

DESIGN OF GRAVEYARD LIGHT POLES AND MATHEMATICAL MODELING OF ELECTRIC USE IN GRAVEYARD LIGHTS

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Abstract

In making lamp posts, square galvanized iron is needed with dimensions of 10 cm, 5 cm and 2 cm. Mathematical modeling here calculates the electrical energy used over a certain time. The electrical energy used by a lamp for 12 hours and four lamps is 192 watt.hours in 24 hours. Keywords: Lamp Posts, Electric Energy, Mathematical Modeling.

1. INTRODUCTION

Lamp poles function to support outdoor lighting lights. In addition, lamp poles aim to provide maximum lighting distribution. The ideal height of a lamp pole is 4 – 13 meters and this height affects the area of lighting distribution.

2. DESIGN OF TOMB LIGHT POLE

In the design of the tomb lamp post, square galvanized iron (iron that does not rust easily (McFadden et. al., 2011) is used. Galvanized iron material with dimensions of 10 cm, 5 cm, 2 cm. The lights used are four points. Figure 1 is only drawn two light points. This is to make the drawing easier. In practice, the lamp pole uses four light points. The strength of the pole in support depends on the quality of the welds and bolts at the base of the pole. Area of the Kampung Jetak Cemetery RT: 01, Mredo, Bangunharjo, Sewon, Bantul, Daerah Special Yogyakarta is 27 m x 27 m.

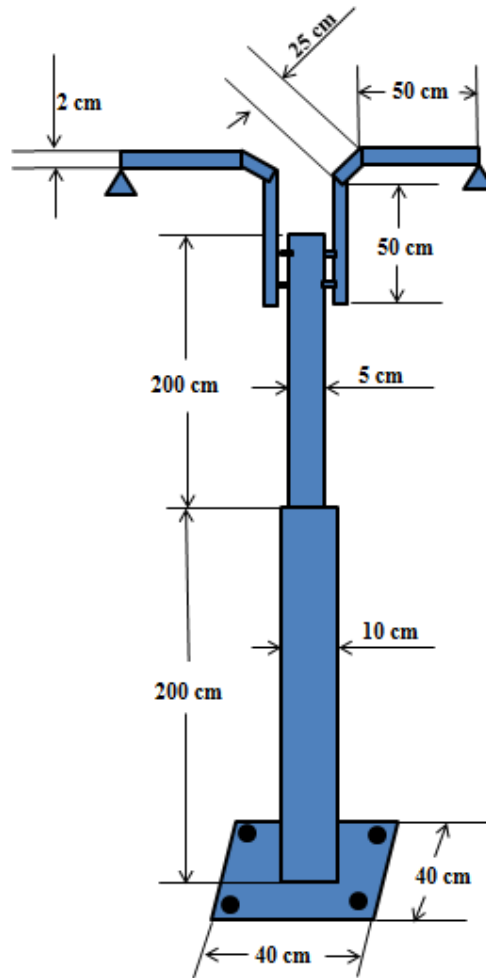


Figure 1. Two Point Light Pole Design

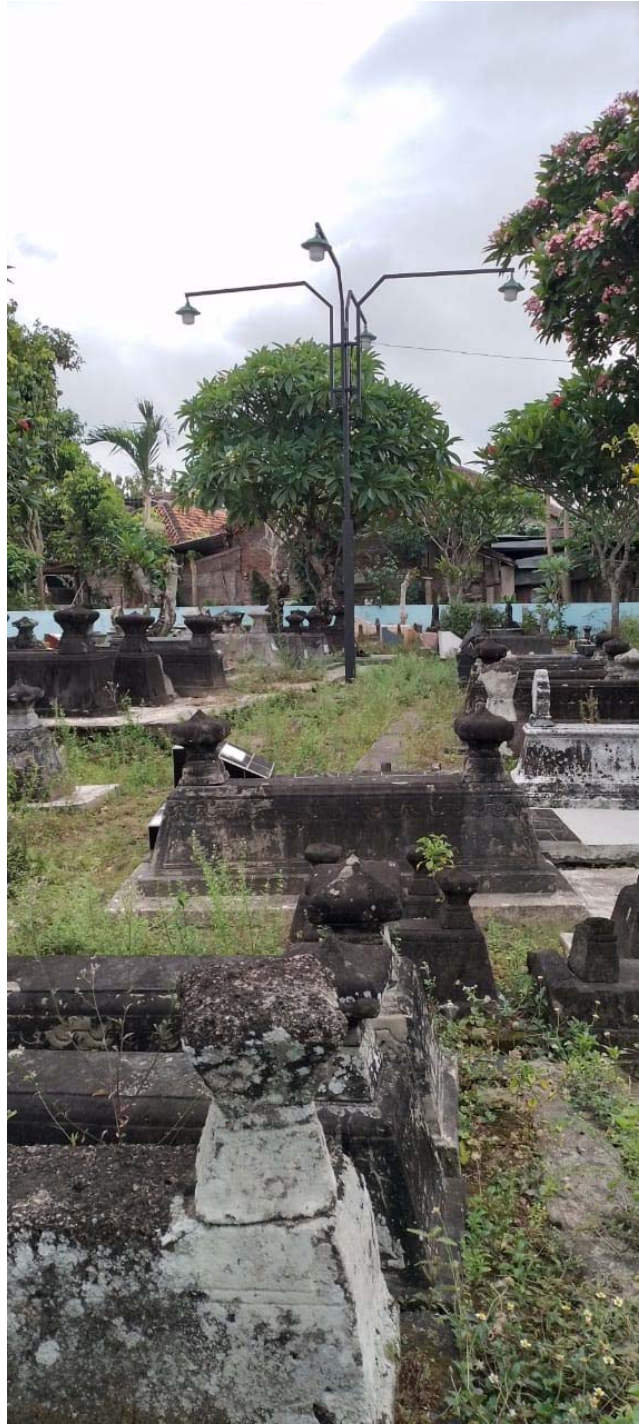


Figure 2. Lamppost during the Day

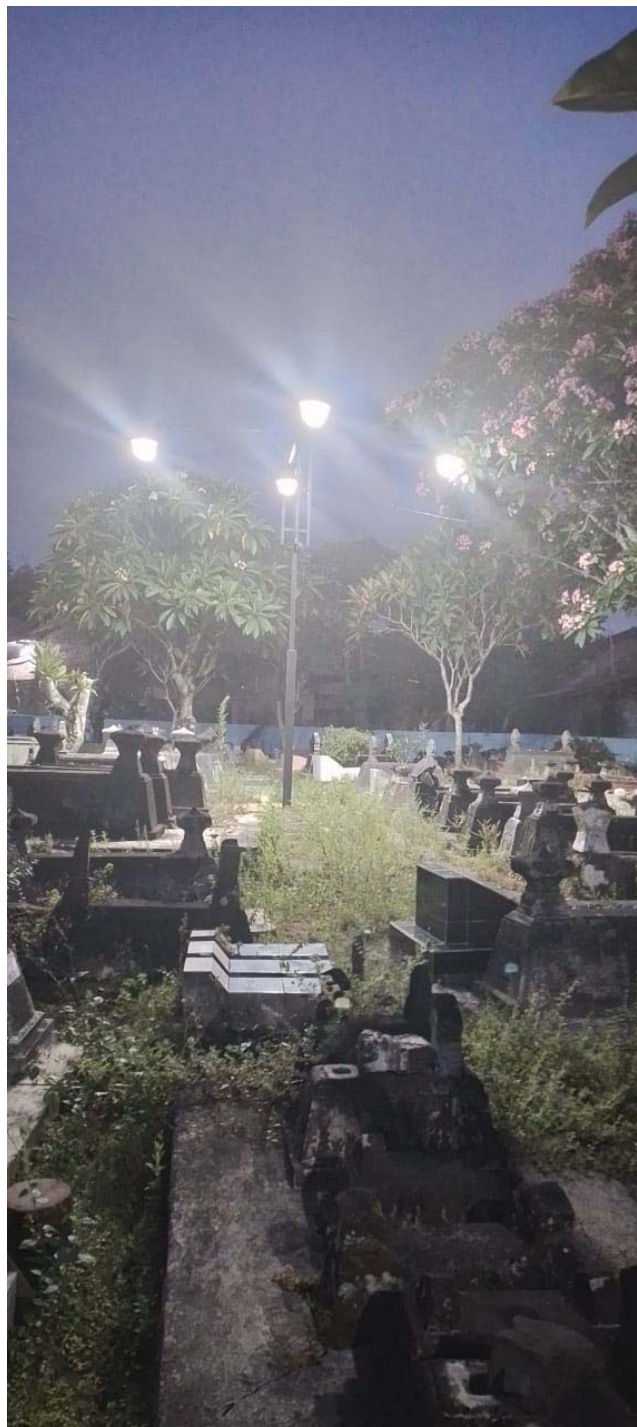


Figure 3. Lamppost at Night

3. MATHEMATICAL MODELING OF ELECTRICAL LOADS OF GARDEN LIGHTS

Mathematical modeling of electrical energy use is

$$f = \sum_{i=0}^n a_i p_i t_i \quad (1)$$

where f : amount of electric power (watt.hour); a_i : number of types of electronics used; p_i : the type of electronic electrical power used (watt); dan t_i : waktu jenis elektronik yang digunakan (hour). Because we only use four types of lamps of the same wattage, namely 40 watts, and the

lamp usage time is 12 hours, the amount of electrical power is $f = 4 \times 40 \times 12 = 1920$ watt.hour.

4. CONCLUSION

In the design and manufacture of lamp posts, square galvanized iron with dimensions of 10 cm, 5 cm and 2 cm is used. The mathematical modeling of electrical energy use in the lamps used is 1920 watt hour.

5. REFERENCES

McFadden, M., Giani, R., Kwan, P., & Reiber, S. H. (2011). Contributions to drinking water lead from galvanized iron corrosion scales. *Journal-American Water Works Association*, 103(4), 76-89.