



## Outdoor Amphitheater Planning in Mastplan Activities using Autocad 2 D and Sketchup 3 D Applications

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**Abstract.** SMK Negeri 1 Sebatik Barat is a school expected to realize SMK Agrotourism, which has a land area of about 35 Hectares. The research "Outdoor Amphitheater Planning In Mastplan Activities Using Autocad 2D And Sketchup 3D Applications" itself was developed so that the existing land can be utilized properly, which planning uses 2D (Autocad) and 3D (SketchUp) applications. The object of this research is Liang Bunyu, West Sebatik, Nunukan Regency, North Kalimantan. Data collection uses primary methods where data is collected directly. The results of this study indicate that SMK Negeri 1 Sebatik Barat requires an Outdoor Amphitheater design plan to support the acceleration of the realization of SMK Agrotourism quickly.

**Keywords:** *Outdoor Amphitheater, Autocad 2D, Sketchup 3D*

### INTRODUCTION

SMK Negeri 1 Sebatik Barat is utilizing idle land to be productive to support the realization of the first agrotourism smk in north kalimantan. The school's land area is 35 hectares; about 4 hectares have been utilized for school buildings and supporting facilities, and 5 hectares have been utilized for planting fruit seedlings. Currently, teachers and students, especially those majoring in plantations and fisheries, are focusing on working on 2 hectares of idle land to open ponds. To utilize the existing land and, at the same time, support special needs to accelerate the development of SMK negeri 1 Sebatik Barat as an agri-tourism school, a plan for an amphitheater is needed. This is done so that this school can become a school that can utilize the land well and attract people to come not only to attend school but also to increase regional income and population growth. The challenge in handling this is that half of the building that will be planned is in the water, which requires complex calculations and planning. Hence the researcher planned this amphitheater.

An amphitheater is a type of building for hold various performances. Starting from theater and sports to other types of performances. This term is taken from the Greek amphieatron. if explained further, amphi means two sides or around, while theatron means a place to watch. the shape of this building is generally round, semicircular or oval. however, planning an amphitheater in agritourism also has its challenges. the amphitheater must be designed using Autocad and Sketchup applications with visualization from 2 dimensions to 3 dimensions so that it can accommodate many people in an open environment. The amphitheater must consider factors such as weather conditions, safety, and accessibility. The amphitheater should also be able to accommodate different types of performances or events, such as music concerts, theater performances, and sporting events.

A two-dimensional object has two dimensions, namely, length and width. 2D is used in math and physics graphics, art, computers, animation, and others. The concept of 2D shows a flat object consisting of length and width—examples of two-dimensional images, paintings, and posters. Three-dimensional objects have length, width, and height with

various shapes. 3D is not only used in math and physics, art, computers, animation, and other fields—the concept of 3D shows an object or space consisting of length, width, and height.

## METHODOLOGY

- **General**

Agrotourism is a tourist attraction that combines agriculture and tourism. Along with the development of agrotourism, a performance facility is needed that can support tourism activities in agrotourism. Therefore, planning an amphitheater in agrotourism is very necessary. An amphitheater is a semi-circular theater building that functions to hold performances or events.

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2 Dimensional Modeling is an object with two dimensions: length and width. 2D is used not only in mathematics and physics but also in graphics, art, computers, animation, and others. The 2D concept shows a flat object consisting of Length and width—examples of two-dimensional images, paintings, and posters.

3D Modeling of an object that has length, width, and height with various shapes. 3D is not only used in mathematics and physics, art, computers, animation, and other fields. The 3D concept shows an object or space consisting of Length, width, and height. Examples of three-dimensional objects are balls and pyramids.

3 Dimensional Technique of the object is needed for two purposes. The first purpose is to the model together with the information used to analyze the image of the object in question, and the second purpose is to modify and analyze the objects to be displayed.

3D techniques allow the creation of objects with three dimensions (length, width, and height) in a digital environment. This technique can be done using 3D software such as AutoCAD, SketchUp, Blender, and so forth.

The role of data collection methodology is an effort to collect data needed in planning, in other words, data collection methodology will provide guidance on the implementation of planning or guidance on how this planning is carried out. Methodology contains meaning concerning procedures and ways of conducting data testing needed to solve or answer planning problems.

In this research, several things will be developed concerning data collection methodology, including planning objects, methods, and techniques.

- **Planning objects**

The planning object is a problem used as a writing topic in the context of compiling a report. according to husein umar (umar, 2003:303) said that "the planning object explains what or who is the object of planning as well as where and when the planning is carried out. other things that are considered necessary can also be added.

The object of this planning is the design of an amphitheater that functions as a tourist attraction to support income in the region. In this planning, the author makes an amphitheater to meet comfort so that the activities carried out run smoothly because they meet all the standards and provisions that have been set.

- **Data collection method**

This study uses a primary data collection method, namely by collecting data directly. the time of data collection must be adjusted to the comfort variables of the location of the research object, including quantitative, namely air temperature, humidity, wind, and lighting.

- **Data Collection Techniques**

In this plan, we build an amphitheater to meet the standards and conditions set using primary data collection methods, namely direct data collection.

- **Planning Data**

Location Data:

Data on the location of the development project is located at West Sebatik State Vocational School on Jalan Trans Sebatik, Liang Bunyu, Kec, West Sebatik, Nunukan Regency, North Kalimantan.



Source: Google Maps (2023)

FIGURE 1. Location Data

- Analysis of Research Results  
From the results of data processing research that has been carried out both by observing in the field and analyzing more from a perspective view in order to understand the physical condition of West Sebatik State Vocational School 1 in order to facilitate design planning. So that you get the results you want.
- Planning flow diagram

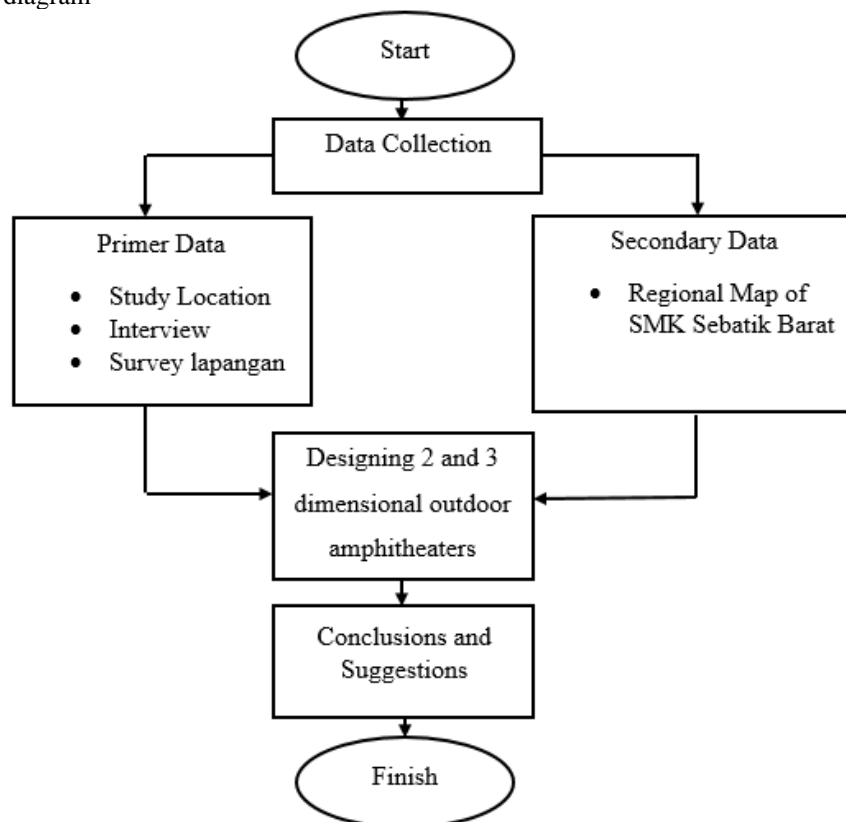
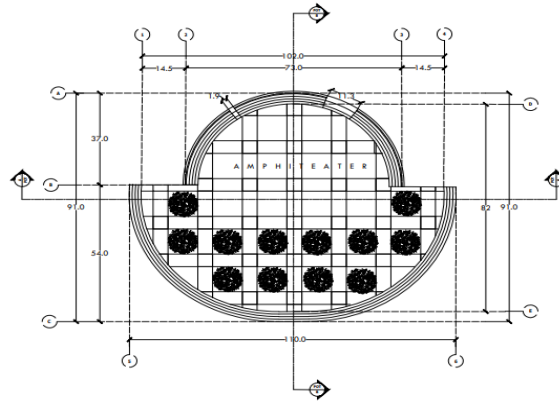


FIGURE 2. Planning flow diagram

## RESULT AND DISCUSSION

### 2 Dimensional Results



**FIGURE 3.** Plan of the Amphitheater



**FIGURE 4.** Front view

If you look at the front of the Outdoor Amphitheater, it has six trees and has two entrances from behind the stands.



**FIGURE 4.** Left Side View



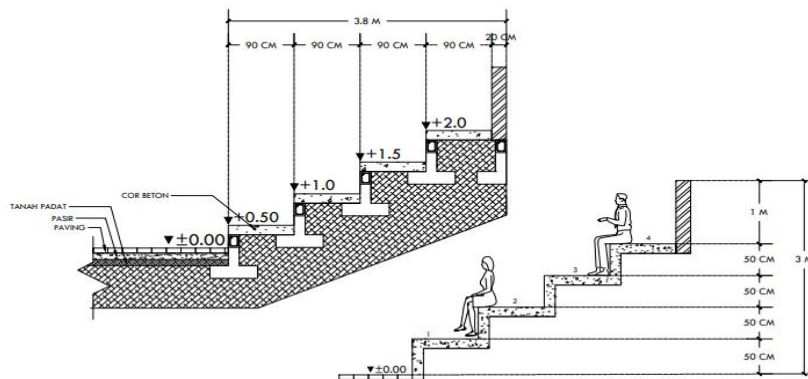
**FIGURE 5.** Right Side View

If you look at the right and left views, the Amphitheater has three trees that add aesthetics and cool the surrounding environment.



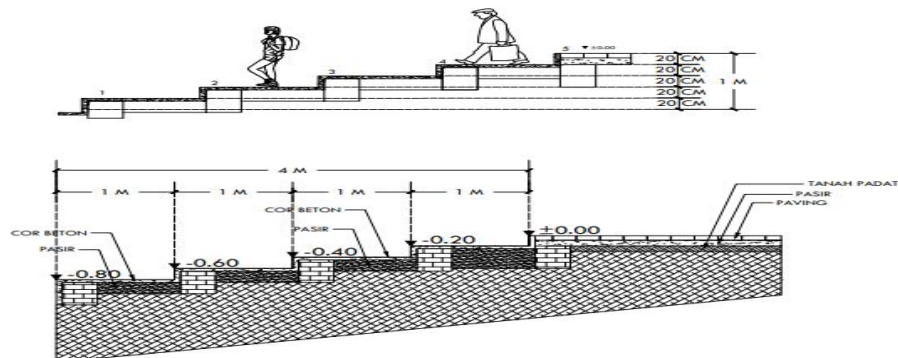
**FIGURE 6.** Rear View

The author divides the access to the entrance from the back of the Amphitheater into two parts to avoid piles of spectators who want to enter the Amphitheater.

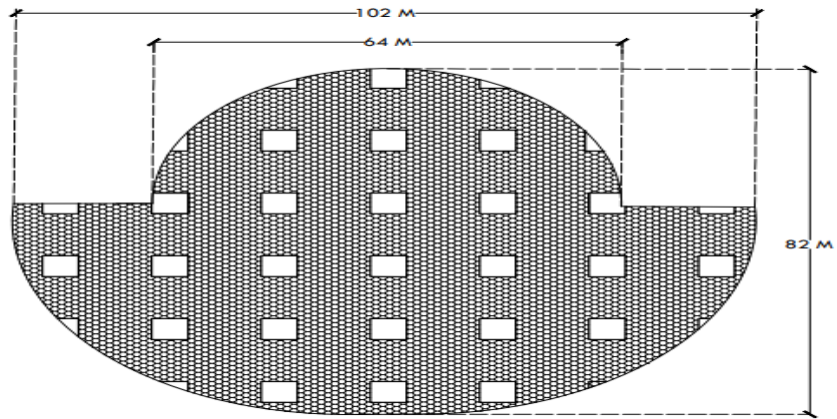


**FIGURE 7.** Details of the Grandstand

In the details of the stands, the designer made the height of the spectator stands 50 cm, and the width of the spectator seats 90 cm. In the details of the stairs, the designer made the height of the stairs 20 cm and the width of the stairs 1 m and four steps. This will make it easier for spectators to move and not be cramped when carrying out activities on the spectator stands.

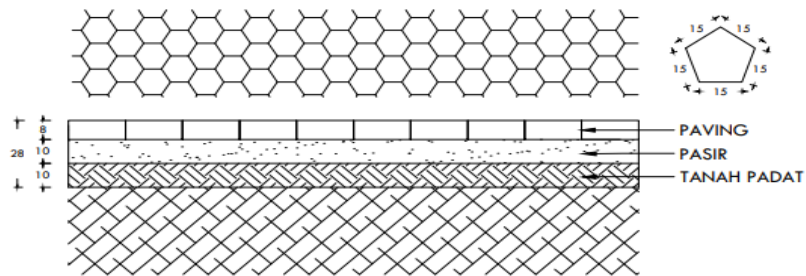


**FIGURE 8.** Stair details



**FIGURE 9.** Paving Block Plan

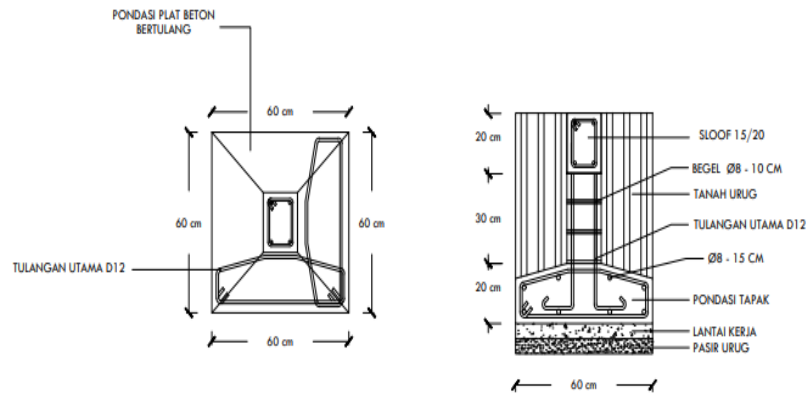
The author uses paving blocks and mini elephant grass in the Amphitheater area because they have advantages, namely, good water absorption capacity and reducing water puddles when there is heavy rain.



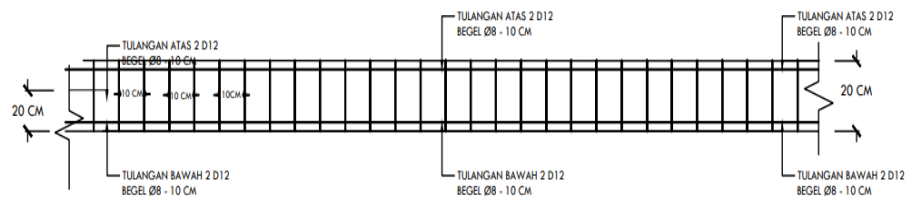
**FIGURE 8.** Paving Block Details

DESKRIPSI SLOOF		
	TUMPUAN	LAPANGAN
<b>SL</b>		
TULANGAN UTAMA ATAS	2 D12	2 D12
TULANGAN UTAMA BAWAH	2 D12	2 D12
SENGKANG/BEGEL	Ø8 -10	Ø8 -10

**FIGURE 9.** Foundation Details



**FIGURE 10.** Sloof Ironing Details



**FIGURE 11.** Ironing details

### 3 DIMENSIONAL RESULTS

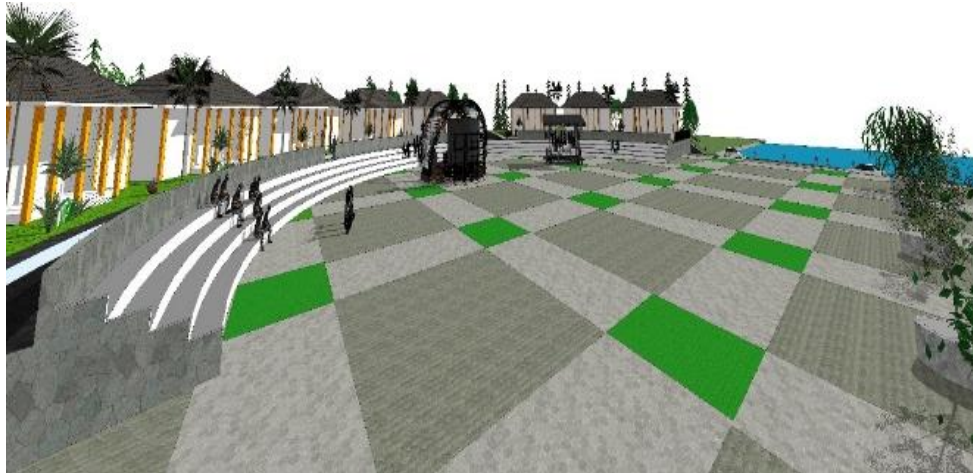
At this stage, the author uses Sketchup software to render the amphitheater so that it looks like the real thing and looks from various angles.



**FIGURE 12.** Front view



**FIGURE 13.** Top View



**FIGURE 14.** Left Stand View



**FIGURE 15.** Rear view of the stands



**FIGURE 16.** Front view

The stage: The Amphitheater is an arena-type face where the audience sits around the performance area.

Lighting Type The lighting system used by the Amphitheater is direct sunlight hitting the spectator stands.

## CONCLUSION

Based on the results of the 2D Amphitheater using an arena stage type, more wind flow is felt because of the influence of wind direction on the location of the building. It has a stage that can be seen from various directions because the audience seats are semicircular. From the picture above, the length of the Amphitheater is 91 M, the width of the spectator stands is 73 M, and the width of the stairs is 110 M. There are 12 trees.

- Discussion

More detailed calculations are needed to make this plan perfect using paid applications such as SAP2000 planning using Revit, which are related to structural calculations.

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