

The green
environment society
environmental
sciences essay



**ASSIGN
BUSTER**

College Tunku Abdul RahmanJalan Genting Klang Setapak51300 Kuala

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Setapak51300 Kuala LumpurDear SirPROPOSAL TO BUILD A NEW BLOCK IN

THE COLLEGE WITH GREEN BUILDING CONCEPT

Introduction

We, the Green Environment Society wishes to propose an idea of building a block of building with green concept. The club starts at 2009 with the collaboration with Ban Lee Hin Engineering & Construction Sdn Bhd, with the support of our college principal, Dr Tan Chik Heok. The club is devoted to make the college a greener, comfortable, environment friendly place for students to study. With this proposal I hope that the college can give full cooperation with the club in making it possible. I understand the college currently pays heavy expenses for utility bills and maintenance fees and this proposal we hope to change the situation from something negative to positive. A green building is a structure that is environmentally responsible and resource efficient throughout a building's life-cycle. A lot of country is starting to use this idea for their construction, design and maintain of building and this is something new to Malaysia and well supported by the government. With this new building, we aim to reduce the environmental impact of buildings, with the improvement in energy efficiency, water efficiency, materials efficiency as well as waste reduction. This concept not only will reduce the waste and pollution made but also making sure the students have a comfortable and safety environment to study and also improve the productivity of staff. To succeed in implementing the green

building concept into the new block construction, we have made a lot of effort in finding out the suitable architectural structure, the idea of conserving energy, and other alternatives in hope to reduce the energy wasted and the pollution created. The result is, a new building with some key technological features integrated into the core of the building such as new piping system, better angular structure, better opening of building and other features that made this possible, making the college the first institution which implements green building in Malaysia.

Background and Purpose

We understand that the college had always been giving much attention in making the college green and clean but it has not been successful as expected and still have a lot of improvement space. Throughout the years of observation and research done by members, we had realised that most of the ideas that had been implemented in the college today does not last long or does not really produce a satisfied result. We have concluded this proposal with the lists of ideas to implement the green building concepts into the college while saving the college expenses spend on water, electricity, wastage disposal and drainage system. The initial plan for the new building will consist of classrooms and lecture halls and it may change in the future. There will be a lot of things needed to be done because most of the college building are aged more than 30 years and they are not built with any green building features such as centralized wiring and water system plus some of the old wiring are started to become rusty overtime reducing their efficiency and water leakage of old piping system. They all can increase the bills little by little and it is recommended to build a new building which will be easier.

With this green building concept, it will bring three type of benefit. They are environments, economic and social benefits.

Environment benefits

For an instance, green building technique such as solar power can increase energy efficiency and reduce harmful emissions through the use of less environmentally harmful materials and decreased reliance on fossil fuel fired electricity which contains high percentages of carbon and includes coal petroleum and natural gas. Besides, water conservation and recycling rainwater for purpose like urinal flow can preserve potable water and yield significant water savings. Stormwater management including harvesting and redirecting storm water can reduce erosion and flooding, building surface with permeable materials, and using green roofs that is partially or completely covered with vegetation and a growing medium can control and utilize overflow, absorbing rainwater, providing insulation, creating a habitat for wildlife and helping to lower urban air temperatures and mitigate the heat island effect which is a metropolitan area that significantly warmer than its surrounding rural areas due to human activities. Furthermore, the common objective of green building are designed the overall impact of the built human health, at the same time also conserve and restore the natural environment resource by reducing environment degradation. Lastly, it can reduce the waste of stream, for instance reducing and recycling construction and demolition materials can reduce overall construction and disposal costs as well. With their powerful environmental benefits, green building standards are destined to become the basic building standard for all new construction.

Economics benefits

The resource such as energy and water efficiency provided by green design and technology leads to drastic reductions in operation costs that quickly recoup any additional project costs and continue offer dramatic long term college savings. Money previously directed toward utility costs may be used for other purposes such as improve the college facilities and assets. Besides, with the energy costs on the rise, the low operating costs and easy maintenance of green buildings will make for much lower vacancy rates along with much higher property values. Furthermore, the green buildings have control of temperatures and ventilation along with increased natural lighting. This attributes to a much improved employee attendance and health. We believed that the improvements of indoor environment will lower our health care cost along with staff's work losses. Based on our research, staff productivity in green building can be average 3 to 7% greater than non-green building. The green building also have higher occupancy rate and less tenant's turnover than non-green certified buildings. We believed that the demand of green space will only increase in the near future, as more companies, corporations and shareholder require green certified space. In addition, achieving green building can improve the college image as being a leader in environmental stewardship since never have college had implemented the green building concept. Lastly, student productivity can be improve because the related of indoor and outdoor environments conditions where apply the green principles. The student will be sick much less than often and will have a better over sense of well-being.

Social benefits

Although the environment and economic benefits of green building are well known, the social benefits of green building should not be ignored. Firstly, green building emphasizes ventilation and non-toxic, low emitting cost that create an aesthetically pleasing environment, healthier and more comfortable living and working environment, therefore the students will feel more enjoying and motivated in their studies which may indirectly result in better performance in their study. Besides, the benefits of green building also improve the strain on local infrastructure, making things to work better than it should. Green buildings also seek to facilitate alternatives to driving, such as bicycling and public transport, which eases local traffic while encouraging personal health and fitness of students as well as reducing the limited parking slot available in the campus. Moreover, the beauty of green building not only protects the natural environment, it also increase the students overall morale and environmental ethic. Students will be proud of what is available in their college and this can significantly boost their interest in study. Lastly, the comfortable studies environment also improves the student's productivity in studies.

Plan

To further elaborate the ideas, we propose the following plan:

Energy Efficiency

Air conditioning had been the main source of cooling for the college before ceiling fan was being replaced, but actually air conditioner consumes much more energy compared to ceiling fans by 10 times or more. Ceiling fans

circulating the air in a room provides a gentle breeze and cooling with the correct placement and windows opening. By combining with a few open windows, it will keep the room comfortable; the aerodynamic of the building also affect the amount of air entered into the building which we can integrate into air canal of the building. Air that is circulated throughout the room is kept fresher and less humid, possibly helping to eliminate mold and mildew and musty smells in the room. Ceiling fans are also a great help in drying out tables and chairs that have been wet because moving air are proven to be better in drying that stagnant cold air. Moreover if you are wishing for low maintenance, ceiling fans are more preferable. Unlike air conditioners, there are no filters to clean or replace. Fans only require occasional dusting and wiping. Classroom should have automatic light sensors which save the college power by turning off the light when people have not been in room for a while, the lights should go out. However, once someone walks into the room, the light is turned on. For this to happen, the sensor has a threshold for motion that must be crossed before it turns the light back on. So, dust floating in the room should not make the lights go on, but a person walking in should. Besides, to increase the efficiency of the building envelope, we may use high-efficiency windows and insulation in wall, ceiling and floors. Based on our research, a high performance building which built up by recyclable and renewable material such as stone, green roof and wood will uses less operating energy, embodied energy has assumed greater importance and may make up as much as 30% of the overall life cycle energy consumption. Besides, the designer oriented windows, wall and place awnings, porches, and trees to shade the windows and roofs can be maximizing the solar gain in the day for the efficiency of

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solar energy system. In addition, effective and right window placement can provide more natural light to student and lessen the need for electric lighting during the day which can save electric cost and reduce unnecessary waste. Furthermore, the solar water heating which implements in the water heater can be reduce energy costs and more cost saving compare with electric water heater in some of the washroom.

Water Efficiency

From our research, toilets account for about 30% to 40% of domestic water use and up to 90% for offices and public conveniences, therefore the college's toilet flushing system should be designed to reduce water waste. The protection and conversation of water throughout the life of building may be accomplished by designing dual plumbing the recycles water in the toilet flushing. Our other suggestion is using the dual flush toilet which has two flushing options. The first option, which is meant for flushing fluids only, uses less water than the other option, which is meant for solids. Dual flush toilet utilizes a " wash down" flushing design that pushes waste down a larger diameter drain while conventional flush toilets employ a siphoning action that pulls waste down the drain, requiring the use of a greater amount of water than the push method. It has been proven to save up 67% of water usage in most homes. But due to more complex mechanism, it is more expensive than many other low-flow toilets. Besides, the high efficiency of urinal (HEU) is a fixture with a flush volume of 1. 9 liters or less. HEUs use approximately one-third of the amount of water used to flush the average urinal. Based on the average usage, we believed that a single HEU can save close to 18, 000 liters of water per year. Furthermore, the siphon flush

mechanisms offer a number of advantages over valve flush mechanism such as it is more consistent, reliable water efficiency over the long term because siphon unlike valves, are inherently leak-free and it is more easier to repair by just simply replace certain component. Moreover, the point of water treatment and heating improves both water qualities and energy efficiency while reducing the amount water in circulation. Use rainwater catchment systems or water conversation that collect and store water from roofs during the rainy session either for college use or at minimum, to slow down the discharge into the combined sewer system to minimize the incidence of overflows. There are many benefit of using rainwater catchment system in new building which are rainwater is a relatively clean and absolutely free source of water and is better for landscape plants and garden because it is not chlorinated, solve the drainage problem of the property while providing free water, and it can be used as a main source of water or as a backup water source for the college.

Material Efficiency

There are advisor available from the construction company regarding the material choice in order to accomplish the green building concepts. We have come up with a list of materials and procedure for material transport in the construction. Building material should be considered to be green include renewable plant material such as bamboo and straw, wood from forest, ecology blocks, dimension stone, recycled stone, recycled metal and other product that are non-toxic, reusable, renewable and recyclable. Building material should be manufactured off-site and delivered to site, to maximize benefits of off-site manufacture including minimizing waste, maximizing

recycling, less noise and dust. In short, the material efficiency also can be accomplished by utilizing material that meet the certain criteria which is durable, reusable, locally available, natural, plentiful or renewable and can be remanufactured.

Reduce Waste and Pollution

Green architecture also seeks to reduce waste of energy, water, material used during construction. Based on our research, in California nearly 60% of the state's waste comes from the commercial buildings. The most efficiency method to reduce waste and pollution is using landfills. When landfills are properly managed and landfill sites chosen carefully, it can minimize the environmental impact of waste as it degrades. Landfills save the energy that would be used to export waste, but landfills also serve as an additional source of energy. Well-designed buildings also help reduce the amount of waste as well. When building reaches the end of their useful life, they are typically demolished and hauled to landfills. Deconstruction is a method of harvesting what is commonly considered waste and reclaiming it into useful building material. Extending the useful life of a structure also reduce waste such as wood that are light and easy to work with make renovation easier. Thus, we suggest the chair and table which made by wood and considered spoil can be send to recycle and reconstruct the product again. Rainwater collector is used to store the rain water for the future and other usage such use in cleaning work, flush toilet and so on. Another alternative is converting the waste and wastewater into fertilizer which is cost saving and also useful for gardening. Furthermore, much construction and demolition waste can be recycled, for instance metal including copper

from wiring, plumbing and hot water tanks and brick and stones in good condition can be used in construction and student engineering project.

Improve Health and Productivity

The effect of indoor environmental quality in college new block on student health, well-being and productivity is an important topic in our society research. We believed that the indoor environmental quality can negatively affect student physical's health such as asthma exacerbation and respiratory allergies through poor air quality, extreme temperatures, excess humidity and insufficient ventilation and psychological health such as stress and depression through inadequate lighting, acoustics, and ergonomic design. Based on our research and studies, the student with such adverse health conditions are absent more often and less productivity than student without these conditions. For this reason, we concluded that the green building is able to address indoor environmental quality and student health concern by providing healthier building environment.

Interview

Interview with randomly selected student will provide the data that we need further. The interviews will be administered by our professional consultants. These interviews will determine your student's satisfaction with and views on the current building design and building environment. Student's opinions are invaluable to us as it will tell us their expectation and requirements of good building design and environment. The interview question will contains open and closed question and are attached for your reference and approval.

Schedule

The following schedule has been arranged: Interview Session March 1 - March 10
 Contracts March 12 - April 12
 Document Reviews and Revision April 13 - June 10
 Site Preparation June 15
 Construction July 25
 Finishing 2015 Q3 (July – End of September)
 Inspection 2015 Q4 (October – End of December)
 Launching of new Block 2016 January

Staffing

Green Environment Society has been actively in College Tunku Abdul Rahman for since 2009. We have planned to hire the Ban Lee Hin Engineering & Construction Sdn Bhd to help us to construct a new block in order to introduce green building concept to our college. This project will be conducted by Dato' Tony Looi Chee Hong, CEO of Ban Lee Hin Engineering & Construction Sdn Bhd. Ban Lee Hin began in 1974 as iron works contractor while Dato' Tony Looi has started working since 1995. In 1997, Ban Lee Hin embarked on civil engineering works, interior design and renovation work as One-Stop Solution Provider with the formation of Ban Lee Hin Engineering & Construction Sdn Bhd.

Budget

The breakdown of the costs of the green building approach is as follows:

Total

Construction materials RM 4, 000, 000. 00
 Construction wage RM 450, 000. 00
 Construction consultation RM 150, 000. 00
 Operation and Maintenance optimization RM 100. 000. 00
 Total RM 4, 700, 000. 00

Authorization

We strongly believe that our proposal will be able to save a lot of college wastage about energy and water and improving our college image. We will ensure that this green building concept is carried out to your satisfaction and meet the expectations of our college. If you accept our proposal, please sign the enclosed duplicate copy of this proposal and return it to us. Your concern is much appreciated. Thank you for giving us this chance to conduct green building concept for our college. Yours sincerely Tan Kian Long Manager Encs