ANALYSIS OF FITNESS FACILITIES AND EFFECTIVE USE OF CROSSING ROAD

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Abstract-*Pedestrians are part of the transportation system is no less important than other modes of transportation. Although the act of walking legs look very simple, but it plays an important role in the transport system, because if the impaired pedestrians will affect other parts of the transportation system. Objective analysis of the pedestrians along the road Kartini is to determine the characteristics of pedestrians; seek equality relationship between walking speed, as well as determine the appropriate crossing facilities with pedestrian characteristics. This study analyzes the suitability and effectiveness of the use of level crossings in terms of facilities: traffic volume (V), Volume waders (P), Degree of Saturation (DS), the average traffic Speed, Time Headway, the pass percentage of pedestrian crossing facilities, the comparison between the speed of the vehicle with pedestrian volumes and pedestrian behavior analysis. The suitability of the facility Kartini street crossings diruas calculated based PV2, DS, average Speed, Time Headwaysehingga obtained values: P = 78 people / hour, SD = 0.60, mean velocity = 40.3488 km / h, and a small headwaykendaraan time (LV) vehicles and motorcycles (MC) has a value of time headway of <2.5 seconds which describes the condition of high density, so that at the study site at the Kartini Bandar Lampung according to the requirements and are pelican crossings in accordance with the protector. Of regression and correlation analysis shows the location of Bandar Lampung Kartini road traffic volume did not affect the percentage of pedestrian road as seen from R2 = 0.002, which means the relationship between the volume of pedestrian traffic with only 0.2% indicating a relationship classified as very low. Pelican crossing facilities with protective shield recommended to use the island has given the signal light Kartini Bandar Lampung is a one way street with four lanes.*

Keywords: *Walking, Effectiveness, The Pelican Protector.*

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INTRODUCTION

Research on pedestrian is still low in Indonesia. Lulie (1995) states that research on pedestrians in Indonesia have been inadequate and the challenge problems in anticipating change - rapid changes in society related to transportation issues. With the above conditions and inadequate facilities plus, pedestrians are often blamed as one cause of traffic congestion.

Organisers of the area were not aware that the cause of congestion is often caused by the handling of planning and urban development or areas that are not good. The above phenomena seen at locations along the road from the intersection streets Kartini. Cut many Din - Mall Kartini - Technocrats School Building, until the Yellow Bamboo market. showed irregularity or chaos, pedestrians crossing roads melintasaikartini at all the places that have no crossing facilities.

Pedestrian conflicts at this location is high enough to cause pedestrian discomfort, endangerment of safety to cross the road. At the peak time, the opportunity for a pedestrian crossing is very difficult.

With the picture above shows that the location of the pedestrian environment is not well facilitated. That is, security, comfort and smoothness pedestrians are not met. Basically pedestrians at the site most of the patrons are shopping centers, school buildings that will cross from Kartini Mall building site or otherwise. Therefore, to provide comfort and smoothness for pedestrians at this location should be given facilities for pedestrian crossings liaison between the mall.

RESEARCH OBJECTIVES

Research purposes pedestrians on roads along the Kartini is as follows:

1. Knowing the characteristics of pedestrians, as well as finding similarities relationship between walking speed, flow and density.

2. Determine the appropriate crossing facilities with pedestrian characteristics.

LITERATURE REVIEW

1. Pedestrian volume

Pedestrian volume is meant here is the number of pedestrians who cross the crossing is not delayed and delayed to determine the value of PV2 on these roads.
Crossing the assessment criteria in terms of percentage of pedestrian volume that is not equivalent to the opinion pending ArikuntoSuharsimi as follows:

0800 s.d. 1000 is High

0600 s.d. 0800 is High Enough

0.400 s.d. 0600 is Somewhat Low

0.200 s.d. 0.400 is Low

0000 s.d. 0.200 is Very Low

2. Traffic Volume

Traffic volume is meant here is the number of vehicles passing on the road, and the average value calculated at peak hoursketigat largest number of vehicles.

3. Traffic speed

Traffic speed is calculated based on vehicle mileage divided by travel time for each vehicle and taken to determine the average value of the speed of mean compliance with the required speed.

4. Headway between vehicles

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Headway is calculated here is the time headway, which according to Salter, RJ, 1997 is the time difference between the vehicle alongside that pass a point in one lane.

Time headway is taken into consideration in the selection of facility crossings where high density diperlikan crossing facilities. Table 2.14.shows the determination of the category of low traffic density, medium, and high according to the time headway of vehicles.

Table 1.ktiteria determining the current categories of low, medium, and high.

No.	Kategori	Time Headway
1	Kepadatantinggi	<2.5 detik
2	Kepadatansedang	2.5 – 9 detik
3	Kepadatanrendah	>9 detik

Source: Salter, R.J., (1997)

RESEARCH METHODOLOGY

The stage of completion of the problems outlined above are as follows;
1. Identification Data

At this stage, the identification of the necessary data, identification of data sources that may be, the preparation of survey administration, planning time, personnel, survey costs, and so on. The selection of the data must be adapted to the needs of both quantitative and qualitative.

2. Literature

At this stage, taking the requirements that must be met from existing conditions that exist such as the volume of pedestrians, pedestrian behavior, and traffic volume and speed of traffic and time headwaypada roads concerned. The data will be taken from the field survey can also be clarified with the literature study phase.

3. Survey Introduction

At this stage, survey the physical condition of the initial observations and survey speed of the vehicle as a pilot survey.

4. Preparation of field survey

This is done to facilitate the course of the field survey, include: preparation schedule, equipment needed, survey administration, the tables used for recording parameters, preparation of personnel surveys, survey costs, and other preparations that support the way the field survey.

RESULTS

Traffic volume is calculated at the location of pedestrians crossing roads kartini. Calculated the pedestrian crossing over the highway directly. Pedestrian volume calculation results in Table 2. and Table 3. below, a cross (x) in the table shows the largest 4PV2

Table 2. Pedestrian volumes and The volume of vehicles on the road Saturday Kartini Bandar Lampung Date March 9, 2012

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Waktu	Volume Penyeberang (P)	Volume Kendaraan (V)	PV^2	$4PV^2$ Terbesar
06:00:00 - 07:00:00	76	2274	393001776	
07:00:00 - 08:00:00	84	4998	2.098E+09	x
08:00:00 - 09:00:00	70	4472	1.4E+09	
09:00:00 - 10:00:00	86	4657	1.865E+09	
10:00:00 - 11:00:00	40	5706	1.302E+09	
11:00:00 - 12:00:00	43	5625	1.361E+09	
12:00:00 - 13:00:00	72	6042	2.628E+09	x
13:00:00 - 14:00:00	71	5999	2.555E+09	x
14:00:00 - 15:00:00	62	5748	2.048E+09	
15:00:00 - 16:00:00	25	5981	894309025	
16:00:00 - 17:00:00	47	5850	1.608E+09	
17:00:00 - 18:00:00	85	5951	3.01E+09	x

Sumber : Hasil survai dan perhitungan

Facilities to assess compliance with the requirements of the existing crossings and to recommend an appropriate facility can be calculated from the volume of pedestrian and vehicle volume is highest at peak hours when the average value of 4 PV2 largest such calculation below:

P = (84 + 72 + 71 + 85) / 4 = 78.00 pedestrian / hour

V = (4,998 + 6,042 + 5,999 + 5,951) / 4 5747.5 veh. / Hour

Average number of pedestrians at rush hour 78.00 <1100 pedestrians / hour and traffic volume 5747.5> 750 vehicles / hour, PV2> 2 x 10^8 so it can be concluded that facilities use the recommended protective Pelican crossing facilities. Fluctuations in the number of pedestrians who cross streets kartini can be seen in the graph below the image.
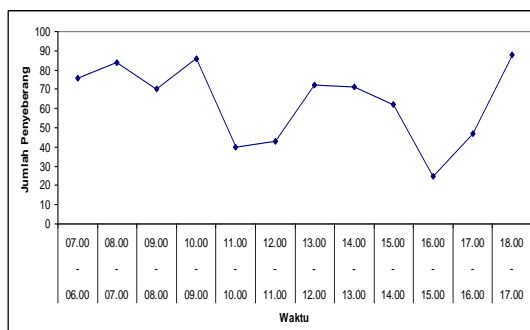

Figure 1 Fluctuations in the number of pedestrian Saturday Date March 9, 2012

From the graph above shows that the highest pedestrian volume equivalent sd 09.00 10.00 which is the peak hour on a Saturday morning where people start on the road to shopping activities, courses or ride through crossing the road, while at 17.00 sd 18:00 pm peak hour indicates the end of the activity in the afternoon traveling, shopping, courses, walks, or other purposes. Volume terandah at 16:00 s.d. 15:00 that person was not a lot of activity on Saturday.
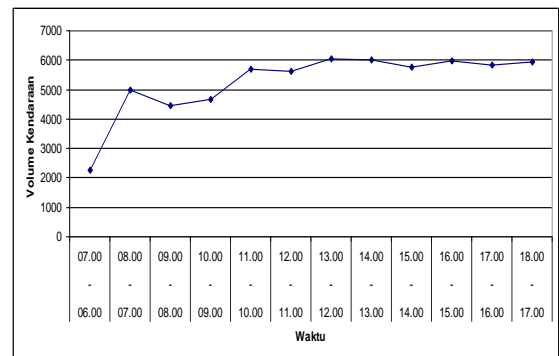

Figure 2. Fluctuations in the number of vehicles Saturday Date March 9, 2012

Of graph drawing 2. above shows that the high volume of vehicles starting at 12.00 sd 18:00 where many people end the trip on a Saturday activity. The lowest volume at 06.00 s.d. 7:00 where many people are still not starting the activity. As for the survey data Wednesday, March 13, 2012 can be seen below.

Table 3. Volume of pedestrian and vehicle volume on roads Kartini Bandar Lampung Wednesday March 13, 2012 Date

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Waktu	Volume Penyeberang (P)	Volume Kendaraan (V)	PV^2	$4PV^2$ Terbesar
06:00:00 - 07:00:00	103	2335	561579175	
07:00:00 - 08:00:00	124	5203	3.357E+09	
08:00:00 - 09:00:00	86	5830	2.923E+09	
09:00:00 - 10:00:00	55	5280	1.533E+09	
10:00:00 - 11:00:00	74	5663	2.373E+09	
11:00:00 - 12:00:00	46	6137	1.732E+09	
12:00:00 - 13:00:00	118	6400	4.833E+09	x
13:00:00 - 14:00:00	121	5873	4.174E+09	x
14:00:00 - 15:00:00	73	5837	2.487E+09	
15:00:00 - 16:00:00	141	6299	5.595E+09	x
16:00:00 - 17:00:00	53	6736	2.405E+09	
17:00:00 - 18:00:00	125	6652	5.531E+09	x

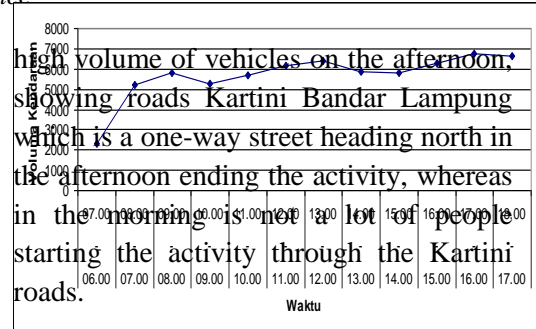Sources: Survey results and calculations

Identical to the above calculations on the location of a pedestrian crossing on the road kartini Bandar Lampung on Wednesday, March 13, 2012 obtained the average number of pedestrians at rush hour is 128.25 pedestrian / hr<1100 pedestrian / h and volume of 6,306 vehicles vehicles / hour> 750 vehicles / hour, PV2> 2 x 10^8 so it can be concluded that the facility is recommended to use a protective Pelican crossing facilities. Below is the graph pedestrian on Wednesday, March 13, 2012.

Figure 3 Fluctuations in the number of pedestrian Wednesday Date March 13, 2012

From the graph above shows that the highest pedestrian volumes at 15.00 sd 16.00 and the lowest pedestrian volume at 11.0 sd 12:00

Figure 4 Fluctuations in the number of vehicles Wednesday Date March 13, 2012

Of the graph shows that the highest volume of vehicles on the sd 16.00 17:00 and the lowest volume of vehicles on the sd 07.00 8:00. From figure 3 and figure 4.seen that the high volume of vehicles on the afternoon, showing roads Kartini Bandar Lampung which is a one-way street heading north in the afternoon ending the activity, whereas in the morning is not a lot of people starting the activity through the Kartini roads.

CONCLUSION

Based on research data and analysis that has been conducted to assess the needs of pedestrian facilities and pedestrian crossing behavior Kartinistreet some conclusions can be drawn as follows:

1. From the analysis of pedestrian volume (P) and volume of vehicle (V) on the location of the research result on the location of Saturday's P is 78 people / hour, and the location is 5747.5 V vehicles / hour> 750 vehicles / hour and PV2> 2 x 10^8. On Wednesday the value of P at the location is 128 people / hour, and V is 6,306 vehicles / hour> 750 vehicles / hour and PV2> 2 x 10^8. So as to support the safety of the pedestrians and smooth flow of traffic recommended to use a pelican crossing with a protective facility.

2. If the terms of the degree of saturation (DS) for the use of whether or not the location of the pedestrian bridge Kartini on Saturday and Wednesday = 0:52 = 0.60, this means that the DS on the site is still under 0.75 so for safety and smooth traffic is recommended to use a pelican crossing facility the protector.
3. Time Headway average at Kartini street location for light vehicles (HV) and motorcycles (MC) has time Headway Time <2.5 seconds, it indicates that the density of traffic on the road Kartini is high, while the average Time Headway in keseluruhanpada Saturday = 18.2 seconds

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and on Wednesday = 15:54 seconds. 4. The average speed of vehicles on the roads in the study sites Kartini Saturday is 40.3488 km / h and on Wednesday was 36.8857 km / h, if the terms of the plan as required speed is 40 km / h average speed of the vehicle at the study site was planned qualify. 5. At the study site had characteristics when viewed from regression and correlation analysis which shows that the location of the crossing is not affected by the volume of traffic that the value of the correlation coefficient (r) in the linear regression analysis was 0.071dan Saturday determinasai coefficient (r2) was 0.051, and the value of correlation coefficient (r) on Wednesday is 0.002 and the coefficient of determination (r2) is 0.015 where the results of the analysis on each day of the study are still relatively low.

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