

# Applied Study of Eco-Interior Concept in Lemongrass Restaurant, Bogor

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# Applied Study of Eco-Interior Concept in Lemongrass Restaurant, Bogor

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## ABSTRACT

The application of eco-interior to buildings and interiors has become a phenomenon and is required by developing environmental issues. Most restaurants in Indonesia have developed the waste zero management environmental issue. Environmental issues sustainable need to applicable for the interior and building space associated with the division of space. The development of restaurants in Jakarta is very developed and all require applying eco-design concept. Restaurants was established with a variety of that are quite interesting and make visitors feel comfortable in the restaurant. One of them is Lemongrass Restaurant founded in a natural modern restaurant with indoor and outdoor concepts as well as a green open area with a garden and pool concept. As a very important public facility and needs aspects of applied eco-interior. Seen from the whole building starting from architecture, interior, until the parts that are designed together with each other to become an eco-friendly tropical paradise. Certainly, Lemongrass Restaurant combines colors and tropical plants to make it very natural modern. Selection of special design styles to unite the design with the natural surroundings. The design concept of Lemongrass Restaurant is creating atmosphere with a touch of nature that is equipped with a variety of unique and 'eye catching' support sustain systems and materials.

**Keywords:** *Eco-interior, Environmental, Facilities, Public, Restaurant, Sustainable*

## 1. INTRODUCTION

Interior design as a unified whole of elements and design principles will create an atmosphere of space which is an expression of the desired concept to then be perceived by the occupants [1]. In a restaurant, this perception which will direct the mood and behaviour of visitors. The mood of visitors is the main goal of interior design from the restaurant to be achieved, which is to provide comfort, satisfaction, and experience. It will encourage to come back or recommend others to visit [2]. The development of restaurants in Jakarta and surrounding areas has been growing rapidly. Comes with various interior design concepts that are quite interesting and make visitors feel comfortable to linger in the restaurant. One of the restaurants that has a natural and comfortable concept is in North Bogor named Lemongrass Restaurant. Lemongrass Restaurant established as a modern natural restaurant with indoor and outdoor concepts as well as a green open area with a garden and pool concept. As a public facility is it very important and needs to have an applied aspect of eco-interior.

Eco-interior aspects which include lighting aspects, aspects of ventilation, aspects of energy efficiency, aspects of spatial organization, energy conservation, water conservation, material selection aspects, and other aspects will be the benchmark of analysis of this research. The eco-

design parameters that are used with 8 (eight) applied aspects that are supported are applied which are indeed carried out on the grounds of responding to environmental issues, and are carried out deliberately and attentively, so that it has a significant effect [3]. The concept of eco-design has indeed become a mandatory purpose for designers and architects in designing a public space or area. The eco-design parameters are used with eight applied aspects from architecture and interior sides.

The method used in this research is qualitative method. This research uses a qualitative research approach with a case study method and descriptive delivery. The research variables observed the indoor and outdoor restaurant areas with consideration of the applied aspects of the concept of environmentally friendly. The research method uses systemic analysis methods through descriptive analysis research methods. The implementation of descriptive methods is not limited to the collection and compilation of data includes analysis and interpretation of the meaning of the data [3]. How the eco-interior is applied in the restaurant area and how the classification of the applied application hierarchy is an issue will be discussed in this study.

### 1.1. Related Work

According to related research for eco-design research has been published in Journal Visual Number 12 Volume 2 year of 2017 with the title 'Green Concepts in the Lobby Lounge

Greenhost Boutique Hotel Yogyakarta' as well as several other studies relating to environmental issues and sustainable design at airports and hotels in several cities in Indonesia.

### **1.2 Our Contribution**

Providing scientific contributions to educational institutions in interior design and architecture regarding the field of interior design studies and human behavior which is an interdisciplinary study that will enrich the treasury of interior design and architecture. This research also provides benefits to the commercial facilities, especially the target group of space users in restaurants both users and managers to get a more appropriate quality of space facilities. Especially, to improved and developed the eco-interior aspects in the restaurant area.

### **1.3 Paper Structure**

The paper is organized as follows. Section 2 introduces research object identification, applied analysis of eco-design concepts from building and interior sides. Building and interior sides consists of many eco-design aspects such as space organization, material selection, lighting system, ventilation system, water sanitation, pollution in space, service management. Section 3 concludes the paper and presents direction for future research.

## **2. BACKGROUND**

### **2.1. Research Object Identification**



**Figure 1** Front Building of Lemongrass Restaurant (by Author Team, 2019)



**Figure 2** Middle Building of Lemongrass Restaurant (by Author Team, 2019)

|                |                                                        |
|----------------|--------------------------------------------------------|
| Project Name   | : Lemongrass Restaurant                                |
| Target         | : All facility users aren't age restricted             |
| Project status | : Real - architecture / interior                       |
| Type           | : Cafe and restaurant                                  |
| Location       | : Jalan Pajajaran No. 21, Bogor Utara, West Java 16153 |
| Architect      | : Leo Einstein Fransiscus                              |

The physical boundaries of Lemongrass Restaurant:

|            |                                       |
|------------|---------------------------------------|
| North side | : Botany Square                       |
| South side | : Jalan Pajajaran and Hotel Pajajaran |
| West side  | : Shell Gas Station                   |
| East side  | : The Halona Coffee                   |

The overall area of the restaurant around 1300 m<sup>2</sup> has a back garden or rather inside the building. Operating hours of this restaurant are from 10.00 am until 10.00 pm West Indonesia Time Zone.

### **2.2 Applied Analysis of Eco-Design Concepts in Lemongrass Restaurant Building**

Lemongrass Restaurant is a restaurant that provides a variety of dishes from the archipelago to peranakan dishes and carries a concept of a restaurant that is 'Tropical Paradise' which gives a comfortable and unique impression that is in the middle of Bogor city which gives a green atmosphere [8]. The green and soothing appearance of the building is a hallmark of the concept of this restaurant building [4]. The restaurant building has a facade like a residential building with two levels. It has a large courtyard that is used as a parking lot. The grounds of this restaurant are surrounded by a black iron fence as high as around 63 inches. This parking lot can accommodate approximately 50 cars and motorbikes from managers, employees and visitors of this restaurant.





**Figure 3** Lemongrass Restaurant Parking Area (by Author Team, 2019)

The restaurant building is surrounded by plants and greenery. There is a pool of water to support the concept of a tropical garden from the concept of architecture [5]. The material used gives an accent to the concept of green and eco-tropical. The parking area uses a brick block that has a high-water absorption (Figure 3). In order to form a unity with the environment, designed a small pool of water for artistic elements and tranquility [8].



**Figure 4** Water, Nature and Environment (by Author Team, 2019)



**Figure 5** Facade of Lemongrass Restaurant Building (by Author Team, 2019)



**Figure 6** Entrance to the Lemongrass Restaurant (by Author Team, 2019)

The facade of this restaurant building looks like a minimalist house building with a small pool and garden in front of it (Figure 4 and Figure 5). The entrance into the restaurant through the road like a corridor / alley that is on the left and right side planted with green leaves creeping surrounded by rocky walls (Figure 6) [8].

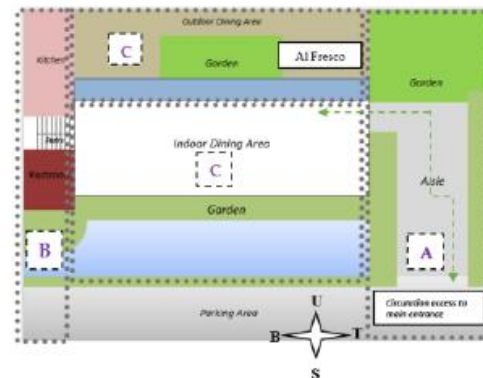
### **2.3 Applied Analysis of Eco-Design Concepts on Lemongrass Restaurant Interior**

Applied aspects the concept of eco-design is affected by several aspects supporting interior spaces:

#### **2.3.1 Space Organization**

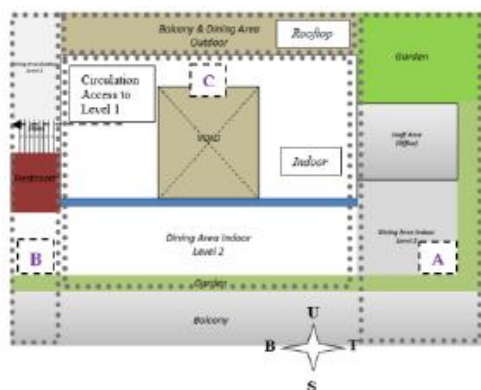
The restaurant building is divided into 4 (four) main rooms on the 1st and 2nd Floor, namely (Figure 7 & Figure 8):

1. Indoor main dining room
2. AI fresco dining room
3. Indoor second floor dining room
4. Rooftop dining room.
5. Pantry and Kitchen



**Figure 7** Lemongrass Restaurant Space Organization Floor 1 (by Author Team, 2019)

Upon entering the restaurant, visitors will walk through a corridor that is designed to look like a forest, besides the sound of the water from the pond, and beautiful greenery. The concept of environmentally friendly is felt by visitors through the arrangement of the organization of space and its circulation pathway that provides a comfort impact for visitors [5]. In the division of the area on the 1<sup>st</sup> floor it can be seen that this building is a square with a balanced area so that indirectly the concept of environmentally friendly in this restaurant can be seen from the arrangement and division of the areas inside [4]. Grouping areas in restaurants consisting of two levels along the north and east sides of the U-shape building. This restaurant has a balanced amount of green area with a dining area. Building A orientation faces the central part directly facing the park area (side of Building C) and facing the building B. Building C orientation provides opportunities to be able to enjoy the artificial nature that is presented through parks that are equipped with various types of trees, water pools and groundcover. Circulation in the building area B and C is obtained from the front and back sides and the hallway that connects visitors from the outside building to the inside which at the same time directly provides natural air circulation. Access to the second floor of Building A and building C must use a stair facility located at the northeast end (Building B).



**Figure 8** Lemongrass Restaurant Space Organization Level 2 (by Author Team, 2019)

The 1<sup>st</sup> floor is for the toilet, kitchen and stair area to the 2<sup>nd</sup> floor. While the upper floor functions as a multipurpose dining area that can be used for small meeting activities, discussions, and is an outdoor dining area. On the second floor the circulation of the building, the user and the air forms of the U-shape building make the air circulation is good. The void's function as air circulation from the 2<sup>nd</sup> floor to the 1<sup>st</sup> floor (building C). On the 2<sup>nd</sup> floor the entire area is also surrounded by greenery so that the concept of eco-design feels that brings a natural atmosphere and on the back side there is an outdoor dining area called the rooftop dining area.



**Figure 9** Indoor Dining Room (Main) 1st Floor (by Author Team, 2019)



**Figure 10** Pantry and Kitchen on the 1st Floor (by Author Team, 2019)



**Figure 11** Al Fresco Dining Room on the 1st Floor (by Author Team, 2019)

Located on the back side of the building C, this dining area is referred to as Al Fresco which in general terms refers to dining together outdoors and an open-air atmosphere [6]. The phrase "Al Fresco" is taken from the Italian language which means cool air. The Al Fresco dining area spoils the eyes of visitors with an open area that provides freshness. One of the unique elements in this area is its reflective water pond which shows the shadows and mosaics formed at the bottom of the pond.



The dining room consists of some furniture such as sofa chairs for the dining area and communal dining area with a garden that surrounds. The concept of eco-design in the organization of space on the 1<sup>st</sup> and 2<sup>nd</sup> floors is very pronounced. Starting from the relationship between the outdoor and indoor areas, the relationship of all elements of interior design with nature and the good air circulation in this restaurant [6].

### 2.3.2 Material Selection

The concept of material in this restaurant has started to apply the principle of reuse and recycle [9]. The principle of reuse in the 1<sup>st</sup> and 2<sup>nd</sup> floor area is implemented with the use of materials that have undergone a process of recycling and accessories with the concept of 'antiquity' such as: the use of mirrors, old-fashioned artwork accessories, on walls and floors made of natural stone material such as clam shells as material floor with a rough surface that again shows aspects of the tropical concept. Some plants in the dining indoor area are mixed between original and artificial plants. On the wall area near the toilet and stairs using a partition of used wood which is then finished again by painting murals with paint media.



**Figure 12** Material selection of Wall (by Author Team, 2019)



**Figure 13** Material selection of Floor 'Tropical Concept' (by Author Team, 2019)

The principle of reduce is also implemented in restaurants using pallets and recycled wood on walls and floors. The wall on the second floor is dominated by cream-colored natural stones combined with recycled wood as an accent. On the ceiling, it is given a natural impression as possible with exposed concrete material and iconic recycled plywood wood as the ceiling [10]. There is the use of

ironwood material on tables and chairs combined with rattan and iron construction. Chairs and tables in this restaurant aren't uniform in shape and color but produces as its own uniqueness.



**Figure 14** Material Selection of Furnitures (by Author Team, 2019)

### 2.3.3 Lighting System

The lighting in this restaurant is designed with the aim of conserving energy by optimizing natural lighting during the day with advantages of the U-shape building. The dining room on the 1<sup>st</sup> floor in the middle has a void connected to the 2<sup>nd</sup> floor so that it provides the advantage of getting natural light. The outdoor dining area which is on the front and middle side get enough natural light directly [10].



**Figure 15** Natural Lighting in Dining Area 1<sup>st</sup> Floor (by Author Team, 2019)



**Figure 16** Artificial Spotlight Led Lighting for Wall Accents (by Author Team, 2019)

For the 1<sup>st</sup> and 2<sup>nd</sup> floor during the day reduce usage of artificial lighting. The artificial lighting in the form of led spotlight is only as accentuation in the room to provide atmosphere of warmth and comfort. Lighting in the pantry and dining area also uses an indirect lighting system that produces soft and warm lighting to enhance the comfort of guests [10]. The connecting stairs from the 1<sup>st</sup> to the 2<sup>nd</sup> floor also have a glass roof for natural lighting.



**Figure 17** Natural Lighting with the 'Skylights' from Glass Roof Construction (by Author Team, 2019)

#### 2.3.4 Ventilation System

Vulnerability extends to natural ventilation, this is implemented in the form of building A and building B which use U-shape, with the building C have void in the middle on the 2<sup>nd</sup> floor make circle circulation in this restaurant (Figure 7 and Figure 8). Sides of Building B also have natural ventilation (Figure 20). Building construction with many openings and open hallways. The material used and the surrounding plants also support the cool air in this restaurant [3].



**Figure 18** Open Area in 1<sup>st</sup> Floor (by Author Team, 2019)



**Figure 19** Ventilation System in The Toilet 1<sup>st</sup> Floor (by Author Team, 2019)

The air temperature condition in Lemongrass restaurant is generally quite comfortable and moderate humidity level. The shade factor is supported by the large number of open areas, greening of trees and plants that produce a lot of oxygen. This high humidity factor is influenced by the location of restaurants located in urban centers on Jalan Raya Padjadjaran.

#### 2.3.5 Water Sanitation

This restaurant hasn't implemented the eco-design principle in wastewater management. The unavailability of rainwater reservoirs and household wastewater which are then processed through filtering to produce water that is safe enough to water plants. But for the toilet drainage system, the water has been regulated so that it is recycled to water the surrounding plants. For water in small ponds and large ponds near the Al Fresco dining room still must be replaced periodically and cleaned [3].

#### 2.3.6 Pollution in Space

The application of this principle is oriented to this restaurant by using materials that minimize all negative impacts for the environment. Some parts of the decoration elements that use wood materials are left as is or without finishing [10]. Likewise, element walls and columns in the hallway, doors, partitions and furniture without paint finishing. It is called finishing exposed concrete. Recycled wood is also installed without the use of chemicals.



**Figure 20** Recycled Wood and Exposed Concrete (by Author Team, 2019)



### 2.3.7 Service Management

The service system at this restaurant hasn't implemented self-service. For the food, all food systems are ordered in advance and then when it is finished will be carried by the waiter. The raw material for making food doesn't use the planting, picking and harvesting system itself. Plants around the restaurant, both inside and outside the restaurant area, have not been widely cultivated as plants that can be consumed by visitors in serving food. The restaurant doesn't have a plantation for the basic ingredients of the food served.

### 3. CONCLUSION

Lemongrass Restaurant building is a renovated residential building with the theme of tropical paradise with a modern and elegant touch but a very thick natural feel. Based on the applied aspects of the eco-design of the building and interior of the Lemongrass Restaurant it can be said to be environmentally friendly. This building feels very tropical impression with a variety of open parks, diverse furniture colors, various recycled wood accents, and unique murals that make people feel the freshness and comfort of the tropical paradise the city of Bogor.

The interior of Lemongrass restaurant has central point without separation and makes people feel closer to the nature. All interior elements blend and support the green concept of the city of Bogor. The combination of furniture arrangement, lighting and air circulation as well as movement has implemented an eco-design aspect. Seen from the whole building, from architecture to interior, to the landscape, it is designed to be integrated into one another to become a tropical paradise. Surely modern touch can't be separated from buildings filled with tropical colors and plants. The choice of design style specifically unites the design with the natural surroundings.

The design concept of Lemongrass Restaurant carries a unique and 'eye catching' theme with a touch of nature that is packed with various attractive and environmentally friendly material support. Water sanitation and housing management aspects can be developed following existing regulations. These two aspects must be developed and improved for the sustainability of this restaurant in the city of Bogor. It is hoped that the development of environmentally friendly aspects of Lemongrass Restaurant can become one of the references for environmentally friendly restaurants in Indonesia.

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