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Modern Vernacular Architecture at Wisma Dharmala, Jakarta

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ABSTRACT

The function of offices in modern buildings now demands more efficiency, effectiveness, and space optimization, leading architects to prioritize simple designs, budget considerations, efficient space programs, low maintenance, and minimal manipulation of forms and facades. This can shift the paradigm that a work or building needs to have a soul, style, and also identity. The presence of Wisma Dharmala Intiland is like an oasis in the Sudirman area, where almost the entire street is lined with a series of boxy buildings, glass, and cladding. Although it was established in 1986, the buildings along Sudirman were not as numerous as they are now. With its location in the Sudirman area, which is the economic center of Indonesia and a place for professionals, entrepreneurs, and businessmen who largely control the Indonesian economy, Wisma Dharmala has become an important building to review and study. By viewing modern architecture as a milestone of established architecture widely used by planners.

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1. INTRODUCTION

Wisma Dharmala is a building constructed in 1985 and designed by Paul Rudolph, an American architect. Its hallmark is its exploration of modular design, with a functional approach and extensive use of concrete elements. Paul Rudolph, a Harvard graduate under the guidance of Walter Gropius (the founder of the Bauhaus), became one of the most renowned architects of the 1950s .*(Suk*ada ; *Purnama Salura 2018)* This guesthouse was phenomenal at the time of its initial construction due to its unusual approach to building mass, including its quite complex structural calculations. The building's location in a tropical area meant it had to respond to abundant light and a two-season climate (dry and rainy). Paul Rudolph's thoughts and concepts, when applied and studied with concepts rooted in developing European architecture and theories from traditional Indonesian architecture, reveal elements that could become a treasure trove for Indonesian architecture in general. How his thoughts enabled local architects to have a deeper philosophical exploration spirit.

Figure 1.1 Wisma Dharmala Building

2. LITERATURE REVIEW

2.1. Modern Architectural Theory

FIRMITY, UTILITY AND VENUSTAS

In Architecture, there are always 3 categories of Vitruvius, as Sir Henry Wotton said: "Well Building has three conditions: Firmness, Commodity and Delight". (The firmness of commodities and carrying meaning. Vitruvius is a theory that developed in the Greco-Roman era or the classical architectural era. But today this theory can still be studied for the present by placing 3 main pillars, namely: Firmness, Utility and Delight *(Roosandriantini and Yulistya 2022)*

Essentially, any building must consider high-quality materials as a source of strength. A building's comfort can be recognized by its connection to Firmness and Utility. These two fundamental values can create beauty (Venustas).

Venustas relates to harmony, balance, and proportion. Utility relates to spatial arrangement, relationships between spaces, lighting, and ventilation. Firmness relates to load distribution, materials, sturdiness, and strength.

An aesthetic can be achieved without ornamentation, one of which is through geometric play or structural beauty, such as exposed columns. Beauty in architecture also includes structural honesty, material honesty, and/or geometric play. By showing the balance of the trilogy, Vitruvius places the position of Venustas (image) on a par with Firmitas and Utillitas (use), so venutas in Paul's theory arises from the role of Firmitas and Utility.

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In his review of "The Elements of Architecture," other authors also took cues from Marcus Polio Vitruvius. Charles Jenks, who used the Technic-Function-Form trilogy approach, was still influenced by the thinking of Vitruvius's trilogy of Firmitas-Ukti-Venustas.

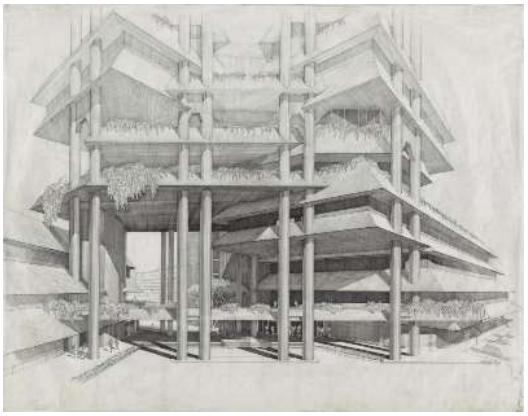

Figure 2.1 Paul Rudolph's sketch, open space in the lower area

The philosophy of the Javanese roof, with its shield-like (pyramidal) shape, is derived from the Gunungan (mountain) shape. This roof shape later became known as the tajug, and over time, the term tajug roof evolved into the joglo, limasan, or Kampung roof. *(Prijotmoo 1995, ismunandar 1986)(Paper et al. 2017).*

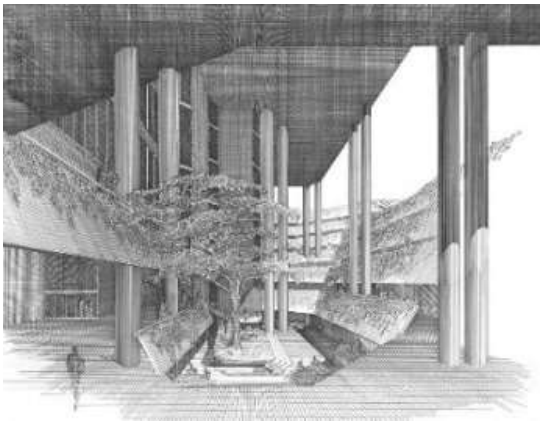

Figure 2. 2 Voids that let sun and air into the building

2.2. Vernacular Architecture and Nusantara Architecture

Vernacular Architecture was introduced by Rudolfsky in 1964, and continued to be debated until 1990, however, Rudolfsky was able to explain by providing a category in the realm of architecture, as a contemporary literature for popular architecture, namely ARCHITECTURE WITHOUT ARCHITECTS and along with the development of the paradigm, Vernacular Architecture is better understood and connected with what is called "locality". Vernacular Architecture is the result of a study of architectural references from various sciences, researchers, and publications. According to Oliver (1977) in Vernacular architecture there are several elements that are used as references : *(Paper et al. 2017)*

1. Earth's axis such as; tropical, subtropical, polar, archipelagic dll
2. Location and environment
3. Natural disaster, earthquake area, flood, typhoon dll
4. Population density, growth, migration dll
5. Grouped, closed, leiar, grid, organic settlement dll

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Vernacular buildings are buildings that have unique characteristics.

From recorded sources, Vernacular Architecture has 2 elements, namely: FORM (physical) and MEANING (abstract) and each also has rules: TECHNICAL, CULTURAL and ENVIRONMENTAL.*(Warnata 2017).*

Nusantara architecture is architecture found in the archipelago from Sumatra to Papua, guided by the local natural environment and culture. It is embodied in physical form, constructed over time, providing layers of memory through geographical entities. Nusantara architecture is actually intertwined with vernacular architecture, meaning time. Nusantara architecture can be called neo-vernacular architecture. Before the arrival of foreign cultures. *(Roosandriantini 2020).*

2.3. Paul Rudolph's Conception

Paul Rudolph's thoughts and concepts as a designer.

Six Factors Determining Architectural Form *(Sukada ; Purnama Salura 2018)*

In 1956, Paul Rudolph, a student of Walter Gropius, made a manifesto, marking the beginning of a trend that continued for quite a long time, namely talking about architecture modern, is talking about form and function. Rudolph identified 6 further dimensions of architectural design that determine form, as the determinants, namely :

Building Dialogue with the Site and its Surroundings.

A building needs to blend in with its surroundings (including the surrounding buildings) so that its existence can be recognized. The physical proportions of a building are the main factor in shaping its appearance.

***Building Function*,**

The functional aspect of building design is a principle in design. Form follows function remains Paul Rudolph's guiding principle.

Surrounding environment

To truly fit the environmental context, analytical observations of climate, natural lighting, and greenery are required as design considerations. This was then translated into Paul Rudolph's Design Principles on High-Rise Office Buildings in Indonesia.

Material Use

Each building has its own characteristics in determining the materials, where integration is the main thing in determining the right materials that will guarantee sustainability and continuity.

Space Control

By paying attention to scale and proportion, good control can be achieved. The psychology of space can be achieved through the overall shape of the building, through the spatial elements and the relationships between the spaces.

Timeless and spirit of the building

With richer building expression, the building's sustainability and longevity are achieved, especially in terms of its appearance. With an emphasis on the five aspects mentioned above, spirit is the most important aspect for creating a timeless building.

Of these six design aspects, Paul emphasized that there are four important aspects that need to be considered, namely FUNCTION, FORM, CONTEXT, AND CYCLE. From these four aspects, two more important aspects are drawn: FORM and CONTEXT. From this perspective, Paul Rudolph's architecture emphasizes the aspect of beauty as its main priority.

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3. METHODOLOGY

Using a literature study, the collected data is then compared with the theory of architect Paul Rudolph, who provided his own theory, linked to the building results and examined against theoretical formulations, including Vitruvius' theory, Form-Function theory, and Vernacular Architecture.

To address the facts surrounding the Dharmala Intiland building, it is necessary to first explore related theories, such as Vitruvius' theory of Form Follows Function. To understand the Dharmala Intiland building, it is also necessary to understand the thinking of architect Paul Rudolph, by comparing it with the context of form and appearance. Qualitative research is used to understand the phenomenon of descriptive forms, utilizing various scientific methods. It is hoped that it can provide a comprehensive conclusion.

4. DISCUSSION STUDY

4.1. Description of the Object of Study

4.1.1. Siteplan

Siteplan

Figure 4.1 Avisme Dharmala Siteplan

The site plan is located at the corner of Jalan Sudirman and Jalan Kasablanka.

Figure 4.2 Building Location

TECHNICAL DATA
Planning-in-use process: **1983-1990**
Height: **328,08 kaki.**
Floor (Above Ground):**24**

PROFESSIONAL TEAM
Client: **PT Yamano Utama**
Architect: **Paul Rudolph**
Rudolph Staf: **Lawrence Scarpa**
Associate Architect: **Ir. Johannes H. Gunawan, IAI**
MEP: **Professor Lee Seng Lip, PT Wiratman & Associates, Ir FX Zanussi, PT BMP Indonesia**
Lighting: **William Lam & Associates, Inc.**
QS/PM: **PT Woltrowindo/Wolferstan Trower**
Contractor: **PT Wijaya Kusuma**

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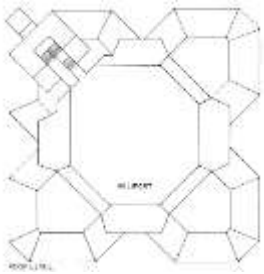
4.1.2. Floor Plan

Parallelogram-shaped with 5 corners.
Figure 4.3 Site plan with a parallelogram

It is rectangular in shape with a notch in the center, making it resemble a flower with four corners.
Figure 4. 4. Square plan

In the next two typical floor plans, the floor plan appears to be rotated 90 degrees, but the resulting interior remains typical underneath, with the remaining space being used as a plant box
Figure 4.5 Typical Floor Plans



On the roof, it is formed similarly to the typical one which is repeated every 2 floors

Figure 4.6 Roof Plan

4.1.3. Sectional View

Figure 4.7 East View

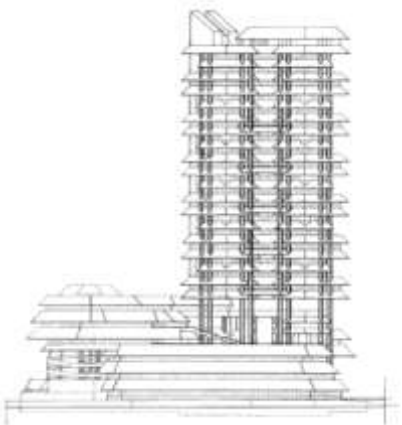


Figure 4.8 South View

Figure 4.9 Section A-A

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Figure 4. 10 Pieces B-B

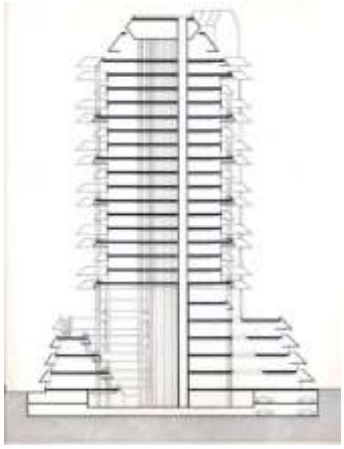

Figure 4.11 C-C section

Figure 4.12 Sketch of Paul Rudolf

4.2. A Glimpse of Intiland's Dharmala Building

The Dharmala building, with its sloping roofs that appear to shade the floors below, is an explicit response to the tropical climate and also a representation of the dominant traditional roofs in Indonesia. This form is not actually a scientific or academic study. Paul Rudolf studied it while traveling around Indonesia. He was impressed by the vernacular building's distinctive shape, which is almost universally recognized as a pyramid or shield. The shape places functional spaces beneath the roof, creating strong shadows, which in turn accelerate the flow of hot air upwards. This makes the roof a primary element in the beautiful regional vernacular architecture.

In the Dharmala Building, Rudolph abstracted the roof form by incorporating twisted geometry and the interaction between the supporting elements and the building's perimeter. Supported high by massive paired columns, the tower begins about thirty meters above ground level, the columns rising through a series of twisted floor plates that create overhanging roofs at each level. These overhangs shelter the windows below and provide outdoor terraces for offices. The building presents the entire building as a hanging garden, with trees and shrubs planted on the terraces and vines trailing along the sides. It even gives the impression of several trees huddling together, using the columns as trunks. The Dharmala Building demonstrates how architecture and landscape can merge. The shadowy aspect of the Dharmala tower, indicating the downward slope of the roof, is also a clear response to the local climate and traditional Indonesian architecture. Rudolph's study of architecture is not academic or scientific. What is more impressive, amidst the multitude of forms seen in buildings, is the consistency of those forms. By considering the functional areas within the space, in addition to accelerating the upward flow of hot air, this technique will also evoke the impression of key elements in much-loved regional architecture.

In the Dharmala building, Rudolph abstracted tectonic form through a combination of geometric rotations and interactions between supporting elements and the building's perimeter. This is powerfully supported by the building's sturdy columns. These columns will enhance a series of rotations that create a "tectonic" effect at each level.

4.3. Studies

4.3.1. Floor Plan Analysis

What's interesting is the shape of this pyramid-shaped roof, when stacked every two floors and rotated 90 degrees geometrically, creates a very dynamic composition from bottom to top. With large, paired columns that emerge from the outside due to the rotation of the floor plan, it gives the impression of a tree among the leaves.

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Figure 4.13 Concept of rotation and stack

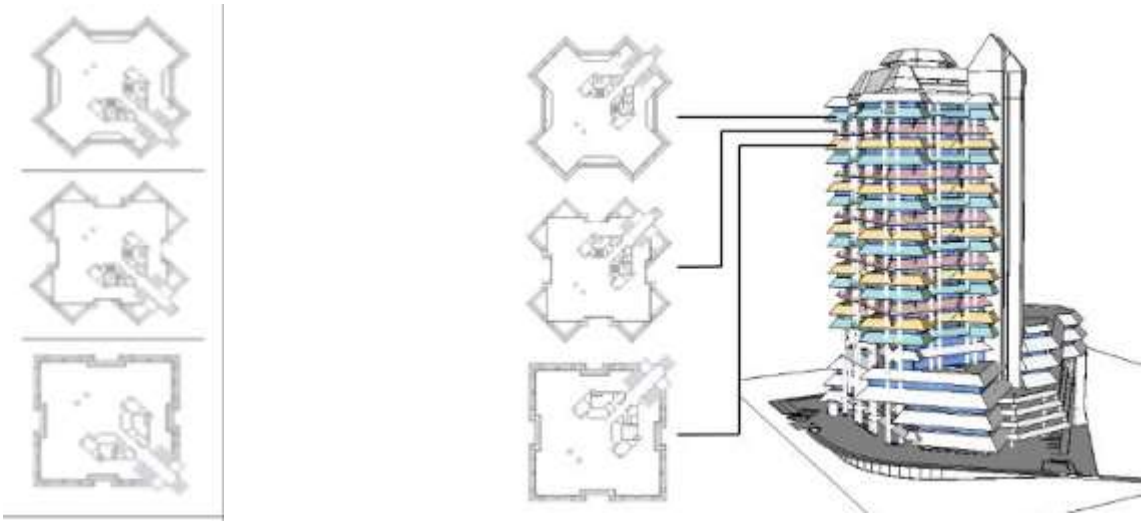

Figure 4.14 Position of floor plans inside the building

4.3.2. Shape Analysis

A. Building Period

It is formed from a podium and tower that are connected by slanted cantilevers, making them appear to be a single unit, united by a void (interior) in the middle that unites the tower and podium. The podium is more elongated, while the tower is rectangular.

B. Repetition

With a consistent square shape that is rotated alternately, it gives the impression of a play of shapes that provides beauty.

C. Analogy of Shape

C1 . Vernacular Architecture

The approach to the study of form, based on Vernacular architecture adopted from the terraced roof shape such as the Pura Meru (Bali), can also embody the dominant roof shape in Java with a shield roof. This transformation also becomes a very dynamic form, with the presence of open terraces and planted with plants that hang down adding strength and giving the impression of a friendly building. But there is a slight difference where the Darmala Building also emphasizes dominant columns, this abstracts the TECTONIC form that embodies structural strength, giving a sense of "confidence" that this building stands firmly.

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Figure 4.15 Perspective of the human eye Dharmala Intiland (Jakarta)

Figure 4.16 Pure Meru (Bali) Pure Meru (Bali)

C2. Arsitektur Metafor

Another approach to study is the theory of metaphorical architecture, which approaches the mechanism of transfer from one object (idea, event, physical object) to another. Allusion is a product of the designer's fantasy and imagination. It transfers a subject into something else. It attempts to see the subject as another through analogy, or attempts to shift a particular focus from one subject to another based on research or observation. (Antonides)

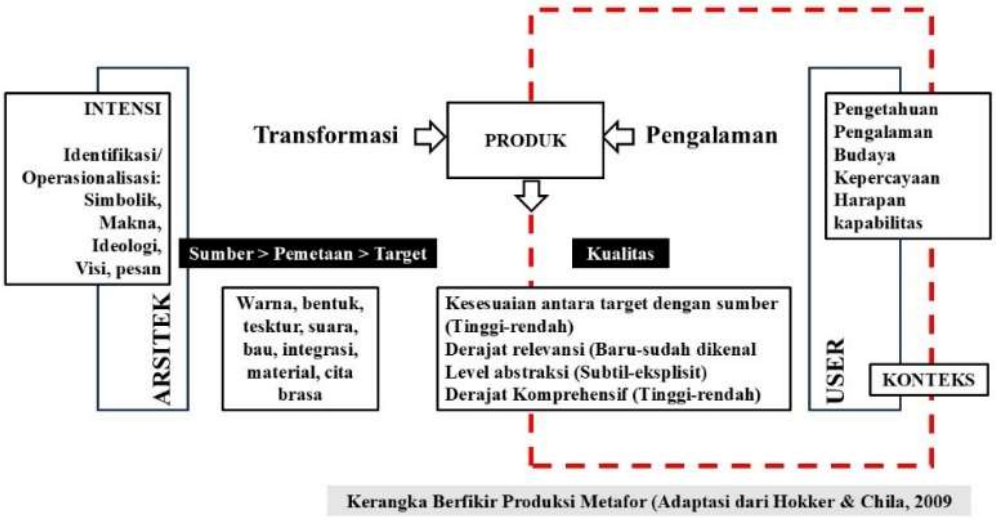

Figure 4.17 Schematic of the thinking process

Figure 4. 18 Image of the human eye

Figure 4.19 Characteristics of dwarf ketapang trees

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The pillars, representing a sturdy structure, can be interpreted as tree trunks. The spaces formed by the massive and strong horizontal lines are reflected. The horizontal branches that appear to shade the lower sections are also visible in this building, where the rotating canopies exhibit a dynamic form that almost resembles the shape of a dwarf ketepang (golden) tree.

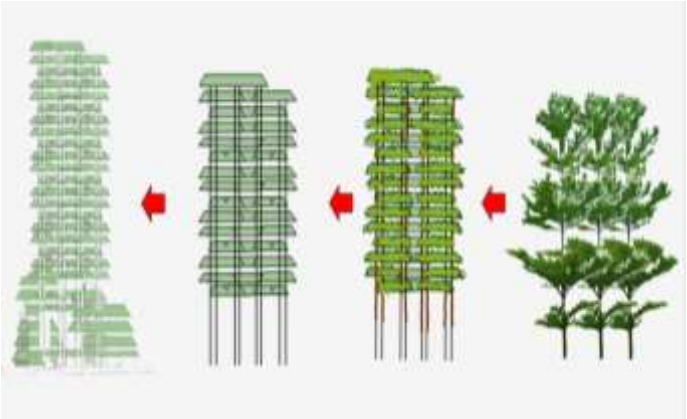

Figure 4.20 Introduction to metaphor architecture

Based on the author's observations, with cognition obtained with a degree of suitability and observation, a metaphorical approach can also be possible.

4.3.3. Massive Void Analysis on the Surface

The massive proportions and void (glass) demonstrate the dominance of the massive form, as evident in the cutouts. This conveys a solid form with the dominant columns. However, the glass windows are arranged in a way that allows for unobstructed views from the inside, even from a seated position. This also allows for minimal use of artificial light.

The building's facade, which flows in and out, creates depth and powerful shadows, embodying the traditional architecture often found throughout the archipelago. The terraces, often found in traditional houses, are also incorporated into this building, complemented by landscaped terraces..

Horizontal lines also appear dominant, resembling a floating arrangement of blocks. This is reinforced by the presence of exposed double columns, so that not only the horizontal elements but also the vertical columns convey a sense of sturdiness and security. This again explains Vitruvius' theory of the sturdiness of his structural elements.

Figure 4.21 Dimensions of a Sloping Roof

The walls appear to be more dominant than the glass, creating a strong shadow effect with depth of space.

$$a > b \ , \ c > e > d/f$$

The dominance of sloping walls does not reduce the impression of concrete because the slope is reminiscent of traditional roofs in Indonesia.

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4.3.4. Building Material Analysis

Concerning texture and color.

The building's facade is covered with white ceramic tiles to prevent mold growth, which can reduce the concrete's strength. Gypsum waterproofing is used for the interior ceiling. The columns are also installed with circular ceramic tiles. The interior is painted with glossy Emultion paint.

Figure 4. 22 Material installed around the shadow

4.4. Other Buildings with Modern Vernacular Architecture (Tropical)

Several Highrise Buildings with a Modern Vernacular Architecture approach

The UI Rectorate is located in the UI Depok Campus Complex, with a height of 15 floors, designed by Prof. Ir Gunawan Tjahjono, established in 1987.

The Central Java Provincial Administration Building, which houses the activities of the Central Java Regional Government, was designed by Ir. Soeroso SR, with the help of ideas from Soejoedi W. This building was built in 1978, preceding Intiland's Dharmala Building.

The ASEAN building, which houses ASEAN political relations activities, was built in 1984, with architect Ir Soejoedi Wiroatmodjo.

One of the office buildings in Surabaya was also designed by Paul Rudoph, still carrying the Tropical Vernacular Architecture style.

Figure 4.23 Examples of buildings with modern vernacular architecture

5. CONCLUSION

The presence of the Dharmala building in 1985, quite breathed new life into the development of architecture in Indonesia, which at that time was infatuated with postmodern architecture. Vernacular architecture can also be embodied in modern conditions. How the

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use of materials that can anticipate climate conditions and air conditions that have quite high levels of pollution in the middle of the city, with the use of small-sized glazed ceramic materials, will later facilitate maintenance. The typology of rental office buildings that have high efficiency standards, reaching 60-70 percent sealable area can be achieved by the Darmala Initiland building, even though the floor plan is atypical from bottom to top (the floor plan is rotated 90 degrees). The expression of the Dharmala building also looks richer in form so that the building's figure displays continuity and sustainability that is timeless (timeless). Its position at the corner of the intersection with a position oriented to the corner makes its figure very elegant and its proportion of height is adequate among other buildings, so that it seems to have attitude and dialogue with its environment. Intiland's Dharmala Building was at that time among the first green buildings, measured by several Green Building standards. From all the outputs of this building, many theories, studies, and lessons can be learned, especially its influence on good architectural methods that always consider the context without compromising the need for efficiency and effectiveness of the spaces within.

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