SIMPLE HOUSE FRONT FENCE HIGH RELATIONSHIP ON ROOM LIGHTING

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ABSTRACT

Simple Residential House Developers usually build in a typical manner; both size, shape and size. Room lighting is given in the form of windows, the area is also typical. So that when determining the height of the front yard fence, many problems arise regarding the requirements for the amount of light that enters the room. Lack of room lighting can cause bad consequences such as; eye fatigue, mental fatigue, sore eyes, eye damage etc. To overcome this, it is necessary to study the requirements for the amount of lighting in the room on the influence of the height of the front fence. This study was carried out in the form of measurements/observations in housing "X" in Denpasar. The study was carried out by studying the literature which required rules for the angle of interference in room lighting in residential homes. Then the data obtained was analyzed by linear regression, making it easier for each owner or occupant of the simple house to estimate the height of the walls. Determination of the height of the fence according to the function of the room against the planned disturbance angle. The result is for a jamming angle of 18°. The Y value as the height of the fence is 0.325X-0.014, for a disturbance angle of 24°, the Y value is 0.445X-0.0005, for a disturbance angle of 30° the value of Y is as high as 0.577X-0.0005, for a disturbance angle of 37.5° the value Y is 0.767X-0.0009 and the disturbance angle is 45° as high as the distance between the fence and the wall of the room (X = distance from the fence to the wall of the room).
It can be concluded that by applying this linear regression formula, the height of the front fence of the house can meet the room lighting requirements. It is recommended that residents of simple houses who want to build a front fence apply this simple linear regression formula.
Keywords: front fence, lighting disturbance angle, linear regression.

1. INTRODUCTION

Simple Residential Developers usually build typically; both size, shape and size. Room lighting is given in the form of windows, the area is also typical. So that when determining the height of the front yard fence, many problems arise regarding the requirements for the amount of light that enters the room. Lack of room lighting can cause bad consequences such as; eye fatigue, mental fatigue, sore eyes, eye damage, and so on. To overcome this, it is necessary to study the requirements for the amount of lighting in the room on the influence of the height of the front fence.

2. RESEARCH METHODOLOGY

The object discussed is the height of a simple house fence related to the amount of lighting required for the function of the bedroom. The method used is a study based on field data and a review of the literature. Linear regression statistical test to obtain the formula for the height of the fence according to the angle of disturbance.

3. RELATED RESEARCH/LITERATURE REVIEW

Factors that affect room lighting
Many factors influence the lighting of a room, including:

a. From inside the room
   - Room function, room area, room height, room condition (clean, dirty)
   - The shape of the room (widened, elongated)
   - Surface conditions (rough, smooth/slippery): walls, floors, ceilings

b. From outdoors
   - angle of light interference, eaves/roofing, fence (high-low)
   - fence (type of surface, color of fence), type of fence (massive, transparent), type of material
   - window (type of glass/coating, its area), opening position (center, left-right side)

Of course, the natural lighting factor itself will also have an effect, such as the position of the room relative to the trajectory of the sun, especially the position of the openings or windows, as well as the angle at which the light falls from outside. However, the review of this paper is limited to the study of the height of the fence in relation to the ratio of the area of the lighting opening to the room, especially the bedroom in a simple building.

4. RESULTS AND DISCUSSION

A room that does not get lighting according to its functional requirements can cause bad things. The consequences of poor lighting include the emergence of fatigue in the senses of the eye in the form of fatigue; mental exhaustion; aches in the eye area including pain / sore in the eyes, eye damage and can also cause accidents. Therefore we need a room design that really meets the lighting requirements for the function of the room. As a general guideline in determining the angle of interference in relation to the window area requirements for the room area are as follows:

Table 1. Interference Angle and Illumination Area Ratio - Room

CORNER OF INTERRUPTION	R. SLEEP	KITCHEN	R. FAMILY
< 18°	0.11	0.13	0.14
18° - 30°	0.13	0.14	0.17
30° - 45°	0.14	0.17	0.20
> 45°	0.17	0.20	0.25

Source: Van der Meijs, 1983. Building Physics

Fence Height Problem in "X" Residential Denpasar

Acquisition of data in the field namely housing "X" in Denpasar which is the third phase of development from previous years. There are two types of simple houses offered by the developer, namely type 36 with a land area of 120 m2 and type 45 with the same land area. With further data as follows:

Table 2. Data on the Condition of the Front Bedroom in "X" Residential Denpasar

No.	Front Bedroom	Type 36/120	Type 45/120
1	Room size (m2)	9	10.5
2	Open window area (m2)	0.92	0.92
3	Ventilation area (m2)	0.23	0.23
4	Total area of lighting openings (m2)	1.15	1.15
5	Room-illuminance ratio %	0.13	0.11
6	Distance from wall to outside site (m2)	3	2.5

The developer offered the house without a fence. So then the owner is left to build the fence of his house. From the point of view of fulfillment of taste, the owner does get freedom in terms of planning the shape and height of the yard fence. However, this will certainly cause problems when viewed in terms of the ratio of area lighting requirements. This is because for type 36/120 the ratio of room illumination is in accordance with table 1 indicating the disturbance angle is at an angle of 18°. Of course, in this case the owner cannot be careless in planning the height of the fence if the lighting-to-room ratio is maintained.

In order to get an idea or approach regarding the height of the fence according to the requirements of table 1. Above, below is a study of the calculation methods. Namely by tangential method to get a table, and then to facilitate the calculation if without a table, the linear regression equation method is used. Linear regression is a statistical way of applying a certain variable obtained from previous data.

Fence Height Calculation by Tangential Way

From these general guidelines, we will look for the relationship between the height of the fence so that it can still meet the requirements for the ratio of window area to room area. By utilizing ***the tangential formula*** , if two variables are known, such as the ratio of the window area to the area of the room (R) and the distance between the walls of the room and the planned position of the fence (X), then the height of the fence (Y) will be obtained by adjusting the disturbance angle in table 1 below. on.

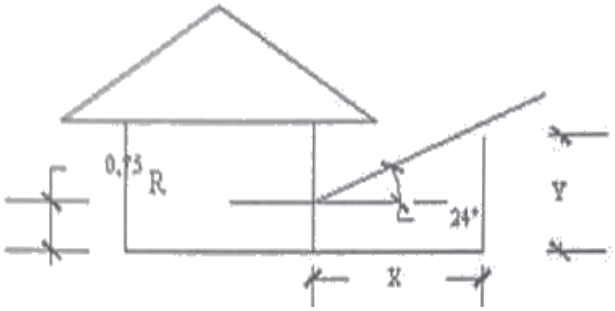

Figure 1. Fence Height Calculation Variables

By making a sequence of X distance data from 2m - 2.1m – 2.2m ... up to 8m and the beam interference angle according to the requirements in table 1 above, Y size will be obtained through the tangential formula, of course by adding the number 0 first, 75 m (working plane height). Also, one cannot forget the height of the floor of the room from the ground on which the front fence is built. This floor height needs to be added to determine the height of the fence from the yard.

Fence Height Calculation by Simple Linear Regression

In order to simplify the calculations in determining the height of the front fence of the house, try to find it tangentially first at various disturbance angles such as 18°-24°-30°-37.5° and 45° as has been done above. From the results of the values obtained through tangential, these data were analyzed by linear regression. Through the use of the formula Y=b1 X + bo which can now be easily processed using *the SPPS 10 software program.*

The results of the linear regression analysis of the height of the fence (Y) obtained from the previous data are as follows;

Table 3. Linear Regression Analysis Results for Fence Height (Y)

No	Interruption Angle	Fence Height Regression Formula (Y)	Information
1	18°	0.325 X - 0.014	-
2	24°	0.445 X - 0.0005	-
3	30°	0.577 X - 0.0005	-
4	37.5°	0.767 X – 0.0009	-
5	45°	X	Same as X distance

Utilization of the Fence Height Linear Regression Formula (Y)

As an example that has been recorded from the field, we try to apply the fence height formula (Y) above. By knowing the ratio of room lighting (R) of 0.13 for type 36/120 and 0.11 for type 45/120

5. CONCLUSION

The conclusions that can be drawn from the above discussion include:

1. By means of simple linear regression, the height of the front fence of a simple house can be predicted;
2. This prediction has been able to meet the requirements for the ratio of window area to room area;
3. The greater the ratio value of the room lighting area (R), the higher the maximum height of the fence (Y). The further the distance between the room and the location of the front fence (X), the higher the maximum height of the front fence.

Thus the relationship between the height of the front fence of a simple house and the room lighting.

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