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Formulation of The Concept of Designing Swimming Sports Facilities in Mojokerto Regency with A Contextual Approach

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ABSTRACT

The design of swimming sports facilities requires a strong understanding of local conditions so that the resulting buildings not only meet technical standards, but also align with the needs and identity of the community. Mojokerto Regency, with population growth, increasing interest in sports, and the availability of diverse land between urban and rural areas, presents challenges as well as opportunities in providing adequate swimming facilities. This study seeks to formulate the basic concept of swimming sports facility design through a contextual approach that places geographical, climatic, socio-cultural, regional spatial planning, and swimming pool planning standards in a central position. The research methods include literature review, national–international regulatory analysis, field observation, and identification of community needs and physical environmental characteristics. The results of the research resulted in a basic concept that emphasizes the integration of local contexts, spatial efficiency, environmental sustainability, user comfort, and conformity with FINA standards and national regulations. This concept is expected to be the basis for the process of designing swimming sports facilities that are functional, safe, inclusive, and relevant to the dynamics of the people of Mojokerto Regency, as well as opening up space for the development of more adaptive and sustainable sports facilities.

Keywords: *Design Of Swimming Sports Facilities, Contextual Approach, FINA Standards, Planning Of Sports Facilities, Basic Concept Of Planning*

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INTRODUCTION

Mojokerto Regency is one of the areas in East Java Province that has a strategic position, both from geographical, historical, and socio-economic aspects. Located in the central area of East Java Province, Mojokerto Regency is located on the main connecting route between Surabaya-Madiun-Jombang, and is close to the economic center of Gerbangkertosusila. This condition makes Mojokerto an area that has great potential in the development of regional development in various sectors. Administratively, Mojokerto Regency consists of 18 sub-districts with diverse regional characteristics, ranging from lowlands to mountainous areas on the slopes of Mount Penanggungan and Welirang. This diversity gives birth to strong natural resource potential, such as the agriculture, plantation, fisheries, and natural tourism sectors (Bappeda Kabupaten Mojokerto, 2020).

Mojokerto Regency is one of the areas in East Java Province that has quite rapid development in the field of sports, especially in the swimming sport. As an area with a growing population and supported by the character of a region that has the potential for water resources and a network of sports facilities, Mojokerto shows a strong capacity to develop swimming sports as one of the leading branches.

In recent years, the achievements of swimmers from Mojokerto Regency have begun to show significant improvements. This can be seen from the medals scored by student athletes at various regional and provincial championships. In a number of competitions between students, swimming athletes from Mojokerto Regency managed to bring home dozens of medals, which indicates that swimming coaching at the school and club levels has gone well. This achievement is proof that swimming has great potential to be further developed as a sport that can make the region proud.

In addition to the achievement factor, swimming is also relevant to the conditions of the Mojokerto Regency area. The availability of facilities such as public swimming pools, school swimming pools, and several training facilities from local swimming clubs is the initial capital in coaching athletes. However, the distribution of these facilities is still uneven and some sub-districts still lack adequate training facilities. This has an impact on limited access to the public, especially early age athletes, to get quality and sustainable training.

On the other hand, people's interest in swimming continues to increase along with awareness of the importance of water sports, personal safety, and a healthy lifestyle. Swimming is not only in demand as an achievement sport, but also as a recreational sport and educational need, such as water safety training for children. This increase in interest demands the availability of swimming facilities that are more representative, safe, and competition-standard.

Seeing the potential achievements of athletes, the high interest of the community, and the need for better facilities, Mojokerto Regency has a great opportunity to make swimming as one of the focuses of regional sports development. Efforts to improve athlete development, provide proper facilities and infrastructure, equal access to training facilities, and support local government policies are important factors in realizing swimming as a sustainable superior sport.

Therefore, more targeted analysis, planning, and development are needed in maximizing the potential of swimming sports in Mojokerto Regency. Strengthening the coaching system, optimizing facilities, and collaborating between local governments, schools, swimming clubs, and the community are strategic steps in creating a competitive and inclusive swimming sports ecosystem.

The purpose of this study is to find a basic concept formulation in the Design of Swimming Sports Facilities in Mojokerto Regency with a Contextual Approach.

METHOD

This study uses a qualitative-descriptive approach with a contextual case study method to formulate a basic concept of designing swimming sports facilities that are in accordance with the characteristics of Mojokerto Regency. This approach was chosen because the research aims to comprehensively understand the real conditions in the

field, user needs, and environmental context before determining the design concept (Creswell, 2014; Moleong, 2012).

Data Collection Methods

At the data collection stage, the method used, namely Literature Study, is through the media of books, journals, articles, and regulations from the government in accordance with the object. Furthermore, through the observation method, namely through direct observation and documentation on the object of the research location to analyze the existing conditions and situations (Creswell, 2014).

Data Presentation Method

The data obtained is then presented through the form of graphics, photos, tables, and descriptions obtained from reliable sources (Groat & Wang, 2013).

Data Analysis Methods

After presenting the data, then the data enters the analysis and synthesis stage. The analysis is carried out by describing the problem based on its classification based on previously obtained data. Synthesis is carried out after the problem has been successfully analyzed so that the problem can find a suitable solution (Sugiyono, 2017).

RESEARCH AND DISCUSSION

Definition of Basic Concepts

The basic concept according to Sugiyono (2017) is a general idea or abstraction that is the basis for understanding certain phenomena and is used as a basis for formulating research variables and designing a system (Sugiyono, 2017).

Definition of Sports Facilities

According to Law No. 11 of 2022 concerning sports, sports facilities are facilities and infrastructure used for the implementation of sports activities, including training venues, competitions, and sports coaching activities. According to Chelladurai (1994) Sport Facility Management, a sports facility is a physical space and equipment prepared for sports activities, both for recreational and competitive purposes, which must meet the standards of comfort, safety, and functionality (Undang-Undang No. 11 Tahun 2022).

Classification of Swimming Sports Facilities

According to Permenpora No.8 of 2018, swimming sports facilities are divided into several levels of service, namely: (Kemenpora RI, 2018).

1) Environmental Service Level (Village/Village)
    - Facilities are basic and easily accessible to local residents
    - Small-medium capacity
    - Examples of swimming infrastructure: small-scale public swimming pools and swimming learning pools.

2) Sub-district Service Level
    - Accommodating wider community activities
    - Can be used for regular community exercises
    - Examples of swimming infrastructure: national standard swimming pools (training pools) and multipurpose swimming pools.
3) Regency/City Service Level
    - Intended for regional level achievement sports activities
    - Larger capacity
    - Examples of swimming infrastructure: regional competition standard swimming pools and PRSI/FINA standard minimum swimming pools.
4) Provincial Service Level
    - Used for provincial to national level competitions
    - More complete and integrated facilities
    - Examples of swimming infrastructure: championship standard swimming pools and warming pools.
5) National and International Service Levels
    - Meet international federation (FINA) standards
    - Equipped with a referee room, doping control room, media, VIP, and security facilities
    - Examples of swimming infrastructure: olympic size swimming pool (50 m x 25 m x 2 m depth), diving pool (if required), and separate warming pool.

Comparative Study

A. Gelora Bung Karno (GBK) Aquatic Stadium – Jakarta

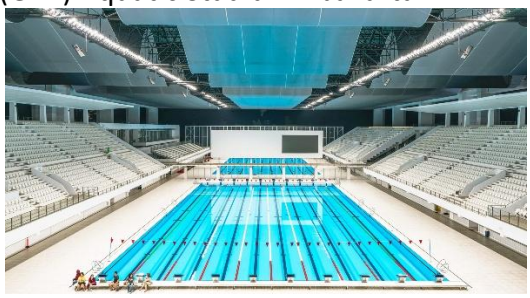

Figure 1: Aquatic Stadium Gelora Bung Karno

Source : https://gbk.id/venue/stadion-aquatic-3

Gelora Bung Karno Aquatic Stadium is located in the Gelora Bung Karno Complex, Central Jakarta. The building refers to the FINA (Federation Internationale de Natation) standard. The main facilities in this building are as follows: (FINA, 2021).

- Main swimming pool size 50 x 25 m, depth 3 m (olympic size pool)
- Warm-up pool
- Kolam loncat indah (diving pool)
- The Tribune has a capacity of ± 8,000 spectators

B. Jakabaring Sport City (JSC) Aquatic Stadium – Palembang

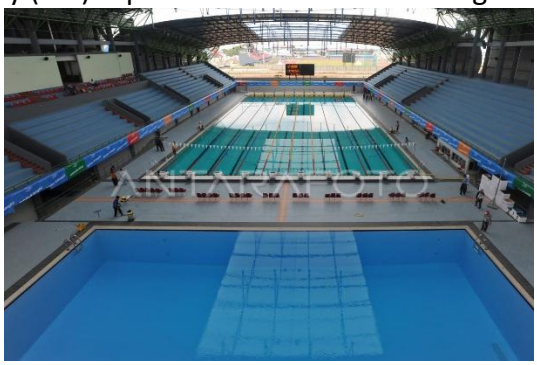

Figure 2: Jakabaring Sport City Aquatic Stadium

Source: https://www.antarafoto.com/id/view/178295/persiapkan-arena-aquatic

The Jakabaring Sport City (JSC) Aquatic Stadium is located in the JSC complex, Palembang, South Sumatra. The stadium is FINA Class 1 certified with the following facilities: (FINA, 2021).

- Main pool 50 m
- Heating pool
- Beautiful jumping pool
- Official room
- Doping control
- Athlete area.

Conclusion of the Comparative Study

A precedent study of several international standard swimming facilities in Indonesia—such as the GBK Aquatic Center Jakarta, and the Jakabarin Sport City (JSC) Aquatic Stadium in Palembang, shows that the design of competition-level swimming facilities requires alignment between FINA's technical requirements, environmental context considerations, and diverse user needs. All precedents show that international standards can be applied optimally when supported by design aspects that include the dimensions of the competition pool, water circulation technology, lighting, safety, and adequate spectator comfort. In addition, the integration of supporting facilities such as athletes' locker rooms, warming up areas, medical rooms, referee/judge rooms, media centers, and public areas also determine the operational quality of the facility. The precedent also affirms the importance of flexibility, i.e. the ability of facilities to be used not only for competitions, but also for community training and recreational activities. (FINA, 2021; Moore, 2011; Wilkinson, 2014).

Another factor that stands out is the importance of professional management, periodic maintenance, and adaptation to the development of modern swimming technology. The implementation of the principles of energy efficiency and sustainability is also starting to become a concern in the design and renovation of facilities. Overall, precedent studies show that international standard swimming sports facilities should be designed with global technical standards in mind, user comfort, sustainability, and responsiveness to the local context. This finding can be an important reference in

formulating the basic concept of designing swimming sports facilities in Mojokerto Regency with a contextual approach.

Object Characters

Based on comparative studies and literature studies of swimming sports facility objects, the characteristics of objects based on the most dominant needs for the national/international scale are as follows: (FINA, 2021; Neufert, 2012).

1) Meets international/FINA dimensional standards
    - Main pool measuring 50 x 25 m (competition pool)
    - The depth ranges from 2-3 m for competition events
    - Has an international standard lane rope
    - Equipped with a warm-up pool
2) Completeness of the supporting system
    - Starting block berstandar FINA
    - Electronic timing system
    - High-rate filter water circulation system
    - Lighting systems that meet the lux level of competition
3) Athlete and coach support facilities
    - Athletes' dressing room
    - Medical room and doping control
    - Official and technical meeting room
    - Tribune for coaches and officials.

Basic Concepts

Based on the character of the object, the character of the perpetrator, and the character of the location, the formulation of the basic concept as a guideline for the design of swimming sports facilities in Mojokerto Regency is obtained as follows:

1) Local Cultural Context

    Mojokerto Regency has a very strong local cultural wealth, especially related to the heritage of the Majapahit Kingdom which is the historical identity of this region. This historical value is reflected in traditional space patterns, Majapahit artifact motifs, and the character of local architectural elements. In the context of designing swimming sports facilities, the use of local cultural values can be realized through: (Bappeda Kabupaten Mojokerto, 2020; Habraken, 1998).

    - The use of Majapahit geometric patterns in interior and complete elements,
    - Articulation of public spaces that reflect openness and togetherness as cultural values of eastern East Java,
    - Providing a visual narrative about the glory of Majapahit at certain points of space.

    This aims to create facilities that not only function as sports facilities, but also as a representation of the identity of Mojokerto Regency.
2) Sports Facilities and Community Services

Swimming sports facilities function as a means of training, recreation, education, and organizing events. With the scale of the district's services, the facility must meet: (Kemenpora RI, 2018; Jones, 2016).

- National and international standards (FINA) for competition pools,
- Athlete training and coaching room,
- Flexible spaces for public activities, recreation, and water education,
- Comfortable, safe and easily accessible support facilities for all age groups.

The services provided are not only for professional athletes, but also for the general public, so the design must be inclusive and adaptive.

3) Health, Fitness, and Mental Formation

Swimming activities are closely related to physical health and mental recovery. Then the planning should pay attention to: (Cohen, 2015).

- A calming atmosphere of the space (natural lighting, vegetation, orientation),
- Relaxation area or recovery zone after exercise,
- Circulation of space that supports visitors to feel safe, comfortable, and pressure-free.

This concept is important because modern sports facilities are not only a place to compete, but also for character building and improving the quality of life of the community.

4) Integration with the Natural Environment and Local Climate

Mojokerto has the character of a humid tropical climate with relatively hot temperatures. The planning should consider: (Bappeda Kabupaten Mojokerto, 2020; Ching, 2014).

- Building orientation that minimizes direct heat,
- Use of cross ventilation, shading, and shade vegetation,
- Landscape treatment that is integrated with outdoor facilities,
- The use of modern tropical architectural concepts to create thermal comfort without full dependence on mechanical systems.

This integration not only supports energy efficiency, but also improves visitor comfort.

Formulation of Basic Concepts

Based on these four aspects, the design concept was prepared by combining local cultural values, sports service functions, mental health aspects, and natural integration. The incorporation of concepts resulted in one main idea as follows: (Lawson, 2005; Lang, 1987).

Basic Concept: "Harmony Tirta Majapahit"

"Harmoni Tirta Majapahit" is a basic concept that combines the historical value of Majapahit with the function of modern swimming sports facilities to create an active, healthy, and contextual space.

- Harmony represents a balance between culture, nature, and human activities.
- Tirta means water as the main element in swimming.

- Majapahit became the local identity of Mojokerto which gave character and symbolic value to the design.

This concept interprets a swimming sports facility as a space that unites:

- Local identity through visuals, patterns, and spatial organization.
- Sports activities that meet the standards of competition.
- Physical and mental recovery through a soothing space atmosphere.
- Environmental sustainability through tropical architecture and site treatment that is in harmony with nature.

Thus, "Harmoni Tirta Majapahit" is the basis for a design that is able to answer the needs of the people of Mojokerto while presenting a strong local character in national and international standard swimming sports facilities.

CONCLUSION

The formulation of the basic concept of designing swimming sports facilities in Mojokerto Regency shows that the design must depart from the context of the applicable physical, social, cultural, and regulatory environment. The integration of technical standards such as FINA and Permenpora No. 8 of 2018, combined with the needs of the community and the character of the Mojokerto region, results in design principles that are oriented towards accessibility, safety, sustainability, and the function of national-international standard sports services. This concept is the basis for designing swimming facilities that are adaptive, inclusive, and relevant to regional development.

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