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INTEGRATION OF CONTEXTUAL ARCHITECTURE IN THE DESIGN OF THE PANCEING CEMARA STREET WALK, DELI SERDANG REGENCY

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Abstrac

Medan City and Deli Serdang Regency are two adjacent regions experiencing significant population growth. In the border area, particularly in Percut Sei Tuan District, the need for public spaces for recreation and social interaction has not been optimally fulfilled. The limited availability of open space in this densely populated area highlights the importance of developing spaces that can inclusively accommodate social functions. To address this issue, the design of the Pancing Cemara Street Walk is proposed as a public space that is not only functional but also contextual to its surrounding environment. With the theme of contextual architecture, the Street Walk design aims to harmonize with the social, cultural, and physical character of the area, while reviving local elements through adaptive architectural expression. Spaces such as parks, seating areas, pedestrian paths, commercial zones, and green open areas are designed to support the creation of a comfortable and well-connected place for interaction and recreation

Kata Kunci: *Arsitektur Neo-Vernakular, Budaya Lokal, Resort Hotel, Lagundri Beach, Nias Selatan.*

Abstrak

Kota Medan dan Kabupaten Deli Serdang merupakan dua wilayah yang saling berbatasan dan mengalami pertumbuhan penduduk yang signifikan. Di kawasan perbatasan, khususnya Kecamatan Percut Sei Tuan, kebutuhan akan ruang publik untuk aktivitas rekreasi dan interaksi sosial belum terpenuhi secara optimal. Keterbatasan ruang terbuka di wilayah padat ini mendorong pentingnya pengembangan area yang mampu mengakomodasi fungsi sosial masyarakat secara inklusif. Menjawab permasalahan tersebut, perancangan Street Walk Pancing–Cemara diusulkan sebagai ruang publik yang tidak hanya fungsional, tetapi juga kontekstual terhadap lingkungan sekitarnya.Dengan mengusung tema arsitektur kontekstual, desain Street Walk dirancang agar selaras dengan karakter sosial, budaya, dan fisik kawasan, serta mampu menghidupkan kembali elemen-elemen lokal dalam wujud arsitektur yang adaptif. Ruang-ruang seperti taman, area duduk, jalur pedestrian, zona komersial, dan ruang terbuka hijau dirancang untuk mendukung terciptanya tempat berinteraksi dan berekreasi yang nyaman dan terhubun

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INTRODUCTION

Medan City has 21 sub-districts and villages, with a population of ±2,474,166 people, bordering Deli Serdang Regency in Medan Tembung District which has a population of ±149,279 people[1]. Meanwhile, Deli Serdang Regency has 22 sub-districts and 394 villages/wards with a population of approximately 1,931,441. In Percut Sei Tuan District, which borders Medan Tembung, there are only three tourist destinations[2]. Due to the lack of recreation and interaction locations or areas directly adjacent to Medan City in Percut Sei Tuan District, there is a phenomenon that occurs in Percut Sei Tuan District, namely the lack of areas for public space, interaction and social, so a place is needed for recreation and community interaction areas in the form of Street Walk in the Pancing and Cemara Area[3], [4]. Responding to this condition, Street Walk Pancing Cemara with a contextual architectural approach, as an effort to present a public space that is in harmony with the local character[1], [5] .

Street Walkcan be defined as a public area which contains open spaces, commercial areas, dining areas such as food courts, sidewalks, plazas, and shopping center functions, which can connect activities that support interaction and recreation[6], [7]. Contextual architecture is a design approach that considers the harmonious relationship between new buildings and the existing conditions around them[8], [9]. According to[10] (1980) in his book Architecture in Context, this approach is carried out through the integration of local elements such as the form, material, and scale of the building into a new design, so as to create visual and functional continuity in one area, aiming to create a harmonious relationship between the building and its surrounding environment[11]. This approach emphasizes the importance of integrating the building with its surrounding context. This can be done by reincorporating elements or elements from the surrounding environment into the new building design.[12], [13]

State Of The Art

1. Contextual Architecture

According to Ian Bentley in his work Architecture in Context (1980)[9] Contextual architecture is an approach to designing and planning buildings that prioritizes visual continuity between new buildings and the character of their surrounding environment. This approach also includes an examination of the challenges that arise in creating relationships between buildings of different periods and complementing the surrounding environment[14], [15]. This relationship can be realized by reintegrating elements or components found in the surrounding environment or buildings into the new building design. According to Ian Bentley[16], [17], the application of contextual architecture can be categorized into two main applications, namely harmony and contrast[15], [17], [18].

- Harmony, The harmony approach is designing new buildings that are able to adopt and integrate existing elements in the surrounding environment, including existing old buildings that have been built previously[16].
- Contrast, The contrast approach is to present new elements that are different from what is in the old building and the environment in contextual architecture is not intended to disturb or damage the existing environmental order. On the contrary[19].
- There are several basic criteria that can be used as considerations in linking new buildings to their surrounding environment. These criteria are applied through theory by(Bentley, 2011).Ian Bentley (1985) in his book Responsive Environment, namely[20], [21]:
- Permeability,Easy access and circulation, which makes it easier to access the building
- Variety, Diverse functions withadapt to various existing space needs

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- Legibility,Ease of building recognition, helping users understand and navigate the environment through clearly designed and distinct paths, intersections and landmarks
- Robustness, Providing a place that can be used for various activities, with a multifunctional spaceVisual appropriateness,Visual Conformity, the building fits in appearance with the surrounding context.
- Richness, visual richness, provides an interesting and varied visual and sensory experience.

2. Street Walk as a Public Space

A Street Walk is a modern form of public space that combines pedestrian circulation with recreational and social interaction elements. Street walks can include elements such as pedestrian paths, parks, seating areas, food courts, plazas, and commercial zones, all connected by a single public corridor[7], [22]. These spaces support non-motorized mobility, create economic opportunities, and serve as inclusive social spaces[23], [24] . Street WalkA corridor is usually an open space corridor intended for pedestrians and serves to connect various commercial and retail areas. This corridor is open and relatively wide, ranging from 2 to 6 meters, depending on the concept and type of activity being implemented.[22], [25]. A successful Street Walk design must meet the needs of urban communities for safe, comfortable, and easily accessible open spaces. Street Walks have three main elements:

1. Open space can be used for a variety of activities, including recreation, interaction, and performance areas. This space plays a crucial role in creating cohesion between various elements in the surrounding environment. Furthermore, its existence serves not only as a venue for entertainment or public activities, but also as a connecting link that unites the surrounding building masses.[26] Well-designed open spaces within a Street Walk are thus instrumental in fostering community engagement and providing flexible environments that cater to diverse social and recreational needs [6].
2. Pedestrian, The word "pedestrian" comes from the Greek pedos, meaning foot. Therefore, the term refers to individuals who walk or walk within a particular environment.[27]
3. Retail (buildings), Buildings are the main elements that shape the character and function of an area, especially in a modern shopping center environment. As commercial spaces, buildings have an important role in supporting various trading activities, providing facilities for visitors[28].

Research gap

Although many studies have examined contextual architecture in specific buildings or areas, its application in pedestrian infrastructure design remains highly limited. Most existing studies tend to focus solely on physical elements of pedestrian paths, such as paving blocks, lighting, and vegetation, without considering broader contextual factors such as local culture, social dynamics, and economics[29], [30]. Additionally, most research on pedestrian path design focuses on major cities like Jakarta and Surabaya, while secondary urban areas, such as Deli Serdang Regency, which have unique characteristics, are rarely explored in this context.[31]

Furthermore, research on pedestrian path design is often separated from social and cultural studies, even though integrating contextual elements into the design could significantly contribute to the comfort and safety of pedestrians. In many cases, existing pedestrian path designs are not optimal due to a lack of understanding of pedestrian behavior in the local context.[32], [33] Therefore, this study aims to fill this gap by analyzing how contextual elements can be integrated into the design of pedestrian paths in Pancing Cemara Street and how this integration affects pedestrian comfort and safety in the area. The research will also provide design recommendations that are more responsive to

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the local context, ultimately improving the quality of pedestrian paths in Deli Serdang Regency.

Research Novelty

The novelty of this research lies in its focus on the integration of contextual architecture into pedestrian path design, specifically in the context of Pancing Cemara Street in Deli Serdang Regency, an area with unique characteristics that have not been extensively studied in previous research. Unlike most studies that concentrate on urban areas such as Jakarta and Surabaya, this research brings attention to secondary urban areas, which often have different social, cultural, and economic dynamics that influence pedestrian behavior[34], [35].

Furthermore, the research proposes a holistic approach that incorporates not only physical design elements (such as paving blocks, lighting, and vegetation) but also broader contextual factors, including local culture, traditions, and the socioeconomic environment. This approach is novel because it aims to create pedestrian infrastructure that is not just functional but also responsive to the needs and behaviors of the local community, thus enhancing pedestrian comfort and safety[36], [37].

In addition, this research fills the gap in existing literature by addressing the lack of studies that combine contextual analysis with pedestrian infrastructure design. It integrates interdisciplinary perspectives, considering both physical and sociocultural aspects, which have often been treated separately in previous studies. The research will also provide practical recommendations for designing pedestrian paths that are culturally and socially relevant, offering insights that can be applied to similar urban development projects in other regions with similar characteristics[22], [38].

METHODOLOGY

This research adopts a qualitative and quantitative approach with a descriptive and analytical method, aiming to analyze how contextual elements can be integrated into the design of pedestrian paths on Pancing Cemara Street and their impact on pedestrian comfort and safety[39], [40]. The methodology consists of the following stages:

1. Literature Review

Purpose: To understand the concept of contextual architecture and its application in infrastructure design, as well as previous studies related to pedestrian path design in urban areas, especially in regions with unique characteristics.

Steps: Reviewing relevant literature, including journals, books, articles, and previous research reports on contextual architecture, pedestrian path design, and case studies in large cities and secondary urban areas.

2. Case Study

Purpose: To identify and analyze the existing condition of pedestrian paths on Pancing Cemara Street, Deli Serdang, and the contextual elements that can be integrated into the design.

Steps: Conducting field observations of the physical condition of the pedestrian path, pedestrian behavior, and the interaction between environmental elements (such as buildings, vegetation, and infrastructure) in the area.

3. Surveys and Interviews (Field Survey and Interviews)

Purpose: To collect primary data on pedestrian perceptions, local community opinions, and contextual factors influencing pedestrian path design.

Steps:

Survey: Distributing questionnaires to pedestrians around Pancing Cemara Street to identify their comfort levels, perceptions of the existing pedestrian path design, and the need for contextual elements such as public spaces, lighting, and vegetation.

Interviews: Conducting interviews with relevant stakeholders, such as urban planners, local residents, and architecture experts, to

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gather insights on how contextual elements (cultural, social, economic) can be applied to the design of pedestrian paths.

4. Data Analysis

Purpose: To analyze the data obtained from field observations, surveys, and interviews, and to synthesize findings regarding the integration of contextual elements in pedestrian path design.

Steps:

Qualitative: Qualitative data will be analyzed using thematic analysis to identify key themes related to pedestrian path design and relevant contextual elements. Data from interviews and observations will be analyzed to understand the relationship between contextual elements and pedestrian comfort.

Quantitative: Data from the surveys will be analyzed using descriptive statistics to describe pedestrians' perceptions of the pedestrian path design and how important contextual elements are in enhancing comfort and safety.

5. Development of Design Recommendations

Purpose: To develop design recommendations that integrate contextual elements based on the research findings, aimed at improving the quality of the pedestrian path on Pancing Cemara Street.

Steps: Based on the data analysis, design recommendations will be created that consider both physical and contextual aspects, such as the use of local materials, culturally relevant lighting, and public spaces that encourage social interaction. These recommendations will be presented in the form of design sketches and technical guidelines.

6. Validation of Findings

Purpose: To ensure that the proposed design recommendations align with user needs and local contextual relevance.

Steps: A focus group discussion (FGD) will be organized with relevant stakeholders (local community members, local government, urban planners) to gather feedback on the proposed design recommendations.

Data Collection Methods:

Field observations to assess the existing condition of pedestrian paths and observe pedestrian behavior.

RESULTS AND DISCUSSION

The Street Walk design is located in Deli Serdang Regency, Percut Sei Tuan District, North Sumatra. With a footprint of ±18,100 m.

Figure 1 Location and Size of Site

The site is located at a crossroads, accessible from Jl. H. Anif on the west side and Jl. Irian Barat on the south side. Therefore, the entry lanes for four-wheeled and two-wheeled vehicles are separate in the site, to reduce congestion at the intersection. Streetwalk prioritizes circulation and access functions, allowing users to walk on Street Walk. Parking is placed at the rear of the site to minimize vehicle dominance, so that visitors can walk more.

The site's circulation is designed in a curved and winding manner to encourage a flowing and winding circulation concept, creating a dynamic and engaging walking experience. This non-linear path creates curiosity and visual surprises at every turn, while also opening up opportunities for seating areas, photo spots, and community activity areas. The placement of the masses following the shape of the site, surrounded by scattered

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small gardens, further enriches the spatial experience, both visually and functionally.

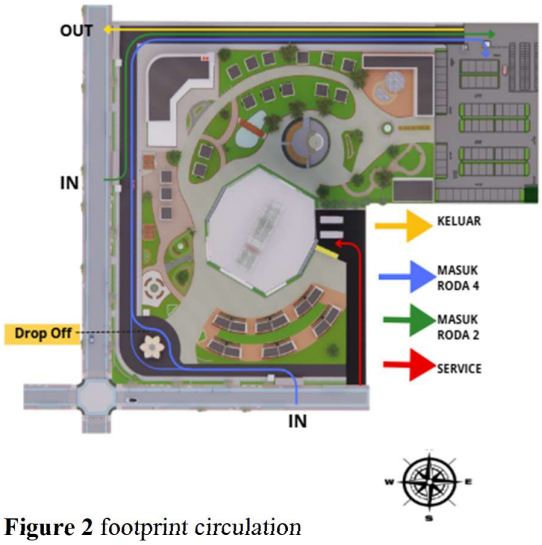

Figure 2 footprint circulation

The layout of the building mass follows the planned circulation form. It is designed to spread out so that visitors are encouraged to explore the entire site area, creating a comprehensive circulation flow and increasing interaction with each available function zone.

Figure 3 building period

*Street Walk*applied to three main elements: open spaces, pedestrian paths, and commercial zones. Open spaces serve as social gathering points and comfortable recreational facilities, such as public plazas, themed gardens, and communal seating areas. Pedestrian paths are designed with a Primary Path Width of 4-8 m and a Secondary Path Width of 2-4 m. Commercial zones merge with pedestrian paths, presenting retail, which supports the local economy.

Application Of Contextual Architectural Themes

The application of contextual architecture is applied by aligning the harmony and character of the surrounding environment with the street walk design, with the application of the theory by Ian Bentley (1985) in his book Responsive Environment, so that new buildings "blend" with the character of the surrounding environment context—both physical, social, and cultural and complement the deficiencies. Contextual Theory based on Bentley-Brent, is divided into seven (7) Indicators, namely: Permeability, Variety, Legibility, Robustness, Richness, Visual Appropriateness, and Personalization. These seven Indicators are applied to the design of the Pancing Cemara street walk through the following explanation.

1. ***Permeability*(Easy access)**

Easy access for users in the street walk design is applied in several parts, such as.

a) Pedestrians are arranged around the site to facilitate access.
b) designing pedestrians within the site that are comfortable, neat and safe
c) easily recognizable gates, for example by designing the entrance
d) pedestrian that connects between functions on the site
e) alternative entry area to the site for pedestrians, so that access for pedestrians is easy
f) multi-lane that connects the masses, but not just one line, but can be from many lines

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Figure 4 Application of permeability

2. Variety (Varied functions)

Variety in contextual architecture refers to the diversity of functions that support various activities and create a vibrant environment. The surrounding site features a variety of building functions, such as shophouses and commercial areas, but the availability of interaction and recreational spaces remains limited.

a) Various activity functions such as recreation and interaction areas
b) Street Walk provides a shopping area, allocation of surrounding traders, open stage, green park
c) Combination of Social, Commercial and Recreational Functions

Figure 5 Application of variety

***3.* Legibility (Easily recognized)**

The area's layout is designed to be clear and easily recognizable through the use of visual landmarks such as large signage, distinctively patterned corridors, and a central plaza. These elements help visitors navigate, find gathering points, and identify the function of each space.

a) Provide visual identity (color, shape, small landmarks)
b) Center orientation within the site
c) Building recognition in the form of building names in clear signage
d) Consistency of Design and Visual Style
e) The main pedestrian paths are marked by different floor materials,
f) Secondary paths or access to the park, food court, or plaza are made narrower or the floor texture is different.

Figure 6 Implementation of legibility

4. Robustness (Functional Flexibility)

Robustness refers to a space's ability to adapt to various activities. Open spaces such as plazas and parks are designed to be multifunctional, allowing them to serve as gathering areas, art stages, bazaars, and even educational spaces, depending on the community's needs.

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a) Multifunctional open space for relaxing, performing, or playing.
b) Shopping center atrium for bazaars, outdoor gardens, and other activities.
c) A stall area with seating, a lounge, and semi-permanent buildings for exhibitions.
d) Seating area in the park as a public interaction space.
e) The pedestrian path branches out with wider spaces for events, street artists, or evening culinary delights.

Figure 7 Implementation of robustness

5. Visual Appropriateness

Visual Appropriateness in contextual architecture is a principle that ensures the design of buildings and public spaces is in harmony with the character, scale, and identity of the surrounding environment. This approach considers visual elements such as massing, color, materials, and architectural details to harmonize with the existing context, without losing the distinctive features or innovation of the design. In this context, buildings are designed so that their external appearance is in harmony with the surrounding environment, thus creating visual continuity and avoiding the impression of excessive contrast.

a) Number of floors 1-4 m
b) Local materials such as exposed brick, wood, natural stone, secondary skin, stone skin, WPC, roster, etc.
c) Use of facade layering (secondary skin, WPC, glass)
d) Dominance of box shapes, sharp horizontal/vertical lines, flat facades.
e) Neutral warm colors such as gray, wood brown, and black
f) The front facade is designed with a strong visual focal point in the center with an open garden atrium and skylights.

Figure 8., Application of visual appropriateness

6. Richness (Visual Richness)

Richness refers to the ability of a space or building to provide diverse visual and sensory experiences, thus creating interest and comfort for visitors. This can be achieved through a combination of elements such as varied textures, dynamic natural lighting, refreshing vegetation, play of color, and unique architectural details. This approach makes every corner of the area feel alive and invites exploration.

a) The facade has a play of perforated brick textures, lattices
b) The facade uses a combination of glass, WPC, and secondary metal skin, each of which has a different visual character.
c) Creating a skylight Natural light enters from skylights and louvers.
d) The sound of water from the fountain.
e) Texture and Pattern Play

Figure 9 Application of richness

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7. Personalization

According to Bentley, personalization is the ability to represent the area and location where it is built. In this regard, Bentley emphasizes that planned buildings must involve the participation of the surrounding community and residents, as well as the ability of users or designers to add local identity, meaning, or expression to the design.

a) Retail with different types according to tenant needs
b) Providing a place for the community to participate by providing a stall area that can be rented
c) provide an exhibition area for the public

Picture10 Applications of personalization

Source: personal document, 2025

Of the seven Ian Bentley (1985) in his book Responsive Environment, the application to Street Walk was again adjusted according to the needs and function of each building.

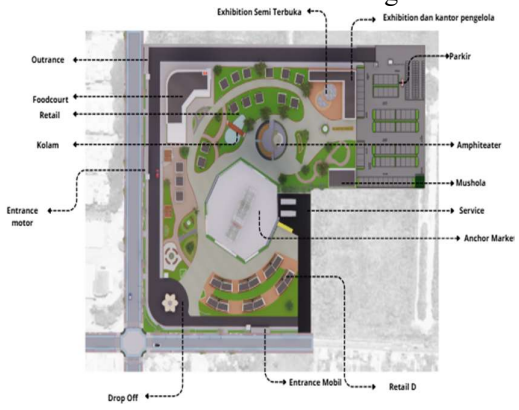

Figure 11 Site plan

By integrating the principles of contextual architecture according to Ian Bentley, the street walk design will not only create a public space that simply fulfills its basic function as a pedestrian path, but also becomes a space rich in meaning and socially and culturally significant for the surrounding community. This contextual approach ensures that the street walk design responds carefully to the physical character of the surrounding environment, from the building form, circulation patterns, materials, to the created spatial atmosphere. Thus, this public space becomes an integrated and harmonious part of the local identity.

CONCLUSION

Based on the analysis and design of the street walk in Cemara using Ian Bentley's 7 principles of contextual architecture, it can be concluded that the integration of these principles can produce a public space design that is not only functional, but also has high aesthetic and social quality. The application of principles such as variety (functional diversity), legibility (ease of recognition), robustness (functional flexibility), richness (visual richness), personalization (personalization), appropriateness (visual suitability), and permeability (ease of access and circulation) provides a strong foundation in creating a street walk that is responsive to the physical, cultural, and social context in the Cemara area.

The resulting design strengthens local identity through the selection of appropriate materials and architectural forms, while creating a dynamic and inclusive social interaction space for diverse user groups. Thus, the street walk in Cemara serves not only as a pedestrian path but also as a vibrant, meaningful, and easily accessible public space, tailored to the needs and character of the local community.

The implementation of Ian Bentley's contextual architectural principles in this design can be an important reference for the development of other public spaces that prioritize harmony with the surrounding environment, as well as supporting the social and cultural sustainability of the area.

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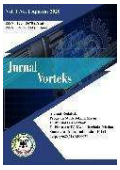

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