

Design of House and Architect Office Against Pandemic Covid-19

Anugerah Bagus Wicaksono¹ Rudy Trisno^{1,*}

¹Department of Architecture, Faculty of Engineering, Tarumanagara University

*Corresponding author. Email: rudyt@ft.untar.ac.id

ABSTRACT

Creating a building design customized to survive the Covid-19 pandemic can be useful for an architect working at home. This report will analyze to minimize the influx of viruses from outside the house brought in by the occupants of the house itself, both from clothing, bodies, and goods carried. To increase the house's resilience to the Covid-19 virus and in this study is highly recommended by using a method of maximizing natural lighting, air circulation, and circulation air circulation. Also, still pay attention to the aesthetics of the space, both interior and exterior. It can be concluded that from the three discussions, it is essential to be able to prevent the transmission of the Covid-19 virus either from workers coming from outside the house or dirty air entering the house.

Keywords: Architect, air and lighting, COVID-19, home office

1. INTRODUCTION

By early 2020 Covid-19 had already spread in Wuhan, causing a stir that spread throughout the world. And from various countries directly implement the Protocol to Minimize the development of Covid-19 following the recommendations of the World Health Organization (WHO), such as washing hands, not gathering, and doing Large-Scale Social Restrictions / PSBB up to lockdown [1]. The problems that occurred during the Covid-19 pandemic in Indonesia significantly affect the physical condition of even many lives that have died. Indonesia is currently contributing to the second-highest death rate in Southeast Asia [2].

The impact of Covid-19 is not only on physical condition but also affects the economy of individuals, households, companies, even significantly affect the economy of a country with a considerable scale graft both nationally and even globally. And in Indonesia, it was announced that the virus was affected by President Joko Widodo on March 2, 2020. The National Disaster Management Agency (BNPB) specifically referred to Covid-19 as a non-natural disaster [3]. With the news announced, many workers enforced Work From Home, including for an architect was also put in place [4]. And here I take research on the design of the architect's house because, in this pandemic condition, an architect must be able to make a house into a healthy office and can apply the regulations against covid-19 following which rules. Because an architect must also have an office to conduct meetings, designs, and others because it is not just coming to the project. And how to minimize the entry of viruses from small things that can have a significant impact.

2. MATERIAL AND METHOD

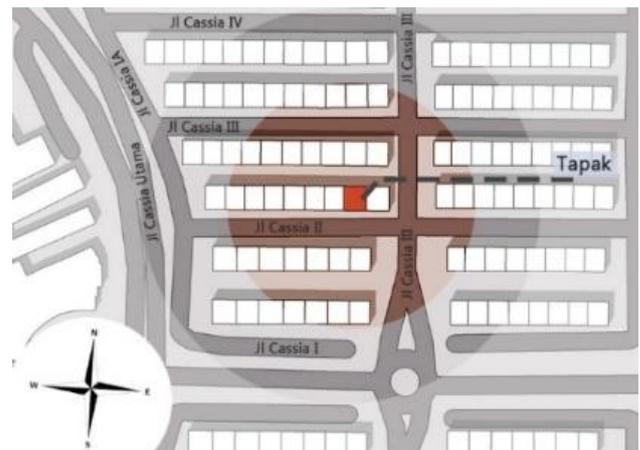


Figure 1 Location, East Jakarta.

Source: cadmapper.com

The location of the site is located on Jl Casia II, Cakung, East Jakarta; here, the face of the building facing southwards will have an impact on the entry of natural lighting rays from the overall face of the building at the rising of the sun from the east. And the house is 15 x 6 m² and inhabited by 1 father, 1 mother, 2 children, and 1 housekeeper.

Most architects will spend time in their workspace. However, this activity will create a flow of air that settles in one room. Not only thinking about activities but how to minimize dirty air and viruses that will settle in one room by playing with the circulation of lighting and air in the workspace [5, 6]. And most of the 80-90% of people's daily

3.2. Air Circulation

For air circulation is also made the same as natural lighting with the making of each room that has an opening to drain clean and dirty air, and also make use of open space inside the building to get good air circulation (Figure 3)



- | | | |
|--------|-----------------|---------------------|
| Note : | 1 : Workspace | 7 : Front porch |
| | 2 : Dining room | 8 : Stair area |
| | 3 : Kitchen | 9 : Children's Room |
| | 4 : ART Room | 10 : Toilet 2 Floor |
| | 5 : Family Room | 11 : Toilet 1 Floor |
| | 6 : Main room | 12 : Rear Terrace |

Figure 4 Pieces of air circulation.
Source: Documentation Author 2020

3.3. Movement Flow Circulation

Movement circulation is made into two flows for home users and employees of the office by creating two stairs at the front of the house and at the back of the house to distinguish the flow of activity between home users and office employees so as not to collide with new normal conditions against the covid-19 pandemic.

- **Residents:** the flow of the house occupants can be seen from the yellow line in figures 4a and 4b.

- **Workers:** the flow of workers can be seen from the red line for the architect workers and the purple line for ART in figure 7a.



Figure 5 Circulation of Floor Plan Movement 1st Floor
Source: Documentation Author 2020



Figure 6 Circulation of Floor Plan Movement 2nd Floor
Source: Documentation Author 2020

3.4. Final Project Result

From a method that the author designed for residential buildings and offices by creating a vent to get natural lighting and air circulation, the author also uses it to be an aesthetic in the interior by playing the shadows that are made from the natural lighting (Figure 5).



Figure 7 (a) Backyard



Figure 8 (b) Front stairs



Figure 9 (c) Main bedroom



Figure 10 (d) Family room



Figure 11 (e) Exterior design

Note :

Figure 5. (a) : In this rear patio area the lighting enters to the maximum because to maximize the natural lighting that will enter the dining room and also the work space, as well as for circulation in the kitchen area.

Figure 5. (b) : In the front porch area there is a vent for air circulation and used for an aesthetic to form a shadow created from incoming light.

Figure 5. (c) : In the main room there are openings to drain air circulation.

Figure 5. (d) : In the living room there is a large opening to give maximum lighting, because this room is used for gathering.

Figure 5 (e) : From a vent made will create an icon on the building because it uses the form follow function method.

Figure 12 Interior and exterior
Source: Documentation Author 2020

4. CONCLUSION

To help the problem caused by the Covid-19 virus against an economy from the point of view of a person who works as an architect, one of them is to create a house that is also used as an architect's office, by separating a place to work and a place for a residence.

Of all the discussions the author has made about air circulation, natural lighting, and a flow of movement between workers and the house residents. It can be concluded that from the three discussions, it is essential to be able to prevent the transmission of the Covid-19 virus either from workers coming from outside the house or dirty air entering the house. By maximizing an opening or ventilation of the house, it will be beneficial to remove polluted air to not survive or settle in the room.

As for this design, by using a form follow function method so that the shape of the building must adjust to the current state to create a healthy home. However, anesthetic is still taken into account from a vent that has been made, can be used again to create a shadow game to create aesthetics in the building.

REFERENCES

- [1] O. Mungkasa, "Bekerja dari Rumah (Working From Home/WFH): Towards a New Order/Menuju Tatanan Baru," *The Indonesian Journal of Development Planning*, vol. IV, p. 127, Juni 2020.
- [2] WHO, "https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200502-covid-19-sitrep-103.pdf?sfvrsn=d95e76d8_4.%20Diakses%20pada%20tanggal%2002%20Mei%202020." May 2 2020. [Online]. [Accessed November 12 2020].
- [3] A. Taufik and . E. Avianti, "The impact of the covid-19 pandemic on businesses/Dampak pandemi Covid-19 terhadap bisnis," *Journal of self-employment development/Jurnal pengembangan wiraswasta*, vol. 22, pp. 22-23, 1 April 2020.
- [4] R. Sjarief, July 31 2020. [Online]. Available: [https://real-rich.org/2020/07/31/pandemi-dan-pengaruhnya-ke-arsitektur/.](https://real-rich.org/2020/07/31/pandemi-dan-pengaruhnya-ke-arsitektur/) [Accessed 18 December 2020].
- [5] T. A. I. o. Architects, "Reopening America: strategies for safer buildings," *AIA_Public_Health_Briefing*, p. 7.
- [6] R. Trisno and F. Lianto, "Relationship Between Function-Form in The Expression of Architectural Creation," *Advance Preprint*, pp. 1-5, September 2019.
- [7] T. Widjaja, . M. S. Muntini and T. Suhartanto, "Responding to the New Life Order in the Post-Covid-19 Pandemic Through the Green Healthy Building/Mensikapi Tata Kehidupan Baru Di Masa Pasca Pandemic Covid-19 Melalui Green Healthy Building," 20 may 2020. [Online]. Available: www.its.ac.id. [Accessed December 1 2020].
- [8] A. F. Wibisono and A. K. Huda, "Journal of Innovation and Entrepreneurship/Jurnal Inovasi dan Kewirausahaan," *Efforts to increase healthy home knowledge/upaya peningkatan pengetahuan rumah sehat*, vol. III, no. 1, pp. 17-18, Januari 2014.
- [9] K. Thalita Kumala, *Characteristics of natural lighting and its suitability/Karakteristik pencahayaan alami dan kesesuaiannya*, vol. 8, pp. 208-216, 19 Oktober 2017.
- [10] R. Trisno and F. Lianto, "The Meaning Of Natural Lighting on Altar Case Study: Cathedral Church and Church of The Light," *International Journal of Civil Engineering and Technology (IJCIET) Volume 9. Issue 12, December 2018*, pp. 209-213, 2018.
- [11] J. Muchlis Alahudin, "Environmental conditions for thermal comfort/Kondisi lingkungan sekitar terhadap kenyamanan termal," *Journal Ilmiah Mustek Anim Ha*, vol. 3, pp. 25 - 27, April 2014.
- [12] B. Chandra, , R. Trisno, S. Gunanta, N. Widayati and F. Lianto, "The Application of Passive Design Chart on the Analysis of Natural Ventilation of Low and Middle Income Flats Case Study Sky View Apartment and 'Rusunawa' Manis Jaya, Tangerang," *Journal of Physics: Conference Series*, vol. 1179, pp. 1-9, 2019.