COMPONENT ANALYSIS AT FORT KEDUNG COWEK BUILDINGS IN SURABAYA, EAST JAVA: OBSERVATION ON PANOPTICON CONCEPT

Rafli Ahmad Giffari
Department of Archaeology, Faculty of Humanities Universitas Indonesia, Kampus UI Depok, Depok, 16424, Indonesia.

Kresno Yulianto Soekardi
Department of Archaeology, Faculty of Humanities Universitas Indonesia, Kampus UI Depok, Depok, 16424, Indonesia.
E-mail: rafligiffari@gmail.com

ABSTRACT

The fortress in the 20th century has certain characteristics to match the war strategy that is applied at this time. In 1900 the Kustbatterij Kedoeng-Tjowek project or Kedung Cowek fortress was built as a coastal defense for the city of Surabaya by the Dutch colonial. This study aims to identify the function of each building contained in the Kedung Cowek fort military area using a component review by their availability and categorization. Based on the analysis results it is known that each building has a specific function related to the concept of panopticon to apply the value of surveillance in its defense system.

KEYWORDS: Fort Kedung Cowek, Surabaya, panopticon, surveillance, function identification.

INTRODUCTION

Humans in carrying out their lives need to fulfill various aspects of basic needs such as physical needs, social needs, and the need for a sense of security. Fortress as a manifestation of protection efforts was built by humans to withstand the threat of a group of other humans who are experiencing conflict or war. The main concept in building a fort was initially to install a barrier at the territorial boundary, this was done by installing a barrier made of various materials such as wooden fences, piles of stones or earthen mounds (Koestoro, 2013).

The existence of the fort is related to war. War can be interpreted as a conflict involving violence with the aim of destroying, paralyzing, and controlling the existence of a nation (Suryohadiprojo, 2008: 1-2). Fortress is considered important in the implementation of war because at this time a group will fight for its existence as best as possible so that various efforts are made to make this happen. The relationship between fort and war is related to the main basis
why a fort was made, namely to defend the area and as a defense building as well as an attack, both the existence of the fort can be a means of social or economic stability which mainly can support success during wartime, the three existence of the fort is also evidence of the strength of a the nation is in line with showing the capabilities of the nation, which is reflected in the knowledge of building technology and the strategy of resistance that being implemented (Abbas, 2001: 4).

The existence of the fort in Indonesia was influenced by the presence of Europeans colonialism at the end of the 16th century. The construction of the fort was driven by economic factors to strengthen trade, especially in the commodity of spices, then in the following century the Europeans (especially the Dutch) plunged their military power to gain dominance in several areas in the Archipelago. The development of the Dutch military was primarily built on the island of Java because this region was central to economic development, until the 20th century along with the end of the occupation of the Dutch in Indonesia. Since that time, various forts have been built which until now can still be physically found and are also recorded in various historical records (Abbas, 2001: 2).

Fortifications in the 20th century tended to adapt to evolving technology and battle strategies. At this time war technology developed to be more sophisticated, such as the creation of airplanes, artillery and machine guns, which resulted in the adaptation of changes in defense building materials which were previously made of brick and stone, then at this time using reinforced concrete in almost the entire structure of the building (Abrianto, 2008). Then in the 20th century the battle strategy also adjusted, previously settled at one point (passive) to more movement wherever the battlefield occurred (dynamic), this led to the adaptation of battle strategies that prioritized communication effectiveness (Abrianto, 2011). Its effect on defense buildings that no longer relies on buildings which have large characteristics, but also implements support defense buildings that are spread across the line of defense, such as battery buildings or small defense buildings that do not extend like fortresses, standing alone at a strategic point of attack that functions as a place for placing a number of cannons or weapons (Mansyur, 2014).

Panopticon as a concept used in this study is the idea of a building structure model by Jeremy Bentham (1785) which aims to influence social behavior in humans by means of constant monitoring of actions. This architectural model seeks to build the perception that human behavior is monitored all the time. Jeremy Bentham's panoptic idea, which he got from his younger brother, Samuel Bentham, emphasized three basic assumptions: (1) the omnipresence of the supervisor by ensuring his invisibility. (2) broad or deep coverage of the object that being monitored. (3) the birth of the assumption that the object being monitored feels itself being constantly observed. It is important to note that Bentham's idea of a panopticon involves two sides, the first is the 'power over' side which requires monitors to thoroughly supervise detainees, to observe, and to provide punishment with the aim of creating discipline. The second side is 'power over oneself' is the effect on detainees that they are constantly monitored continuously to form self-discipline behavior and
avoid unnecessary deviant behavior (Manokha, 2018).

Michel Foucault (1975) in his book Discipline and Punish tries to reconstruct Bentham's thinking. Foucault explained that this concept was initially applied to the construction of a prison design with a circular model in prison buildings and there is a watch tower in the middle as an inspection agent for all prisoners. Foucault also explains that this concept is not fixed only on the form of design, but can extend to its objective aspect, namely discipline (Foucault, 1975: 200). So that in its development is not only applied to prison buildings, but can also be in factories, hospitals, military barracks, and schools. In its development, Foucault's panoptic concept is associated with power relations which he calls 'technologies of the self' or behavior resulting from panoptic ideas that make an individual behave in a disciplined manner without coercion, so that this idea takes place, it is important to note that there are technical aspects that represent domination, strength in creating 'self-discipline' or independent discipline.

The logic behind Foucault's and Bentham's panoptic conceptions can be interpreted as a structure or the position of a building to create independent discipline to create power relations. The success of this panopticon concept needs attention to the aspect of visibility as a surveillance and control tool (Randle, 2011). Fort Kedung Cowek is a defense building built during the Dutch East Indies era in the early 20th century to defend the city of Surabaya from the coast. This defense building complex has a distribution of 10 buildings in an area of 7 hectares.

This study seeks to identify the function of the Kedung Cowek Fort building and other buildings that are within the scope of this site. The function identification in each building is carried out by analyzing the components contained in each building. After knowing the function of each building, then the linkage of each building will be identified based on the panopticon concept.

METHODOLOGY

The framework of the archaeological method is applied in this research and carried out through the stages: data collection, data processing, data analysis, and data interpretation. (Sharer & Ashmore, 2003: 158-160). The data was collected by means of literature study, namely the collection of literature data that has a relationship with the object and research studies. The next stage was to collect primary data in the form of verbal and pictorial data recording which was carried out by directly visiting the object of research, namely Fort Kedung Cowek, which is a military cluster with 10 buildings. After that, data processing is carried out to convert the results of data collection into information that can be continued in the analysis. Data processing is done by making a building plan based on a field survey to facilitate the identification of a spatial overview at the analysis stage.

The analysis is the activity of changing data that already has information so that it can be
followed up at the interpretation stage. At this stage, two analysis models will be used, namely specific analysis and context analysis. The specific analysis was carried out by component analysis in the form of categorization and availability of components based on each space contained in the Kedung Cowek Fortress building and identification of positions between buildings to get a landscape picture on the site. Then at the context analysis stage, each component in the Fort Kedung Cowek building based on the component review and position review is associated with the panopticon concept, to obtain information that in the Kedung Cowek Fortress compound there is an indication of the role between buildings as a representation of the monitoring function (surveillance).

Data interpretation is the stage of interpreting a series of data into the final information of a study to answer research problems and achieve specific research objectives. In this study, the interpretation aims to explain the functions that each building has in the site and its relationship with the application of the panopticon concept that exists in Fort Kedung Cowek.

**Kedung Cowek Fortress Building Cluster**

In 1743 the VOC controlled the city of Surabaya and carried out to develop a city model resemble with a city in Europe (Samidi, 2017). After the collapse of the VOC, the archipelago was then controlled by the Dutch. Governor General H.W Deandels (1808-1811) was sent to the Dutch East Indies to guard and defend the island of Java from the British kingdom. The period of significant development in the city of Surabaya began after the end of the Diponegoro War or the Java War (1825-1830) marked with the construction of the Prins Hendrik Fortress to support the city's defense system in the form of building a wall that occupied the center of government. However, by the early of 20th century the wall defense model in the city center was abandoned and the development of defense infrastructure was changed to a defense system extending along the coastline to defend Surabaya (Setyawan, 2015: 8). This led to the construction of Fort Kedung Cowek in the early 1900s.

Through historical data in the form of archives of blueprints, Fort Kedung Cowek is a component of two fortresses located on the northeast coast of Surabaya. The archive has the title *Aanleg van Batterijen ter verdediging van het Oostervaarwater van Straat Madoera*, totaling two blueprints. The first blueprint is blad 2 with a time statement of April 30, 1900, explaining the plan of the location of Fort Kedung Cowek 1 and 2. The second blueprint is blad 3 with a date of January 15, 1900 explaining the architectural design of the two fortresses. Both archives were signed by Kapitein der Genie in Batavia.
Fig. 1 and 2

blad 3 blueprint about architectural design blad 2 blueprint about the location plan
(Source: The National Archive in The Hague. In Setyawan, Ady, Benteng-Benteng Surabaya)
In accordance with the title of the planning scheme which means "Defense Battery Construction in the Madura Strait East Waterway" that the focus of this fortress is as a defense area for the Madura Strait waters which stands at the coastal point of the city of Surabaya. According to Ady (2015) the development of fortresses was not only Kedung Cowek Fortress, but there were also fortifications located in the Madura Strait in the early 20th century, including: Lodewijk (Gresik), Semambung (Gresik), Modderlust (Komplek Armatim, Surabaya), Kali Dawir (Bulak Banteng), Tompeng, Ujung Piring, Modoeng, Karang Djemuang. At this time Lodewijk fortress and Ujung Piring could still be found even though it was in ruins. Based on these data, the location of the Kedung Cowek Fortress and the distribution of other defense structures has the aim of monitoring and defending all forms of threats along the coast of the Madura Strait.

During its development, the construction of Fort Kedung Cowek was not only in the form of the two fort buildings but was more like a cluster with supporting fortification buildings and supporting buildings whose placement of buildings was spread out along the coastline on an area of 71.876 m². Based on the field survey, there are ten buildings consisting of: two forts (Fort Kedung Cowek 1 and Fort Kedung Cowek 2); three battery (square bastion battery, circular bastion battery, and closed bastion battery); four ammunition warehouses (1-4 ammunition warehouse); and one diesel warehouse. The terminology that mentions of each building is based on field survey identification and refers to the source of the mapping plan that was carried out by the Surabaya Army Construction and Logistics Command in 1965. The following is a map of the location of the building on the Kedung Cowek Fort Site:
Overview of Main Fortification Buildings

Fort Kedung Cowek 1 and Fort Kedung Cowek 2 are categorized as the main buildings because these two buildings have the largest area compared to others. Fort Kedung Cowek 1 and Fort Kedung Cowek 2 have the same shape and size of the building area, namely 713.7 m², then the building also has the same amount of space, namely three bastions and six rooms, the difference between the two buildings is in the availability of room components. Based on the field survey, there is a pattern of availability of room components which the researchers categorized with
numbers to facilitate the description into odd rooms (1,3,5) and even rooms (2,4,6) from a total of six rooms. Rooms 1-6 run from the westernmost side of the building (left) to the easternmost side of the building (right).

![Layout of Fort Kedung Co](image)

*Fig. 4*
Layout of Fort Kedung Cowek 1 & 2

*Table 1*
The components of the Kedung Cowek Fortress room

<table>
<thead>
<tr>
<th>Components</th>
<th>Fort Kedung Cowek 1</th>
<th></th>
<th>Fort Kedung Cowek 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odd Room</td>
<td>Even Room</td>
<td>Odd Room</td>
<td>Even Room</td>
</tr>
<tr>
<td>Door</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Window</td>
<td>-</td>
<td>✓</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ammo Window</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Extended Room</td>
<td>-</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
</tr>
<tr>
<td>Metal Pipe</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Metal Hanger</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
• Odd Number Room

Rooms 1, 3, and 5 at Kedung Cowek fortress have the same characteristics in the form of the room, the size of the room, its location, and the type of components. The area of the odd-numbered room measures 9 m long and 4.6 m wide. The position of all odd rooms has something in common, namely being on the right side of the bastion, then the odd-numbered room is the only room that has an ammo window with direct access to the bastion. Looking at the table based on field observations, the components that are not in the odd-numbered room are windows and additional rooms, the absence of windows in the odd-numbered room indicates that this room is at maximum guard by ensuring that every wall is closed without any gaps in the form of windows, then regarding the position of the odd-numbered room which is right next to the bastion and is the only room that has an ammo window to the bastion, it can be said that the specific function carried out by the odd-numbered room is as an ammunition storage warehouse which will later be used in every bastion of Fort Kedung Cowek.

The function reconstruction based on the availability of components explains that the odd-numbered room is a supplier of ammunition for bastion. Room 1 (R1) is the ammunition supplier for bastion 1 (B1) with its location in the westernmost part of the fort, then room 3 (R3) is the ammunition supplier for bastion 2 (B2) with its location in the middle of the fort, and room 5 (R5) is a supplier of ammunition for bastion 3 (B3), located in the easternmost part of the fort.

• Even Number Room

Rooms 2, 4, and 6 at Kedung Cowek fortress have the same characteristics in the form of the room, the size of the room, and its location. The area of the even number room measures 10.20 m long and 4.6 m wide. The position of all even rooms has the same thing, namely being on the left side of the bastion except for room 6 (R6) which is at the east end of the building, then the even number room is the only room that has an extended room as a double layer before entering the room.

The difference in even-numbered rooms at Kedung Cowek 1 and 2 Fortress is the existence of the components, unlike odd rooms that completely have the same components. The difference in the even room is in the window component, in the even room fort Kedung Cowek 1 has two windows with a size of 70 cm x 70 cm, while the even number room in the fort Kedung Cowek 2 has no windows at all. Then at the Fort Kedung Cowek 2, there is an ammunition window located in bastion 2 (B2) and bastion 3 (B3), while in the even number room of Fort Kedung Cowek 1 there is not a single ammo window.

With the difference in the existence of components, the reconstruction of the even-
numbered room function is divided based on the building. In the even-numbered room, the Fort Kedung Cowek 1 is indicated to have a storage function other than ammunition and a gathering place for soldiers. Both functions are supported by the presence of windows. The window indicates that the room is fit to be occupied by soldiers for a period or as logistical storage other than ammunition, this is considered because there is a window which indicates the lack of defensiveness of the room. In the even number room, Fort Kedung Cowek indicates a room for supplying ammunition for bastions. Room 2 (R2) is a supplier of ammunition for bastion 2 (B2) with its location in the middle of the fortress and Room 4 (R4) is a supplier of ammunition for bastion 3 (B3) with its position in the easternmost part of the Fort Kedung Cowek 2.

- **Bastion Room**

Fort Kedung Cowek bastion is an open type of attack area without a roof which is shaped like a semicircle on the front of the 'round shape', then on the north or front of the bastion, there is a parapet or defensive wall that protects the cannon and gunners. In the bastion room, several components support the function of the defense system. The components in the bastion at Fort Kedung Cowek have uniformity in terms of type, number, and size. The following are the components contained in the Kedung Cowek fortress bastion:

*Table. 2*

Components of Bastion Room in Fort Kedung Cowek 1&2

<table>
<thead>
<tr>
<th>Komponen</th>
<th>Buildings</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fort Kedung Cowek 1</td>
<td>Fort Kedung Cowek 2</td>
</tr>
<tr>
<td><em>Hoist Recess</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><em>Minor Recess</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><em>Mounting Cannon</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><em>Parapet</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><em>Loophole</em></td>
<td>-</td>
<td>✓</td>
</tr>
</tbody>
</table>
Based on the components, it can be understood that this space has the main function as an attack post in the fort. The target of the attack is focused on the front (north and northeast) of the fort which is the sea. The assault model uses cannons or beach artillery whose types are not yet known, but clearly, the bastion is an attack post with the distribution of ammunition from the room to the bastion to be ready to fire.

**Overview of Supporting Fortification Buildings**

The buildings in the Fort Kedung Cowek compound illustrate how the characteristics of the 20th-century fortification. Abrianto (2011) explains that in the 20th century the battle strategy adjusted to the circumstances, previously the battle tended to stay at one point (passive) but nowadays the battle has become more movement wherever it occurs (dynamic). This has led to adaptations to 20th-century defensive buildings such as the term batterij building. Batterij or battery is a small assault building that has a special room for an attack as the placement of artillery, cannon, or mortar weapons (Mansyur, 2014). The reason why the battery is categorized as a supporting defense building in the form of a battery is an offensive building because it prioritizes the weapon room without any special structures as a fire barrier apart from the building itself. The supporting fortification consists of a circular bastion battery, a square bastion battery, and a closed bastion battery. The spatial review of the building will be discussed regarding the components contained in it, an overview of the room plan, then a spatial review will be carried out based on the structures contained in it, the structures that are categorized as spatial reviews in the form of ground floor structures and upper floor structures (bastion), after that, it will be reconstructed regarding the specific function that is carried out by each building. The following are the availability of components contained in each battery:

**Table. 3**

Components of supporting fortification (battery)

<table>
<thead>
<tr>
<th>Components</th>
<th>Building</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Circular bastion battery</td>
<td>Square bastion battery</td>
</tr>
<tr>
<td>Entry Access</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>On circular and square bastion battery the entry access has 2,5m long, on closed bastion battery</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td><strong>Additional Room</strong></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Stairs</strong></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Parapet</strong></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Rail</strong></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Cannon Mounting</strong></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Metal Pipe</strong></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Concrete Base</strong></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Bastion Roof</strong></td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Circular Bastion Battery**

The circular bastion battery is a building with two floors, namely the ground floor and the upper floor (bastion). In the form of this building is rectangular on the ground floor and circular in the bastion. Access to the top floor is a ladder totaling 20 steps with a width of 50 cm on the
outside of the building. The circular bastion battery has a building area of 34.98 m² with a total building length of 6 m and a width of 5.8 m.

The ground floor consists of two rooms in the form of the main room which has an area of almost the entire ground floor and an additional room located under the stairs to the top floor. Based on the components, the ground floor only has a component in the form of access to the main room and the additional room. At the entrance to the main room, no metal frame was found but it could be seen the marks of a component that had been attached to that part, this proves that there used to be a door that served as a room cover at the entrance to the main room. With this evidence, it can be said that the importance of the ground floor to be maintained and there is an assumption that this building functions as an ammunition warehouse to supply ammunition to the upper floors. The upper floor is an open space without a roof surrounded by a parapet as the protective wall of the space. In addition to the parapet, another component in this space is a rail in the form of a metal pair in a straight line extending from the outer wall to the center. The circular shape of the bastion and the presence of rails is strong evidence that this place is a kind of attack space in all directions, the placement which is on the beach and close to the Fort Kedung Cowek 1, which is 220 m away indicates the building has a function other than as an attack post but also as a protection from the threat of attack contained in the Fort Kedung Cowek 1 and the area around the circular bastion battery.

**Fig. 5**
Layout of Circular Bastion Battery

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The square bastion battery is the component that has similarities with the circular bastion battery, the only significant difference is in the bastion shape. This building consists of two floors, on the ground floor consisting of the main room and additional rooms, then on the upper floor is an open space or bastion without a roof. The overall shape of this building is square, both on the ground floor and bastion. Access to the top floor is a ladder totaling 17 steps with a width of 50 cm on the outside of the building. The square bastion battery has a building area that is not much different from the circular bastion battery, which is 35.1 m² with an overall length of 6.3 m and a width of 5.7 m.

The ground floor of this building has the same characteristics as the circular bastion battery, so that the ground floor is assumed to have a function as an ammunition store for supplying ammunition to the top floor. The upper floor is an open space without a roof surrounded by parapets as a protective wall for the space, apart from the parapet. Another component contained in this space is a rail in the form of a metal pair in a straight line stretching from the outer wall to the middle. With a square as a form of bastion and the presence of rails, this is strong evidence that this place is a kind of attack space in all directions, a placement on the beach and close to the Fort Kedung Cowek 2, which is 221 m away indicates that this building has a function other than as an attack post, but also as protection from the threat of attack found in Fort Kedung Cowek 2 and the area around the square bastion battery.
The closed bastion battery is a two-floor building with an area of 50 m², consisting of two rooms on the ground floor and one room on the top floor which functions as a bastion. The shape of this building is square in both the ground floor and the bastion section, but there are additional walls on the outside of the room which may be a protective structure, this is what makes a closed bastion battery different from other battery.

The ground floor of this building consists of the main room which has an area of almost the entire ground floor and there is a dividing room before going to the main room. Based on the components, the ground floor has a component in the form of an access where there is still a door measuring 70 x 160 cm, then there is evidence of another component in the form of a metal pipe in the shape of a cylinder with a diameter of 9 cm with the same shape in the fort component of Kedung Cowek. With the evidence of these components, it can be said that the ground floor has various functions such as an ammunition store before being moved to the top floor (bastion) and the function of the barracks as a temporary gathering place for soldiers, given the presence of metal pipes that have a function as air vents. The top floor is a bastion room that is closed with a roof and cannon openings are only found in the front (direction of the coastline). The components contained in the bastion consist of the parapet on the front, the amount of the cannon, along with the concrete base, with this evidence it can be seen that the workings of this defense building are more focused on attacking the sea or the coastline because the firing space is only in that part.

![Fig. 7](image-url)
Overview of Supporting Buildings (Warehouse)

According to Novida Abbas (2001: 35), a fort can be categorized based on its function, namely a fort that carries out defense and attack functions, then a fort with an additional function as a place to support military activities such as a logistical storage area (warehouse), a barracks as a place to rest for soldiers, a hospital to providing health services, guard posts, soldier training places, and prisons. At Fort Kedung Cowek compound, there are several supporting buildings which are initially suspected of being ammunition stores, the state of which these buildings stand separately from the main defense building and supporting defense buildings. The following are the availability of the components in each supporting building:

Table 4
Supporting Buildings Components

<table>
<thead>
<tr>
<th>Components</th>
<th>Ammunition Warehouse 1</th>
<th>Ammunition Warehouse 2</th>
<th>Ammunition Warehouse 3</th>
<th>Ammunition Warehouse 4</th>
<th>Diesel Warehouse</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry Access</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Every building has varied entry access</td>
</tr>
<tr>
<td>Stair</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>-</td>
<td>On ammunition warehouse 4 has stairs with amount of 15</td>
</tr>
<tr>
<td>Concrete Base</td>
<td>-</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
<td>-</td>
<td>The amount of concrete base: ammunition warehouse 2 (4), ammunition warehouse 4 (1)</td>
</tr>
<tr>
<td>Air Ventilation (Window)</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Metal Pipe</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Nut-Bolt</td>
<td>-</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

The amount of air ventilation: ammunition warehouse 2 (3), ammunition warehouse 3 (9), diesel warehouse (2)

Diameter of metal pipe: ammunition warehouse 1 (9 cm), ammunition warehouse 2 (6 cm), ammunition warehouse 4 (3 cm), diesel warehouse (6 cm)

On ammunition warehouse has 12 nut-bolt planted on the wall

- **Ammunition Warehouse 1**

Ammunition Warehouse 1 is a one-floor building with an “L” shaped plan and has a building area of 15.58 m², the internal dimensions of the building are 5.2 m long and 1.7 m wide, consisting of only one room. The first component in the Ammunition Warehouse 1 is the two access points measuring 70 cm x 160 cm, where the door and frame are no longer available. The
two metal pipes are 9 cm in diameter, which add up to two, these metal pipes have holes through the walls of the building. The distribution of metal pipes is installed horizontally, and some are installed vertically, this has the same characteristics as the diesel warehouse (there are two metal pipes installed vertically and horizontally). The function of the building cannot be specifically ascertained, but this building does not have any indication that makes it a defense building, but because it is located in a military compound, what is certain is that this building has functioned as an ammunition store.

![Ammunition Warehouse 1](image)

**Fig. 8**
Ammunition Warehouse 1

- **Ammunition Warehouse 2**

  Ammunition warehouse 2 is a building with a rectangular shape and has a flat roof. This building has an area of 31.36 m² with a building length of 6.5 and a width of 4.8 m. The inner room of the building has a length of 6.1 m and a width of 4.3 m which consists of one room without a dividing partition. The condition of this building is still in a state of minimal damage with the foundation that looks intact on the outside, on the inside there are still several components. Based on the field review, the first component contained in the ammunition warehouse 2 was the one-off access, measuring 1.5 m x 2.2 m, where the door and frame were no longer there. Second, there is a metal pipe with a diameter of 6 cm. Third, there is a former building of a structure, a nut embedded in the wall, an air vent in the form of a window, and a circular shape resembling a fan. With the evidence of these components, it can be said that this building does not have the function of a defense building because it is intact even though there is no shooting room or monitoring room for the enemy, the strongest possibility is that the function carried out is related to office activities, rest areas, or command room, this is strengthened by component in the form of three windows.
which indicates the feasibility of this building to be lived in by paying attention to good air circulation.

- **Ammunition Warehouse 3**

  Ammunition Warehouse 3 is a one-floor building with a rectangular building plan with an area of 42.25 m². The internal space of this building has a length of 4.8 m and a width of 5 m, with three dividers or dividing walls between rooms totaling three. Another visible component of this building is the number of air vents in the form of nine windows openings on two sides of the wall. With the evidence of this component, it cannot be said that this building has the function of a defense building because there is no attack room, and its location is far from the coastline. With nine air vents and three-room dividers, it is possible that the function carried out is as a rest area, office, or prison.
• Ammunition Warehouse 4

Ammunition Warehouse 4 is a building with two floors in a rectangular shape and has a ladder as access to the upper floor on the outside of the building, it has similarities with a fort defense building and battery that uses concrete material. This building has an area of 84.6 m² with a building length of 9.8 m and a width of 8.6 m. Based on the shape, the material, and the size it resembles a defensive building. The building plan is divided into the ground floor and the top floor, on the lower floor the shape of the plan resembles a battery building with two rooms, namely the main room and an additional room located at the bottom of the stairs. On the top floor there is a terrace with an 'L' shaped plan and there is one room connected to the lower floor in the form of a staircase embedded in the wall. Even though it looks like a defensive building, there are no features that explain the attack function because there is no parapet protection on the upper terrace, which is structurally very open, but if we look at the ground floor plan, it is assumed that this building has a function as an ammunition store because of the fulfillment of elements protection, such as building materials in the form of concrete and access to which there are traces of metal frames.

Fig. 11
Ammunition Warehouse 4

• Diesel Warehouse

The Diesel warehouse is a rectangular building with a flat roof consisting of one floor, and there are two rooms (rooms 1 and 2). This building has an area of 8.97 m², with a length of 4.8 m, 1.8 m wide and 2.3 m high. The components contained in the diesel warehouse are access to which no doors have been found but there are still metal frames and hinges in rooms 1 and 2, for room 1 on the inside there are only windows, so it cannot be known with certainty the functions
carried out in this room. The component that is assumed to have a connection with a diesel engine is in room 2 which is located on the west side because in this room there are two metal pipes embedded in the wall, one horizontally and one vertically (attached to the roof), this metal pipe installation has similarities with ammunition warehouse 1, the difference is that in the vertical metal pipe in the ammunition warehouse, there is still a metal cylinder connected to the metal pipe.

![Diesel Warehouse](image)

**Fig. 12**
Diesel Warehouse

**Surveillance and Relations Between Buildings of Fort Kedung Cowek**

The concept of Foucault's and Bentham's panopticon can be interpreted as a structure or position of a building to create the independent discipline to create power relations. The success of this panopticon concept needs to be considered in the aspect of visibility as a means of surveillance and control (Randle, 2011). Surveillance is generally defined as an effort of observation especially of the object of surveillance, this is done as the act of observing someone or something to detect violations and create order. The main characteristics of the panopticon and surveillance concepts are:

1. Supervision is carried out on physical objects that are limited to a certain space and have visibility;
2. The main actor in supervision is an object that has power;
3. The object of control is the lower class where the focus is on the individual and their physical body; and

The relationship between the panopticon concept and Fort Kedung Cowek as a military compound can be seen based on the location of the main fortification building, supporting fortification buildings, and supporting buildings. The results of the component review have identified in general the functions performed by this military compound, which has a distribution of 10 buildings over an area of 7 hectares. The discussion of the relationship between buildings will be related to the direction of attack of the fortification buildings (fort and battery), this is known after a components review of each of these buildings is carried out. The direction of the attack is used as a marker of the relationship between buildings because it represents the visibility of the fortification building against an area, the main target of the attack area, namely the sea or the land area where the site is located.

Fort Kedung Cowek 1 and 2 as the main fortification buildings have a limited direction of attack, namely on the coastline towards the sea, this is influenced by the shape of the bastion which has openings in the direction of the coast while the right and left of the fortress bastion are covered by walls which result in a limited direction shoot. Similar to the fort building, the closed bastion battery can only attack the coastline because the open bastion only leads to the shoreline. The different thing is the circular bastion battery and the square bastion battery which have an open bastion shape so that they can fire in all directions.

Fig. 13
The direction of attack of Fort Kedung Cowek fortification building
Based on figure 13 the direction of the attack that is owned by the fortification buildings, provides an overview of the reconstruction of the relationship between buildings in carrying out the defense function. The formation of each defensive building forms a pattern, namely:

1. Each fortification building that has an attack directed towards the coastline is at the most western location (Fort Kedung Cowek 1), the middle (Fort Kedung Cowek 2), and the easternmost (closed bastion battery).

2. The fortification buildings that has all directions attack are between (flanked) the fortification buildings with the direction of the attack towards the coastline, such as the circular bastion battery located between Fort Cowek Kedung Cowek 1 and 2, then the square battery bastion which is between Fort Kedung Cowek 2 and closed bastion battery.

3. Every supporting building is in the firing range (protection) area of the defense building except for the ammunition warehouse 4.

With this information, it can be understood its relevance to the panopticon concept. The basic assumption of the panopticon by Jeremy Bentham is the omnipresence of the supervisor, by ensuring its visibility and broad or deep coverage of the object to be monitored (Manokha, 2018). Surveillance as a factor in creating discipline and representation of power is implemented in the function and position factors contained in the Fort Kedung Cowek buildings in the form of coordination carried out by each fortification buildings unit in carrying out its role to create a war strategy suitability. The application of surveillance is divided into two values, namely:

1. Internal surveillance: The case in this value is how the defense building supervises every other building so that the realization of total security within the scope of the military compound. The defensive buildings that carry out this surveillance value are the Circular Bastion Battery and Square Bastion Battery, which have all-direction monitoring capabilities on the site.

2. External surveillance: Efforts to monitor the main location where the enemy is suspected to be present, namely the ocean. All defense buildings carry out this surveillance value because in the direction of the attack the entire defense building can attack the ocean area.

CONCLUSION

Fort Kedung Cowek compound consists of the main fortification buildings (Fort Kedung Cowek 1 and 2), then supporting fortification buildings (circular bastion battery, square bastion battery, closed bastion battery) and supporting buildings (ammunition warehouse 1-4 and diesel warehouse). The placement of these various buildings spread out within a single area that characterized 20th-century defensive buildings that no longer relied on large buildings to protect
the entire territory but rather the distribution of buildings as points of attack towards the enemy.

The distribution of buildings in the Fort Kedung Cowek building compound has relevance to the panopticon concept where the position of the building has contributed to the creation of power relations. The panopticon concept is reflected based on the results of the identification of the function of the fortification building which explains the shooting area of each defense building in relation to the surveillance system. The value of surveillance creates coordination that is carried out by each fortification buildings unit in carrying out its role in order to create a war strategy suitability, this value is divided into two, namely internal surveillance or supervision of defense buildings against other defense buildings in order to realize total security within one military compound. then external surveillance, namely monitoring the main location where the enemy is suspected to be present, namely the ocean.

REFERENCES


