

Article on Green Construction

Global Warming and Green Construction

During the past decade, it has been globally understood that humanity today faces one of the greatest challenges in its history. Global Warming poses a very real risk for habitats and ecological systems, on which billions of people rely. The scientific community unanimously agrees that due to the man-made burning of fossil fuels, Earth's temperature is rising, alongside the occurrence rates of extreme weather-related phenomena that risk people across the world.

The last Paris Climate Change Conference that took place in 2015 made it a worldwide goal to limit Global Warming to 1.5° by the end of the century. The construction of buildings and their maintenance are two of the most environmentally damaging activities. According to the USGBC database, buildings are responsible for 38% of CO2 emissions worldwide.

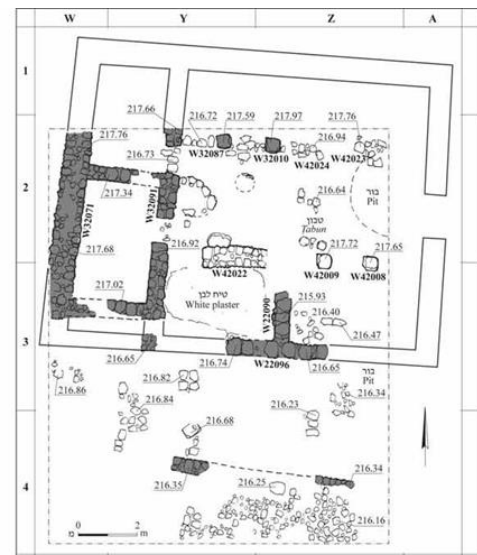
Green Construction aims to reduce the use of non-renewable resources as well as the production of waste. Applying Green Construction guarantees an improvement of quality of life and the health of the building's occupants, through saving natural resources.

Green Construction can noticeably reduce the damage caused to the building's surroundings and aids in protecting them. Applying it in a wide scale may even lead to a reduction in the stress and damage humanity causes to Earth's ecological systems.

Green Construction Features

Green Construction draws inspiration from ancient construction methods that can be found in archaeological sites.

For example, the Four-Room House is one of the oldest structure model in the Mediterranean; it is constructed around a central patio which allowed ventilation of the living spaces. A related side effect is the structure's energetic efficiency, as the hot air is sucked from the rooms and escapes through the patio.



The Four-Room House Model - the Mediterranean's oldest construction model

Today, too, Passive Solar Planning is the basis of correct climate planning. Green Construction is characterised by a correct positioning of the building in relation to the sun, in order to use natural means and achieve economy by re-use, recycling and dual usages. The advanced technology characterizing Green Construction requires such solid basis of Passive Solar Planning and Construction, which relates to the positioning of the building, its thermal insulation, the control of its entryways and their shading.

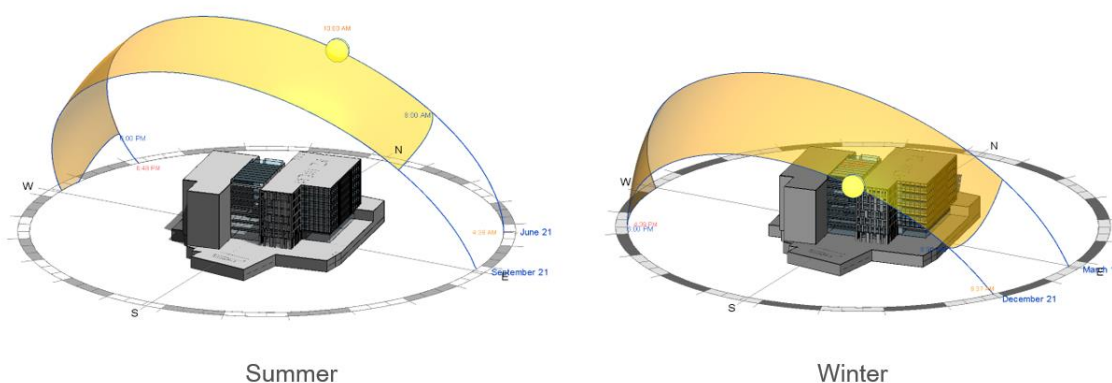
The Importance of the Building's Positioning in the Lot

The positioning of the building in the lot, as well as the interior design of the rooms, is imperative for the smart use of the property.

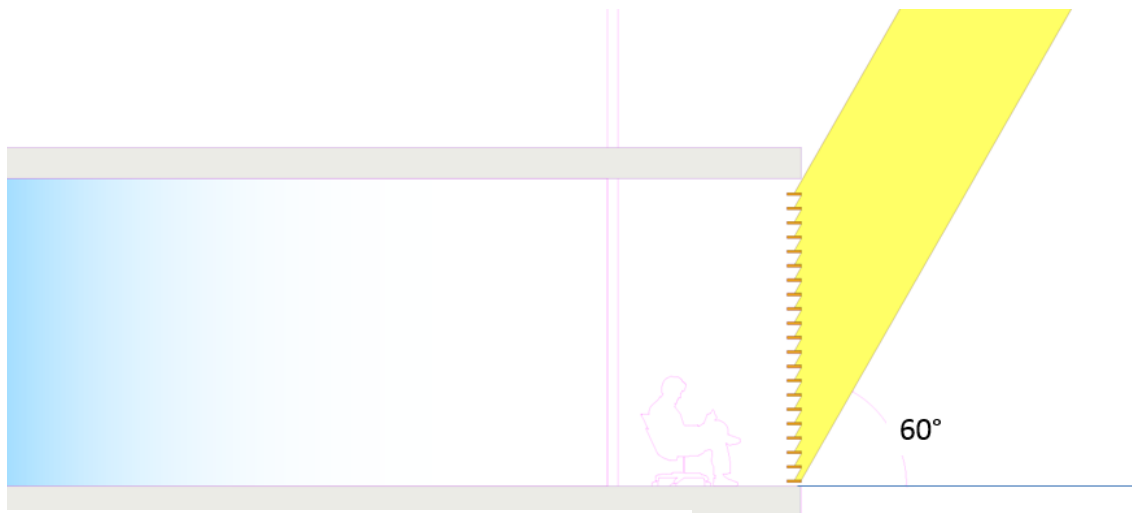
***Exterior Area** – It is recommended to increase the building's area by adding floors and keeping all utility areas (parking lot, gas cylinders and water, electric or waste facilities) in one place. This way, a larger open space will be created, benefitting both people and the environment.

***Energetic Performance** – The building's location and positioning in the lot have crucial importance when it comes to the building's energetic performance: for example, the fact that the sun moves in a fixed path from east to west, alongside the sky's southern side, can be used. As a rule, it is best to have the building's longer face north and south.

Solar Shading Analysis



***South Facade Windows** – Installing large windows in the building’s southern facade and shading them properly will allow the low-angle winter sun to penetrate the windows, but the summer sun will be blocked by the blinds. Efficiently planned shading blocks direct light and prevents overheating, while also permitting a large amount of natural light into the room.

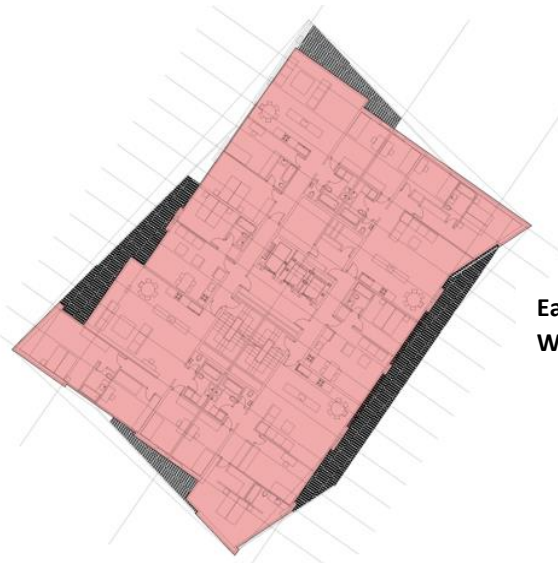


Summer Shading - 60A August, 12 21 :00

***North, West and East Facade Windows** – The northern facade can receive soft, consistent natural light all year round. In the western and eastern facades, in turn, windows should be limited to small utility rooms, or be protected by vertical blinds hanging beside the window, not on top of it – to block the low sunlight coming from the side.



**Western sun –
Undesired due to overheating**



**Eastern sun –
Warms the cold winter morning**

**Southern sun –
Important for passive solar heating**

Natural Lighting in the Workspace – Artificial lighting lacks wavelengths of blue light, necessary for the eye's optimal function. Natural light contains the entire range of wavelengths, and the human eye evolved works best with it. Therefore, natural lighting is optimal for people, regardless of their personal preferences. That being said, the Mediterranean climate often poses the problem of excessive sunlight, which can cause dazzling and visual discomfort. It is therefore necessary to control the amount of natural light.

Analysing Natural Light in Commercial Spaces:

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Energetic Efficiency

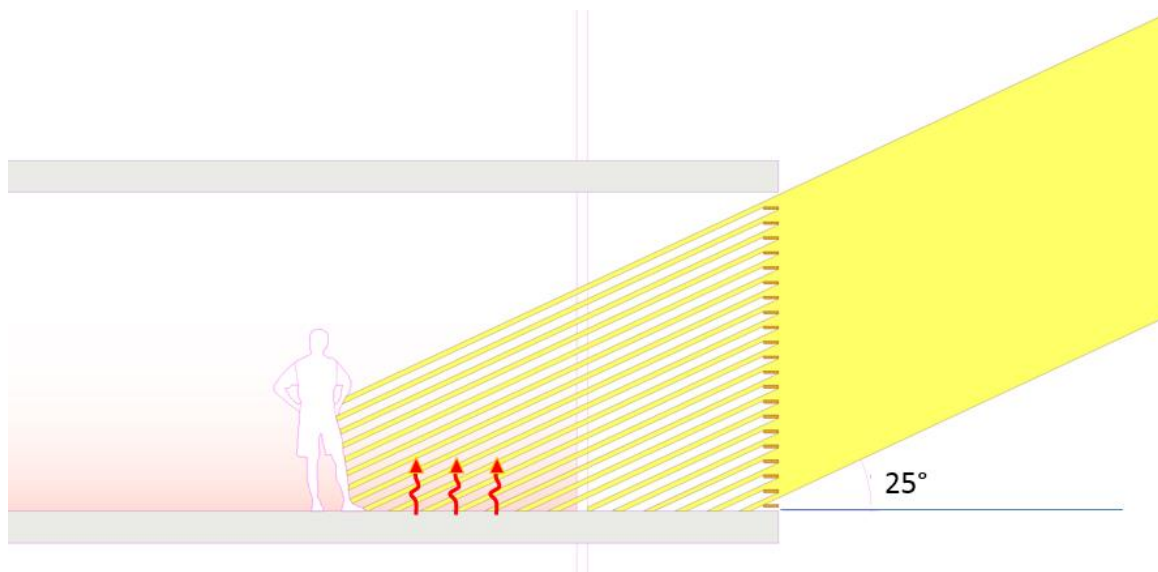
The best way to save energy is to reduce consumption. Other ways include more efficient air conditioning systems, or recycling energy.

A reduced use of energy leads to significant financial savings. Additionally, saving energy reduces our carbon footprint (the human effect on the environment measured by levels of CO2 emissions), as well as that of energy providers and the entire related industry, whose sole purpose is to provide this energy for our use.

Thermal Mass

Every material has a thermal mass – a measurement of the amount of energy required to increase the temperature of said material's given volume. Using materials with a high thermal mass, mostly in the southern walls, may reduce the energy consumption: the material will "absorb" a large amount of energy before heating and passing into the building. In a climate which requires cooling during the day and heating through the night, thermal mass can help regulate consumption.

An example of using thermal mass in winter:



Renewable Energy

In addition to reducing energy consumption, it is possible to create and provide a significant amount of the energy consumed by the building by using alternative resources: solar panels, wind turbines or geothermal heat pumps. Despite high costs, long term savings in electric costs may justify their installation.

The LEED Rating System

The LEED Rating System is the world's most widely used system for planning and certifying green buildings. Currently, about 70,000 buildings in over 150 countries are certified or in the process of certification. LEED has 4 levels of certification – Certified, Silver, Gold and Platinum.

In Israel there exists dozens of buildings already LEED certified . Most projects in Israel aim to achieve the highest levels of Gold and Platinum. The LEED System has long become a standard guaranteeing the quality of a building in terms of thermal comfort, occupants' health and a reduced use of energy and water. Research shows an increase of property value, in terms of rent and sale prices as well as rent duration.¹

The Israeli industry abides to Standard 5281 for green buildings, aiming to cause minimum environmental impact, which should be read alongside Standard 1045 for building insulation and Standard 5282 for saving energy in buildings.

Green Construction is a proven and efficient way to achieve the highest levels of energy and water savings, and of occupants' comfort and health. Green Construction is gradually taking its place in the Israeli construction sector with several high-performing projects, such as Amot Atrium and others, which not only serve as positive examples in the Israeli market, but also by global standards.

Chen Shalita – CEO

LEED AP BD+C



¹ Coster Study 2008.

Sources:

1. Paris Climate Change Conference, website – November 2015.
2. The Effects of Natural Light on Building Occupants, L. Edwards and P. Torcellini, 2002.
3. "Our House is Big and Green" – an Intro for Green Construction –the website of "The Council for a Beautiful Israel – Architect Gahl Sorkin Spanier