**BUILDING RELATED PROBLEM**

**1.0 INTRODUCTION**

There are several building related problem that will occur in building. Those building related problem such as building orientation design which interrelated to the building passive design approach. On the other hand, building related symptoms also classify as one of the cause on building related problem.

Those problems is a very important issue to be look into for a better living internal environment for the occupants who using the building. The problem that related to building will be discussed in further detail such as following.

**2.0 PASSIVE BUILDING DESIGN**

Below are the aspects that we always miss up when constructing a building. Thus, these aspects become one of the problems that haunt us during occupancies period. This is too late for us to relocate, redesign and rebuild the building that already occupied by people. It is a tough job for those consultants to overcome the problem if we notice and start concern about the problems during this stage.

**Passive building design such as:**

* Building planning and massing
* Building section
* Materials, components and assemblies
* Cliamte responsive strategies
* Daylighting, Ventilation, Humidity

**Building planning and massing**

The planning approach is a sensible response to environmental conditions created bythe site and the brief if this step is properly taken. A proper planning on entire design of the building will lead to the overall passive design concept to be fully optimized.

**Building section**

The north south section shows the principle aspects of the composition of the building and the environmental control intentions. Recordings of air temperatures in the building can provide the information to the designer whether any extension of opening should be added to the building for a better breathing of the building itself.

**Materials, components and assemblies**

The key aspects of the material selection are to use low cost and low maintenance components where possible. Materials are an very important criteria to be look into whether which material suit the building design the best. Different materials will contribute different heat gain to the building itself and this will affect the overall heat gain of the building, which named as Overall Thermal Transmitted Value (OTTV).

**Climate responsive strategies**

A proper design toward climate responsive will reduce the occupants worry toward the climate change. A proper design overhang on every opening will decrease the potential rain water to flow into the building. By doing this, the opening won’t be the issue to be look into when any climate changes.

**Daylighting, Ventilation and humidity**

This is the three aspects that the least concern from most of the designer and consultant during planning stage. Actually, these three “tiny” aspects contributes the most effect on the building when we are not properly concern about it. Daylighting design can be properly planned to fulfill the lighting requirement inside the building to reduce the energy consumption on lighting services.

For ventilation and humidity control as well, a proper planned ventilation approach such as proper design opening towards the orientation of the building to gain sufficient air into the building will lead the building towards a lower energy consumption requirement to cold down the building.





 *Lighting levels across the section showing the available natural light*

**3.0 BUILDING RELATED SYMPTOMS**

**What Building-Related Symptoms Are:**

As opposed to building-related illness where there are specific health complaints that are caused by a known problem, building-related symptoms (BRS), also called sick building syndrome (SBS) symptoms are nonspecific and cannot be traced to a particular cause. Building-related symptoms are generally characterized by the following:

* People in the same building complain of mucous membrane irritation, (such as eye, nose, or throat irritation) headache, dizziness, and difficulty in concentrating.
* The symptoms are relieved soon after leaving the building.
* The cause of the symptoms is not known.

When there are many people who complain that their symptoms seem to be associated with a particular building, that building may be labeled "sick." The problem with labeling a building as sick is that there is no agreement on the criteria that can differentiate between "sick" and "healthy" buildings. For example, there is no agreement on the number, pattern, severity, or frequency of symptoms; no agreement on how to measure symptoms, and not even agreement on what symptoms should be measured.

However, most people agree that indoor air quality (IAQ) complaints began to increase following the oil embargo of 1973. That is when homes and offices began introducing energy conservation measures such as insulation, non-opening windows, and super efficient HVAC systems, which did not exchange as much air as before (only 5 cfm per person as opposed to the 20 cfm recommended by ASHRAE). Perhaps energy conservation has led to less ventilation, allowing indoor pollutants to build up inside homes and buildings. However, during that same period, many changes occurred in office work, such as the use of computers and other new work technologies, which forced a change in office procedures and productivity. Coupled with the conservation measures and changing technology, there has been a dramatic increase in the number of workers in white-collar jobs. Because of these changes, ergonomic and organizational stress problems have also increased. Further complicating ongoing attempts to understand BRS, some observers have noted that BRS complaints are more common in air-conditioned than naturally ventilated offices.

According to Occupational Safety and Health Administration (OSHA), it is estimated that 30 percent of non-industrial buildings have IAQ problems. In addition, the World Health Organization (WHO) also has estimated that nearly one in three new and remodeled buildings worldwide will have IAQ complaints that lead to problems such as low morale, loss of productivity, and even absence from work. While the large majority of these will be comfort, rather than health related problems, 10 percent to 25 percent will be categorized as BRS (or SBS). In a random sampling of US office workers, 24 percent said there were air quality problems in their work environments, and 20 percent believed these problems affected their work performance.

**Causes of Building-Related Symptoms:**

Despite all the research done over the past 20 years about cases of BRS, it has been estimated that the cause has not been identified in more than 75 percent of cases. Buildings that have been alleged to have BRS problems include schools, laboratories, hospitals, and large, complex government buildings. Many of these are thought to be prone to IAQ problems because of their complicated and specialized HVAC systems. Buildings in the southeastern U.S. have additional IAQ concerns because of the hot, humid weather during their longer summers.

In newly constructed or recently remodeled home and office spaces, reports of indoor air problems during the first six months of occupation are common. Many of these health complaints are thought to be due to volatile organic compounds (VOCs), off-gassing from new building materials, and interior furnishings. However, in buildings that have been "sick" for years, the explanation may be with other problems such as mold contamination. A NIOSH study linked about half the cases of SBS to poor ventilation and the other half to a combination of things such as:

* Poor quality air in the area around the building
* Pollutants from office equipment such as copying machines and other electrical equipment
* Microbes such as mold and fungi
* Common Indoor Air Pollutants
* Ozone
* Formaldehyde
* Environmental tobacco smoke
* Dust
* Viruses
* Bacteria

**Symptoms Associated With Building-Related Symptoms:**

The number of people complaining of sick building-related symptoms is on the rise. Across the country, doctors are reporting that the number of patients they are seeing with BRS has increased by 40 percent in the past 10 years. Part of this could be due to increased awareness about the problem of poor indoor air quality. For example, media coverage of indoor air problems has increased the number of informational requests received by NIOSH. Following one network television report on the subject, NIOSH received over 6,000 phone calls and nearly 800 requests for investigations.

In addition to indoor air pollutants, BRS also has been found to be related to work characteristics such as workload, job reorganizations and job satisfaction. Common symptoms associated with BRS include:

* Headaches
* Nasal/sinus congestion
* Runny nose
* Sneezing
* Eye problems (dry, itching, tearing, or sore eyes, blurry vision, burning eyes, problems wearing contact lenses)
* Throat problems (throat irritation, sore throat, hoarseness, dry throat)
* Neurological symptoms (difficulty remembering or concentrating)
* Dizziness

Some people suffer more from the effects of BRS than others. For example, those who work at video display terminals for more than four hours a day miss work due to BRS 20 percent more than those who do not spend as much time at computers. According to a study, women miss 1.8 times as many days as men, smokers are absent 1.4 times more days than nonsmokers, and people with allergies miss 1.8 times more days than those without allergies.

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