Vernacular approach passive design strategy to achieve an optimum cooling effect ...

Business, Strategy

Common attack inactive design scheme to accomplish an optimal chilling consequence in Belum Rainforest

Abstraction

The intent of making a survey of common attack inactive design scheme to accomplish an optimal chilling consequence in Belum Rainforest is to understand how the past architecture manners can gives us an indicant of effectual inactive design schemes to better the criterion of life within a place by supplying a construction that is more energy efficient and comfy. In helping the proof of research, literature reappraisals based on the common architecture inactive design were conducted to heighten the procedure. First of wholly, the orientation on the site is really of import to near a good passive design onto the edifice. From the instance survey at Belum Rainforest Resort, the edifices are orientated in a really systematic agreement. Buildings are placed insistent with a consistent distance to let sufficiency air current flows into the edifice. Apart from this, shaded the out-of-door country with planting and supply the shading on the edifice to take down the land temperature. Besides, seting design can work as funnel chilling zephyrs and filtrate the strong air currents. The edifice layout, for illustration the window design, orientation of the gap and shading, roof discharge, raise the edifice in piles, provided the evaporative chilling system and the stuffs used on a edifice is of import because those design schemes would act upon the airing and accomplish optimal chilling consequence inside the edifice. In decision, a standard passive design is one that uses non-energized design characteristics to do the edifice clime responsive. It is

of import to observe that the optimal consequence can non normally be achieved by utilizing merely one scheme because the schemes would work best when an integrated attack is used.

1. 0 Overview of Belum Rainforest Resort

The Belum Rainforest Resort is located in the thick of tropical Eden, Pulau Banding, Perak. Belum Rainforest is one of Malaysia 's premier ecotourism vacation finishs. It is a nature lovers getaway finish where can being shut to the nature because it was surrounded by a beautiful lake position and jungle. It accomplishes theenvironmentwith arresting positions, escapade, relaxation and repose. Belum Rainforest Resort provide an chance for the nature lovers to see the beauty and enigma of the huge jungle, observe the beauty of the vegetations and zoologies and be intoxicated in the nature beauty scenery that can be found seldom in someplace else. Belum Rainforest Resort make up the rural landscape become more interesting and attractive with the common architecture edifice which is the old wing slang resort (phase 1) , Kampung House and the new flying modernism resort (phase 2) . Common architecture attack inactive design in their ornament, pick of stuffs used and their size and signifier to accomplish an optimal chilling consequence in the edifice.

In this paper will analyze about how common attack of inactive design scheme to accomplish an optimal chilling consequence in Belum Rainforest Building.

1. What is the demand for Common architecture to near inactive design?

2. How does the orientation of the edifice influence the airing and chilling consequence inside the edifice.
3. How does the common attack inactive design scheme influence the airing to accomplish optimal chilling consequence in the edifice?
4. How make the stuffs help to accomplish the chilling consequence in the edifice?
5. What is the similarity and differences of inactive design in the old wing resort (phase 1) and new flying resort (phase 2) in Belum Rainforest Resort?

2. 0 Requirement for Vernacular architecture to near inactive design

Natural and inactive methods nearing on a edifice is indispensable to do an indoor environment comfy with keeping a low temperature scope in a edifice. An optimal design house is non merely designed base on their residents for assorted practical demands but yet for a comfy indoor environment. In common architecture, it simplest signifier of turn toing human demands is successfully achieve a sustainable edifice with those natural and inactive methods and yet it besides encompassing the regionalism and cultural edifice traditions, supplying the construction more energy efficient.

In traditional manner, a common architecture edifice was been built with the natural resources around the site and have to do certain that those stuffs application would giving a good responsive to the clime to do the indoor environment comfy. Besides that, orientation of the edifice is considerable to do the edifice takes the advantages of climatic characteristics such as Sun

and chilling zephyrs. Orientation of the edifice is the basic application for a sustainable and inactive design decides the edifice layouts, window design, shadowing and etc.

3. 0 Building Orientation influence the airing and chilling consequence inside the edifice

Orientation of the edifice, on of the basic inactive design strategic should be see on the site because it is really of import to cut downing the energy ingestion and supplying the edifice environment comfortable. A good orientation of a edifice can assist to cut down the edifice heat addition and provided a good airing and chilling consequence onto the edifice. Because of the Sun rises on the E and sets in the West, all the edifices in Belum Rainforest Resort was orientated their long facade to the North and South way and short facade to the E and west way with a really systematic agreement for illustration every individual of the Kampung House and the stage 2 resort are confronting their entryway and life room on the North way and holding an enclosed facade on the West to forestall the edifice upper limit exposure to the sunshine. There will be a long roof shadowing on the E and west facade of the edifice while the North and the south facade will be decorated with short crucifix shadowing. Most of the gap would be placed on the North and south way due to the inactive design strategic to forestall the edifice most of the clip was been exposed to the sunshine and besides it can assist to cut down the heat addition of the edifice. In others manner, the edifices are placed insistent with a consistent distance to let sufficiency air current flows into the edifice. To accomplish high natural airing inside the

edifice, opening should confront on the strong air current way. For illustration, more gap was been placed on the North East way due to most of the clip at that place have strong natural air currents blows towards.

Due to the topography of Belum Rainforest Resort which is an island surrounded by the rain forest, the environing mountain was reclaimed as the higher topography comparison to the lower topography which is the location of Belum Rainforest Resort. Thus, the higher topography helps to barricade the Sun irradiate to the lower topography when the sundown. In regardless of the site contrast, the mountain was acted as a shading to profit the Belum Rainforest.

4. 0 Common attack inactive design scheme influence the airing to accomplish optimal chilling consequence in the edifice.

Based on this subject, the method of common attack inactive design scheme influence the airing to accomplish optimal chilling consequence in the edifice of Belum Rainforest Resort would be discussed. There are some of the common design scheme could be applied on the edifice to chilling down the edifice such as the evaporative chilling system, gable roof discharge, roof stack airing, huge gap, constructing rise in piles and the overhang for the shading.

4, 1 Evaporative chilling system

To accomplish a comfy environment, evaporative chilling system is one of the ways to do the environing environment ice chest with the evaporated

H2O vapour in the environing air. For illustration, in Belum Rainforest Resort, we can establish there is pool andswimmingpool been decorated in the courtyard outside the resort. As the H2O evaporated, about 2500 J of heat energy is consumed. It wet the environing edifice and the H2O pull out the heat from its environing country to do the environing ice chest. Evaporative chilling system is suited to continue outside the edifice alternatively of inside the edifice particularly is our state which is a really hot and humid to avoid the elevating of inside edifice humidness.

4. 2 Stack Ventilation and Roof Ventilator

Stack airing usually will be go oning in the common architecture house with the map of ventilate the inside and trapped the hot air underneath the roof and so cut down the heat addition inside the edifice. The air motion usually is from the high denseness country of air to a less denseness of air. The ventilator roof articulations or the Malay funnels shaped roof at each gable terminal allowed the hot air rises with perkiness inside the edifice and is infiltrated out therefore the temperature inside the edifice could be lower down and accomplish a chilling consequence inside the edifice.

On the other manus, roof blowhole besides could be found in the common architecture house. Due to the Phase 1 Resort in Belum Rainforest Resort is design base on the common architecture manner, the rectangular gable roof blowhole hole was been founded near to the extremum of the roof. The inactive gable roof blowhole map effectual as the natural air can flux in and out to the edifice.

4. 3 Opening

Huge fenestration is really indispensable for a edifice. It plays an of import function for wind circulation from outside to inside of the edifice. To accomplish a good passive design edifice, the orientation of the gap is really of import. Huge fenestration should be layout on the North and south facade of the edifice to forestall most of the interior surface country of the edifice been exposed to the sunshine. In Belum Rainforest, most of the North and south edifice facade are designed with operable huge fenestration such as the gap of eating house in Phase 1 resort and the Kampung house. Those operable gap helps to cut down the energy ingestion in the edifice and brings the natural airing into the edifice. There is besides some sort of inoperable fenestration from the Phase 1 Resort at Belum Rainforest Resort. The inoperable bamboo fenestration design act as a shading on the edifice facade and in the same clip it is besides an gap with could let the airing flow into the edifice.

4. 4 Stilt Building

Piles edifice are the edifice which is raised up by stacking over the dirt to the edifice land floor. It is one of the feature of common architecture manner. Chiefly, piles house is used to forestall house been flooded by H2O and forestall the wild animate being such as rat or bite to mount up to the edifice. In add-on, pile edifice besides present good itself in inactive chilling design with the method of air current flows under the edifice land floor. The good airing system enable the hot been exchange with the cold air and

therefore it maintain the edifice land floor ice chest all of the clip. By the same item, because the dirt under the edifice all of the clip was been shaded and less exposed to sunlight, it keep the land floor with low temperature and do the edifice environment lupus erythematosus with heat addition.

The saloon & A ; kitchen which connected with the Phase 1 Resort and the Kampung House in Belum Rainforest Resort was been designed with pile. Those edifice are full fill the demand of common architecture inactive design manner non merely with the application of aesthetic traditional design but besides with their inactive design strategic for illustration lower down the temperature of the land floor edifice to accomplish an optimal chilling consequence into the edifice.

4. 5 Overhang Roof

Overhang roof is the most simple and most obvious engineerings for salvaging energy to maintaining the edifice environing cool in the summer. Overhang Roof is portion of roof that extends beyond the walls. It functions as a roof shadowing to protect the facade of the edifice been maximal expose to the solar radiation. Larger overhang roof will be occurred in the E and west edifice facade while the North and south facade decorated with smaller overhang due to the place of the Sun rise and Sun set.

4. 6 Shadowing by tree and Vegetation

Planting a batch of trees on our environing country is the most good because seting can do our environment beauty and nicer, provided shadowing to our

environment which can cut down the sum of sunlight perforating into our edifice, better the environing air quality which can assist to filtrate the harmful air and supply O to do our environing fresh. In Belum Rainforest, trees was been planted in the surrounding of the edifice. The plantation make the environing looks really aesthetic and full of poetic feeling when walking through under the trees. Most significantly, those plantation plays an of import function to protect the edifice been extremely exposed to the sunshine. It acts as a shading of the edifice to take down the temperature of the edifice and the land temperature and besides can be used to filtrate the chilling zephyr and strong air currents.

1. Sustainable stuffs helps to accomplish the chilling consequence in the edifice

Choice of environmental friendly building stuffs is one of the indispensable design schemes in order to construct a sustainable edifice, add-on to accomplish a standard chilling consequence in a edifice. Green edifice stuffs have lightened the footmark of any building undertaking as they have lower energy ingestion comparison to others non-sustainable stuffs. Green edifice stuffs include bamboo, wood, stones or rocks and sand which can be found of course on Earth, and besides the usage of recycled stuffs, for case, bottles, bricks, steel and the similar. These green and harmless edifice stuffs are non-toxic, reclaimable, and able to renew and hold a extremely lasting. Bamboos, wood, which are both the bing stuffs on the Belum Rainforest Resort are been used as a wall, shadowing or barrier. The ground why bamboo and wood been chosen to utilize for the edifice stuff because the

energy embedded in their transit can be minimize and extracted and manufactured locally the edifice stuffs to the edifice site.

In Belum Rainforest Resort, bamboo is been used as a wall, barrier and shading. The agreement of the bamboo as a barrier or shadowing giving a high efficiency allowed the outside airing swimmingly flow into the edifice and by the same clip the sunshine can somewhat perforating into the edifice. for illustration, in the old wing resort, every individual window from the resort is been shaded with row of bamboo. It brings the advantages to the edifice which the energy ingestion on the edifice could be reduced. In add-on, bamboo is one of the edifice stuffs which is low heat absorbent. To do the edifice more sustainable and experiencing comfy with a low temperature, all the ceiling of the edifice are been decorated with bamboo. The ornament of bamboo as a edifice stuffs is sustainable, high efficiency and besides really aesthetics.

Furthermore, wood besides act as one of the sustainable edifice stuffs on the site. Using wood as edifice stuffs can easy cut down the heat addition inside the edifice because of the thinnest of light colour of the stuffs. For case, the Kampung House in Belum Rainforest Resort have a really high thermic efficiency because the edifice was built with wood wall, wood flooring and roof. Therefore, this sustainable stuffs make a really high chilling consequence in the edifice.

What is the similarity and differences of inactive design in the old wing resort (phase 1) and new flying resort (phase 2) in Belum Rainforest Resort?

The old wing resort which is phase 1 in Belum Rainforest Resort is design base on common architecture manner while the new wing resort which is Phase 2 is more modernism architecture manner. In comparative both resort which is phase 1 and phase 2, the inactive design strategic of stage 1 edifice would be more efficiency so the stage 2 edifice. First of wholly, the differences of both stage is the edifice stuffs. The envelope edifice in stage 1 most of all is built with wood and bamboo while the envelope edifice in stage 2 is all built with concrete and rage Earth. Old flying resort do good execute in inactive design comparison to the new wing resort base on the differences of their edifice gap. In the old edifice, there is more opening. There are row of bamboo act as a window shading in every individual resort room. The ornament make the facade looks aesthetic and besides lower down the energy ingestion of the edifice because of the window shadowing which can let a good airing flow into the edifice and somewhat incursion of sunshine into the edifice. For the new wing, there is less outside airing can be flow inside the edifice because of the enclosed concrete wall and less fenestration. Other than that, the temperature of old wing edifice would be more ice chest than the new wing edifice. The ground is the old wing edifice was surrounded with a batch of flora plantation comparison to the new wing resort which is missing of flora on the surrounding.

As a decision, Belum Rainforest Resort has to the full adopted common attack as a inactive design scheme to accomplish ideal chilling effects for the comfort of the residents in the edifice. Natural chilling attack gives advantages to human and besides our environing environment.

Orientation of edifice, flora as shadowing device, uses of natural edifice stuffs, more gaps confronting north and south way, elevate the edifice, circulation of air flow and the blending of edifice with topography were taken into considerations when the designer is planing and building the Belum Rainforest Resort. The installing of these inactive chilling devices in Belum Rainforest Resort are non merely helps to continue the site to the minimal detrimental degree, it besides helps to better our environing air quality asdeforestationis non needed, trees absorbs C dioxide and release O to assist to clean the air. These inactive chilling methods besides helps to salvage more energy as they have replaced those mechanical chilling devices which consume big sum of energy. Therefore, lesser emanation of nursery gasses. Greenhouse effects can be prevented as no harmful gasses are being released, earth surface temperature can be maintained, and human wellness will be improved.

Last but non least, inactive chilling attacks are required for every designers when planning, planing and building a edifice in order to make a cleaner and uncontaminated ambiance for our hereafter.