

Design Concept of an Amphitheatre Building High Land Borobudur That is Responsive to the Surrounding Environment

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ABSTRACT

The Indonesian government is confronted with several issues concerning tourist sites, both local and foreign. This study serves as a support facility for the Borobudur Highlands sector of the Nglinggo-Sedayu Gate. A combined technique is used during the research stage to collect primary data, such as measuring the area's position using a Total Station and GPS. Additionally, there are secondary restrictions in government and local government norms. The Ministry of Tourism formed the Borobudur Tourism Area Management Authority Agency to facilitate the growth of the Borobudur attraction. After field measurements with the Total Station and GPS, as well as a soil test in the Highland Borobudur region, mainly the site where the Amphitheatre location has elevation, and the valley position's contours are very dry, two factors drew us to the area: the design, which is inspired by the forms and textures of the surrounding environment, and the stunning outlook, particularly towards the private resort. This conclusion applies current architectural notions to building masses, vernacular architecture on building roofs, eco-architectural approaches to the built environment in building assembly, and building technology in utility systems and building facades.

Keywords: Highland area, Soil Test, vernacular architectural, building facades technology

1. INTRODUCTION

The Indonesian government is confronted with several issues relating to developing tourism destinations, both domestic and international. The Borobudur Authority Implementing Agency will be referred to in the future as the Borobudur Authority Agency (BOB), which was established according to Presidential Regulation No. 46 of 2017. Borobudur Authority Agency (BOB) was established as a work unit under the Ministry of Tourism of the Republic of Indonesia by Minister of Tourism Regulation No. 10 of 2017. Borobudur Authority Agency (BOB) has managed 309 hectares in the Menoreh Hills, in Central Java's Purworejo Regency. This area is planned to develop into a regional powerhouse and a new tourist attraction, complementing Borobudur Temple's status as one of Indonesia's top tourist sites[1].

The approach to the design concept of the Borobudur

Highland Amphitheater is through a contemporary architectural concept approach. Where contemporary architecture is applied, namely two architectural styles, namely modern architecture in the form of the main building and eco-architecture in the tribune or amphitheater seating system. Which follows the contours of the natural surroundings to remain realistic and beautiful.

Tourism is defined as "a sort of tourist travel to natural places undertaken to maintain the environment and safeguard the lives and wellbeing of local populations"[2]. Research conducted [3] An article named "Analysis of the Amphitheatre's Effect on Tourist Decision Making to Visit Tourist Objects and Areas (Study at the Amphitheatre Malioboro, Yogyakarta)" was published in a scientific business administration publication. The study's findings indicate that the Amphitheatre Malioboro plays a critical role in disseminating tourist information about Jogja and Indonesia in general. When in-

formation is delivered, staff members engage in marketing activities. Public relations, marketing, and the selling of trip packages are included in marketing operations. The Amphitheatre Malioboro's marketing initiatives are non-commercial. The Malioboro Amphitheatre's primary purpose is to assist and facilitate travelers in carrying out their tour activities. The tourist information and convenience provided by the personnel at Malioboro's Amphitheatre enable travelers to prolong their stay in Jogja. Subsequent researchers were conducted by [4]. I published an article titled "Tourist information center workers as knowledge brokers: The Case of Macau" in a scholarly publication. The findings indicated that the tourist information center at the Amphitheatre served as the primary source of information for travelers.

While many studies have been published defining the Amphitheatre's purpose, little research has been conducted on the exchange process, information gatekeeping, or the amphitheater staff's position as knowledge brokers. This article summarizes the results of a qualitative study of encounters between people designated as "tourists" and personnel at a large Macau information center. The research highlights four factors that affect the quality of information sharing. A knowledge intermediary process model was constructed further to understand the nature of this interaction[5].

The novelty in this research is where the researcher sees the approaches and concepts applied in the Amphitheatre building. The idea is the Application of Contemporary Architecture, which combines several styles [6]. The mass of the building itself uses a modern architectural style which uses glass, steel in columns and beams, corporate metal on the front facade of the entrance, and

other modern materials. The use of vernacular architectural styles on a typical Javanese roof concept, namely "Joglo"[7]. As well as the use of the aerobic system concept. On the facade and stop, sol glass pieces act as glare reductions[8]. Additionally, the eco-architectural style is reflected in the positioning of the building mass by the contour slope[9].The objective of this study is to aid in the preservation of the Borobudur Highlands' Nglinggo-Sedayu Gate sector.

2. METHODS

The literature study uncovered theoretical underpinnings, design standards, planning and design policies (through field surveys, online searches, and literature studies), as well as non-physical physical circumstances and geography[10]. Additionally, a comparison study was undertaken comparing data from field investigations and comparative studies with literature studies. This study compares the status of the field to the theory by performing field surveys and collecting data, such as conceptual drawings, working drawings, and photographs[11]. It is then compared to concepts for residential dwellings, interior spatial arrangement, and contoured terrain to arrive at a conclusion that may be considered while constructing on the steep contoured ground.

This research conducted in one construction company in Indonesia, the company was facing several problems, many projects that already ended have delays[12]. If the layout is appropriate, a residence constructed on the curved ground will be rich in spatial creativity.

- Utilizing land on a curved surface creates space that may be buried amid other regions. For instance, a

Table 1. The tool used for measurements

No	Tool's name	Lots	Information
1	Total Station (TS)	2	The main metric system
2	Theodolite (T0)	3	The major metric
3	Prism TS	4	For scenario points as well as polygons
4	Pillar of Prism	4	Where should T's prisms be installed
5	Tripod	5	A location for TS As a marker for the location of the Total Station and Theodolite
6	Thumbtack	Sufficiently	
7	Spray Paint / Pylox	15	Marker
8	hammer	5	Install nails
9	Marker	20	Marker for the stake's name
10	Usual Meter	5	Determine the primary tool's height.
11	camera	2	To document outdoor photography
12	Stationery (Pen + paper)	Sufficiently	Make a note of the location of the measurement.
13	Radio HT	4	Media for long-distance communication
14	Laptop	2	For processing data

three-story home will be seen from all angles from just one floor.

- A shelter built on uneven terrain is also distinct from a one-story home (without an upper story) built on a flat surface.
- Another distinguishing feature that does not exist on flat ground is the scenery. The front of the building will be divided into two sides on this property. The resultant vision is far more pleasurable. To measure and educate public awareness in implementing health protocols, further research is needed [13].

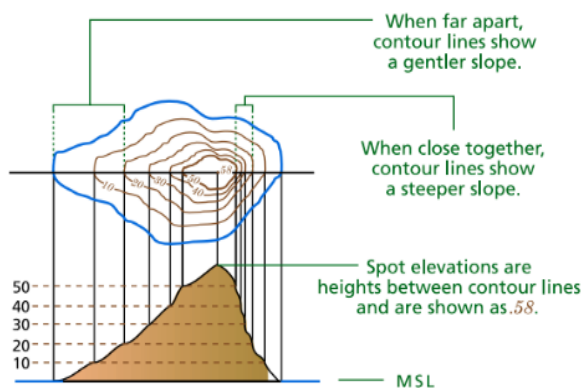


Figure 1. Examples of contours on the map.

3. RESULTS AND DISCUSSION

Table 2. Land conditions in Borobudur highland.

Land Conditions	<ul style="list-style-type: none"> ▪ Perum Perhutani manages the state pine forest. ▪ Forest status is classified as either production or local production forest.
Topography	<ul style="list-style-type: none"> ▪ Altitude ranges between 400 and 1000 meters above sea level. ▪ Hills with steep slopes and some that are pretty level ▪ The highest point in the area's east is the will's height. ▪ The west is traveling north, while the south is descending.
Slope	<ul style="list-style-type: none"> ▪ Slopes > 15° and > 40° ▪ The relatively safe area to be built is scattered ▪ The generally safe area to be developed is stretched across 189.67 hectares and is

Borobudur Highland Tourism Area has significant potential for development as a tourism center for Menoreh Hills tourism activities. Borobudur Highland still has to build more tourist attractions that complement and synergize with current tourist objects to counteract the appeal of other tourist destination magnets[14]. In Central Java and Yogyakarta.

3.1 The design concept of the Amphitheatre Building

It is relatively safe to develop with particular engineering and security technologies. The Amphitheatre structure is 259 ha, notably on BOB's HPL 50 ha. The Amphitheatre, which serves as the focal point of the Highland Borobudur region, is a Highland Borobudur landmark[15]. Because the information center educates the public about the amenities available in the Highland Borobudur region. Additionally, the Highland Borobudur region includes support structures such as the UMKM Center, the Transfer Hub, and the Amphitheater[16]. Because the information center educates the public about the amenities available in the Highlands of Borobudur region, additionally, the Highland Borobudur region includes support structures such as the UMKM Center, the Transfer Hub, and the Amphitheater. The Amphitheatre is a four-story structure incorporating the split-level idea with the surrounding natural contour.

The design concept of the Amphitheatre Building refers to the following provisions, namely [17]:

1. Principles of the Amphitheatre
In terminology, the Amphitheatre is:
 - a. Accurate and up-to-date tourism information service facilities to anyone who needs them.
 - b. A place to do promotions to increase the number of visits and the high length of tourists visiting.
2. The function of the Amphitheatre Building
Based on the Masterplan Borobudur Highland, the functions of the Amphitheatre are:
 - a. The central center/hub of Borobudur Highland
 - b. Information center about:
 - Accommodation / resorts
 - Tourist activities can be done within the area.
 - c. Area Amphitheatre pays tour packages inside and outside the Borobudur Highland area.
 - d. Infrastructural development is a critical component in accelerating the national development process, particularly in Java, as it has a significant impact on economic and population mobility, particularly in 2025, when the population will reach around 151 million people[18]. Based on this and by the provisions Minister of Tourism Regulation No. 5 years 2019 Regarding the Technical Operational

Guidance for the Physical DAK for Tourism, the functions of the Amphitheatre can be categorized into 4, namely the processes of promotion, travel advice & support, education, and sales [19].



Figure 2. View from the amphitheater stage to the main building.

3.2 Physical dimensions of land & buildings

In the master plan, it is stated that the BCR of this Amphitheatre lot is 10%, but based on the directions of the master plan, where the Amphitheatre is in the Exclusive Resort Zone, the maximum BCR of the lots that can be permitted is 10% [20].

Table 3. Requirements for the dimensions of land Amphitheatre buildings.

Building Functions	Amphitheatre
Plot area (m ²)	24714
%BCR	10
%Green	90
Large Floor Basic (m ²)	2471
Floor Area Ratio (FAR)	0,2
Maximum Building Height (Floor)	1
Plot borders (m)	10

3.3 Location

Because the Amphitheatre is the exclusive resort zone's sole semi-public function, the site and building design ideas will be as follows[21]:

a. Exclusive yet in harmony with the natural environment, via the use of:

- 1) The use of glass in the building envelope.
- 2) Preserving contours and minimizing cut and fill.
- 3) Preserving contours and minimizing cut and fill.

Vegetation components are arranged

b. Plant components are arranged.

The following picture illustrates the position of the Amphitheatre based on the criteria specified in the Master Plan document and the findings of field surveys[22].

The arrangement of the building mass is necessary to prevent the creation of a monolith or a single group[23]. Along with increased population productivity, the need for housing grows and becomes a challenge, particularly in metropolitan areas[24]. This might result in an oversized shape within a parcel and impede another building's view of a particular item[25].

- It is a building mass arrangement based on the concept of a platform that minimizes direct contact with the ground.
- The boardwalk connects many platforms, symmetrically or asymmetrically.
- The general shape of the building mass is a square. Other mass forms are allowed as long as it is a minor function.
- The distance between building masses is at least 6 meters
- The mass and height configuration of the building must provide visibility or "Stolen Vista."
- Connectivity between buildings must be simple and easy to read by building users

Mass design and building structure must be uncomplicated and straightforward[26].



Figure 3. Bird's eye from the right.

3.4 Utilization of Hills Slopes

- Arrangements on steep slopes are authorized only in regions with a maximum gradient of 25%.
- Slopes on hills can be used for "Light Structure and Light Load or Non-Massive Development."
- All structures on steep slopes, including buildings, swimming pools, and other structures, must undergo extensive soil geotechnical analyses and receive Design Committee approval.
- A structural system should have no adverse effect on the hilly terrain.

The Borobudur Highland Tourism Area's branding is as follows, by the visioning of Borobudur Highland, as defined in the notion of "culture and adventure ecotourism"[27]:

Borobudur Highland's spatial characterization plan aims to convey the region's uniqueness and reinforce its identity by emphasizing each zone's distinct emphasis [28]. This study is anticipated to serve as a reference for his future work and may be expanded to a larger scale[29]. The stronger the visual factor, the stronger the element will be remembered/understood by visitors [30]. So that the strategy for characterizing this area's space will focus on the visual aspects of the site that give visitors meaning (a sense of place) [31].



Figure 4. Bird's eye from the left.

This reflective coating has a long-lasting endurance and quality, reflects light and heat, and delivers a rich touch of style while reducing air-conditioning needs [32]. The coating is applied on only one surface of the glass, and it consists of super silver and classic [33].



Figure 5. View of the human eye from the amphitheater stage.

4. CONCLUSION

- Structuring the mass of the building is necessary to prevent a monolithic or single mass in a single parcel, which might result in a giant figure and impede the view of another building towards a specific item.

- Building mass arrangement based on the concept of a platform that minimizes direct contact with the ground.
- Several platforms are arranged symmetrically or asymmetrically connected by the boardwalk
- The general shape of the building mass is a square. Other mass forms are allowed as long as it is a minor function.
- The distance between the building masses is at least 6 meters.
- The configuration of the mass and height of the building must provide visibility or "Stolen Vista."
- Connectivity between buildings must be simple and easy to read by building users.
- Mass design and building structure must be uncomplicated and straightforward.
- Arrangement on hilly slopes is only permitted on hilly areas with a maximum gradient of 25%.

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