

WEEK ASSIGNMENT 7

Fatemeh Jafari (10663637)

Task 1:

SOLAR RADIATIONS is an energy radiated from the sun in the form of electromagnetic waves, including visible and ultraviolet light and infrared radiation. The energy that comes to the earth is modified due to the phenomenon of dispersion and absorption. The solar radiation reaching the earth surface can be divided into two types of solar radiation: Direct beam solar radiation and diffuse solar radiation.

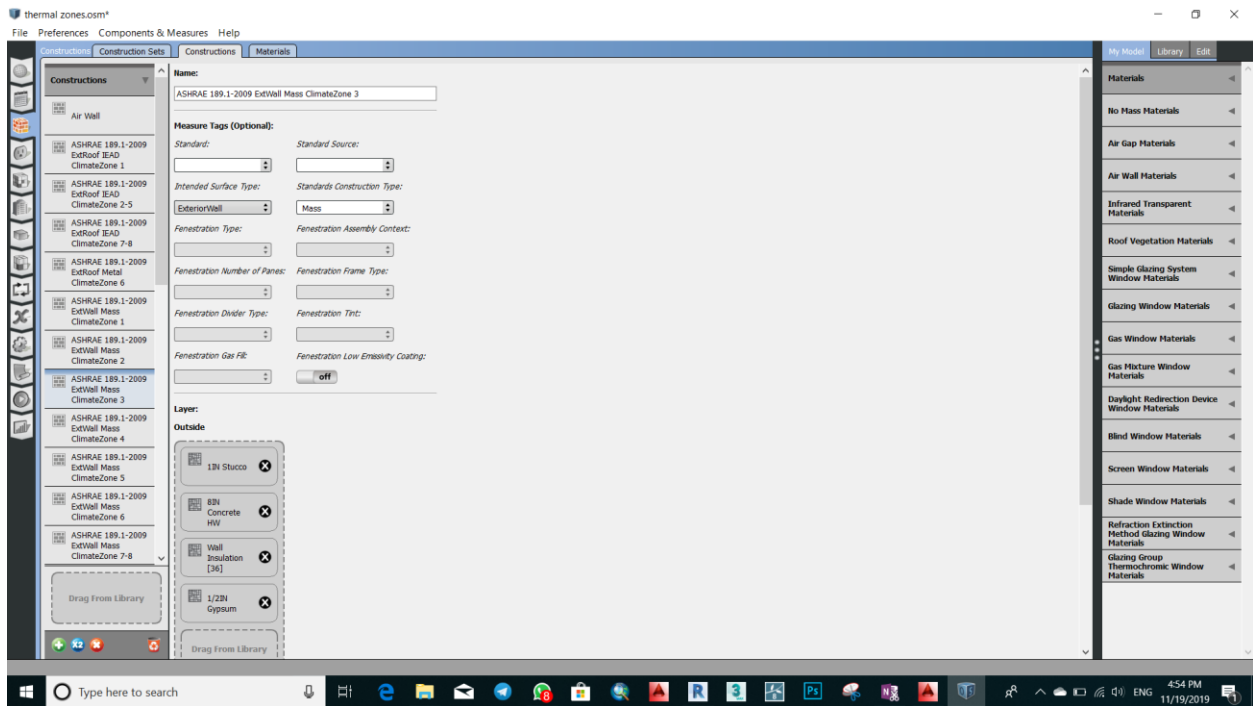
Solar radiation absorption is due to some atmospheric components, especially ozone, water and carbon dioxide. Stratospheric ozone absorbs almost all the ultraviolet component of the solar radiation for wavelength less than 0.29 μm , water vapor has important absorption bands in the infrared field, centered at 1.0, 1.4, and 1.8 μm . Over 2.5 μm the atmosphere becomes practically opaque to solar radiation for the strong absorption due to water and carbon dioxide. The solar radiation, available on the Earth's surface for conversion in other energy forms, depends on the sun position, the weather condition, the site altitude over the sea level, and the daylight hours.

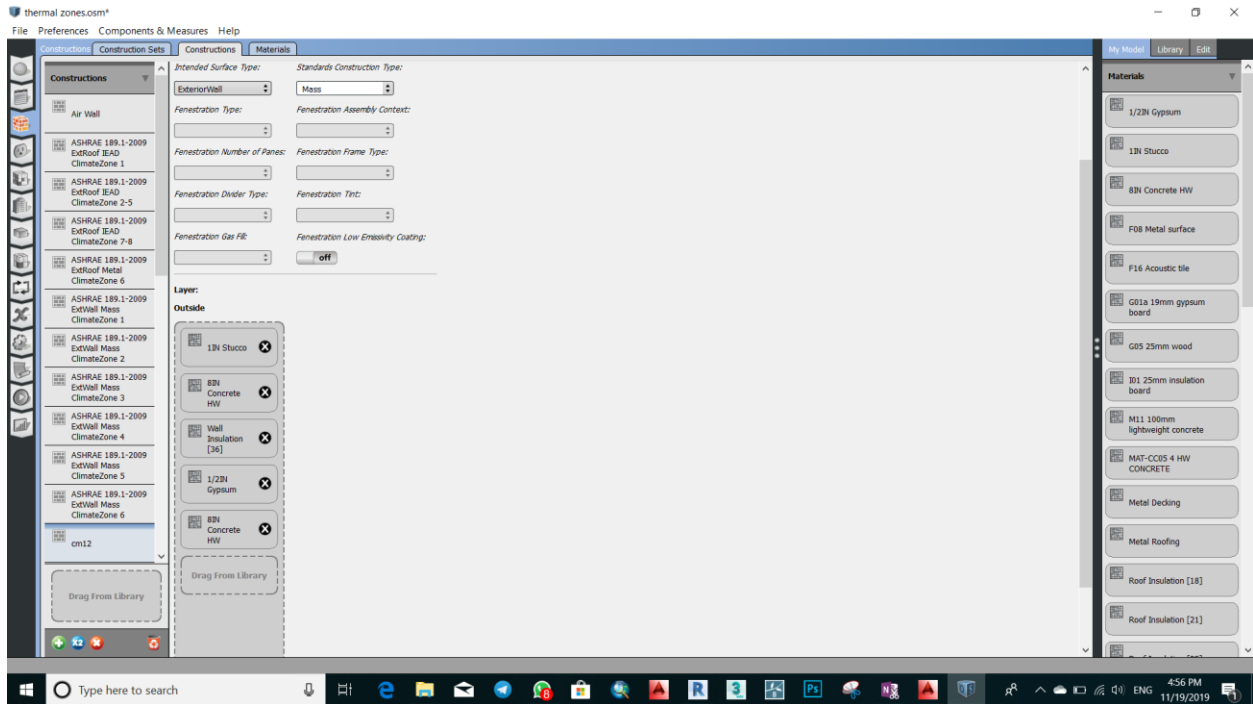
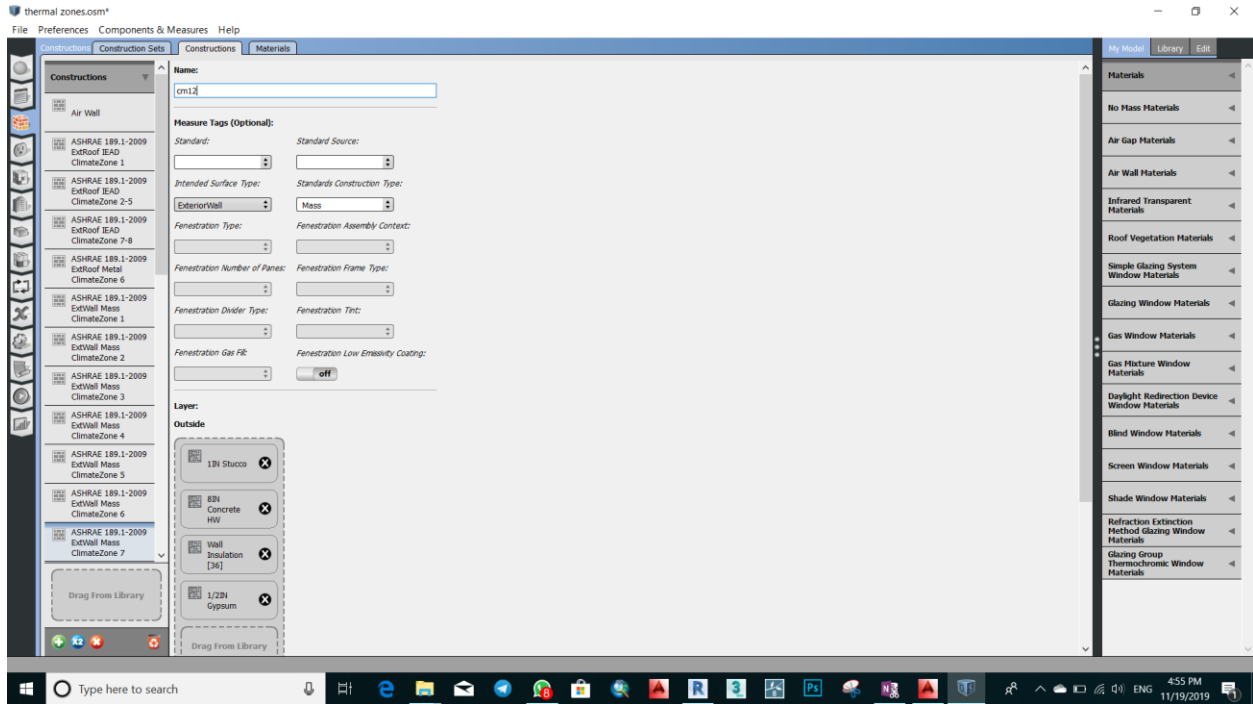
Task2:

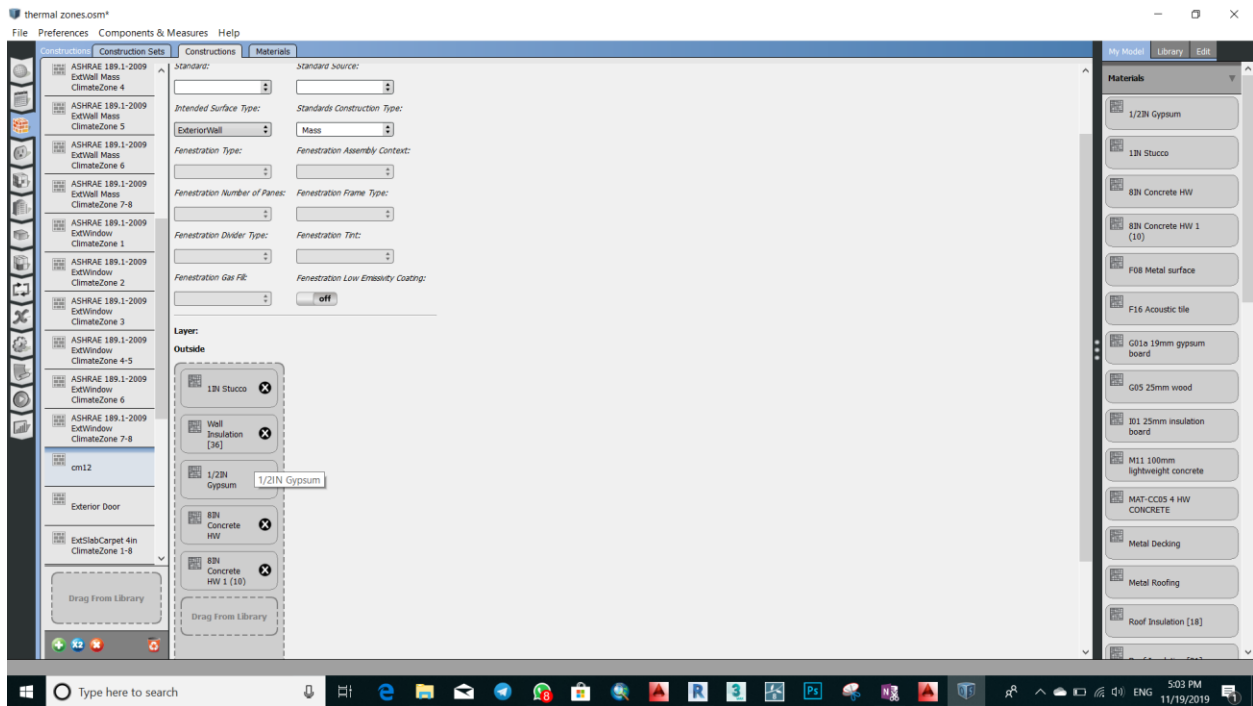
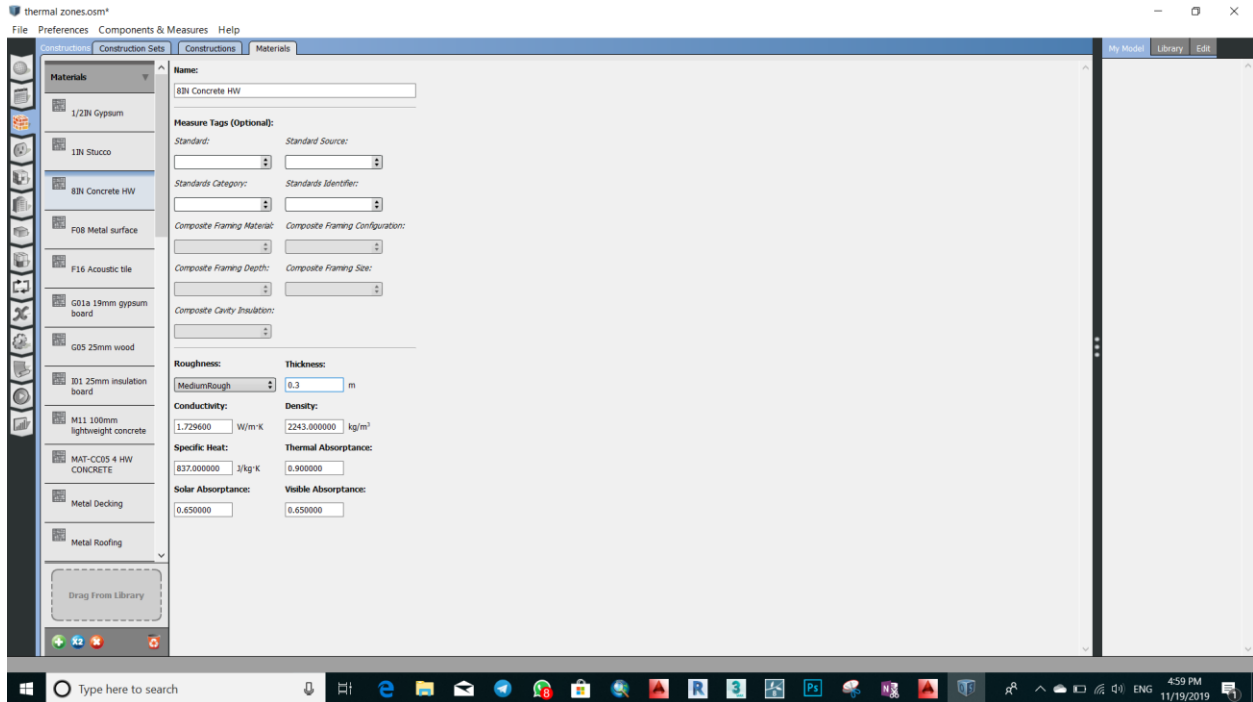
The screenshot displays the Thermal Zones software interface. The top menu bar includes 'File', 'Preferences', 'Components & Measures', and 'Help'. The main window is divided into several sections:

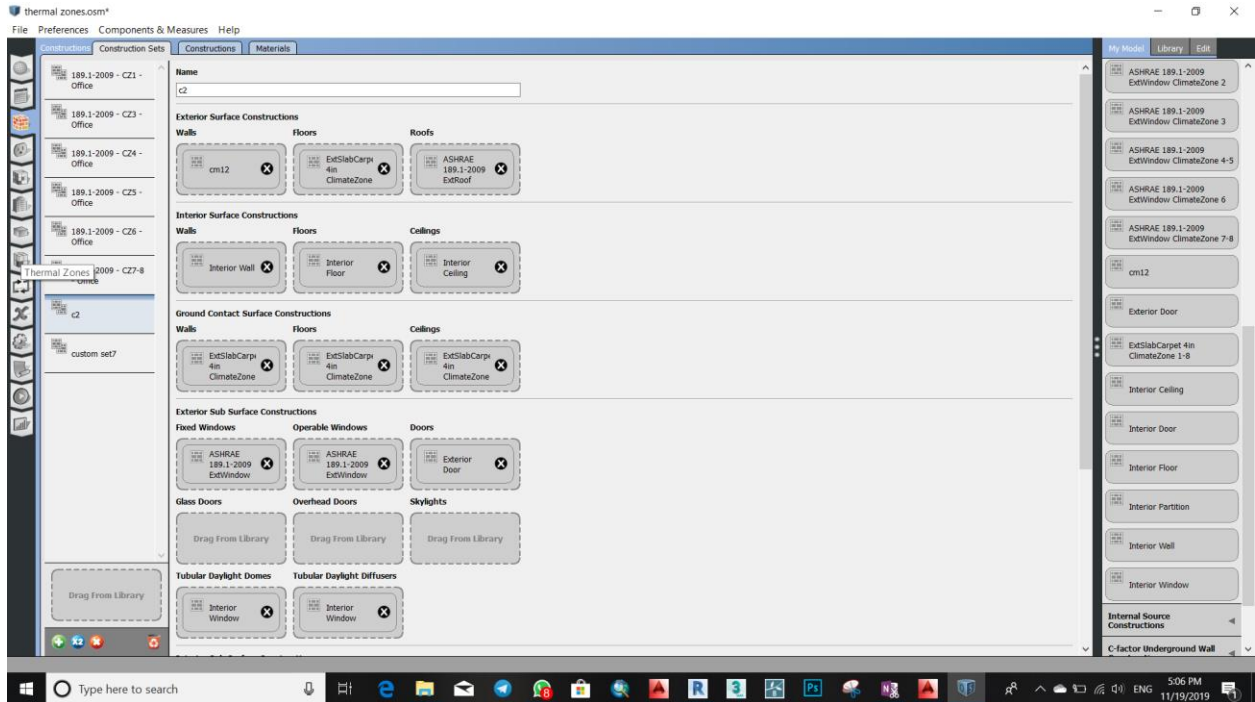
- Weather File & Design Days:** Contains fields for Name (Piacenza), Latitude (44.92), Longitude (9.73), Elevation (134), and Time Zone (1). It also has a link to download weather files at www.energyplus.gov.
- Measure Tags (Optional):** Includes dropdown menus for ASHRAE Climate Zone and CEC Climate Zone.
- Design Days:** Features a button 'Import From DDY' and a table for defining design days.
- Design Days Table:** A table with columns for Design Day Name, All, Day Of Month, Month, Day Type, and Daylight Saving Time Indicator. It lists various design days for Piacenza, including Ann Cg, Ann Cg, Ann Cg, Ann Cg, Ann Hg, Ann Hg, and Ann Hum.
- Right Panel:** Contains sections for 'Select Year by:' (Calendar Year, First Day of Year), 'Daylight Savings Time:' (off), and 'Starts/Ends' (Define by Day of The Week And Month, Define by Date).

The bottom of the screen shows a Windows taskbar with the search bar and various application icons. The system clock indicates 4:44 PM on 11/19/2019.









thermal zones.oss*

File Preferences Components & Measures Help

Spaces Properties Loads Surfaces Subsurfaces Interior Partitions Shading

General Airflow Custom

Filters: Story Thermal Zone Space Type

All All All

Space Name	Story	Thermal Zone	Space Type	Default Construction Set	Default Schedule Set	Part of Total Floor Area
Space 101	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - C21 - Office		<input checked="" type="checkbox"/>
Space 102	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - C21 - Office		<input checked="" type="checkbox"/>
Space 103	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - C21 - Office		<input checked="" type="checkbox"/>
Space 104	Building Story 4		189.1-2009 - Office - Op			<input checked="" type="checkbox"/>
Space 105	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - C21 - Office		<input checked="" type="checkbox"/>
Space 201	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - C21 - Office		<input checked="" type="checkbox"/>
Space 202	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - C21 - Office		<input checked="" type="checkbox"/>
Space 203	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - C21 - Office		<input checked="" type="checkbox"/>
Space 204	Building Story 3		189.1-2009 - Office - Op			<input checked="" type="checkbox"/>
Space 205	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - C21 - Office		<input checked="" type="checkbox"/>
Space 301	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - C21 - Office		<input checked="" type="checkbox"/>
Space 302	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - C21 - Office		<input checked="" type="checkbox"/>
Space 303	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - C21 - Office		<input checked="" type="checkbox"/>
Space 304	Building Story 6		189.1-2009 - Office - Op			<input checked="" type="checkbox"/>
Space 305	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - C21 - Office		<input checked="" type="checkbox"/>

Library:

- Interior Partition Surface
- Building Stories
- Thermal Zones
- Space Types
- Default Construction Sets
- Default Schedule Sets
- Design Specification Outdoor Air
- People Definitions
- Lights Definitions
- Luminaire Definitions
- Electric Equipment Definitions
- Gas Equipment Definitions
- Water Use Equipment Definitions
- Heat Pump Water Heater
- Hot Water Equipment Definitions
- Steam Equipment Definitions
- Other Equipment Definitions
- Internal Mass Definitions

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File Preferences Components & Measures Help

Spaces Properties Loads Surfaces Subsurfaces Interior Partitions Shading

General Airflow Custom

Filters: Story Thermal Zone Space Type

All All All

Space Name	Story	Thermal Zone	Space Type	Default Construction Set	Default Schedule Set	Part of Total Floor Area
Space 101	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	c2		<input checked="" type="checkbox"/>
Space 102	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 103	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 104	Building Story 4		189.1-2009 - Office - Op			<input checked="" type="checkbox"/>
Space 105	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 201	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 202	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 203	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 204	Building Story 5		189.1-2009 - Office - Op			<input checked="" type="checkbox"/>
Space 205	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 301	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 302	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 303	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 304	Building Story 6		189.1-2009 - Office - Op			<input checked="" type="checkbox"/>
Space 305	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>

My Model Library Edit

Interior Partition Surface

Building Stories

Thermal Zones

Space Types

Default Construction Sets

189.1-2009 - CZ1 - Office

189.1-2009 - CZ3 - Office

189.1-2009 - CZ4 - Office

189.1-2009 - CZ5 - Office

189.1-2009 - CZ6 - Office

189.1-2009 - CZ7-8 - Office

c2

custom set7

Default Schedule Sets

Design Specification Outdoor Air

People Definitions

Lights Definitions

Type here to search

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File Preferences Components & Measures Help

Spaces Properties Loads Surfaces Subsurfaces Interior Partitions Shading

General Airflow Custom

Filters: Story Thermal Zone Space Type

All All All

Space Name	Story	Thermal Zone	Space Type	Default Construction Set	Default Schedule Set	Part of Total Floor Area
Space 101	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	c2		<input checked="" type="checkbox"/>
Space 102	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 103	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 104	Building Story 4		189.1-2009 - Office - Op			<input checked="" type="checkbox"/>
Space 105	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 201	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 202	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 203	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 204	Building Story 5		189.1-2009 - Office - Op			<input checked="" type="checkbox"/>
Space 205	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 301	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 302	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 303	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 304	Building Story 6		189.1-2009 - Office - Op			<input checked="" type="checkbox"/>
Space 305	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>

My Model Library Edit

Interior Partition Surface

Building Stories

Thermal Zones

Space Types

Default Construction Sets

Default Schedule Sets

Design Specification Outdoor Air

People Definitions

Lights Definitions

Luminaire Definitions

Electric Equipment Definitions

Gas Equipment Definitions

Water Use Equipment Definitions

Heat Pump Water Heater

Hot Water Equipment Definitions

Steam Equipment Definitions

Other Equipment Definitions

Internal Mass Definitions

Type here to search

5:14 PM 11/19/2019

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File Preferences Components & Measures Help

Spaces Properties Loads Surfaces Subsurfaces Interior Partitions Shading

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
Space 101	<input checked="" type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	C2		<input checked="" type="checkbox"/>
Space 102	<input checked="" type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 103	<input checked="" type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 104	<input checked="" type="checkbox"/>	Building Story 4		189.1-2009 - Office - Op			<input checked="" type="checkbox"/>
Space 105	<input checked="" type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 201	<input checked="" type="checkbox"/>	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 202	<input checked="" type="checkbox"/>	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 203	<input checked="" type="checkbox"/>	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 204	<input checked="" type="checkbox"/>	Building Story 5		189.1-2009 - Office - Op			<input checked="" type="checkbox"/>
Space 205	<input checked="" type="checkbox"/>	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 301	<input checked="" type="checkbox"/>	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 302	<input checked="" type="checkbox"/>	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 303	<input checked="" type="checkbox"/>	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>
Space 304	<input checked="" type="checkbox"/>	Building Story 6		189.1-2009 - Office - Op			<input checked="" type="checkbox"/>
Space 305	<input checked="" type="checkbox"/>	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	189.1-2009 - CZ1 - Office		<input checked="" type="checkbox"/>

My Model Library Edit

Interior Partition Surface

Building Stories

Thermal Zones

Space Types

Default Construction Sets

Default Schedule Sets

Design Specification Outdoor Air

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Electric Equipment Definitions

Gas Equipment Definitions

Water Use Equipment Definitions

Heat Pump Water Heater

Hot Water Equipment Definitions

Steam Equipment Definitions

Other Equipment Definitions

Internal Mass Definitions

Type here to search

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File Preferences Components & Measures Help

Spaces Properties Loads Surfaces Subsurfaces Interior Partitions Shading

General Airflow Custom

Filters: Story Thermal Zone Space Type

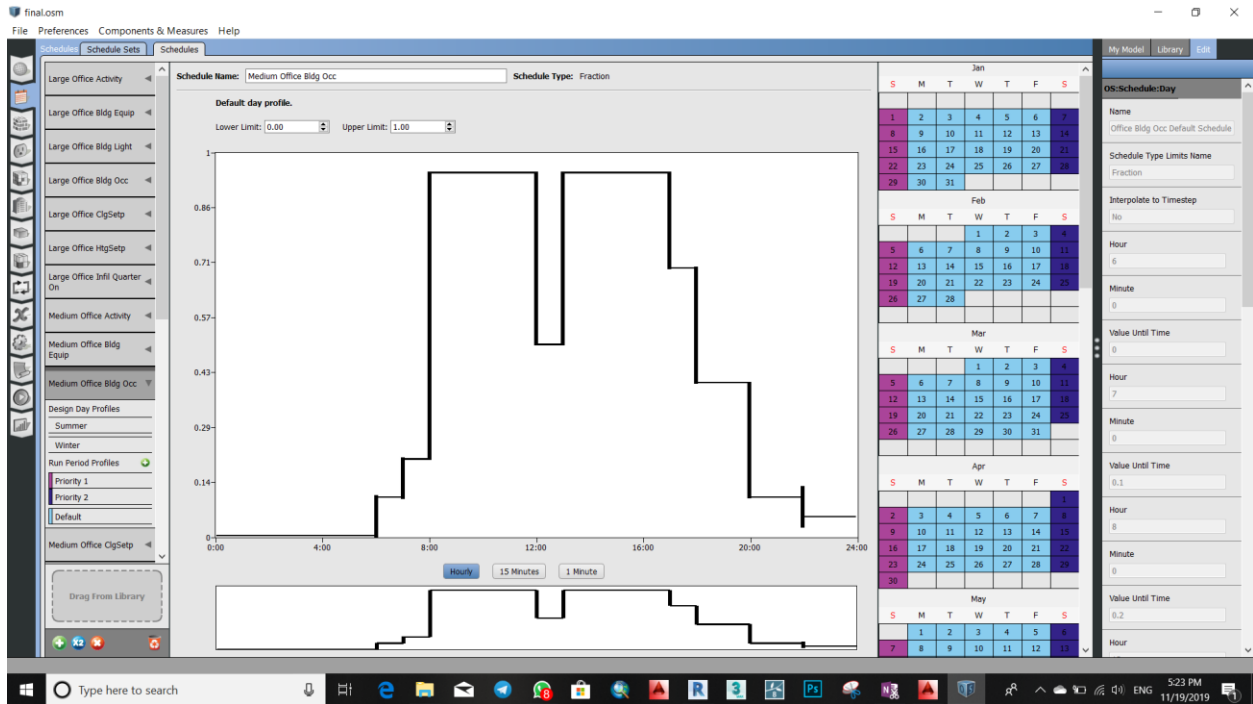
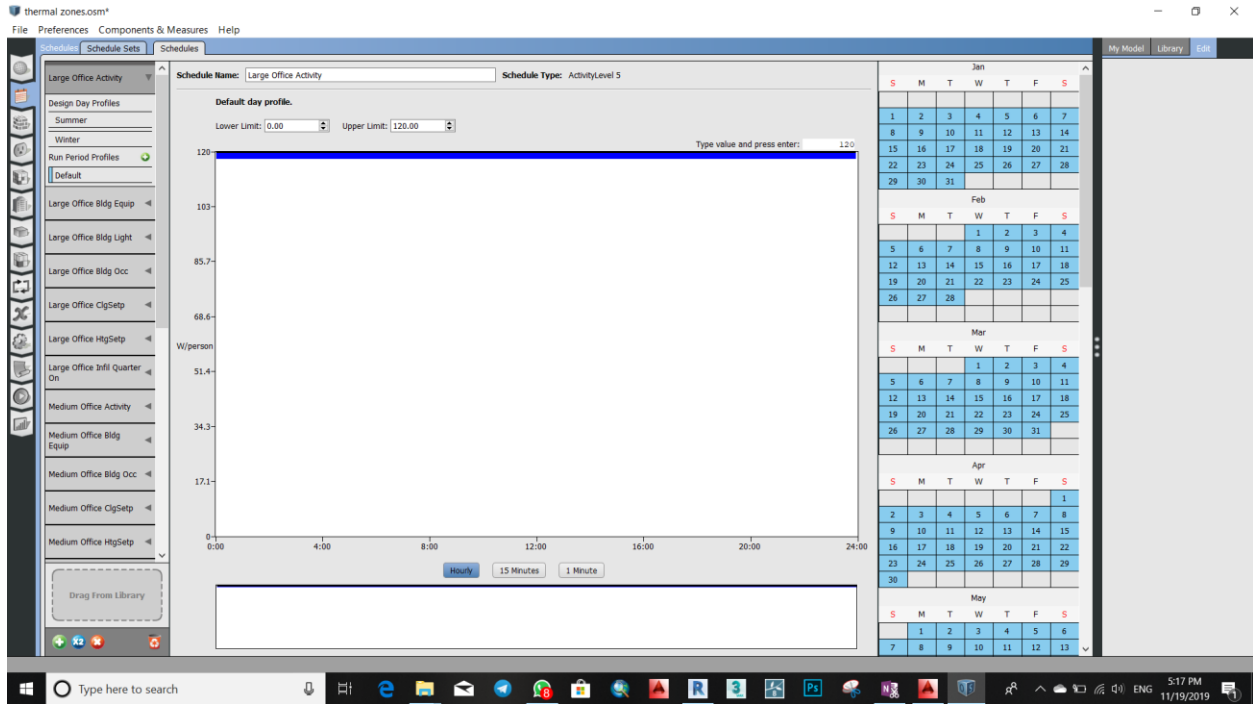
All All All

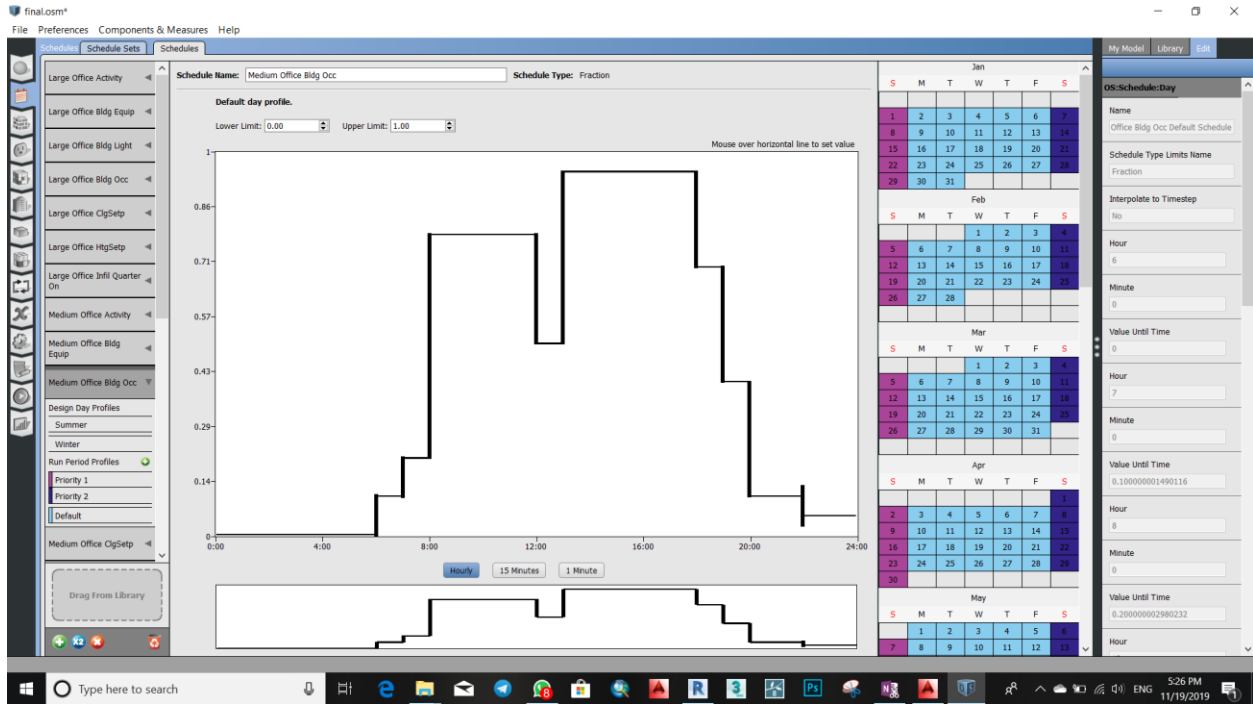
Space Name	All	Story	Thermal Zone	Space Type	Default Construction Set	Default Schedule Set	Part of Total Floor Area
Space 101	<input checked="" type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	C2		<input checked="" type="checkbox"/>
Space 102	<input checked="" type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	C2		<input checked="" type="checkbox"/>
Space 103	<input checked="" type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	C2		<input checked="" type="checkbox"/>
Space 104	<input checked="" type="checkbox"/>	Building Story 4		189.1-2009 - Office - Op	C2		<input checked="" type="checkbox"/>
Space 105	<input checked="" type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Office - Op	C2		<input checked="" type="checkbox"/>
Space 201	<input checked="" type="checkbox"/>	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	C2		<input checked="" type="checkbox"/>
Space 202	<input checked="" type="checkbox"/>	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	C2		<input checked="" type="checkbox"/>
Space 203	<input checked="" type="checkbox"/>	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	C2		<input checked="" type="checkbox"/>
Space 204	<input checked="" type="checkbox"/>	Building Story 5		189.1-2009 - Office - Op	C2		<input checked="" type="checkbox"/>
Space 205	<input checked="" type="checkbox"/>	Building Story 2	Thermal Zone 2	189.1-2009 - Office - Op	C2		<input checked="" type="checkbox"/>
Space 301	<input checked="" type="checkbox"/>	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	C2		<input checked="" type="checkbox"/>
Space 302	<input checked="" type="checkbox"/>	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	C2		<input checked="" type="checkbox"/>
Space 303	<input checked="" type="checkbox"/>	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	C2		<input checked="" type="checkbox"/>
Space 304	<input checked="" type="checkbox"/>	Building Story 6		189.1-2009 - Office - Op	C2		<input checked="" type="checkbox"/>
Space 305	<input checked="" type="checkbox"/>	Building Story 3	Thermal Zone 3	189.1-2009 - Office - Op	C2		<input checked="" type="checkbox"/>

My Model Library Edit

Type here to search

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Loads

People Definitions

189.1-2009 - Office - BreakRoom - CZ1-3 People Definition

Number of People: People per Space Floor Area: Space Floor Area per Person:

0.538196 people/m² m²/person

Fraction Radiant: Sensible Heat Fraction: Carbon Dioxide Generation Rate:

0.300000 autocalculate 0.000038 L/s·W

Drag from Library

My Model Library Edit

Type here to search

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File Preferences Components & Measures Help

Loads

People Definitions

189.1-2009 - Office - BreakRoom - CZ1-3 People

189.1-2009 - Office - BreakRoom - CZ4-8 People

189.1-2009 - Office - BreakRoom - CZ4-8 People

189.1-2009 - Office - ClosedOffice - CZ1-3 People

189.1-2009 - Office - ClosedOffice - CZ4-8 People

189.1-2009 - Office - Conference - CZ1-3 People

189.1-2009 - Office - Conference - CZ4-8 People

189.1-2009 - Office - Corridor - CZ1-3 People Definition

189.1-2009 - Office - Corridor - CZ4-8 People Definition

189.1-2009 - Office - IT_Room - CZ1-3 People Definition

189.1-2009 - Office - IT_Room - CZ4-8 People Definition

Drag from Library

Name: 189.1-2009 - Office - BreakRoom - CZ4-8 People Definition 1(2)

Number of People: people/m²

Space Floor Area per Person: m²/person

Fraction Radiant:

Sensible Heat Fraction:

Carbon Dioxide Generation Rate: L/s/W

Windows

Type here to search

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File Preferences Components & Measures Help

Space Types

Drop Space Type

General Loads Measure Tags Custom

Filter: Load Type

Show all loads

Space Type Name	All	Rendering Color	Default Construction Set	Default Schedule Set	Design Specification Outdoor Air	Space Infiltration Design Flow Rates	Space Infiltration Effective Leakage Areas
189.1-2009 - Office - BreakRoom - CZ1-3	<input type="checkbox"/>		<input type="text" value="Apply to Selected"/>	<input type="text" value="189.1-2009 - Office - Bri"/>	<input type="text" value="189.1-2009 - Office - Bri"/>	Office - BreakRoom - CZ1-3 Infiltration	<input type="text" value="Apply to Selected"/>
189.1-2009 - Office - BreakRoom - CZ4-8	<input type="checkbox"/>		<input type="text" value="Apply to Selected"/>	<input type="text" value="189.1-2009 - Office - Bri"/>	<input type="text" value="189.1-2009 - Office - Bri"/>	Office - BreakRoom - CZ4-8 Infiltration	<input type="text" value="Apply to Selected"/>
189.1-2009 - Office - ClosedOffice - CZ1-3	<input type="checkbox"/>		<input type="text" value="Apply to Selected"/>	<input type="text" value="189.1-2009 - Office - Clk"/>	<input type="text" value="189.1-2009 - Office - Clk"/>	Office - ClosedOffice - CZ1-3 Infiltration	<input type="text" value="Apply to Selected"/>
189.1-2009 - Office - ClosedOffice - CZ4-8	<input type="checkbox"/>		<input type="text" value="Apply to Selected"/>	<input type="text" value="189.1-2009 - Office - Clk"/>	<input type="text" value="189.1-2009 - Office - Clk"/>	Office - ClosedOffice - CZ4-8 Infiltration	<input type="text" value="Apply to Selected"/>
189.1-2009 - Office - Conference - CZ1-3	<input type="checkbox"/>		<input type="text" value="Apply to Selected"/>	<input type="text" value="189.1-2009 - Office - Co"/>	<input type="text" value="189.1-2009 - Office - Co"/>	Office - Conference - CZ1-3 Infiltration	<input type="text" value="Apply to Selected"/>
189.1-2009 - Office - Conference - CZ4-8	<input type="checkbox"/>		<input type="text" value="Apply to Selected"/>	<input type="text" value="189.1-2009 - Office - Co"/>	<input type="text" value="189.1-2009 - Office - Co"/>	Office - Conference - CZ4-8 Infiltration	<input type="text" value="Apply to Selected"/>
189.1-2009 - Office - Corridor - CZ1-3	<input type="checkbox"/>		<input type="text" value="Apply to Selected"/>	<input type="text" value="189.1-2009 - Office - Co"/>	<input type="text" value="189.1-2009 - Office - Co"/>	Office - Corridor - CZ1-3 Infiltration	<input type="text" value="Apply to Selected"/>
189.1-2009 - Office - Corridor - CZ4-8	<input type="checkbox"/>		<input type="text" value="Apply to Selected"/>	<input type="text" value="189.1-2009 - Office - Co"/>	<input type="text" value="189.1-2009 - Office - Co"/>	Office - Corridor - CZ4-8 Infiltration	<input type="text" value="Apply to Selected"/>
189.1-2009 - Office - Elec/MechRoom - CZ1-3	<input type="checkbox"/>		<input type="text" value="Apply to Selected"/>	<input type="text" value="189.1-2009 - Office - Ele"/>	<input type="text" value="189.1-2009 - Office - Ele"/>	Office - Elec/MechRoom - CZ1-3 Infiltration	<input type="text" value="Apply to Selected"/>

Windows

Type here to search

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