WEEK 7

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Task 1

Provide a summary of the main concepts that went through about solar radiation.

Solar radiation

Often called the solar resource, is a general term for the electromagnetic radiation emitted by the sun. Solar radiation can be captured and turned into useful forms of energy, such as heat and electricity, using a variety of technologies. However, the technical feasibility and economical operation of these technologies at a specific location depends on the available solar resource.

Every location on Earth receives sunlight at least part of the year. The amount of solar radiation that reaches any one spot on the Earth's surface varies according to: geographic location, time of day, season, local landscape and local weather.

Diffuse and direct solar radiation

As sunlight passes through the atmosphere, some of it is absorbed, scattered, and reflected by: air molecules, water vapor, clouds, dust, pollutants, forest fires, volcanoes. This is called diffuse solar radiation.

Whereas direct beam solar radiation is the solar radiation that reaches the Earth's surface without being diffused.

The sum of the diffuse and direct solar radiation is called *global solar radiation*.

Atmospheric conditions can reduce direct beam radiation by 10% on clear, dry days and by 100% during thick, cloudy days.

Solar Radiation Absorption

It is made possible by atmospheric components, which are the ozone, water, and carbon dioxide. These atmospheric components absorb the incident radiation in specific wavelength bands.

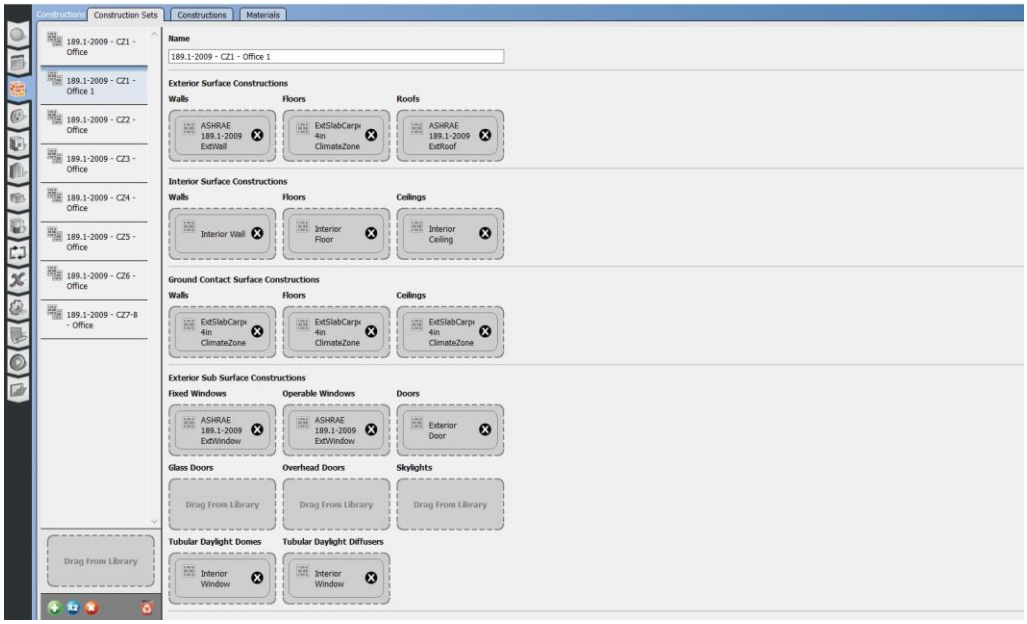
Solar radiation density

The extraterrestrial solar irradiance, the maximum yearly average solar radiation density, has a value of 1367 W/m2

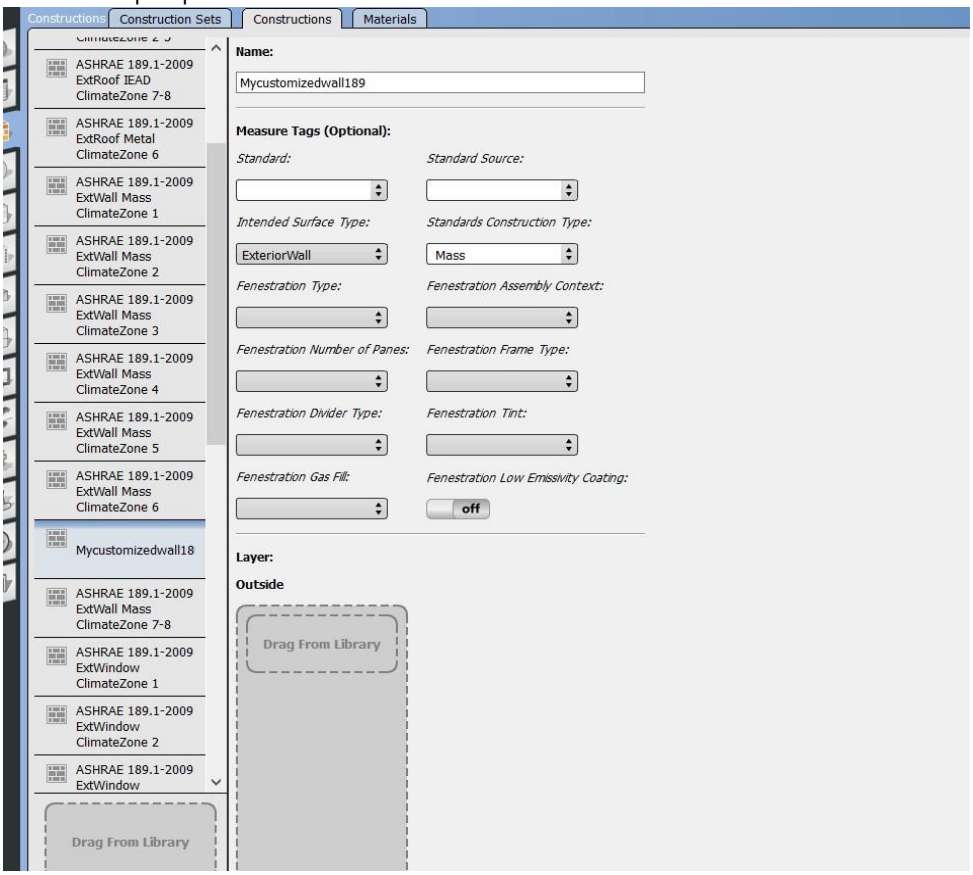
Task 1

Create a pdf file with screenshots of all of the steps we went through in the second lesson on openStudio and explain briefly the reason behind the use of each step.

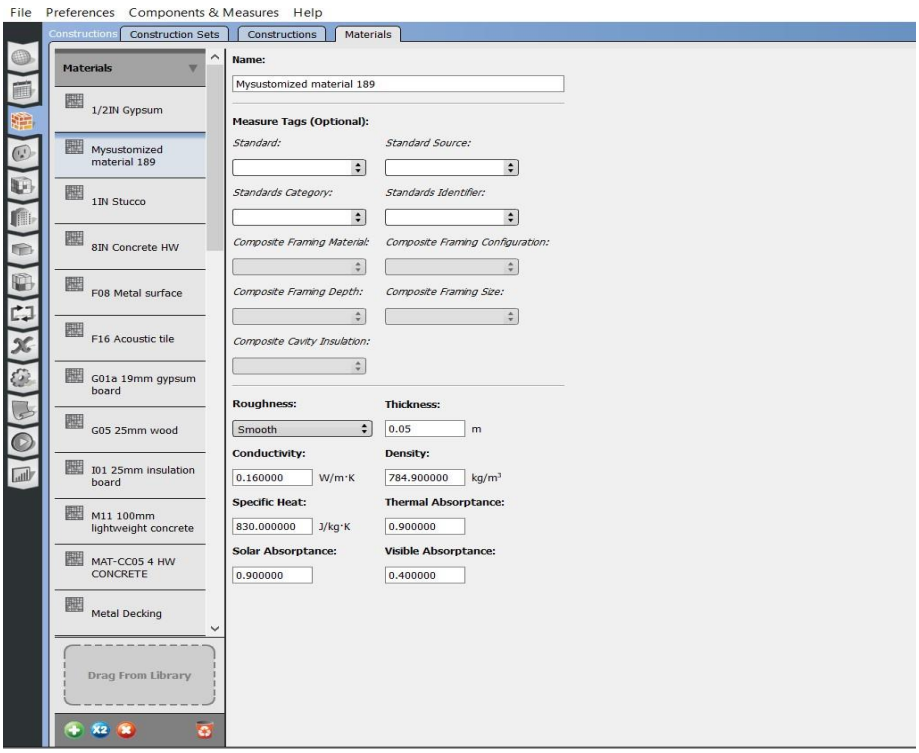
1. Open the construction sets to choose the customized walls and materials and then change the name



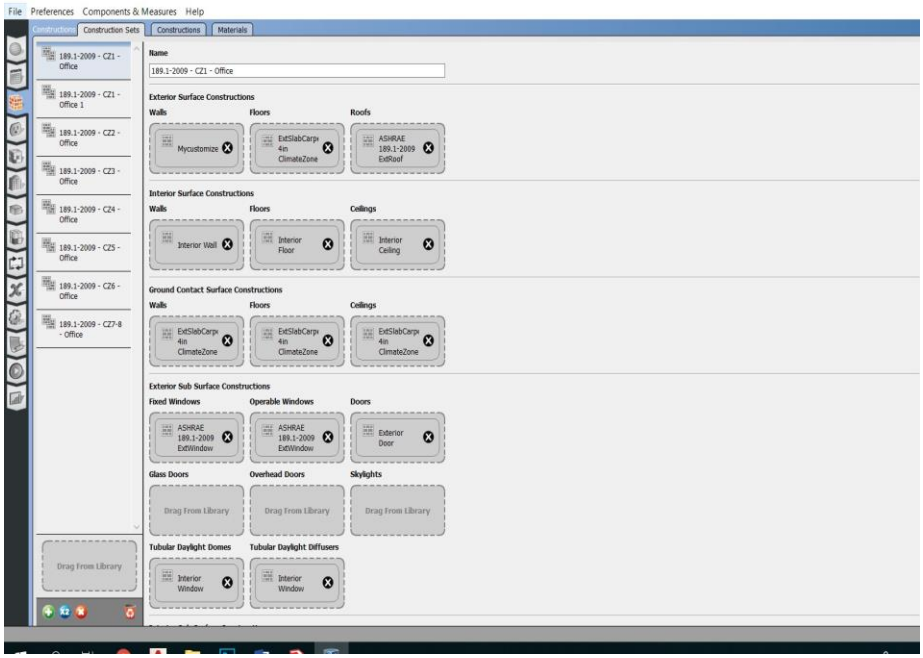
2. Customize the wall properties



3. customize the materials by adding the wanted properties



4. Add the new materials that we chose for the customized wall we made



5. Create custom schedule for winter and summer. (Priority 1 and 2)