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## Study of building typology of school constructed during the Dutch Colonial Period in Indonesia. Case study of Hoogere Burgerschool (HBS) in Bandung

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# Study of building typology of school constructed during the Dutch Colonial Period in Indonesia.

## Case study of Hoogere Burgerschool (HBS) in Bandung

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**Abstract.** Bandung is one of the most important colonial cities in Indonesia. In the early 20<sup>th</sup> century the capital city of Dutch East-Indies Government planned to move in Bandung. Critical infrastructures were intensively built during that period, such as streets and railways, houses, governmental buildings, train stations, hospitals and educational facilities. Besides the famous campus of Technische Hoogeschool te Bandoeng (ITB), still in the same period, several schools were also constructed. One of the most important schools was Hoogere Burgerschool in Bandung (HBS Bandung), now SMUN 3 and 5, Bandung designed by Charles Prosper Wolff Schoemaker and constructed in 1915. HBS Bandung was the fourth HBS constructed by Dutch East Indies Government, therefore became important and put itself as a reference for the later school buildings in Bandung. This study is analyzing how the architects' frame of mind in producing this design works. Survey and direct data collecting were used to take the exact embodiment of building design. Usage and functional analysis were also used to match space and other standard used in a school building at that time. This study will give an understanding of building typology of school during the Dutch Colonial Period in Indonesia.

### 1. Introduction

Hoogere Burgerschool in Bandung (HBS Bandung) was designed by Charles Prosper Wolff Schoemaker, one of the most reputable architects at the moment, and inaugurated in July 1<sup>st</sup>, 1915. Located in Billitonstraat, now Jalan Belitung, the HBS Bandung was the fourth HBS after the other three in Batavia, Surabaya, and Semarang. HBS Bandung was a secondary school proposed for European and very limited indigenous people. The school was designed for a five-year education program. HBS Bandung constructed slightly earlier than Technische Hoogeschool te Bandoeng (ITB) and Gouvernements Bedrijven (GB / Gedung Sate). Bandung was promoted as gementee (autonomous city government) in 1906 by the colonial Dutch East-Indies Government.[1] And the construction of the school most likely was a part of the infrastructure to support it. And HBS Bandung was one of the European style learning system in Bandung that adopted by most of the Indonesian school later. Therefore, it is important to understand how schools designed in the early period of Bandung. The purpose of this study is to provide an idea of the possibility of method and background used in manifesting the design of the school, not to give a final conclusion in this regard.

### 2. Method

This article will offer a brief study of building typology of the school constructed during the Dutch colonial period in Indonesia, taking the case of HBS Bandung. The study will be limited only on



conjecture of how the architect designed the building based on order and composition of rooms. The discussion will be also limited to plan and facade of the building. The study was delivered in three steps, starting from data collecting, data processing, and data analyzing. The main data used in this study was collected through field survey, processed into the model and analyzed. This article is based on a brief assessment on colonial schools within the spatial configuration.[2] Reference is only used as a historical background of the building, while all data were taken directly from the object, and the analysis flew by logical reasoning. This study is also a part of an assessment to provide several possibilities of idea on the design process. Therefore not many references being used in this matter.

### *2.1. Field survey*

Measurement of the building was taken directly from the building. The data from field survey is based on the current condition, including changes made to the original design. The measurement was recorded using digital measurement equipment that collects the data up to a millimeter in detail. Each wall side of the room was measured to make sure the place and its composition to the building. The measurement was categorized into 2 (two) groups: macro measurement and micro/detailed measurement. Macro measurement refers to the measurement of the building in general, such as columns intervals, the enclosure of the building and other large measurements. Micro/detailed measurement referring to the detailed size of a part, including the plan of a room or wall and door/window size.

### *2.2. Digital reconstruction*

The data collected from the field survey was processed into 3-dimensional models. The model was constructed based on the assumption that the building was designed in geometric order. Room composition or plan and building facade or elevation presumably were designed based on right-angled pale. Therefore the digital reconstruction was also developed based on this comprehension. Every differentiation of measurement of the similar part should be evaluated and recalculated to meet geometrical pattern of the building. Old photograph was also used as a reference to develop the 3D model.

### *2.3. Design analysis*

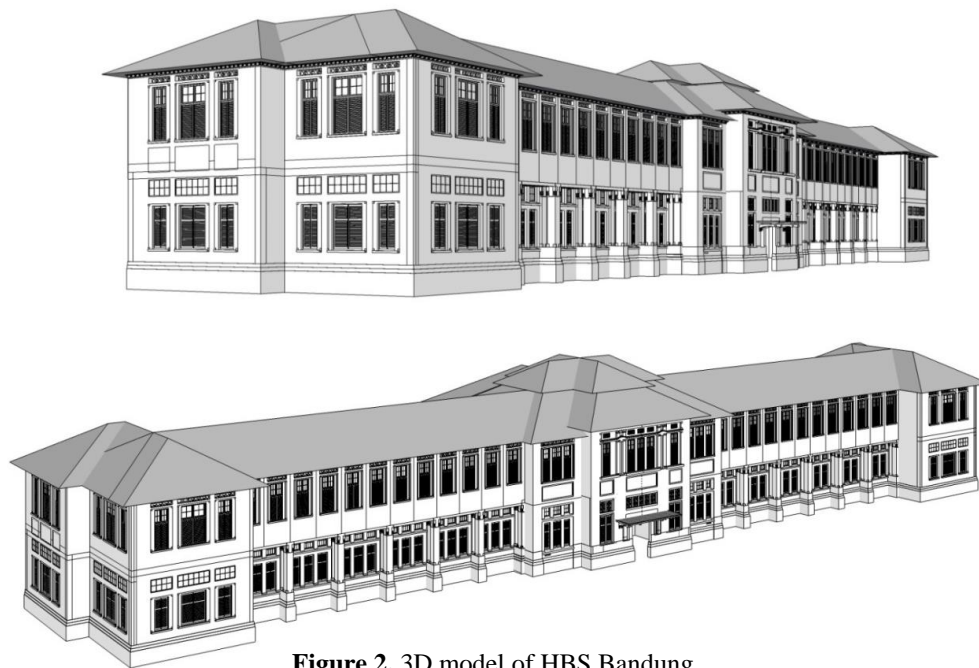
The data and 3D model being used in the study of the building typology of colonial school focused on the plan and wall facade. The roof was excluded in the discussion due to limited access to the roof. The discussion will elaborate on how the building probably designed and what order was used by the architect in designing the building. Since this is a very brief study regarding on this building, the analysis will only focus on the classroom and omit other rooms, such as the main entrance hall and second-floor hall. This study is most likely use a simple logic and paying attention to several possibilities that might be taken by the architect during his design process. The result of the study will only provide a conjecture and possibility of design method chosen by the architect, which still leaves many other possibilities.

## **3. Result and Discussions**

The most significant result of this study is the digital reconstruction of the building, besides the study on the typology itself. The reconstruction needs an analytical process to make sure the measurement taken from field survey can be realized and meet the logic in every aspect. Through this process, it can be said for sure that HBS Bandung was designed in symmetrical shape. The building composed of two wings: west and east wings. Both wings are identical in shape, measurement, and design. At the moment, the West wing is used as SMUN 3 Bandung and the East wing is SMUN 5 Bandung. A part of the roof is noticeably changed, as seen in figure 1 and 2. The minaret shape in the top roof is no longer available, which proofed that the roof had been modified. There is no authentic document that mentions about when and why the roof had been modified.



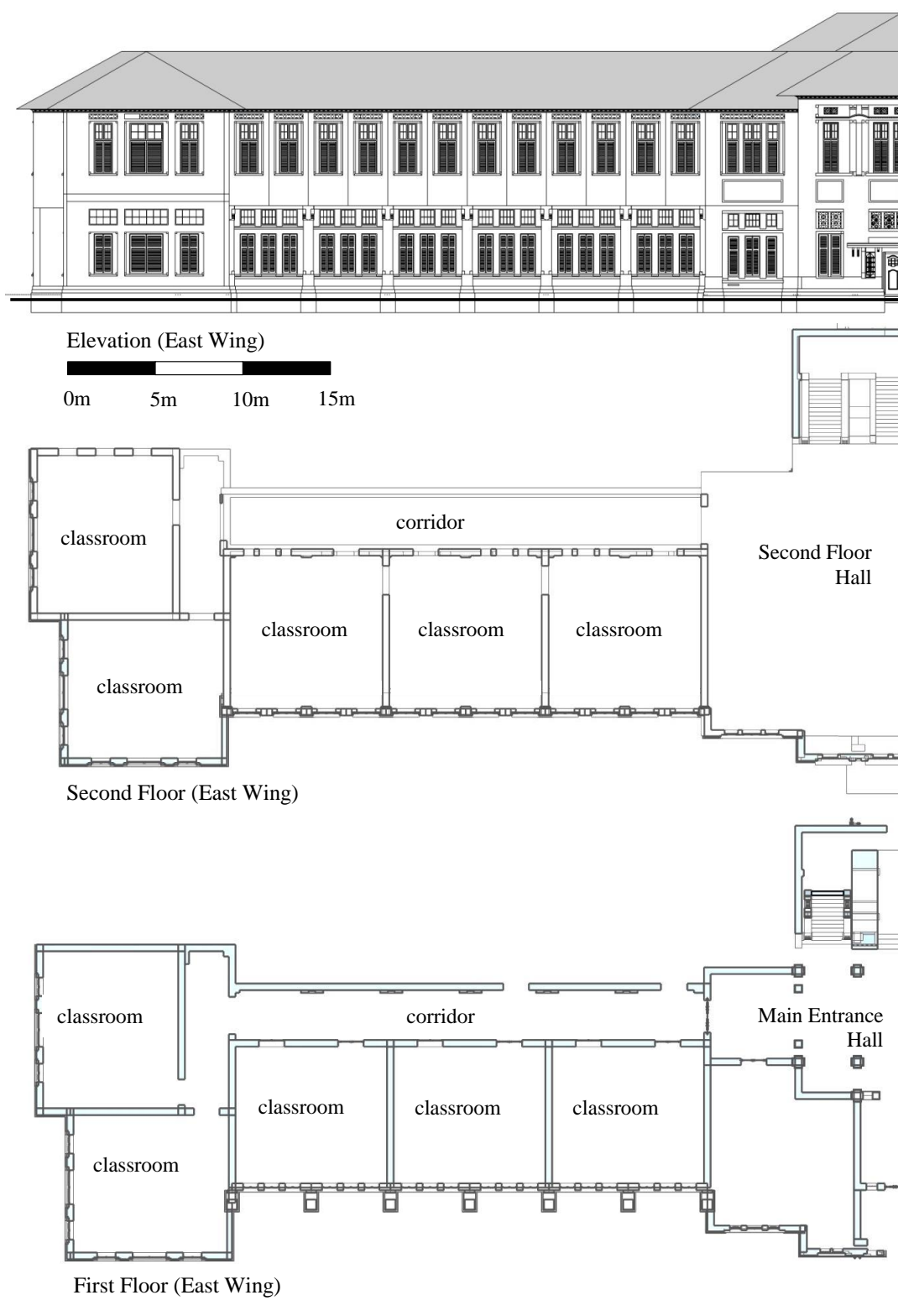
**Figure 1.** HBS Bandung in 1920's. (source: [www.pinterest.se](http://www.pinterest.se))



**Figure 2.** 3D model of HBS Bandung.

The first floor is composed of five rectangular classrooms in each wing of the building, sized 8.5-meter x 9.4-meter, measured from the axis of the wall, with about 400-centimeter wall thickness, providing approximately 8.1-meter x 9.0-meter room space inside. The back corridor is approximately 3.0-meter wide. Currently, the corridor on the first floor is covered by a wall of the additional room at the south side. The additional room can only be accessed from the outer side, made the corridor exclusively become the main circulation to and from classrooms. Omitting this condition, and referring back to the original design, every classroom has at least two sets of windows, each at the different side. Classrooms only can be accessed from the corridor, making it safe and easy to be controlled.

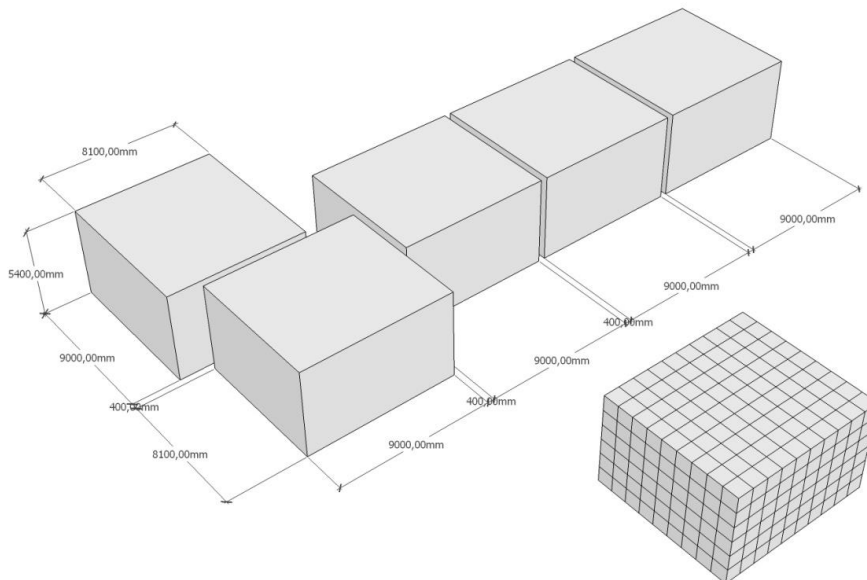
Still similar to the first floor, classrooms on the second-floor got some size adjustment. The first three classrooms in each wing of the building got an extension up to the front main pillar, rendering the interior into a square plan of approximately 9.0-meter x 9.0-meter with the height of 5.4-meter. While the other two classrooms at the end of the wing still perform exactly the same size to those on the first floor, sized 8.1-meter x 9.0-meter x 5.4-meter. From the exterior point of view, the ceiling elevation of the roof is approximately +11.0-meter high, taking the elevation of the first-floor as  $\pm 0.0$  benchmark, while the soil/ground level is approximate -1.00-meter.



**Figure 3.** Elevation, Second Floor Plan and First Floor Plan (East Wing).

If we look carefully to the interior size of the classrooms, measuring approximately 8.1-meter x 9.0-meter x 5.4-meter, then it is easy to say that the room was possibly design based on metric

measurement of 90-centimeter module unit, with 9:10:6 ratio. While the class in the second floor sized approximately 9.0-meter x 9.0-meter x 5.4-meter, which has 10:10:6 ratio. This aspect ratio probably means nothing in term of building massing and composition, but this will lead us to the next research on room scale, visual and thermal comfort study.



**Figure 4.** Blocks model and ratio.

#### 4. Conclusions

HBS Bandung was designed based on classrooms space ratio of 9:10:6, and 10:10:6 for the case of the second-floor, with interior size of approximately 8.1-meter x 9.0-meter x 5.4-meter and 9.0-meter x 9.0-meter x 5.4-meter. The building was probably designed using the 90-centimeter module. Every classroom has a single access to the corridor. Typical single loaded composition probably is being used to maximize the use of daylight as the main illumination inside rooms, and the two sets of windows were expected to give cross ventilation, as well enough light to the classroom.

#### References

- [1] Kunto H 1986 *Semerbak Bunga di Bandung Raya* (Bandung: PT. Granesia Bandung)
- [2] Wibowo A S 2015 Understanding the Colonial Churches' Design Approach: The Study of De Nieuwe Kerk (GPIB Bethel) and De Oosterkerk (GPIB Maranatha) in Bandung *Procedia - Social and Behavioral Sciences* **184** (2015) 380-87