Analysis Of Basic Land Facility Needs In Sape Port, Bima District, West Nusa Tenggara Province

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Abstract

The Sape Ferry Port is managed by PT ASDP FERRY (PERSERO) as a port operator that provides facilities to support operational activities at the Sape Ferry Port. Apart from the port of PT. ASDP Indonesia Ferry (Persero) is also a ship operator providing ferry boats serving the Sape - Labuan Bajo commercial route and the Sape - Waingapu Commercial route with 2 (two) ro-ro types of ferry units. However, the Sape Crossing Port still does there are basic landland facilities that are still lacking to non-existent, which can hinder port operations.

Based on the results of the analysis, it can be seen that the Sape Crossing Port has not provided a deafroom that has an adequate area and seats for the waiting room so that many passengers sit on the floor while waiting for a ship whose trip is only once a day, there is no weigh bridge, and has a gangway that has not yet connected. to the deck of the ship so that the passengers and the vehicle still enter the same lane, namely the ship ramp door.

Therefore, it is necessary to have a review and additions to some of the facilities that are lacking or even non-existent at the Port of Sape. This is done to improve the existing services at the Sape Ferry Port. Improvements to main land facilities, such as repairing the waiting room, adding weigh bridges, and adding a gangway that connects from the previous gangway to the ship's deck, were carried out to smoothen port operations so that passengers can experience the excellent service provided by the port.

Keywords: passenger waiting room facilities, weigh bridge facilities, gangway facilities.

1. Introduction

Bima Regency, which is one of the regencies located at the tip of the island of Sumba, certainly has several means of transportation in running the regional economy, one of the important transportation facilities in this district is the port of Sape, which is one of the means for carrying out travel or moving activities. serves to support economic activity and regional growth.

PT ASDP Sape Branch itself has 3 ships operating, namely KMP Cakalang, KMP Cucut, and KMP Komodo, and for Sape port itself uses 2 ships for daily operations, namely KMP. Cakalang, which serves the Sape - Labuan Bajo and KMP routes. Cucut serves the Sape Waingapu route, for its own operating hours the port operates 12 hours per day and for scheduled ship departures on the Sape - Labuan Bajo route it serves every day while for Sape - Waingapu it serves 2 times inside, while for KMP Komodo itself serves specifically for tours located around the Labuan Bajo area. In order to provide better services for each service user and to support the performance of port services in order to create security, comfort, safety and order for service users,

The port of Sape has basic land-side facilities, but these facilities are incomplete to support daily operational activities. Sape Port only has facilities in the form of terminal buildings, offices, parking lots, gangways, water installations and electricity installations. With
the existing main land facilities, it has not been able to support port activities because there are several facilities that are lacking so that there are not at this port the lack of facilities is the unavailability of facilities in the form of weigh bridges, this facility has a function to weigh the weight of the vehicle and its cargo which will be adjusted accordingly. the maximum load that can be lifted by the Movable bridge (MB).

2. Research Method

This research will use the several methods of analysis of the existing conditions and analysis of the condition of the plan.

a. Method of collecting data

In this compulsory lecture paper research process requires a lot of data in achieving the writing objectives, in the process of data collection using several survey methods, as for the methods used:

1) Observation

It is a method that goes directly to the field and observes land facilities such as measuring the area of the waiting room, dock, parking lot, as well as several observations of the completeness of land facilities at the Sape ferry port, and conducting a 15-day productivity survey at the Sape port.

2) Documentation

Documentation is a data collection technique that is not directly aimed at the research subject, but as supporting data that is needed by researchers. Documentation can be in the form of published documents or personal documents in the form of photos, videos, conversations, recordings (tape recorders), which are related to conducting research, other notes. The documentation that has been carried out by researchers in this study is to strengthen the results of the researcher’s survey in the form of existing photos of the condition of several main land facilities at the port of Sape and some documentation that shows the problems that occur at Sape Port in the form of photos.

3) Study of literature

Namely by studying theories and books and modules as a reference in analyzing and discussing problems. The researcher also made a research flowchart, where in writing this report all the data that has been collected can be identified, the researcher himself uses book literature and several regulations that can support the research that has been researched.

4) Institutional Method

In this method the authors obtain data from several agencies that the author has visited in order to obtain relevant data, as for the agencies the author has visited in collecting some data, namely the PT. ASDP Indonesia Ferry (Persero) Sape Branch in the form of port annual productivity data, ship specification data, and ship facilities and infrastructure.

b. Type of data

In this study, two types of data were used to support research, two types of data, namely:

1. Primary data

Namely, data using surveys or directly plunging into the fields obtained by using the
observation method and the documentation method.

2. Secondary Data
   Namely, data obtained by taking or using existing data that has been researched from related parties obtained using the Literature method, and the Institutional method.

3. Results And Discussion
   a. Analysis of the area of the waiting room
      Passenger Load Factor Analysis for the Last 5 Years
      a. Load Factor of Average Passenger for 5 Years
         The following is the formula used to calculate the ship's load factor:
         \[
         LF = \frac{KP}{KT} \times 100\%
         \]
         Information:
         KP = Used Capacity (Number of Passengers)
         KT = Available Capacity (Number of seats available X number trip / year)
         LF = Load Factor
         The size of the load factor at the port of Sape from 2015 - 2019 can be seen in the following table:

         | No. | Year | Trip | Quantity available (20 x trip) | total used | LF (LF = \( \frac{KP}{KT} \times 100\% \)) |
         |-----|------|------|------------------------------|------------|----------------------------------|
         | 1   | 2015 | 1,638| 32,760                       | 85,210     | 260%                             |
         | 2   | 2016 | 1,573| 31,460                       | 97,450     | 310%                             |
         | 3   | 2017 | 962  | 18,520                       | 87,519     | 455%                             |
         | 4   | 2018 | 858  | 17,160                       | 76,454     | 446%                             |
         | 5   | 2019 | 818  | 16,360                       | 68,630     | 419%                             |

         Result of analysis 2020
         From analysis load factor, the results obtained in the analysis above show that the load factor results exceed 100%, this causes a buildup in the waiting room and causes problems such as the unavailability of sufficient space and seating for passenger needs so that improvements and additions to the area of the waiting room are needed so that with the existence of improvement of the waiting room area, waiting room chairs can be put in the waiting room as needed.

         b. The formula defines the waiting room
         According to Decree of the Minister of Transportation Number 52 of 2004 concerning the Operation of Ferry Ports to determine the area of waiting room requirements using the formula a1:
Information:

\( a = \) the size of the area needed for one ship (take 1,2 \( \text{m}^2 \) / person)

\( n = \) The number of passengers in one ship

\( N = \) Number of ships arriving / departing at the same time

\( x = \) concentration ratio (1.0-1.6)

\( y = \) Average fluctuation (1,2)

c. Determination of the concentration ratio

Determining the concentration ratio requires 15 days of productivity data using the formula:

\[
\text{Concentration Ratio (x)} = \frac{\text{the highest number of passengers per day / trip}}{\text{Passenger capacity in one ship}}
\]

### Passenger capacity in one ship

<table>
<thead>
<tr>
<th>DATE</th>
<th>TRIP / per day</th>
<th>TOTAL PASSENGER</th>
<th>TOTAL PNP / TRIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 March 2020</td>
<td>1</td>
<td>71</td>
<td>71</td>
</tr>
<tr>
<td>15 March 2020</td>
<td>1</td>
<td>84</td>
<td>84</td>
</tr>
<tr>
<td>16 March 2020</td>
<td>1</td>
<td>127</td>
<td>127</td>
</tr>
<tr>
<td>17 March 2020</td>
<td>2</td>
<td>162</td>
<td>81</td>
</tr>
<tr>
<td>18 March 2020</td>
<td>1</td>
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<td>99</td>
</tr>
<tr>
<td>19 March 2020</td>
<td>1</td>
<td>58</td>
<td>58</td>
</tr>
<tr>
<td>20 March 2020</td>
<td>1</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>21 March 2020</td>
<td>1</td>
<td>93</td>
<td>93</td>
</tr>
<tr>
<td>22 March 2020</td>
<td>1</td>
<td>66</td>
<td>66</td>
</tr>
<tr>
<td>23 March 2020</td>
<td>1</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>24 March 2020</td>
<td>2</td>
<td>55</td>
<td>27.5</td>
</tr>
<tr>
<td>March 26, 2020</td>
<td>1</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>29 March 2020</td>
<td>1</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>31 March 2020</td>
<td>2</td>
<td>187</td>
<td>93.5</td>
</tr>
<tr>
<td><strong>02 April 2020</strong></td>
<td><strong>1</strong></td>
<td><strong>237</strong></td>
<td><strong>237</strong></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>18</strong></td>
<td><strong>1315</strong></td>
<td><strong>912</strong></td>
</tr>
</tbody>
</table>

*Source: Analysis Results, 2020*

Concentration Ratio (x) = \( \frac{\text{the highest number of passengers per day / trip}}{\text{Passenger capacity in one ship}} \)

\[
\frac{237 \text{ Passenger}}{247 \text{ Passenger}} = 0.91 \sim 1.0
\]

So the concentration ratio = 0.91 ~ 1.0
the highest number of passengers per day / trip

d. Analyze the area of the waiting room and the number of effective seats

<table>
<thead>
<tr>
<th>No</th>
<th>Year</th>
<th>Trip</th>
<th>Passenger</th>
<th>Total passenger</th>
<th>pnp / trip</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Child</td>
<td>Adult</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2015</td>
<td>1,638</td>
<td>5,963</td>
<td>79,247</td>
<td>85,210</td>
</tr>
<tr>
<td>2</td>
<td>2016</td>
<td>1,573</td>
<td>5,237</td>
<td>92,213</td>
<td>97,450</td>
</tr>
<tr>
<td>3</td>
<td>2017</td>
<td>962</td>
<td>4,228</td>
<td>83,291</td>
<td>87,519</td>
</tr>
<tr>
<td>4</td>
<td>2018</td>
<td>858</td>
<td>4,046</td>
<td>72,408</td>
<td>76,454</td>
</tr>
<tr>
<td>5</td>
<td>2019</td>
<td>818</td>
<td>5,143</td>
<td>63,487</td>
<td>68,630</td>
</tr>
<tr>
<td></td>
<td>total</td>
<td>5,846</td>
<td>24,617</td>
<td>390,646</td>
<td>415,263</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>1169.2</td>
<td>4923.4</td>
<td>78129.2</td>
<td>83052.6</td>
</tr>
</tbody>
</table>

Source: Analysis Results, 2020

From the analysis results obtained from passenger productivity data with how to find the average result of the division between the number of passengers per year and the number of port trips per year so that you get 76 people per day, you can get the following calculation:

\[ a_1 = a \cdot n \cdot N \cdot x \cdot y \]
\[ a_1 = 1,2 \text{ m}^2/\text{person}. \text{76 people}. \text{1 ship}. \text{1.0}. 1,2 \]
\[ a_1 = 109.44 \text{ m}^2 = 109 \text{ m}^2 \]

The capacity of the waiting room now has an area of 82 m² so that from the analysis the current waiting room cannot meet the needs of the passengers because to get an area that matches the daily productivity of the waiting room, improvements must be made from 82 m² to 109 m².

So, the current waiting room must have a minimum area by looking at the average passenger for the last 5 years, which is 109 m² and must have as many passenger seats as:

1. Effective seating needs analysis

\[ \text{Number of seats} = \frac{\text{the waiting are is effective area}}{\text{Passenger capacity}} \]

\[ n = \frac{109 \text{ m}^2}{1.2 \text{ m}^2/\text{people}} \]
\[ n = 90.9 = 91 \text{ people} \]

From the analysis that has been obtained, the author can analyze the need for seating in current conditions according to the average passenger using the Sape ferry port, the number of seats in the waiting room now only amounts to 20 units so that the condition that should have at least as many seats as 91-20 = 71 units.
e. Weighbridge analysis.

The bridge is a facility at the port that functions to weigh the weight of a vehicle that will enter a ferry, the function of weighing a vehicle is to find out the weight of the vehicle that will cross the MB bridge, because the MB bridge has a maximum limit in holding the load of vehicles that will pass on it, for MB in the port of Sape itself has a maximum load of 20 tons, so that the presence of this weigh bridge will be able to prevent incidents such as breaking of the MB bridge from happening again, and the placement of this weigh bridge is also in Regulation of the Director General of Land Transportation Number SK.242 / HK.104 / DRJD / 2010 Concerning Guidelines for Pedestrian Traffic Management, namely:

![Diagram of weighbridge analysis]

Source: Regulation of the Director General of Land Transportation Number SK.242 / HK.104 / DRJD / 2010 concerning Technical Guidelines Crossing Traffic management

f. Gangway analysis to ship

Gangway is a special road for pedestrian passengers to be able to board a ship, this gangway serves to separate the entryway for passengers and vehicles in order to facilitate port operations and for the safety of passengers themselves, gangway is a main port facility that must be equipped at the port, this is in at the port of Sape itself already has a gangway but the gangway cannot separate the road between passengers and vehicles when entering the ship because the existing gangway is only available up to the front of the ramp door so that passengers themselves still use the same door used for vehicles entering the ship other than violating the rules also can endanger the passengers themselves. So the results of the analysis of the Sape branch PKL TEAM were added to the gangway beside the ship which served to distinguish the entrance.
4. Closing

a. Conclusion

Based on the analysis described in the previous chapter, it can be concluded:

1. In the existing condition, the port does not have sufficient area and the number of seats in the waiting room, it is necessary to increase the area and number of seats in the waiting room, namely from the existing condition, the area of the existing waiting room is 82 m², 109 m² for the planned condition and for the waiting room seats from the existing condition, namely 20 seats to 91 units for the planned condition.

2. In the existing condition, the port does not have a weigh bridge that can weigh the weight of vehicles passing through the MB so that the MB can be better maintained because the load carried by MB does not exceed the maximum limit, and avoids events such as broken MB which could endanger service users.

3. In the existing condition, the passenger gangway has not been connected to the ship’s deck so that the passenger and vehicle enter at the same door, namely the ship ramp door so that it can endanger passengers and disrupt ship operations.

b. Suggestion

From several things that have been concluded by the author, the writer will provide some suggestions and input for port managers in this case PT ASDP FERRY (Persero) Sape branch to make additions to improvements in this case some main mainland facilities in order to provide better service for service users, as for some suggestions and input, namely:

1. In the waiting room facilities, the area of the waiting room and the number of seats must be increased so that in the implementation of operational activities, service users, especially passengers, get better service and provide comfort for the passengers themselves.

2. The construction of the waiting room was carried out by utilizing the empty space in the waiting room to be used as a planned waiting room.

3. There needs to be additional facilities in the form of a weigh bridge at the port of Sape, this is needed because the port of Sape itself does not have the facility. This facility is needed in port operations so that in the course of port operations it can make the MB bridge more well maintained, because the vehicle weighing can limit the load weight limit for vehicles passing through the MB bridge.

4. If the weighbridge cannot be realized for the weight of the vehicle, you can determine the volume of the vehicle by looking at the height of the vehicle and the length of the vehicle and this rope is required for the portal facility to do so.

5. It is necessary to add a gangway that has not yet connected to the ship deck so that the access of passengers and vehicles can be separated so that it can facilitate passenger operations.

6. If the construction of a gangway cannot be carried out to separate the support from the vehicle, a barrier is placed in the form of a dividing rope between the vehicle and the pedestrian passenger so that the passenger does not go off the track that has been roped off.
5. Bibliography

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