

## Redesign of the Traditional Market in Tarutung City Using A Neo-vernacular Architectural Approach

Hajar Suwantoro, ST., MT<sup>1</sup>, Renol Hutasoit<sup>2</sup>

<sup>1</sup>Architecture Departement, Faculty of Engineering, Universitas Sumatera Utara, Medan, Indonesia

\*Corresponding Author: [hsuwantoro@gmail.com](mailto:hsuwantoro@gmail.com), [renolhutasoit21@gmail.com](mailto:renolhutasoit21@gmail.com)

### Abstrak

Along with the development of the times, people's markets are starting to be eliminated by the existence of supermarkets, malls and other shopping centers which are considered clean, comfortable, well organized, and also safe. This is also felt by the people's markets in North Tapanuli Regency. As an area that is a center for trade in agricultural products, North Tapanuli Regency still does not have a people's market that meets market building standards, especially the people's market in Tarutung (Onan Tarutung). Human needs that continue to develop require the support of facilities that can accommodate human activities in it. The problems that exist are the lack of awareness of market cleanliness, discomfort, unsafe, not well-organized zoning, and also not accessible to persons with disabilities. The lack of progress in the standard of living of the people in Tarutung has resulted in the slums of the market area continuing to increase so that the existence of people's markets is increasingly inferior to modern shopping centers. Therefore, the rejuvenation and development of the area that will be carried out at Onan Tarutung is through a neo-vernacular architectural approach, not only through physical form but through socio-cultural relations with the environment. The application of neo-vernacular architecture also provides a new function for the development of Onan Tarutung, namely the existence of the 'alaman' concept where sellers can sell in the middle of a mass of buildings which can give a natural impression in accordance with the huta batak concept, as well as the existence of flexible spaces such as plazas that can be used as community for social activities in the form of religious, cultural, and other social events.

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## 1. Introduction

A Market that is Lively and Sustains its Inhabitants. Traditional markets play an important role in the local community's economy. Traditional markets in Indonesia are very easy to find in various regions, such as in rural and urban areas. As time progresses, markets can be understood as institutions managed by the government where the transaction processes run smoothly.

The Presidential Regulation of the Republic of Indonesia regarding the Arrangement and Development of Traditional Markets, Shopping Centers, and Modern Stores in 2007, refers to traditional markets as those built and managed by various parties, including the Government, Regional Governments, the Private Sector, State-Owned Enterprises, and Regional-Owned Enterprises. This involves collaboration with the private sector in the form of business places such as shops, stalls, and tarpaulin-covered areas owned or managed by sellers with small-scale businesses, limited capital, and involving bargaining in the transaction process of trading goods.

According to the Market and Trade Center Directory Data of 2020, there are 16,235 traditional markets spread across many provinces in Indonesia and still actively operating. One of the provinces with the most traditional markets is Central Java, with 1,977 markets, and the province with the fewest is Bangka Belitung Islands, with 75 markets. Meanwhile, the North Sumatra region consists of 858 traditional markets, with Medan city having the

most markets in North Sumatra. Of these markets, 43% have been operating for more than 30 years, and 88.35% are well-managed.

According to data from the Department of Industry and Trade of North Tapanuli Regency, among the 15 sub-districts, 13 sub-districts have traditional markets that are still operating today. The 2 sub-districts without markets are Sipoholon Sub-district and Siatas Barita Sub-district. Based on data, Tarutung Market has the highest number of traders in North Tapanuli. This market is managed by the local government and faces the same issues as other traditional markets. It is well-known for being dirty, slum-like, and muddy. This condition is caused by the lack of drainage provided by the management and other supporting facilities, leading traders to set up their stalls in the middle of the street, often causing traffic congestion. Tarutung Market also serves several sub-districts that do not have markets, such as Sipoholon and Siatas Barita. As a result, on market days in Tarutung, the level of crowding increases as it is filled with both traders and buyers



**Figure 1** Several Issues in Onan Tarutung:

- (a). Circulation between stalls, (b). Drainage filled with garbage, (c). Condition of market stalls, (d). Abandoned new market building, (e). Traders setting up their own stalls in the middle of the street, (f). Traders selling over drainage channels.

**Source:** Author, 2024

Thus, the redesign of Tarutung Market is expected to provide a new image for the city of Tarutung and serve as a model market, especially for North Tapanuli Regency, by providing comprehensive facilities and infrastructure to enhance the community's economy and establish a healthy market in the small city of Tarutung. Therefore, the author is redesigning the market to address each existing issue and meet all the necessary needs for development with complete facilities and infrastructure.

## 2. Method

This research employs literature review, comparative study, and observation. 1) Literature review related to traditional market buildings with a Neo-Vernacular Architecture approach. 2) Comparative study, where the author conducts comparative analysis on buildings with similar functions and approaches. 3) Observation, where the author observes and directly surveys the building site to take documentation and gather data at the location.

## 3. Result and Discussion

### 3.1. Neo-Vernacular Architecture

Neo-Vernacular Architecture is an architectural approach that developed starting from the 1960s in the postmodern era. This approach combines traditional architecture with contemporary elements. In its definition, "neo" means new and "vernacular" means original.

### 3.2 Location

The title of this project is (REDESIGN ONAN TARUTUNG WITH A NEO-VERNACULAR ARCHITECTURAL APPROACH). This project involves redesigning the existing public market in Tarutung City to enhance the local economy and utilize the community's capabilities by arranging educational, recreational, and commercial areas. The design project is located on Jalan Raja Saul Lumbantobing, Hutatoruan VI, Tarutung, North Tapanuli Regency, North Sumatra. According to North Tapanuli Regent Regulation Number 15 concerning the Detailed Spatial Plan for the Urban Area of Sipoholon in 2021, Tarutung, and Siatas Barita for 2021-2041, based on the area's structure, the location to be designed is a City-scale Trade and Service Area. With the existing building being a public market, this location is also in the center of Tarutung City, which has great potential as a commercial area that is easily accessible to the public.

### 3.3 Context and Connectivity

The population growth in the city will continue to increase, creating a city center full of various activities. The relationship between architecture and urban design will shape the city's identity as it develops. One inseparable aspect of urban planning is the aesthetic value, which includes the arrangement and form of the city. This process is closely related to the standard of the city's physical atmosphere (Risidian et al., 2020). Hamid Shirvani (1985) states that there are eight elements to designing a city, including land use, building form and mass, circulation and parking systems, open spaces, pedestrian areas, supporting activities, signage, and preservation. Here is an explanation of these urban planning elements:

### 3.4 Land Use

Land use refers to the arrangement and regulations established to determine the purpose or designation of a particular land area. The designation of land use is carried out at various levels, including city/regency, provincial, and even national levels. This serves to maximize activities in a region and support the sustainability of each area. It is a key element in urban planning, providing a foundation for two-dimensional space planning and three-dimensional space implementation.

Based on North Tapanuli Regent Regulation Number 15, which discusses the detailed spatial plan for the urban areas of Sipoholon and Siatas Barita for 2021-2041, and according to Gistaru's Interactive Detailed Spatial Plan (RDTR), the area is dominated by City-Scale Trade and Services (K-1), Offices (KT), Aquaculture (IK-2), and High-Density Housing (R-2). The Tarutung Traditional Market serves as the shopping center for the sub-districts of Tarutung, Sipoholon, and Siatas Barita. The Tarutung Market is surrounded by buildings, making land use in the area feel very dense. The benefits of this land use include significant economic efforts, such as trade and services, as well as encompassing educational activities, worship, and housing for the surrounding population.



**Figure 2** Existing Site Functions

**Source:** Spatial Plan (RDTR) of North Tapanuli 2021-2041

### *Building form and massing*

In the Tarutung Market area, many buildings are found with qualities closely related to the appearance of the buildings. These are components of the structure and arrangement of the buildings, including:

#### 1) *Building Height*

The buildings in the Tarutung Market area vary in height, ranging from one to three floors. Their arrangement follows the existing road layout.



**Figure 3** Two-Story Building in the Tarutung Market Area

**Source :** Author, 2024

#### 2) *Physical Relationships*

Physical relationships on the sidewalks involve interactions between buildings located in the Tarutung Market area. However, street vendors use the sidewalks for selling and parking, causing the roads to become narrow.



**Figure 4** Sidewalk  
Source: Author, 2024

*Facade*

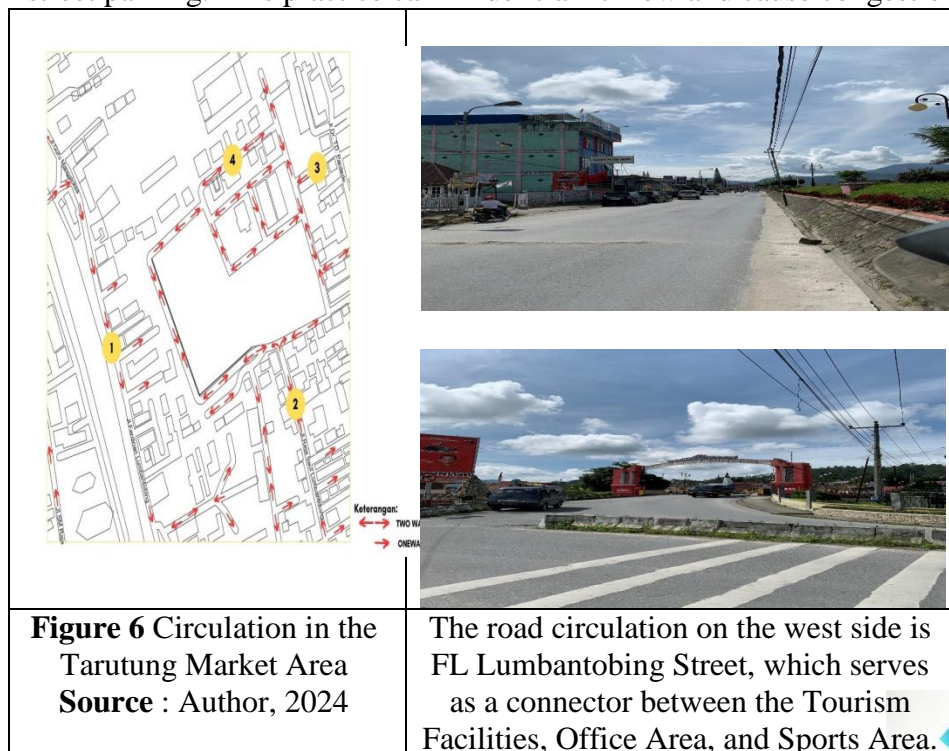
The Tarutung Market area showcases a variety of building facades, adapted to the periods of their construction. There are buildings with traditional to modern architectural styles, reflecting the diversity of architectural styles in the area.




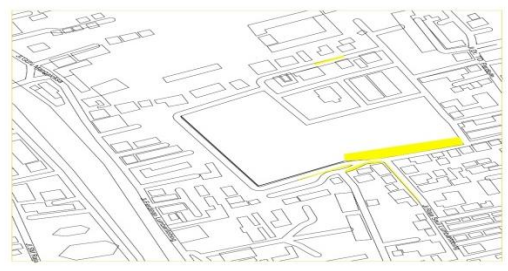


**Figure 5** Buildings with Modern Style and buildings with Traditional Style  
Source: Author, 2024

*Circulation and Parking*

The distribution around the Tarutung Market occurs in two directions, spanning around the market. The two-way circulation system serves all types of transportation, although some road edges are used by road users and street vendors. The Tarutung Market includes parking locations at several points, including vacant land near the site and commercial area. This parking format is known as off-street parking oriented vertically upright. However, due to limited parking quotas during specific times, the roadside is also used as on-street parking. This practice can hinder traffic flow and cause congestion.



	
<p>The road circulation on the south side is Raja Saul Lumbantobing Street, which serves as a connector between the residential area and the site area.</p>	<p>The road circulation on the east side is a street that connects the residential area with the site area.</p>
 <p>The road circulation on the north side is S.M. Simanjuntak Street, which serves as a connector between the green space, residential area, and the site area.</p> <p><b>Figure 7</b> Circulation in the Tarutung Market Area  <b>Source :</b> Author, 2024</p>	 <p><b>Figure 8</b> Parking Locations in the Tarutung Market Area  <b>Source :</b> Author, 2024</p>

### *Open space*

Tarutung Market, which is the shopping center for the sub-districts of Tarutung, Sipoholon, and Siatas Barita.

### *Pedestrian ways*

The Tarutung Market does not have pedestrian walkways; however, the existing pedestrian locations are used as areas for street vendors.

### *Activity support*

In the components of urban design, supporting activities can be analyzed from the following parts, involving:

1) Based on goals and types of activities:

- Recreational activities such as sightseeing
- Sports activities including jogging, futsal, and gym
- Shoppers or consumers
- Traders including street vendors, shop owners, and food centers

2) Movement and Activities Occurring:

- Pedestrians (people who come for relaxation and enjoy the atmosphere of Tarutung Market)

- Various activities including jogging ceremonies and other activities in Tarutung Market  
*Signage*

The Tarutung Market lacks a number of symbols and markers placed appropriately to fulfill their function in conveying information.

*Reservasi*

Around the Tarutung Market, there are several buildings and objects that are still well-preserved, including the Regent's office, church, residential houses, and the Sopo Partukkoan area. These buildings are strategically located in the Tarutung Market area, and their preservation areas surround the sustainability and beauty of this region.



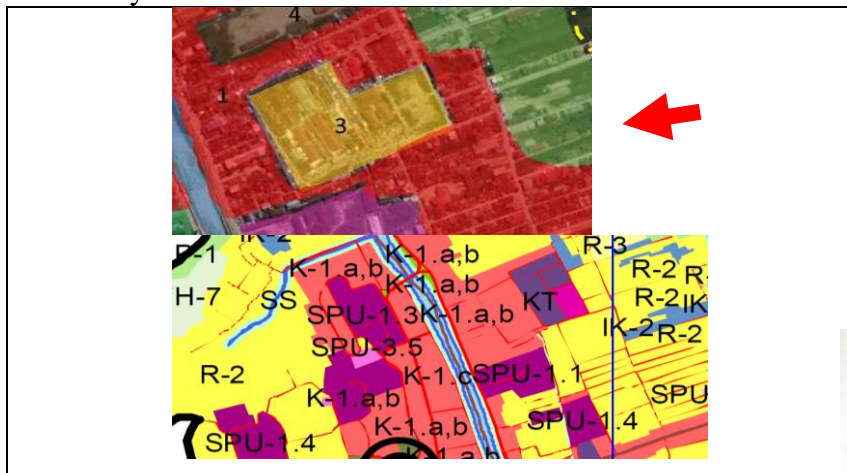
**Figure 9** Existing buildings around the site

**Source:** Personal Documentation

### 3. 5 Site Analysis

#### *Analysis of Land Use*

Based on North Tapanuli Regent Regulation Number 15 concerning the Detailed Spatial Plan for the Urban Area of Sipoholon, Tarutung, and Siatas Barita for the period 2021-2041, and according to Gistaru's Interactive Detailed Spatial Plan (RDTR), the existing area is predominantly characterized by City-Scale Trade and Services (K-1), Offices (KT), Aquaculture (IK-2), and High-Density Housing (R-2). The shopping center for the districts of Tarutung, Sipoholon, and Siatas Barita, namely the Tarutung Traditional Market, is surrounded by various buildings, creating a relatively dense land use pattern. The benefits at Tarutung Market involve significant economic operations such as the exchange of products and services, and include activities related to education, worship, and residential areas for the surrounding community.



**Figure 10** Spatial Planning Plan

**Source:** Detailed Spatial Plan (RDTR) for Urban Areas of Sipoholon, Tarutung, and Siatas Barita Year 2021 – 2041

<b>Potential</b>	The area at the existing location is predominantly characterized by Urban Trade and Services (K-1), Offices (KT), Aquaculture (IK-2), and High-density Residential Houses (R-2).
<b>Problem</b>	There is a need for a facility to accommodate both educational and commercial activities in the area to support the requirements of institutions and activities related to information and literacy in the area.
<b>Solution</b>	Designing educational functions with a library facility that accommodates the needs of the community as a whole.

*Sun Orientation Analysis*

1. Potential: Buildings around the site do not obstruct sunlight because the average building height is only 1 floor, allowing natural light to easily enter the site.
2. Issue: All sides of the site are directly exposed to morning and afternoon sunlight
3. Solution: Provide vegetation buffers and position building masses so that the longest side aligns with the sun's movement direction; openings should be distributed on all sides but predominantly on the north and south sides.

*Traffic Circulation Analysis*

Jalan Raja Saul Lumbantobing is the main route for entering the site, a two-way road that surrounds the site.

1. Potential: Jalan Raja Saul Lumbantobing surrounds the site, facilitating activities such as loading docks.
2. Issue: There is no main entrance to the site, so during market days when crowds increase, congestion occurs.
3. Solution: Utilize one main entrance and utilize the surrounding road for service



activities.

1. Potential: Around the site, the average noise level is moderate because there are only residential activities.
2. Issue: -
3. Solution: Utilize green space buffer zones between buildings and the main road to mitigate sound, and incorporate vegetation as sound buffering elements.

### 3.6 View Analysis

#### *Analysis of the View Outside the Site*



1. Potential: Buildings around the design site are on average one floor tall, thus not obstructing views from within the site.
2. Problem: -
3. Solution: Align the market buildings with surrounding structures while providing distinct architectural ornaments to differentiate them from neighboring buildings.

#### *Analysis of Site Views*



Description of the image:

++ : View into the site is quite good

1. Potential: -
2. Issue: The site's position is not clearly visible because it is surrounded by residential buildings.
3. Solution: Plan a communicative building facade design so that users can immediately understand the building's function as a market.

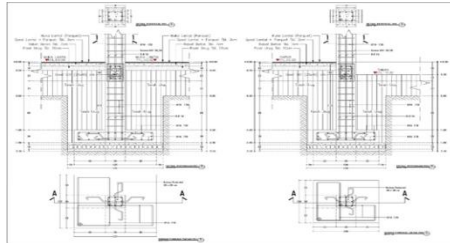
#### *Detailed Area Program*

##### *Structure*

The structural system of a building involves integrating various structural elements in three dimensions. This system aims to effectively and safely support loads within the building and appropriately channel them through the existing foundation. Therefore, the structural system used includes the lower, middle, and upper structures.

In the redesign of the Traditional Market in Tarutung City, a Rigid Frame structural system is utilized. This structure system focuses on a grid system that strongly supports the functions of the interior spaces. The choice of the Rigid Frame structural system is due to:

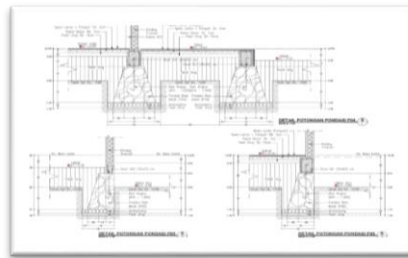
1. Facilitates the placement of all shop units and market stalls as well as their functional circulation.
2. Facilitates the creation of openings that serve as natural ventilation systems.
3. To facilitate and optimize the effective distribution of loads.



**Figure 11** Foundation Structure  
Source : Author, 2024

### *Substructure System*

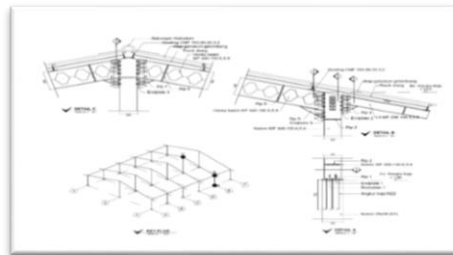
The foundation to be used in the design of Tarutung Market includes spread footings and rubble stone foundations. These are typically applied to wide-span buildings with sufficient soil bearing capacity. However, for low-rise buildings such as guard posts, wastewater management, and some trash bins, rubble stone foundations are used, which have low load-bearing capacity.



**Figure 12.** Foundation Structure  
Source : Author, 2024

### *Middle Structure*

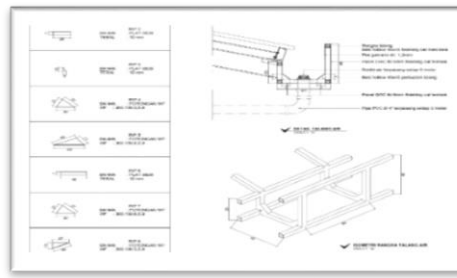
Columns will use steel column structures, which have strong durability and are suitable for wide-span buildings.



**Figure 13** Steel Column Structure  
Source: Author, 2024

### *Upper Structure System*

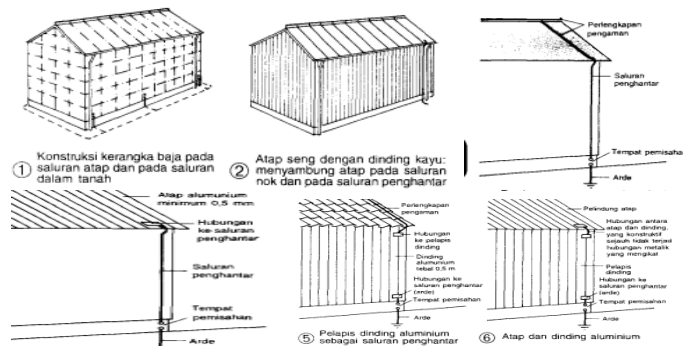
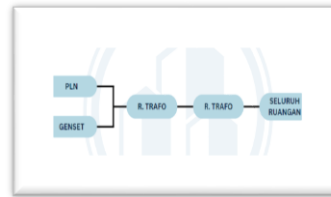
The roof framework used for this wide-span building is a steel roof frame supported by the steel columns used.



**Figure 14** Roof Structure  
Source: Author, 2024

*Electrical*

PLN network system and electrical network system at the Tarutung Traditional Market.



**Figure 15** Schematic Electrical  
Source: Architectural Data

*Mechanical*

In the context of a traditional market, the mechanical systems within the building can include several elements that support operational efficiency and comfort at the market. Here are some aspects of mechanical systems in a traditional market:

1. Heating, Ventilation, and Air Conditioning (HVAC) and Ventilation System: Traditional markets may have ventilation systems to ensure good air circulation, especially in areas selling fresh produce or food items. Some markets may also be equipped with heating or air conditioning systems to provide comfort for visitors and vendors.

2. Lighting: Mechanical lighting systems can be used to ensure that the entire market area is well-lit and easily accessible to visitors. Proper lighting choices can improve visual conditions and security in the market.

3. Plumbing System: Cleanliness and Waste Management System: Mechanical waste management systems or garbage crushers can be used to help manage waste in traditional markets. This includes garbage collection and waste management facilities.

4. Automatic Doors or Mechanical Security Systems: Some traditional markets may have automatic doors or mechanical security systems to ensure safety on-site. This may include automatic gates or security monitoring systems.

5. **Trader's Auxiliary Equipment:** Larger or more modern market sections may provide facilities such as escalators, lifts, or mechanical conveyors to facilitate the movement of goods from one floor to another.

6. **Fire Extinguishing Systems:** Systems such as sprinklers or hydrants can be installed to protect the building and market occupants from fire hazards.

The use of mechanical systems in traditional market buildings can enhance comfort, security, and cleanliness for both visitors and traders. While some traditional markets may still rely on manual and traditional methods in their daily operations, integrating mechanical technology can improve efficiency and provide a better experience for all involved parties.

#### *Plumbing*

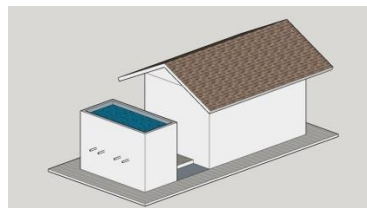
The clean water network scheme in the design of this Traditional Market includes the use of clean water for consumption, washing vegetables, kiosk needs, the requirements of SMEs trading there, as well as for ablution purposes. The water used is sourced from the local water utility (PDAM). In addition to PDAM, the Traditional Market also implements a Rain Harvesting system. Rainwater collected is used for watering plants and washing away residues in the wet market area.



**Figure 16** Schematic Plumbing

**Source:** Architectural Data

Rainwater will be collected in a ground water tank and undergo filtration or purification to ensure it is clean before use.



**Figure 17** Schematic Plumbing

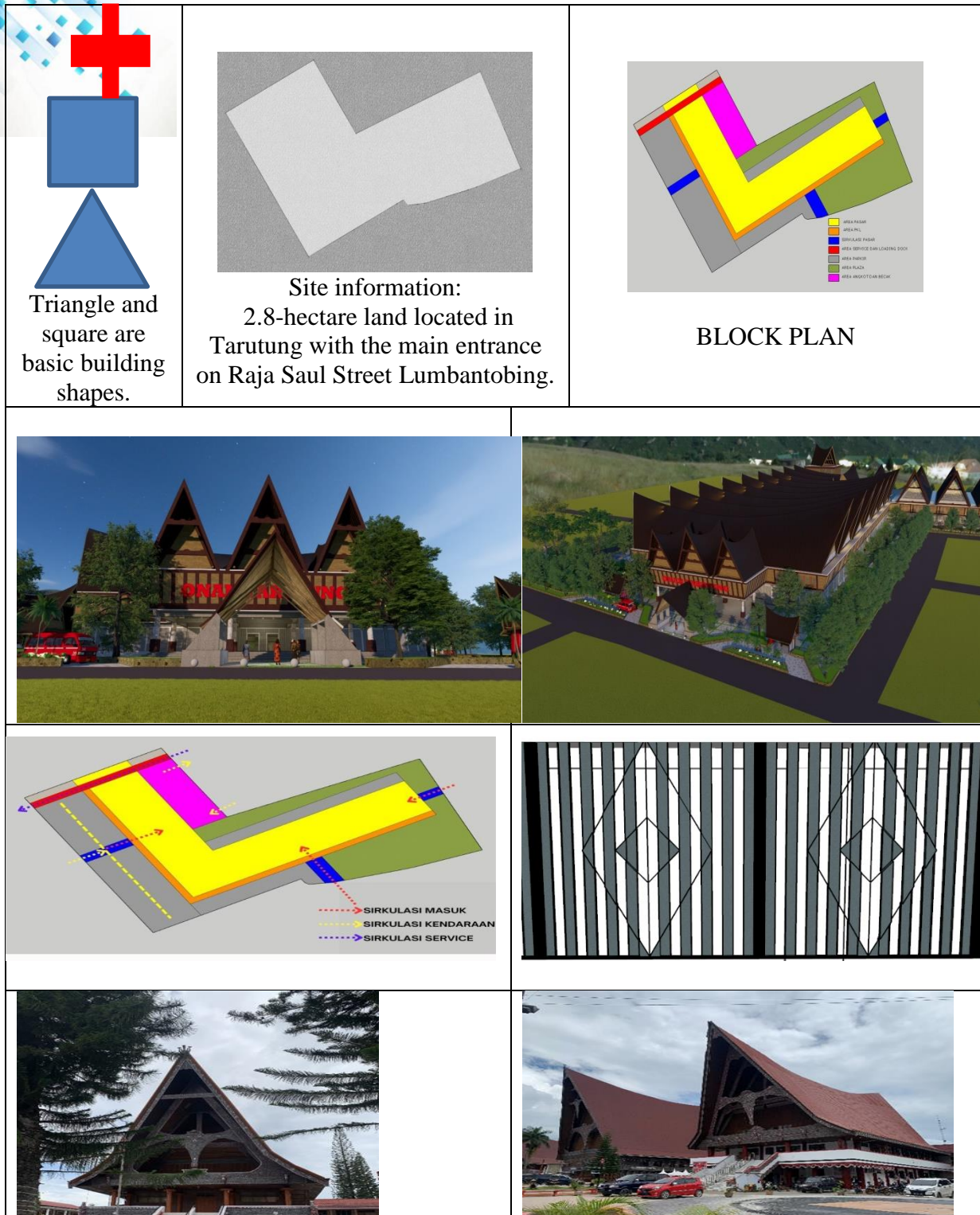
**Source :** Author, 2024

Waste water in this market comes from toilets and wet market areas. This water is collected in one place and naturally filtered before being absorbed back into the ground or discharged into the city's drainage system. Each stall in the wet market is directly connected to a wastewater pipe for disposing liquid waste generated during sales, and integrated trash bins are also provided at each stall.

### *3.7 Schematic Design and Design Concept*

#### *Massing*

The structure of the Traditional Market Tarutung consists of a Single Mass Building aimed at efficiently covering and facilitating all activities under one roof, thereby facilitating circulation from one area to another..



**Figure 18** Building mass and Examples of Toba Batak traditional houses

**Source:** Author, 2024

The aesthetic of the building in the design of the traditional market in Tarutung City lies in the roof structure and building facade. The roof of the building applies the traditional roof shape of the Toba Batak house, while the facade adopts the pattern of ulos sibolang, symbolizing respect and honor. The roof design of the market is transformed with a transparent roof ridge to allow air and light into the interior. The use of gorga Batak as decoration or ornament specifically applies to the fascia board of the roof.

#### 4. Conclusion

Onan Tarutung adopts a neo-vernacular theme where not only physical forms are applied but also the social-cultural philosophies, customs, and behaviors of the market users are incorporated into the design. The aim is to offer a fresh impression to visitors, making Onan Tarutung traditional market the preferred choice for shopping, thus enabling it to compete with modern markets. The addition of stalls placed amidst the building mass creates a 'huta Batak' ambiance (in line with the design concept), enhancing the sellers' enjoyment of their traditional selling practices while considering user circulation paths and greywater circulation calculations.

Organizing merchandise according to trading commodities will facilitate shopping for visitors, enhancing user comfort including for people with disabilities. The market layout also prevents the usual clutter found in traditional markets. Clear circulation planning and parking area placements aim to increase visitors to Onan Tarutung.

The redesign of Onan Tarutung also includes the infrastructure of traditional market buildings, aiming to provide comfort and services to market users and serve as a model market, especially for North Tapanuli District.

#### 5. Acknowledgemen

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