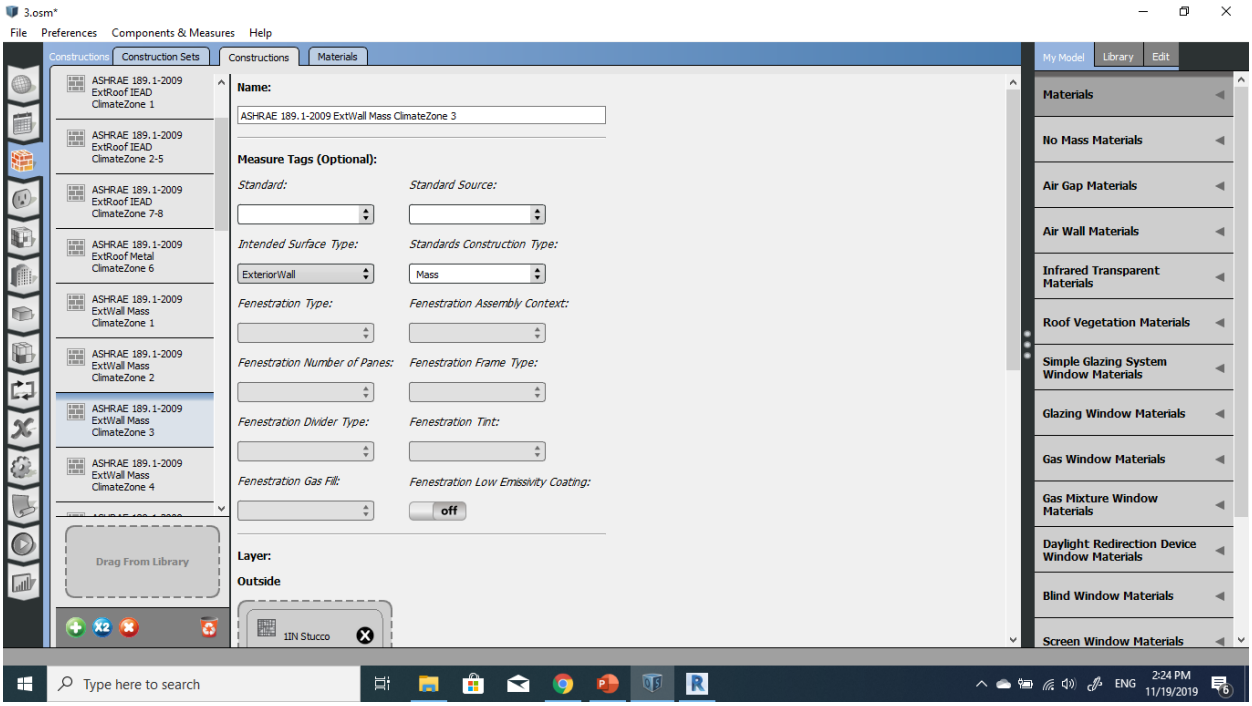


Construction Tab to duplicate layers




3.osm*
File Preferences Components & Measures Help
Constructions: Construction Sets Constructions Materials
ASHRAE 189.1-2009 ExtRoof IEAD ClimateZone 1
ASHRAE 189.1-2009 ExtRoof IEAD ClimateZone 2-5
ASHRAE 189.1-2009 ExtRoof IEAD ClimateZone 7-8
ASHRAE 189.1-2009 ExtRoof Metal ClimateZone 6
ASHRAE 189.1-2009 ExtWall Mass ClimateZone 1
ASHRAE 189.1-2009 ExtWall Mass ClimateZone 2
ASHRAE 189.1-2009 ExtWall Mass ClimateZone 3
ASHRAE 189.1-2009 ExtWall Mass ClimateZone 4
Drag From Library
Name:
ASHRAE 189.1-2009 ExtWall Mass ClimateZone 3
Measure Tags (Optional):
Standard:
Standard Source:
Intended Surface Type:
ExteriorWall
Standards Construction Type:
Mass
Fenestration Type:
Fenestration Assembly Context:
Fenestration Number of Panes:
Fenestration Frame Type:
Fenestration Divider Type:
Fenestration Tint:
Fenestration Gas Fill:
Fenestration Low Emissivity Coating:
off
Layer:
Outside
1IN Stucco
My Model Library Edit
Materials
No Mass Materials
Air Gap Materials
Air Wall Materials
Infrared Transparent Materials
Roof Vegetation Materials
Simple Glazing System Window Materials
Glazing Window Materials
Gas Window Materials
Gas Mixture Window Materials
Daylight Redirection Device Window Materials
Blind Window Materials
Screen Window Materials
Type here to search
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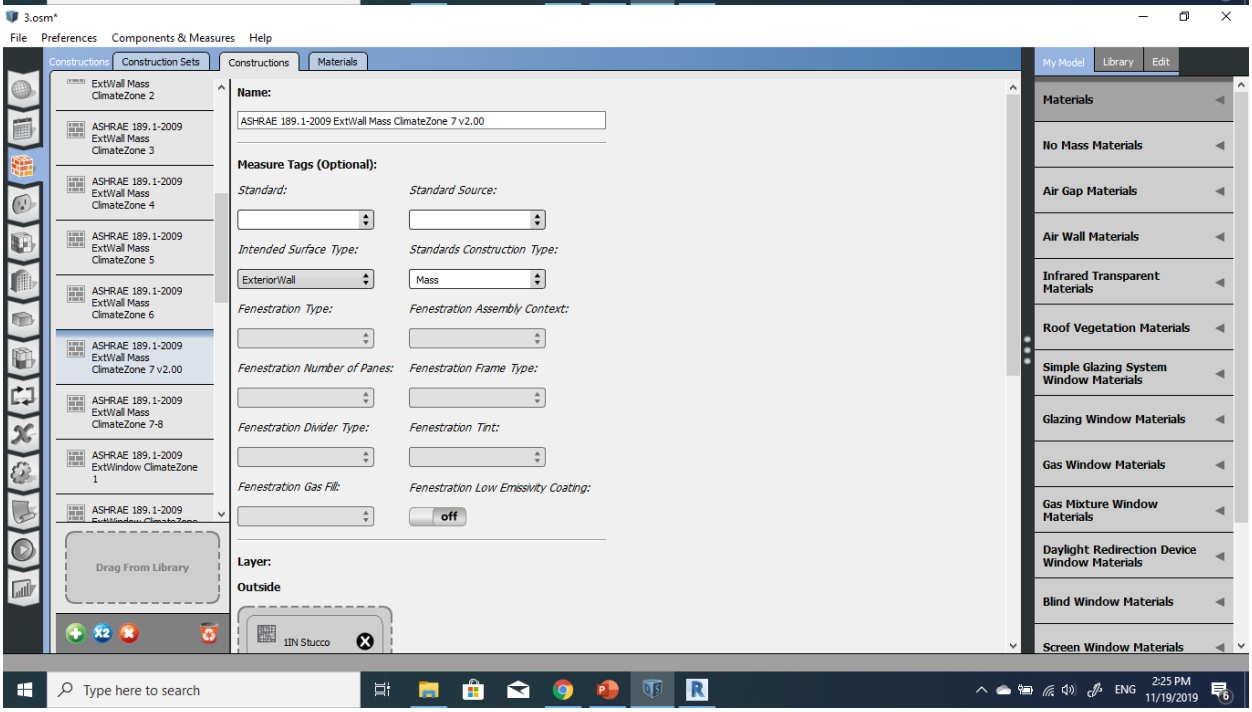
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File Preferences Components & Measures Help
Constructions: Construction Sets Constructions Materials
ExtWall Mass ClimateZone 2
ASHRAE 189.1-2009 ExtWall Mass ClimateZone 3
ASHRAE 189.1-2009 ExtWall Mass ClimateZone 4
ASHRAE 189.1-2009 ExtWall Mass ClimateZone 5
ASHRAE 189.1-2009 ExtWall Mass ClimateZone 6
ASHRAE 189.1-2009 ExtWall Mass ClimateZone 7 v2.00
ASHRAE 189.1-2009 ExtWall Mass ClimateZone 7-8
ASHRAE 189.1-2009 ExtWindow ClimateZone 1
Drag From Library
Name:
ASHRAE 189.1-2009 ExtWall Mass ClimateZone 7 v2.00
Measure Tags (Optional):
Standard:
Standard Source:
Intended Surface Type:
ExteriorWall
Standards Construction Type:
Mass
Fenestration Type:
Fenestration Assembly Context:
Fenestration Number of Panes:
Fenestration Frame Type:
Fenestration Divider Type:
Fenestration Tint:
Fenestration Gas Fill:
Fenestration Low Emissivity Coating:
off
Layer:
Outside
1IN Stucco
My Model Library Edit
Materials
No Mass Materials
Air Gap Materials
Air Wall Materials
Infrared Transparent Materials
Roof Vegetation Materials
Simple Glazing System Window Materials
Glazing Window Materials
Gas Window Materials
Gas Mixture Window Materials
Daylight Redirection Device Window Materials
Blind Window Materials
Screen Window Materials
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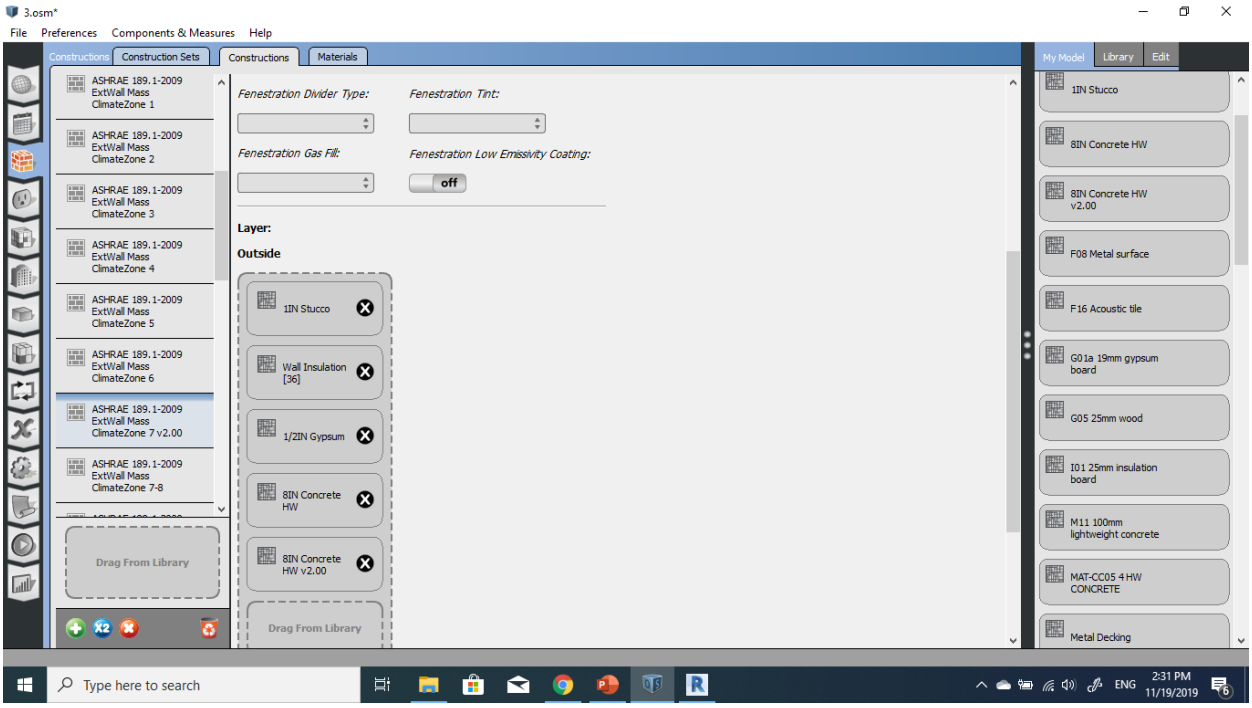
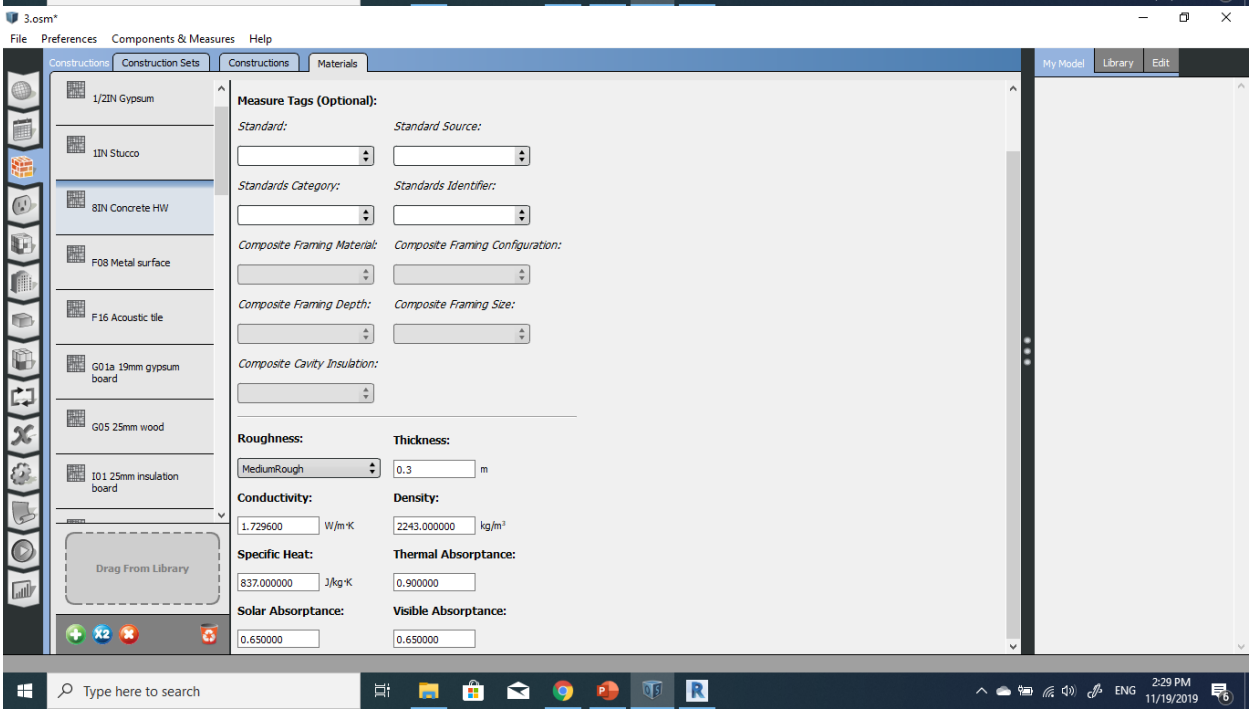
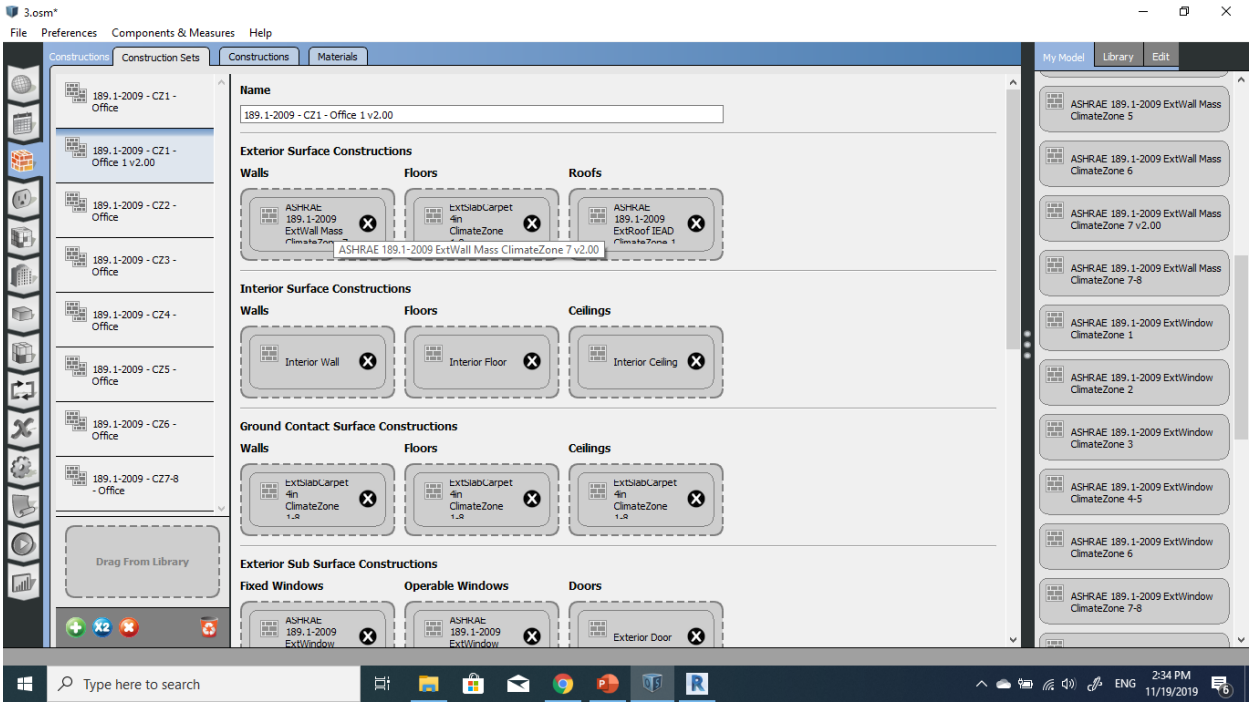
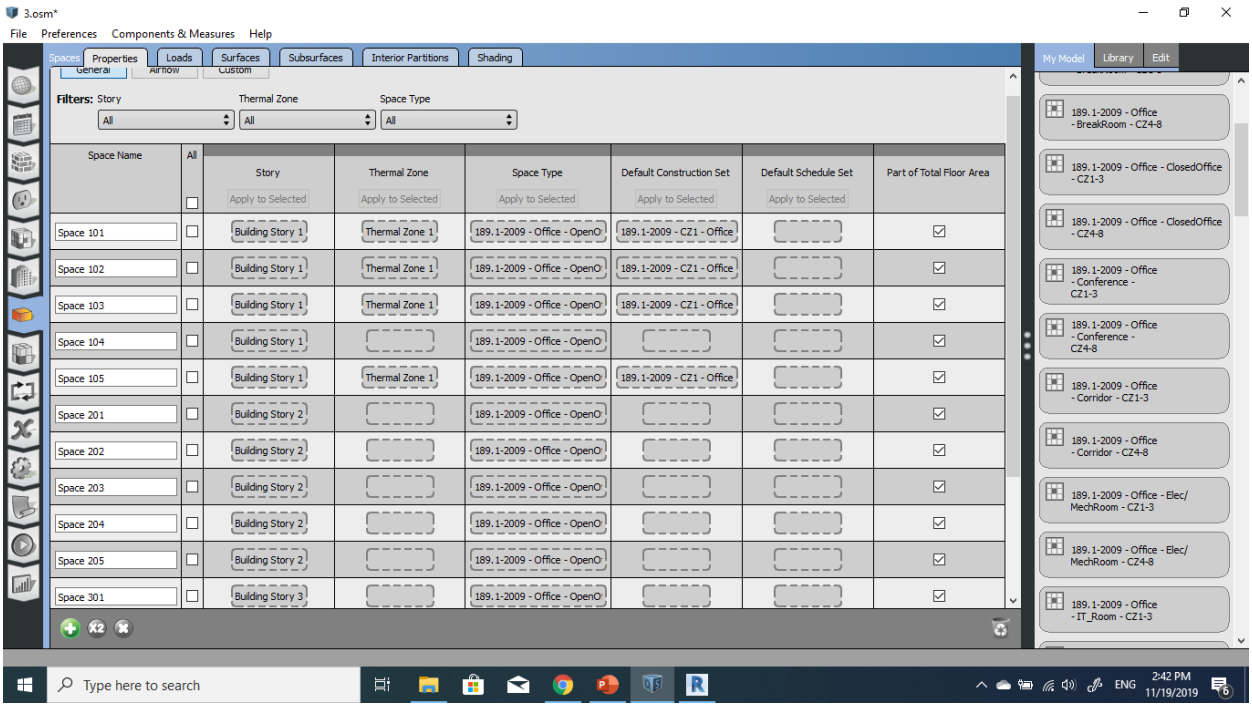
Duplicate materials

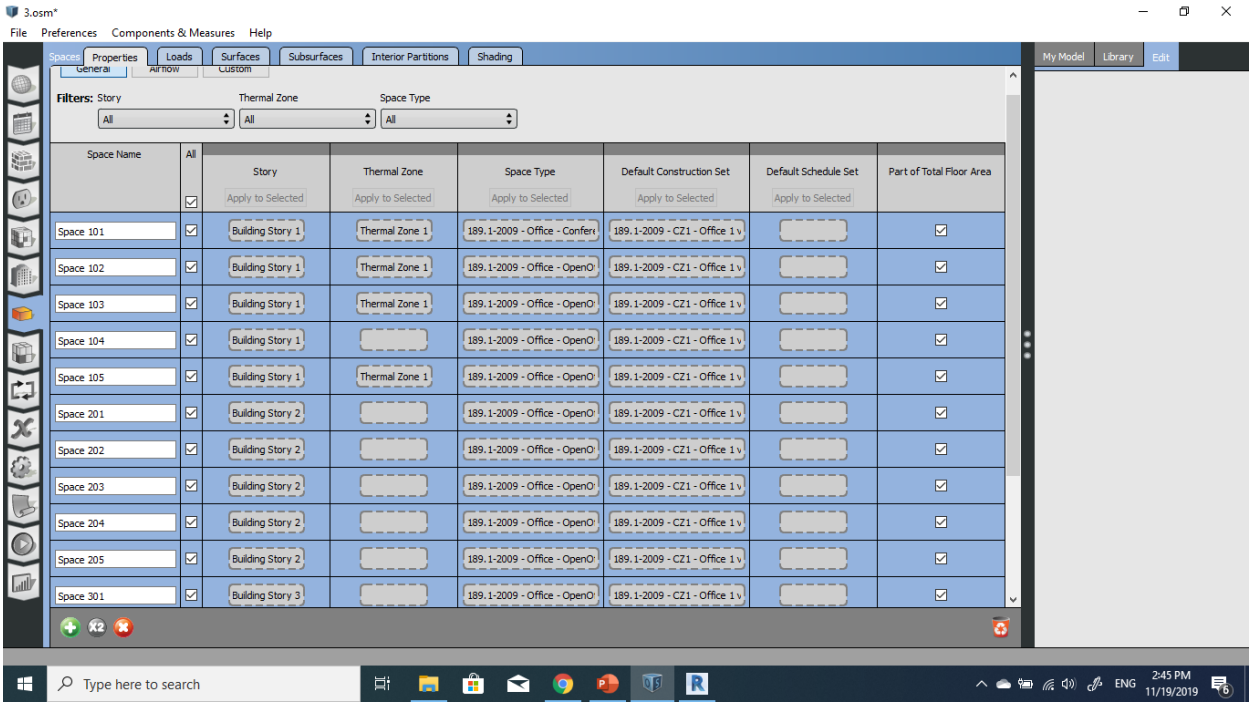






Setting our duplicate walls to whole system as it has done in the class

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File Preferences Components & Measures Help
Spaces Properties Loads Surfaces Subsurfaces Interior Partitions Shading
My Model Library Edit
General Airflow Custom
Filters: Story Thermal Zone Space Type
All All All
Space Name All Story Thermal Zone Space Type Default Construction Set Default Schedule Set Part of Total Floor Area
Apply to Selected Apply to Selected Apply to Selected Apply to Selected Apply to Selected
Space 101 Building Story 1 Thermal Zone 1 189.1-2009 - Office - Confer 189.1-2009 - CZ1 - Office 1 v
Space 102 Building Story 1 Thermal Zone 1 189.1-2009 - Office - OpenO 189.1-2009 - CZ1 - Office 1 v
Space 103 Building Story 1 Thermal Zone 1 189.1-2009 - Office - OpenO 189.1-2009 - CZ1 - Office 1 v
Space 104 Building Story 1 189.1-2009 - Office - OpenO 189.1-2009 - CZ1 - Office 1 v
Space 105 Building Story 1 Thermal Zone 1 189.1-2009 - Office - OpenO 189.1-2009 - CZ1 - Office 1 v
Space 201 Building Story 2 189.1-2009 - Office - OpenO 189.1-2009 - CZ1 - Office 1 v
Space 202 Building Story 2 189.1-2009 - Office - OpenO 189.1-2009 - CZ1 - Office 1 v
Space 203 Building Story 2 189.1-2009 - Office - OpenO 189.1-2009 - CZ1 - Office 1 v
Space 204 Building Story 2 189.1-2009 - Office - OpenO 189.1-2009 - CZ1 - Office 1 v
Space 205 Building Story 2 189.1-2009 - Office - OpenO 189.1-2009 - CZ1 - Office 1 v
Space 301 Building Story 3 189.1-2009 - Office - OpenO 189.1-2009 - CZ1 - Office 1 v
Type here to search
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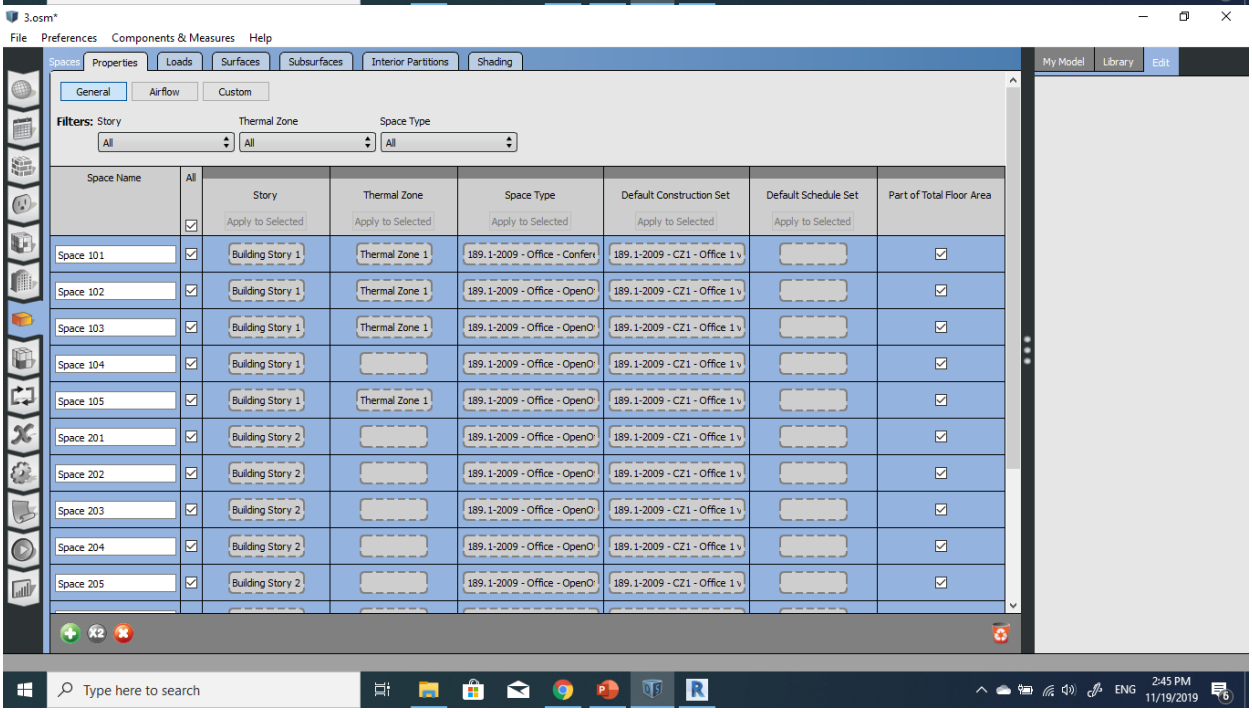
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File Preferences Components & Measures Help
Spaces Properties Loads Surfaces Subsurfaces Interior Partitions Shading
My Model Library Edit
General Airflow Custom
Filters: Story Thermal Zone Space Type
All All All
Space Name All Story Thermal Zone Space Type Default Construction Set Default Schedule Set Part of Total Floor Area
Apply to Selected Apply to Selected Apply to Selected Apply to Selected Apply to Selected
Space 101 Building Story 1 Thermal Zone 1 189.1-2009 - Office - Confer 189.1-2009 - CZ1 - Office 1 v
Space 102 Building Story 1 Thermal Zone 1 189.1-2009 - Office - OpenO 189.1-2009 - CZ1 - Office 1 v
Space 103 Building Story 1 Thermal Zone 1 189.1-2009 - Office - OpenO 189.1-2009 - CZ1 - Office 1 v
Space 104 Building Story 1 189.1-2009 - Office - OpenO 189.1-2009 - CZ1 - Office 1 v
Space 105 Building Story 1 Thermal Zone 1 189.1-2009 - Office - OpenO 189.1-2009 - CZ1 - Office 1 v
Space 201 Building Story 2 189.1-2009 - Office - OpenO 189.1-2009 - CZ1 - Office 1 v
Space 202 Building Story 2 189.1-2009 - Office - OpenO 189.1-2009 - CZ1 - Office 1 v
Space 203 Building Story 2 189.1-2009 - Office - OpenO 189.1-2009 - CZ1 - Office 1 v
Space 204 Building Story 2 189.1-2009 - Office - OpenO 189.1-2009 - CZ1 - Office 1 v
Space 205 Building Story 2 189.1-2009 - Office - OpenO 189.1-2009 - CZ1 - Office 1 v
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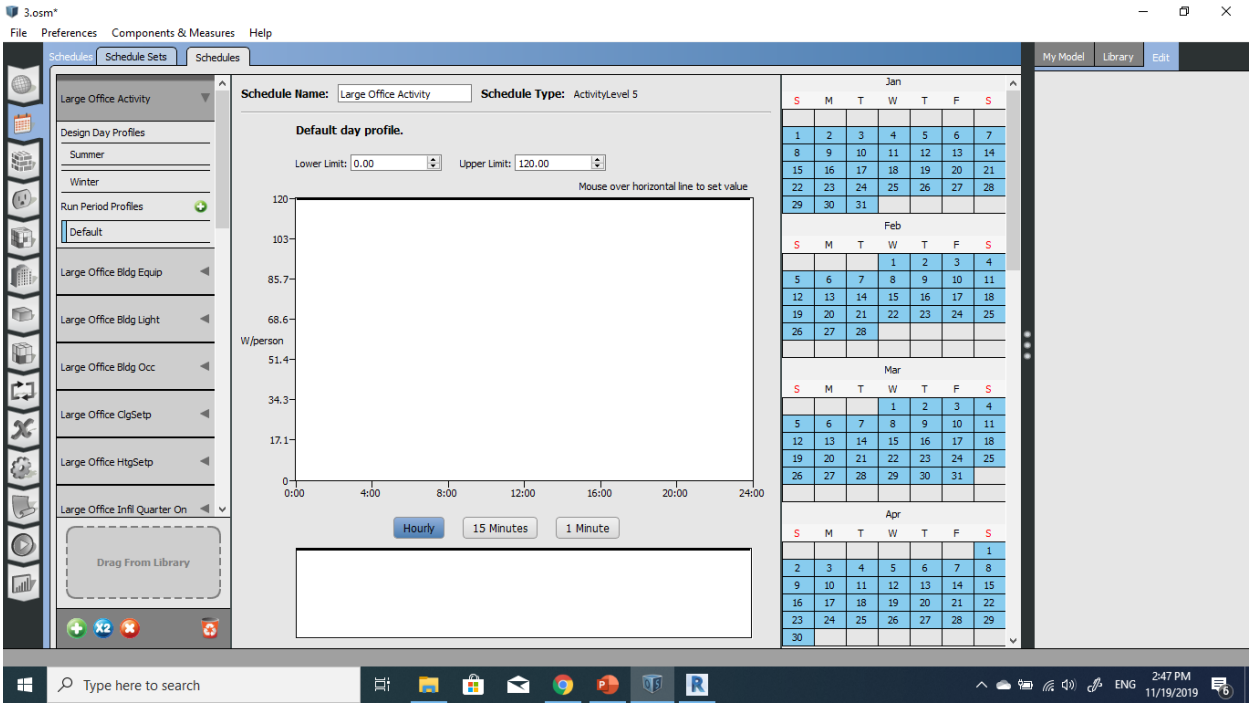
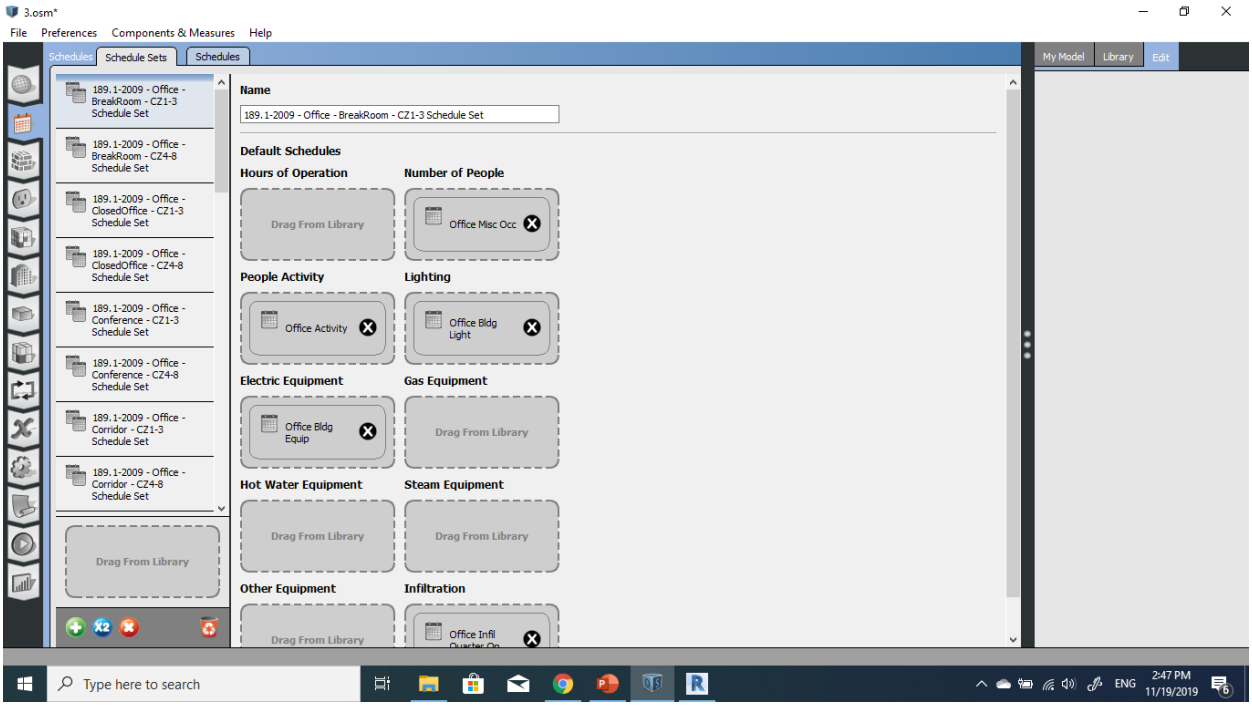
Choosing the building schedule and type of it

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File Preferences Components & Measures Help
Schedules Schedule Sets Schedules
My Model Library Edit
189.1-2009 - Office - BreakRoom - CZ1-3 Schedule Set
189.1-2009 - Office - BreakRoom - CZ4-8 Schedule Set
189.1-2009 - Office - ClosedOffice - CZ1-3 Schedule Set
189.1-2009 - Office - ClosedOffice - CZ4-8 Schedule Set
189.1-2009 - Office - Conference - CZ1-3 Schedule Set
189.1-2009 - Office - Conference - CZ4-8 Schedule Set
189.1-2009 - Office - Corridor - CZ1-3 Schedule Set
189.1-2009 - Office - Corridor - CZ4-8 Schedule Set
Drag From Library
Name
189.1-2009 - Office - BreakRoom - CZ1-3 Schedule Set
Default Schedules
Hours of Operation
Drag From Library
Number of People
Office Misc Occ
People Activity
Office Activity
Lighting
Office Bldg Light
Electric Equipment
Office Bldg Equip
Gas Equipment
Drag From Library
Hot Water Equipment
Drag From Library
Steam Equipment
Drag From Library
Other Equipment
Drag From Library
Infiltration
Office Infil
Type here to search
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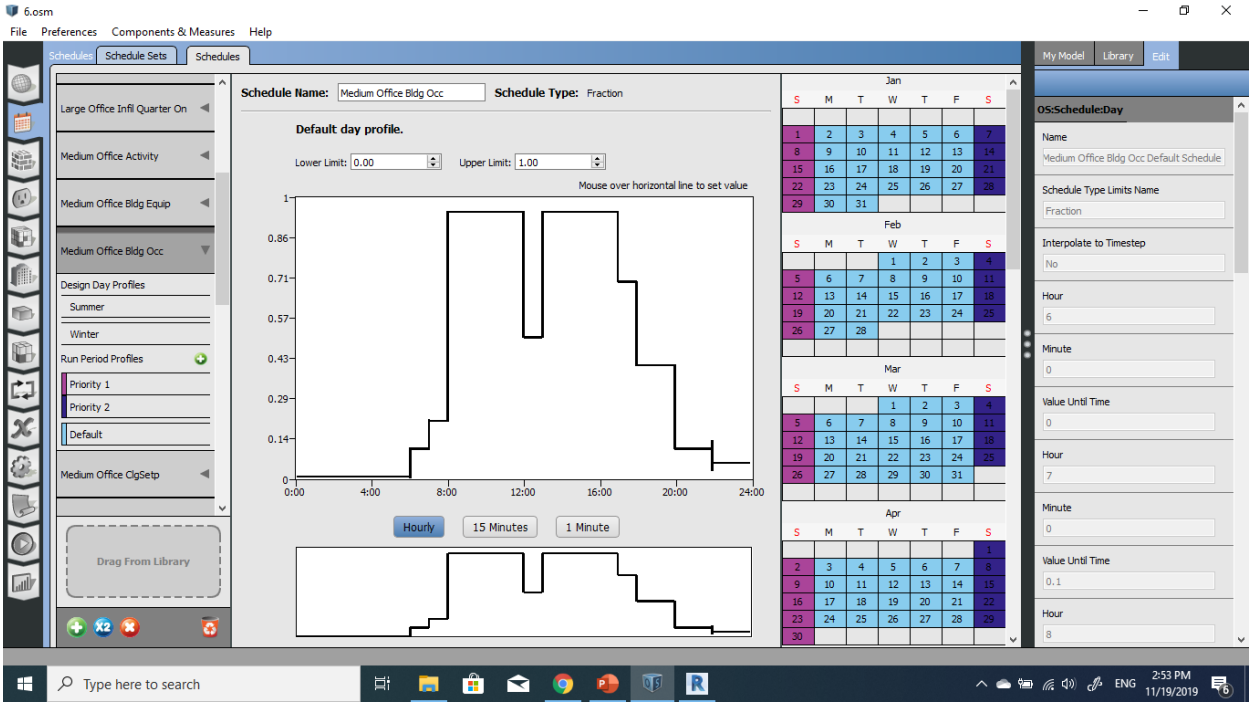
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File Preferences Components & Measures Help
Schedules Schedule Sets Schedules
My Model Library Edit
Large Office Infil Quarter On
Medium Office Activity
Medium Office Bldg Equip
Medium Office Bldg Occ
Design Day Profiles
Summer
Winter
Run Period Profiles
Priority 1
Priority 2
Default
Medium Office ClgSetp
Drag From Library
Schedule Name: Medium Office Bldg Occ
Schedule Type: Fraction
Default day profile.
Lower Limit: 0.00
Upper Limit: 1.00
Mouse over horizontal line to set value
1
0.86
0.71
0.57
0.43
0.29
0.14
0
0:00
4:00
8:00
12:00
16:00
20:00
24:00
Hourly
15 Minutes
1 Minute
Jan
Feb
Mar
Apr
OS:Schedule:Day
Name
Medium Office Bldg Occ Default Schedule
Schedule Type Limits Name
Fraction
Interpolate to Timestep
No
Hour
6
Minute
0
Value Until Time
0
Hour
7
Minute
0
Value Until Time
0.1
Hour
8
Type here to search
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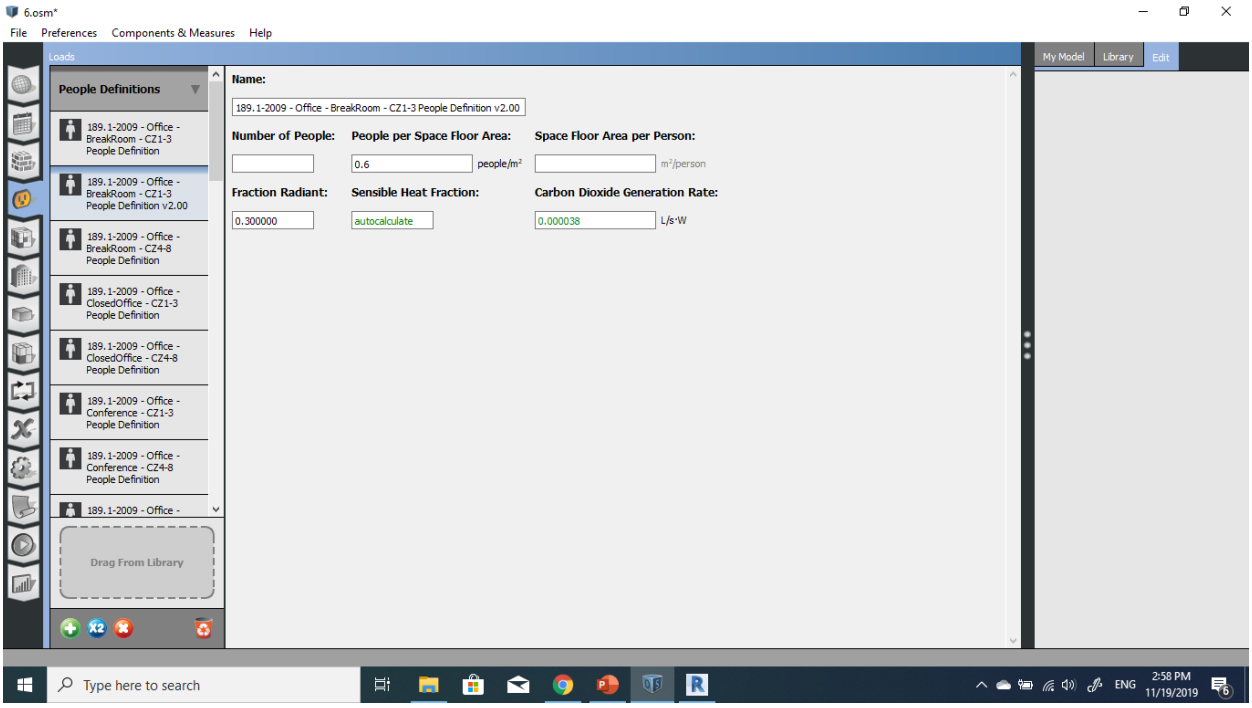
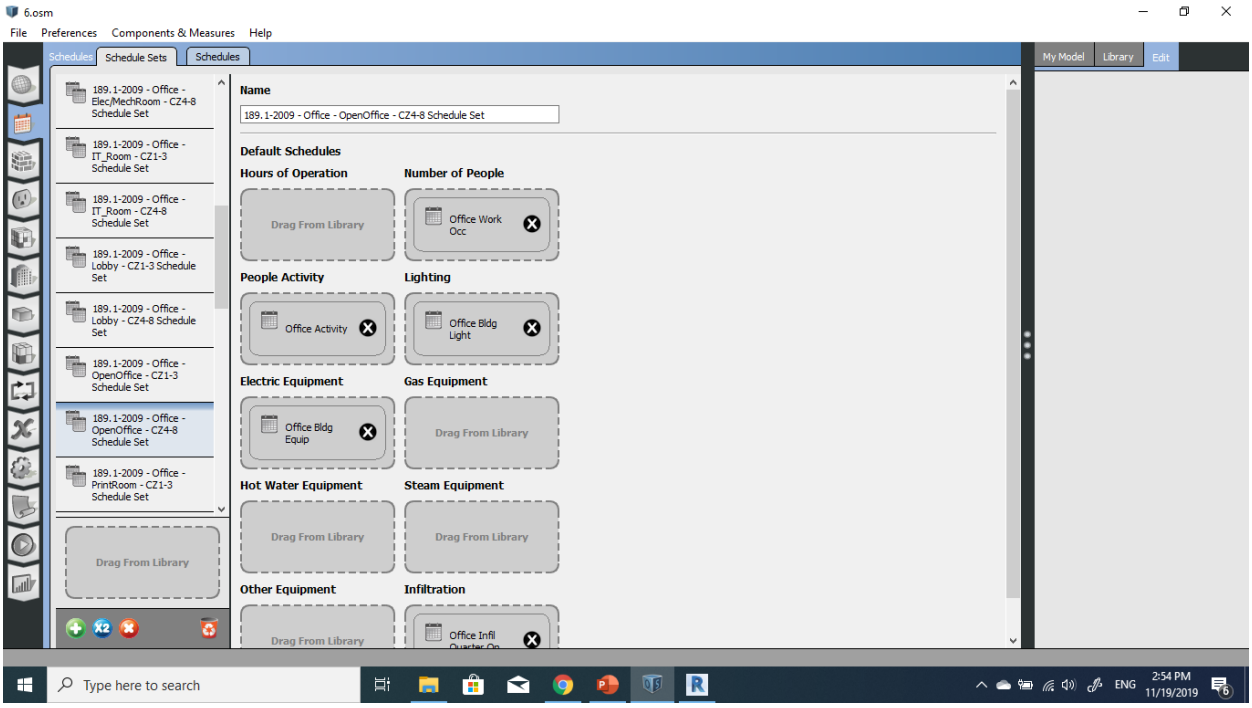
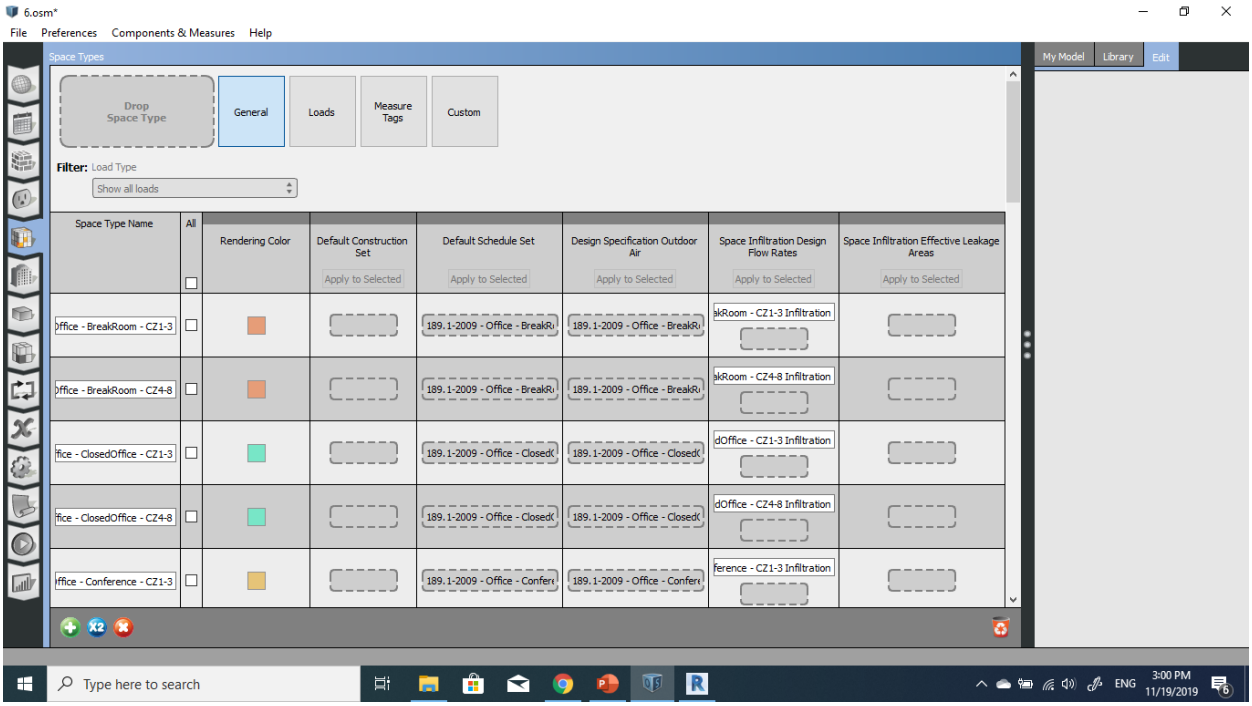
The people features in our building






6.osm*
File
Preferences
Components & Measures
Help
Space Types
My Model
Library
Edit
Drop Space Type
General
Loads
Measure Tags
Custom
Filter: Load Type
Show all loads
Space Type Name
All
Rendering Color
Default Construction Set
Apply to Selected
Default Schedule Set
Apply to Selected
Design Specification Outdoor Air
Apply to Selected
Space Infiltration Design Flow Rates
Apply to Selected
Space Infiltration Effective Leakage Areas
Apply to Selected
)ffice - BreakRoom - CZ1-3
189.1-2009 - Office - BreakRi
189.1-2009 - Office - BreakRi
akRoom - CZ1-3 Infiltration
)ffice - BreakRoom - CZ4-8
189.1-2009 - Office - BreakRi
189.1-2009 - Office - BreakRi
akRoom - CZ4-8 Infiltration
fice - ClosedOffice - CZ1-3
189.1-2009 - Office - Closed(
189.1-2009 - Office - Closed(
dOffice - CZ1-3 Infiltration
fice - ClosedOffice - CZ4-8
189.1-2009 - Office - Closed(
189.1-2009 - Office - Closed(
dOffice - CZ4-8 Infiltration
ffice - Conference - CZ1-3
189.1-2009 - Office - Confer
189.1-2009 - Office - Confer
ference - CZ1-3 Infiltration
Type here to search
ENG
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