

A STUDY ON THE DESIGN AND COST OF AN ENVIRONMENTALLY FRIENDLY BUILDING

Prepared by: Liew Sher Ling

ABSTRACT

Due to the increasing population and environmental pollution, the researchers are now paying more attention to an environmentally friendly building, a sustainable design of modern building. An environmentally friendly building is also known as a “Green House” or an environmentally responsible house, which incorporates a cost effective design with efficient use of energy, water and materials, thus minimizes the environmental impacts.

In order to provide a clearer insight to the readers and to highlight the features and advantages of an environmentally friendly building, the following shows a comparison made with a conventional building.

Features and Advantages	Environmentally Friendly Building	Conventional Building
Energy	Renewable energy, such as solar, wind, biomass, geothermal, wave energy and hydro power	Conventional energy, such as oil, coal and electricity
Materials	Healthy building materials that is reusable and recyclable	A wide variety of materials that may include toxic materials
Waste Management	Efficient use of materials reduces construction waste	More waste means more pollution and increased cost
Water Protection System	Usable water collection system Low flow fixtures Reduce water consumption	Nil
Environment Impact	Reduced	High
Indoor Environment	Healthy and quality	Unhealthy and may contain air pollutants released by toxic materials
Indoor Temperature	26C – 28C	27C – 34C
Durability	More durable due to sustainable design	Less durable
Comfort	More comfortable due to healthy indoor air quality and lower indoor temperature	Less comfortable
Long-term Cost	High initial cost is offset by savings on long-term operating cost (lower cooling bill and maintenance cost)	Low initial cost with high operating cost

A STUDY ON THE DESIGN AND COST OF AN ENVIRONMENTALLY FRIENDLY BUILDING

Prepared by: Liew Sher Ling

This project aims to demonstrate affordable, sustainable design practice and construction techniques, as well as to promote awareness of green practices beyond buildings into the community of homeowners, builders, and the general public.

In the project, a more detailed explanation on the characteristics and advantages of an environmentally friendly building will be made. The emphasis of the project will be placed on the design of an environmentally friendly building. The design will focus on the different means to reduce energy consumption regarding to the orientation, shading, glazing, passive cooling, insulation, lighting, skylight, landscaping, indoor air quality and the installation of solar hot water system and photovoltaic system.

The cost analysis includes the initial cost and running cost of the building. A case study will be made in order to give a clearer comparison on the cost of a conventional building and an environmentally friendly building; a rough introduction will be made on the selection of non toxic, healthy and environmentally friendly building materials.

Waste management and water protection system of an environmentally friendly building will not be discussed due to the reasons that waste management is more important to the construction of a new building because it uses large amount of materials and generates more waste and the usable water collection system is too technical to look into details.

Due to the increasing awareness on the environmental issues and its commitment to the environment, the residents, the neighborhood and the larger community, an environmentally friendly building will definitely become the future trend of modern living.