

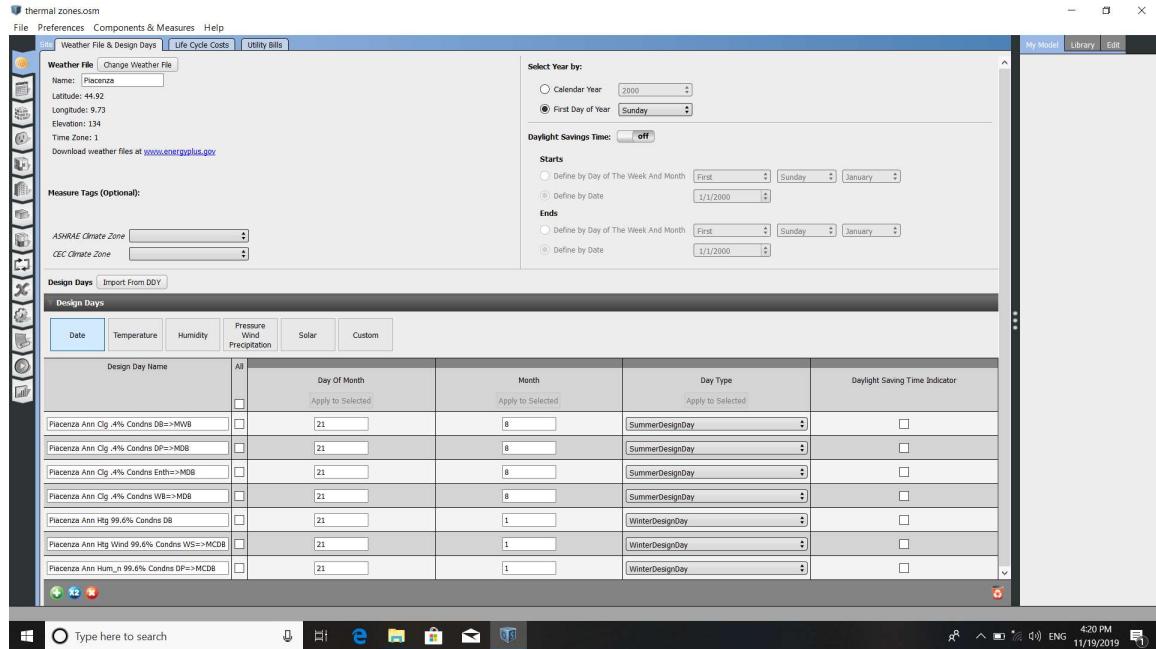
Solar constant is the maximum solar radiation density during the year which is 1367 W/m² and solar radiation is electromagnetic energy which is separated to spectral distribution and irradiance.

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

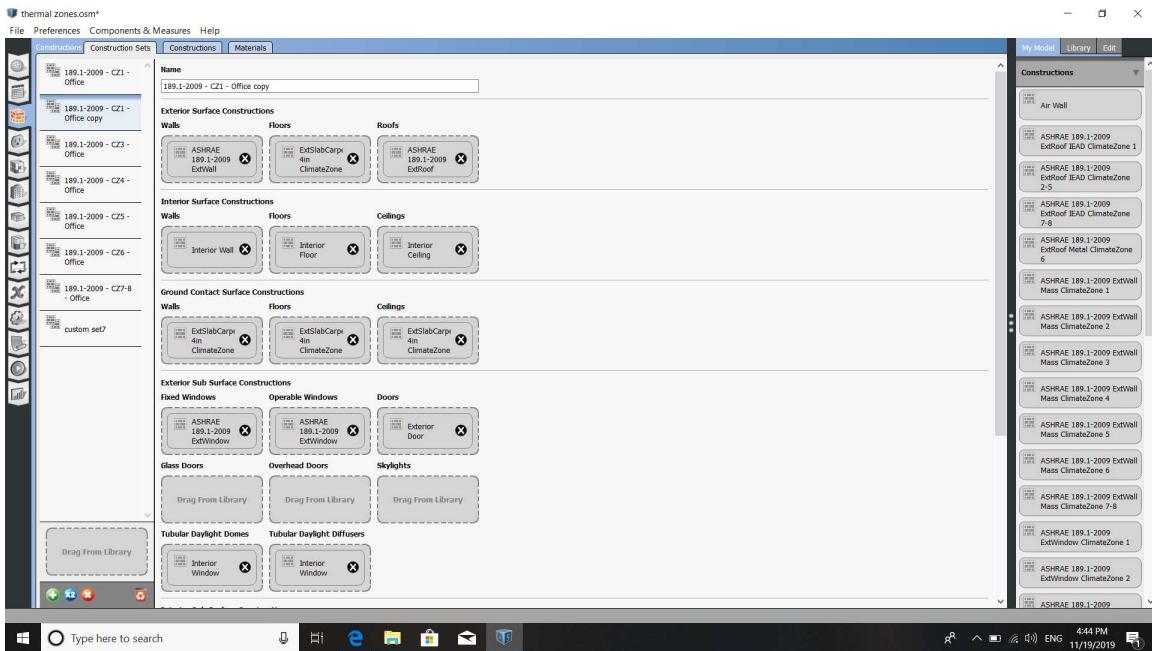
The energy that we gather from the sun depends on:

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

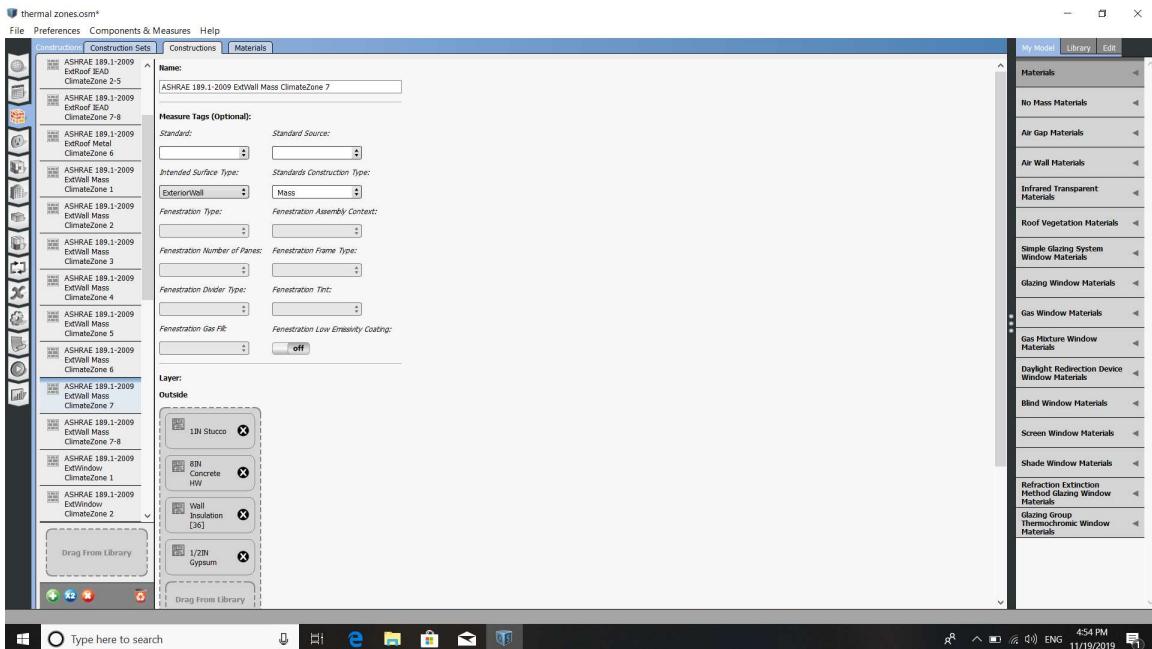
As we produced the previous stages in the task6, now we have:



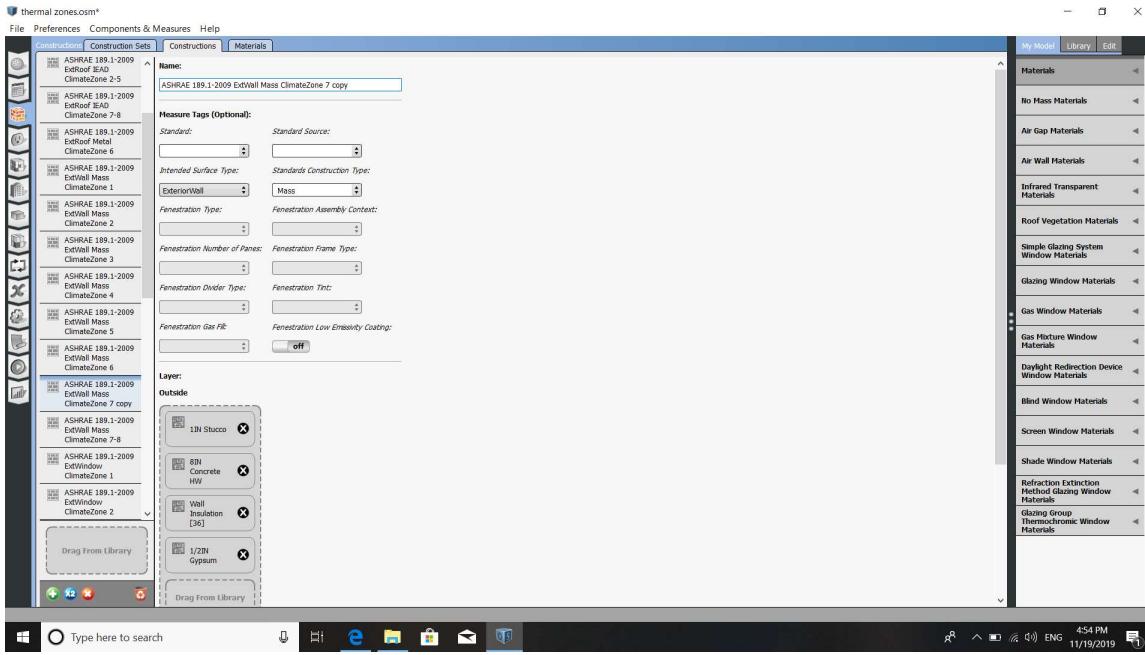
in the next stage we are going to change the features of the building. so we need to duplicate the layer and rename it and do our changes in the new one in the construction tab.



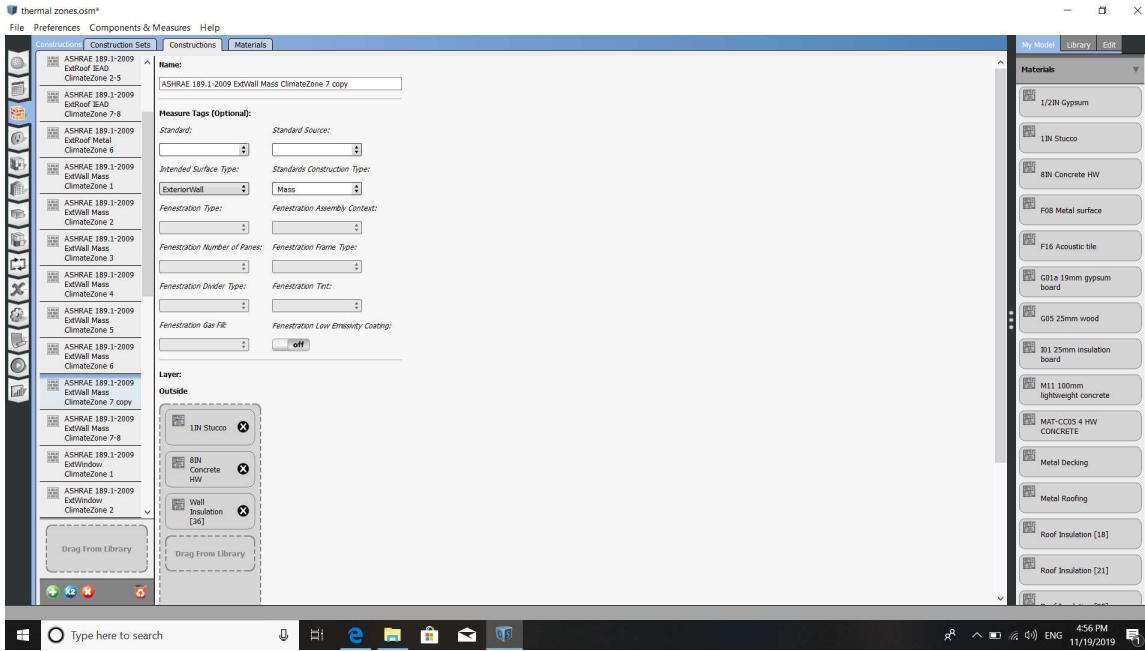
As we know, this data are based on the default of the software. so we need to change the materials and ... base on the data and the kind of material that we want to use in our design. so we have to delete some layers and add those we want. we have to be careful that the order is important in the calculations.

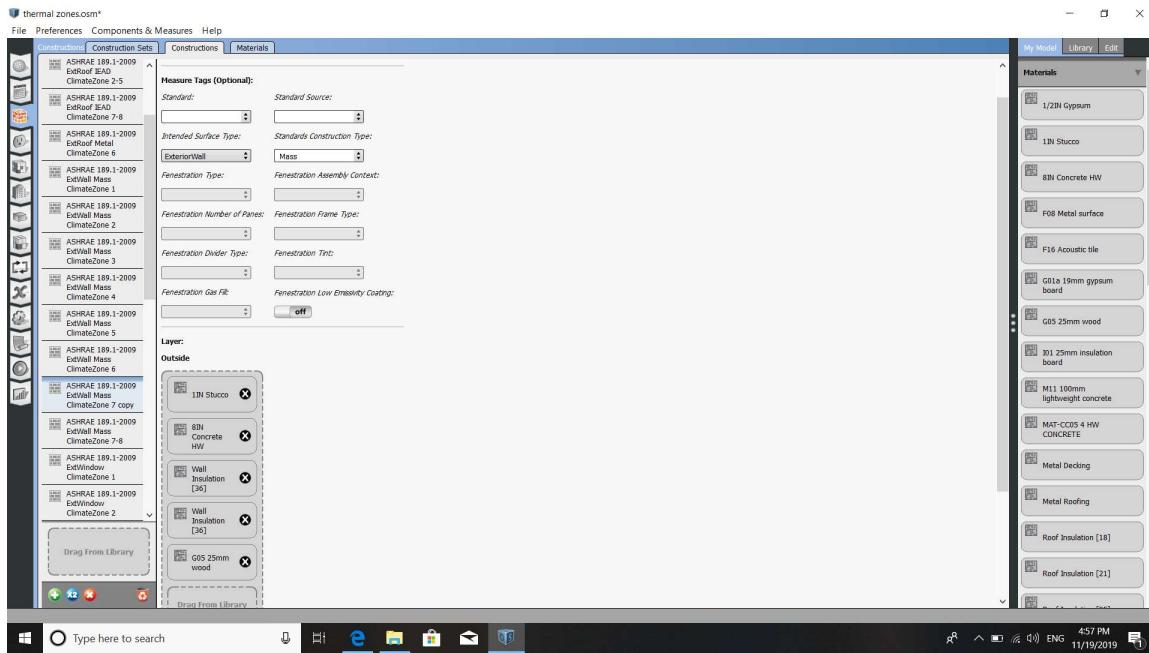


first, we are going to find the wall that we want and then we will provide a copy of that.

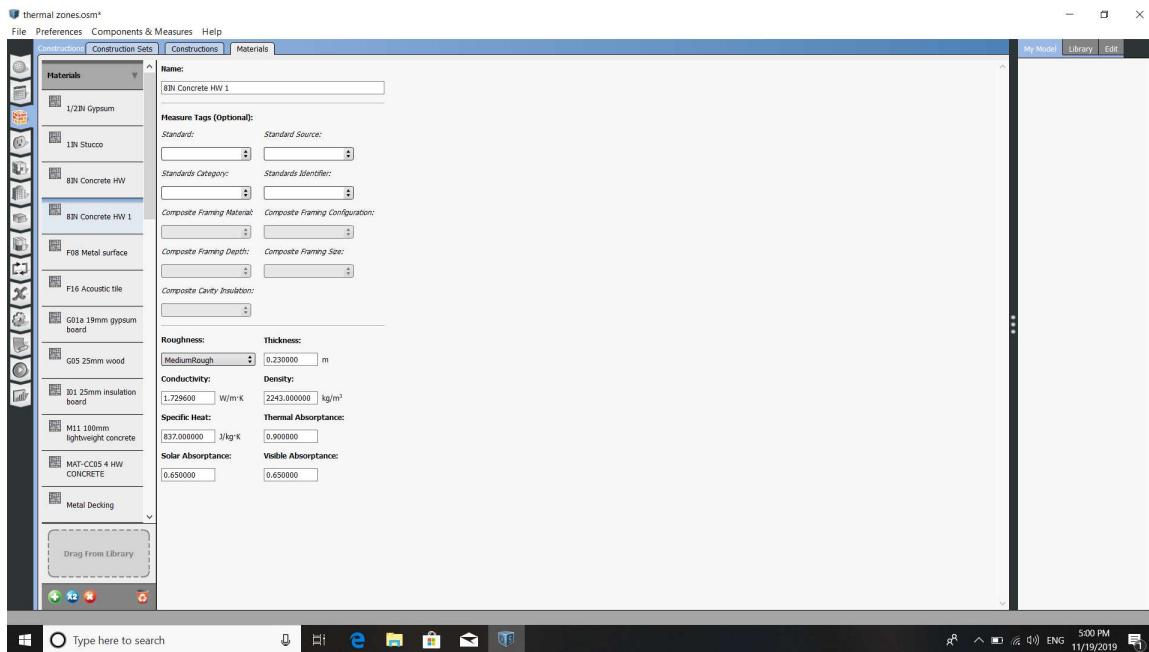


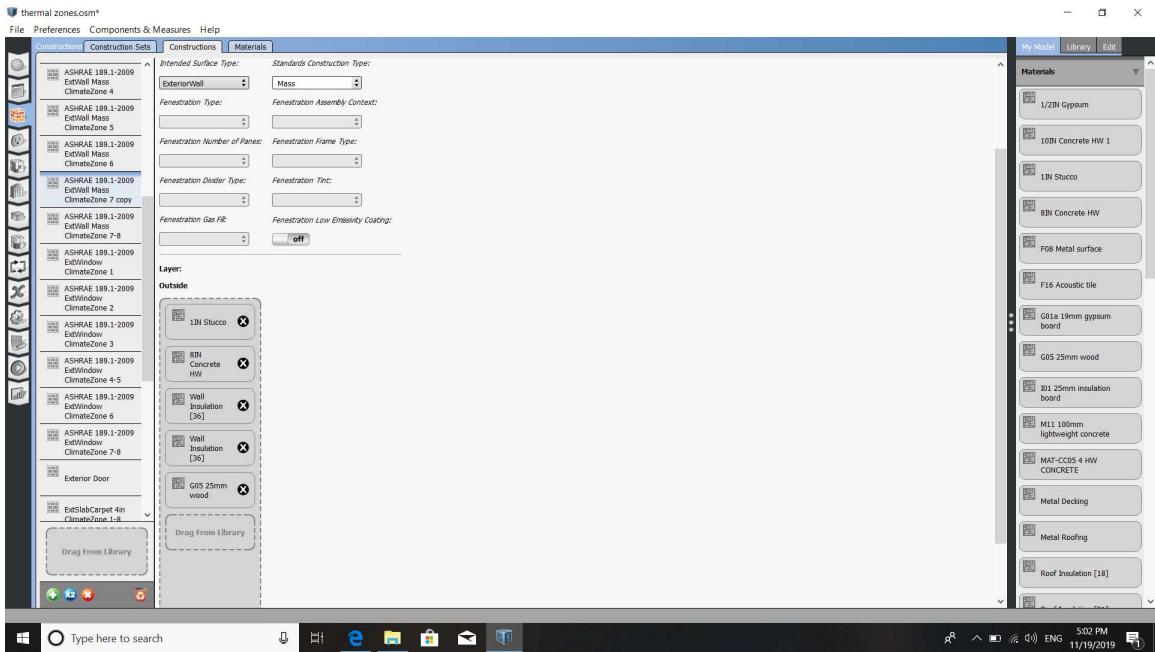
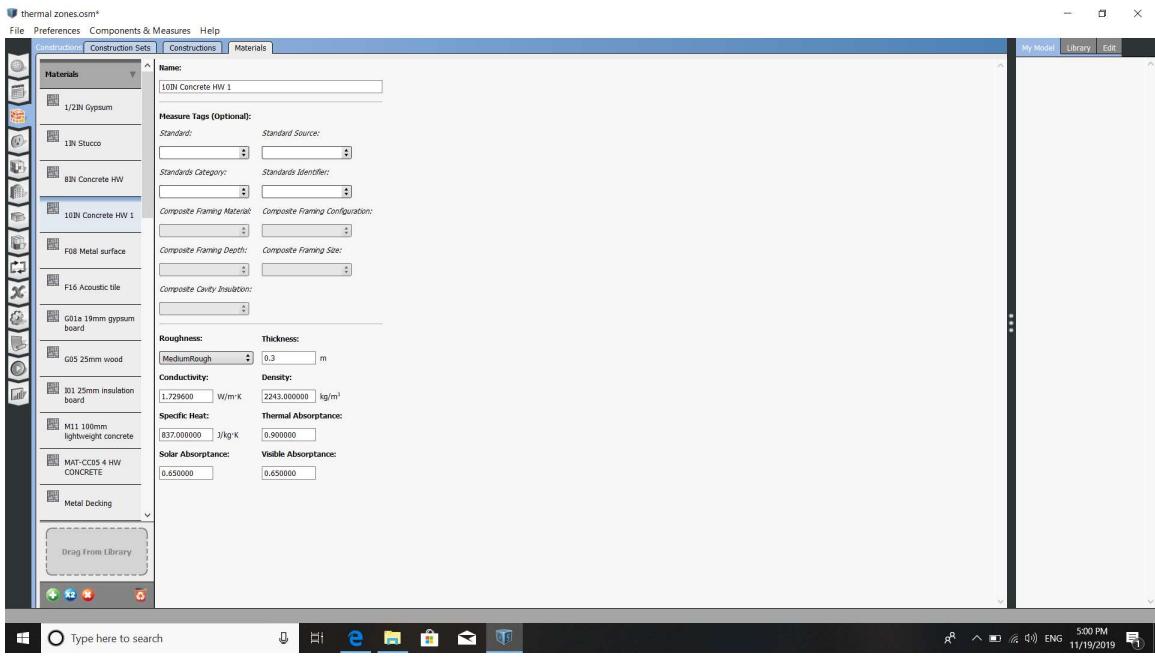
in this stage, we want to delete the gypsum and add the wood in the last layer.

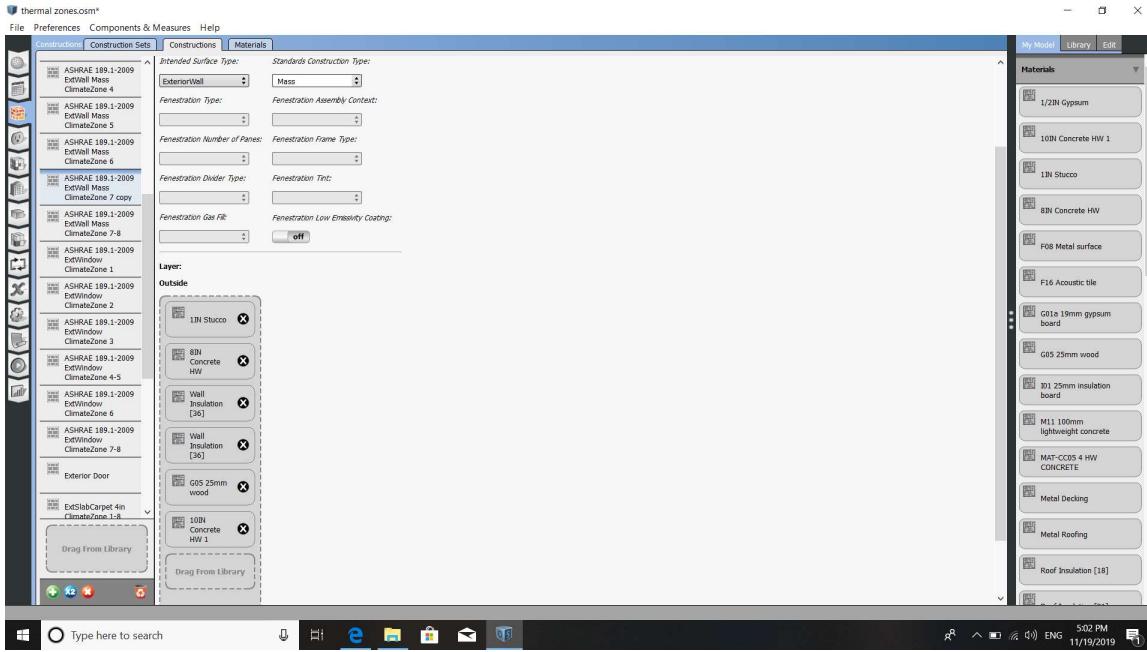




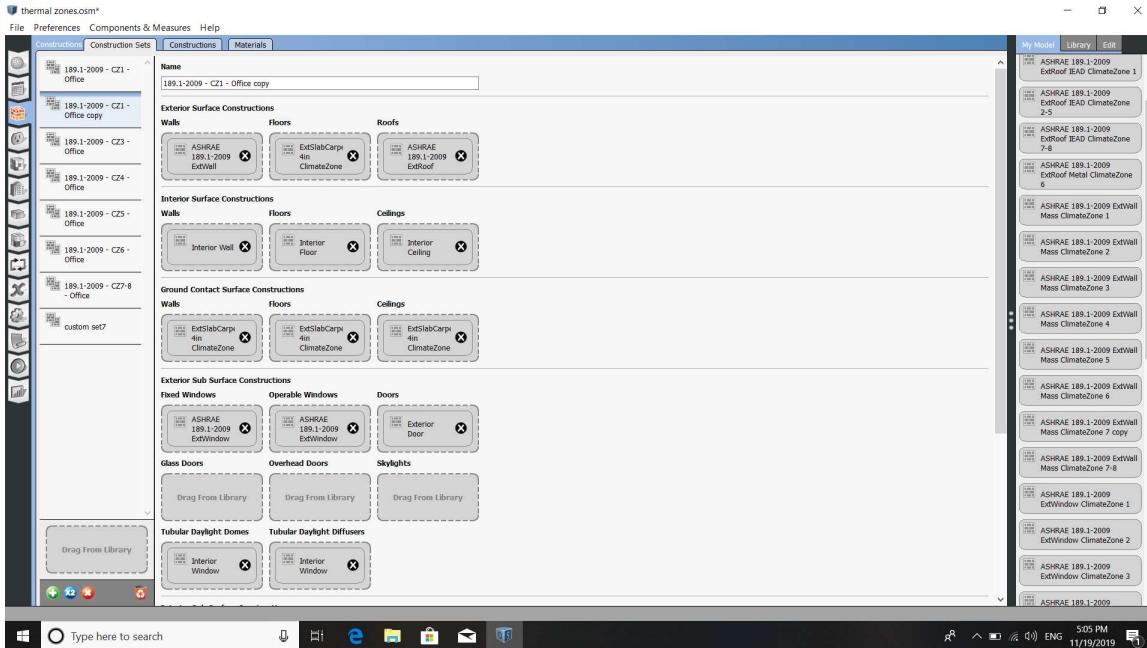
in this stage,im going to change the features of the 8 inch concrete material base on our needs and then add it as the layer of the wall.







then we come back to the construction sets tab and we will add the our new wall that it's features have been changed.



then we will go to the spaces tab and we add our new wall to the default construction sets tab.

thermal zones.osm*

File Preferences Components & Measures Help

Spaces Properties Loads Surfaces Subsurfaces Interior Partitions Shading

General Airflow Custom

Filters: Story Thermal Zone Space Type

Space Name	All	Story	Thermal Zone	Space Type	Default Construction Set	Default Schedule Set	Part of Total Floor Area
Space 101	<input type="checkbox"/>	Building Story 1	Thermal Zone 1	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 102	<input type="checkbox"/>	Building Story 1	Thermal Zone 1	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 103	<input type="checkbox"/>	Building Story 1	Thermal Zone 1	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 104	<input type="checkbox"/>	Building Story 1	Thermal Zone 1	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 105	<input type="checkbox"/>	Building Story 1	Thermal Zone 1	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 201	<input type="checkbox"/>	Building Story 2	Thermal Zone 2	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 202	<input type="checkbox"/>	Building Story 2	Thermal Zone 2	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 203	<input type="checkbox"/>	Building Story 2	Thermal Zone 2	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 204	<input type="checkbox"/>	Building Story 2	Thermal Zone 2	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Space 301	<input type="checkbox"/>	Building Story 3	Thermal Zone 3	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 302	<input type="checkbox"/>	Building Story 3	Thermal Zone 3	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Space 304	<input type="checkbox"/>	Building Story 6	Thermal Zone 1	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 305	<input type="checkbox"/>	Building Story 3	Thermal Zone 3	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>

My Model Library Edit

- Interior Partition Surface
- Building Stories
- Thermal Zones
- Space Types
- Default Construction Sets
- 189.1-2009 - C21 - Office
- 189.1-2009 - C21 - Office copy
- 189.1-2009 - C23 - Office
- 189.1-2009 - C24 - Office
- 189.1-2009 - C25 - Office
- 189.1-2009 - C26 - Office
- 189.1-2009 - CZ7-8 - Office
- custom set7
- Default Schedule Sets
- Design Specification Outdoor Air
- People Definitions
- Lights Definitions

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thermal zones.osm*

File Preferences Components & Measures Help

Properties Loads Surfaces Subsurfaces Interior Partitions Shading

General Airflow Custom

Filters: Story Thermal Zone Space Type

Space Name	All	Story	Thermal Zone	Space Type	Default Construction Set	Default Schedule Set	Part of Total Floor Area
Space 101	<input type="checkbox"/>	Building Story 1	Thermal Zone 1	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 102	<input type="checkbox"/>	Building Story 1	Thermal Zone 1	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 103	<input type="checkbox"/>	Building Story 1	Thermal Zone 1	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 104	<input type="checkbox"/>	Building Story 1	Thermal Zone 1	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 105	<input type="checkbox"/>	Building Story 1	Thermal Zone 1	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 201	<input type="checkbox"/>	Building Story 2	Thermal Zone 2	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 202	<input type="checkbox"/>	Building Story 2	Thermal Zone 2	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Space 204	<input type="checkbox"/>	Building Story 2	Thermal Zone 2	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 205	<input type="checkbox"/>	Building Story 2	Thermal Zone 2	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 301	<input type="checkbox"/>	Building Story 3	Thermal Zone 3	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Space 305	<input type="checkbox"/>	Building Story 3	Thermal Zone 3	[189.1-2009 - Office - Op]	[189.1-2009 - C21 - Offc]	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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- 189.1-2009 - C25 - Office
- 189.1-2009 - C26 - Office
- 189.1-2009 - CZ7-8 - Office
- custom set7
- Default Schedule Sets
- Design Specification Outdoor Air
- People Definitions
- Lights Definitions

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The screenshot shows the 'thermal zones.osm*' file open in the software. The 'Spaces' tab is selected. A context menu is open over Space 101, with options like 'Apply to Selected' and 'Apply to All'. The right panel displays a 'Default Construction Set' dialog for 'OS-DefaultConstructionSet'.

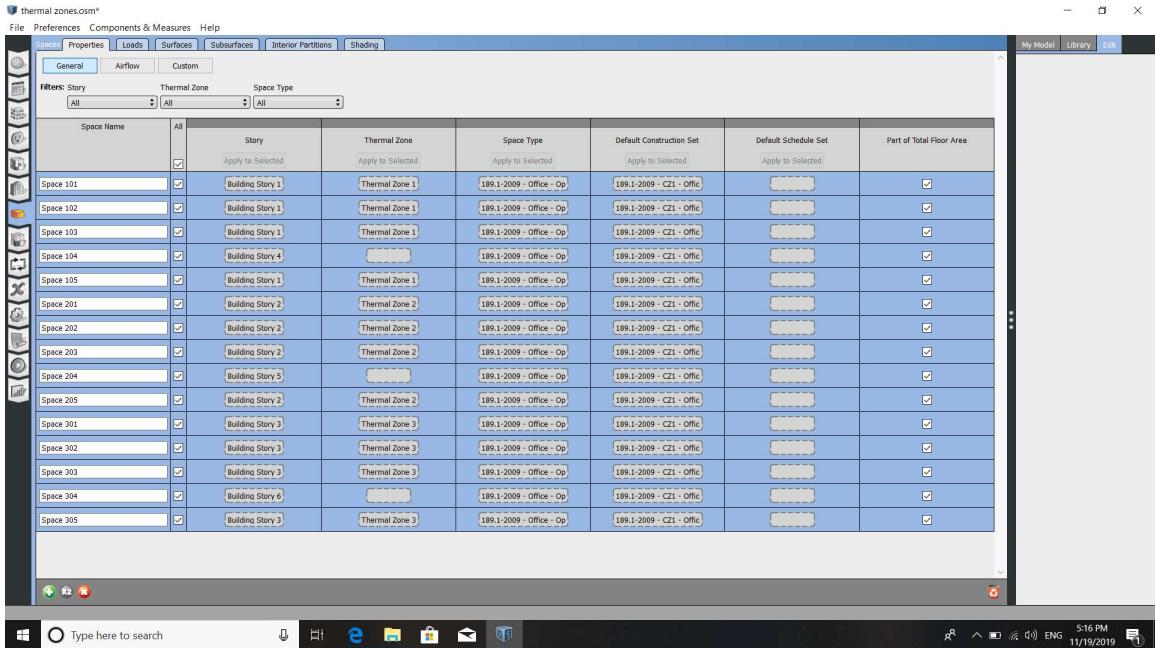
Space Name	All	Story	Thermal Zone	Space Type	Default Construction Set	Default Schedule Set	Part of Total Floor Area
Space 101	<input type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 102	<input type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 103	<input type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 104	<input type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 105	<input type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 201	<input type="checkbox"/>	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 202	<input type="checkbox"/>	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 203	<input type="checkbox"/>	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 204	<input type="checkbox"/>	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 205	<input type="checkbox"/>	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 301	<input type="checkbox"/>	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 302	<input type="checkbox"/>	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 303	<input type="checkbox"/>	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 304	<input type="checkbox"/>	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 305	<input type="checkbox"/>	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>

then we apply the change.

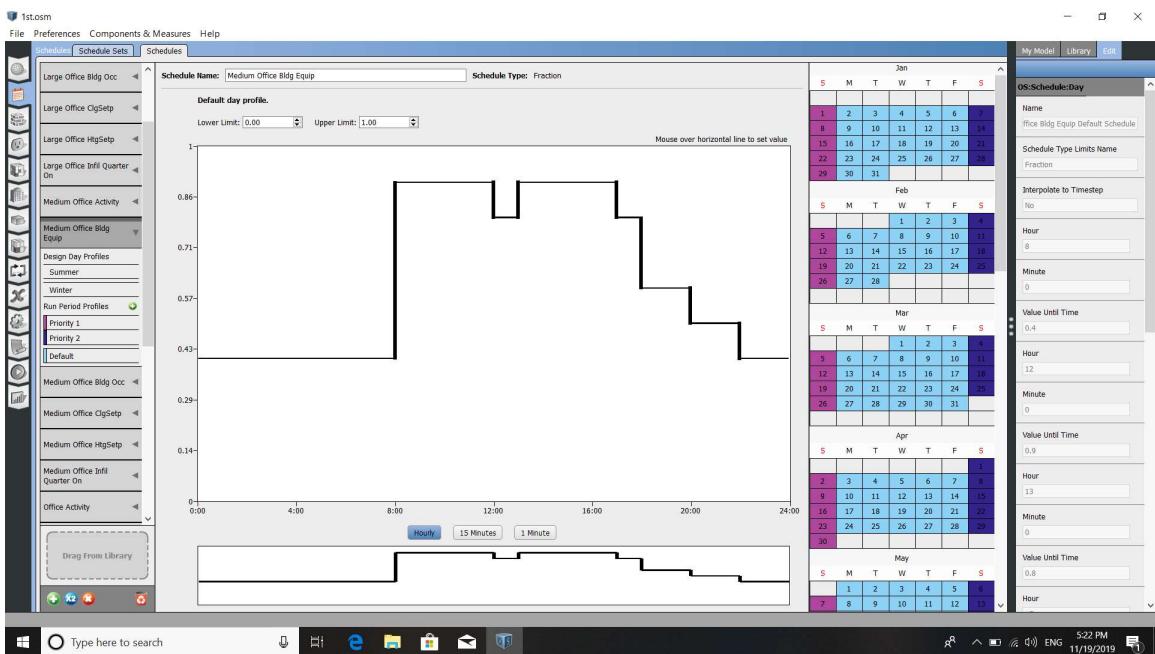
The screenshot shows the 'thermal zones.osm*' file open in the software. The 'Spaces' tab is selected. The entire list of spaces (Space 101 to Space 305) is highlighted in blue, indicating they have been selected. The right panel displays the 'Default Construction Set' dialog for 'OS-DefaultConstructionSet'.

Space Name	All	Story	Thermal Zone	Space Type	Default Construction Set	Default Schedule Set	Part of Total Floor Area
Space 101	<input checked="" type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 102	<input checked="" type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 103	<input checked="" type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 104	<input checked="" type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 105	<input checked="" type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Space 202	<input checked="" type="checkbox"/>	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Space 204	<input checked="" type="checkbox"/>	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Space 301	<input checked="" type="checkbox"/>	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 302	<input checked="" type="checkbox"/>	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 303	<input checked="" type="checkbox"/>	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 304	<input checked="" type="checkbox"/>	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Space 305	<input checked="" type="checkbox"/>	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - C21 - Offic	<input type="checkbox"/>	<input checked="" type="checkbox"/>

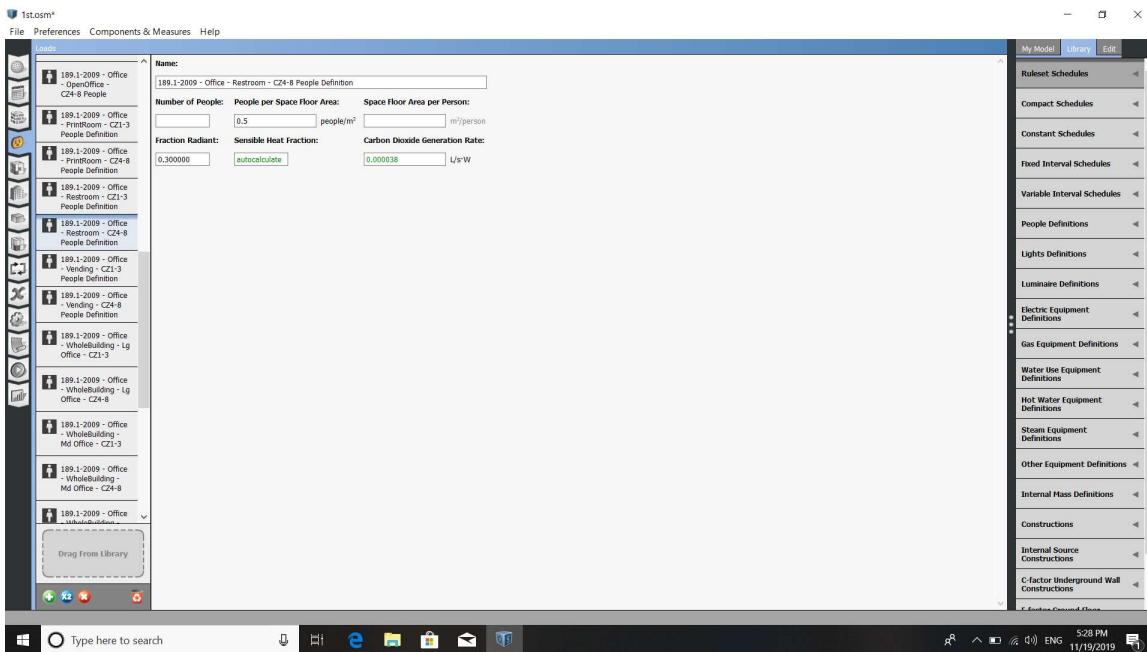
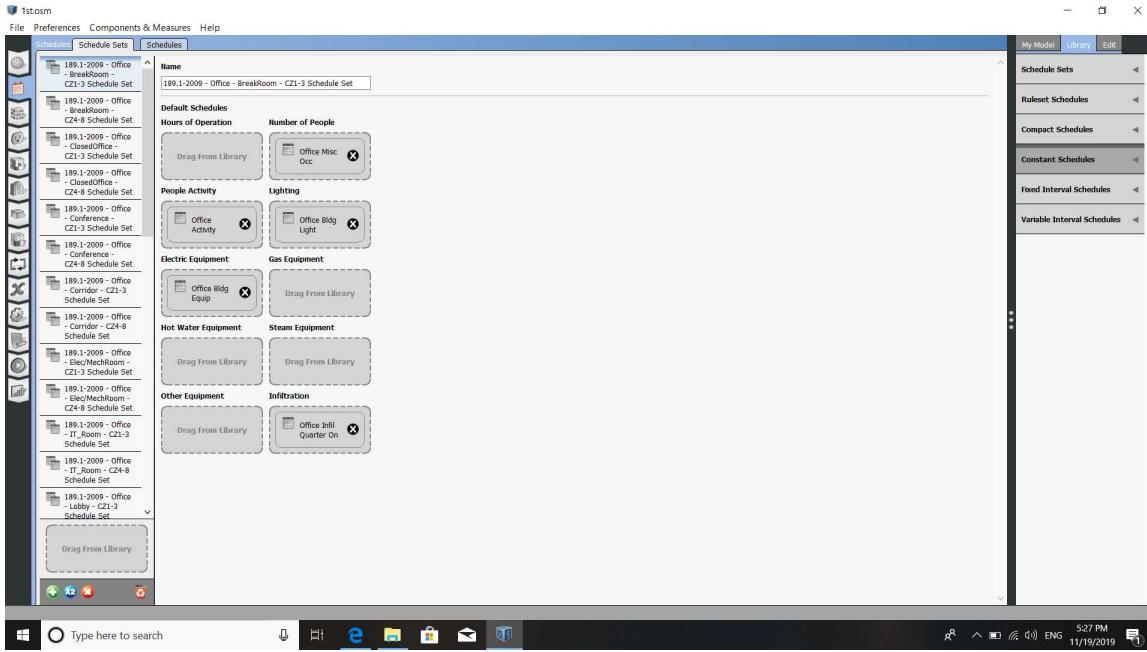
and also we can add it as the same type for other zones.

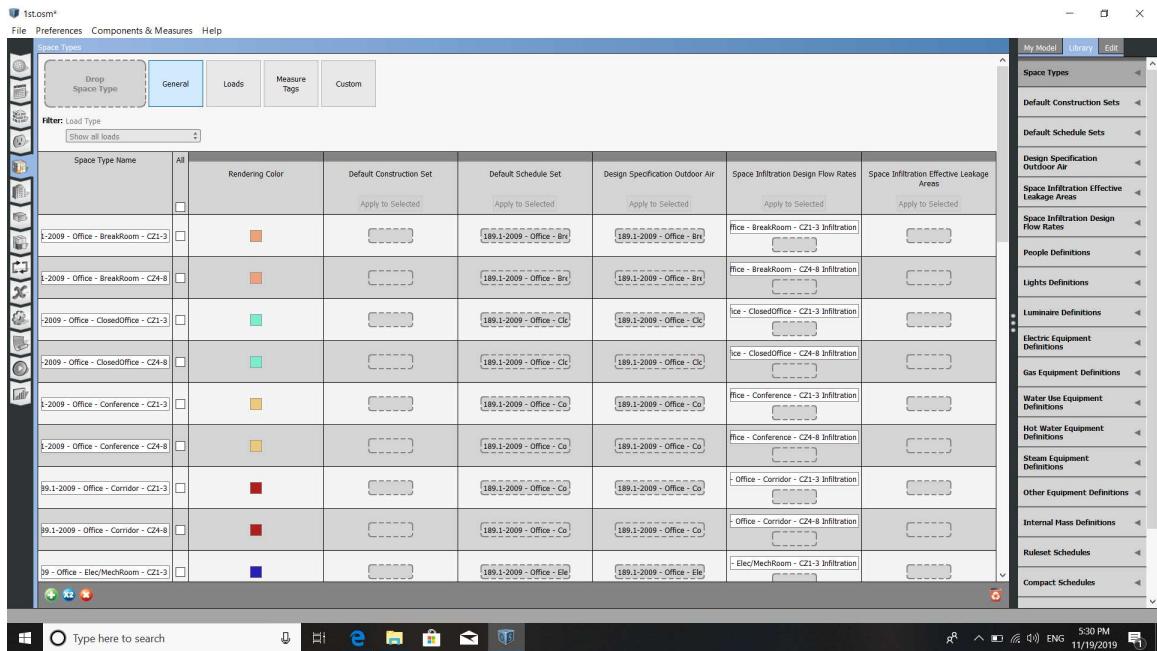


in this stage, we are going to find the special function and give it the schedule based on the information of our design.



and we can make change in the schedule.





and the new data is ready now.