DESIGN OF AN ELECTRICAL DISTRIBUTION SYSTEM FOR BARANGAY SANTA MERCEDES MARAGONDON, CAVITE

Design Project

RENEN N. EROLES
NATHANIEL N. PANTOJA

College of Engineering and Information Technology
CAVITE STATE UNIVERSITY
Indang, Cavite

April 2010

DESIGN OF AN ELECTRICAL DISTRIBTUTION SYSTEM FOR BARANGAY SANTA MERCEDES MARAGONDON, CAVITE

Undergraduate Design Project
Submitted to the Faculty of the
Cavite State University
Indang, Cavite

In partial fulfilment
of the requirement for the degree of
Bachelor of Science in Electrical Engineering

EROLES, RENEN N.
PANTOJA, NATHANIEL N

April 2010

ABSTRACT

RENEN N. EROLES and NATHANIEL N. PANTOJA, Design of Electrical Distribution System for Barangay Santa Mercedes, Maragondon Cavite. Undergraduate Design Project. Bachelor of Sciene in Electrical Engineering.Cavite State University, Indang Cavite. April 2010. Adviser: Engr. Efren R. Rocillo.

Barangay Santa Mercedes, Maragondon, Cavite, formerly Barangay Patungan, was located near the boundary of Cavite and Nasugbu, Batangas. The total number of population of the Barangay is 1505 and composed of 292 houses. The main source of living in the barangay is from the fishing industries. The barangay is only energized at night time from 6 pm to 10 pm. The power distribution was only connected to a 40 KVA generator set.

The design of electrical distribution system for Barangay Santa Mercedes was conducted to have a basis for future electrification of the barangay. Having a longer and reliable supply of electricity in the place would make the residents more productive. Having this system the residence will have the privileged to have a cheaper but more efficient source of electrical energy.

The total number of the households that could be serviced by the design if implemented is 292. The projected additional of households in the next ten years is 147. The total number of the transformers to be installed is 10. The size of primary and secondary conductors to be used is 62500 CM and 250000 CM. The total number of poles to be installed is 51 and the capacity of the substation to be installed for the barangay is 2250 KVA;

The total load is 330.32 KVA and to be increased by 180.807 KVA in the next ten years. The initial cost in implementing the design is Php. 5,526,029. The total cost of the projected upgrading of the system for the next ten years is Php 2,584,818.99.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDIX COMPUTATIONS

LIST OF APPENDIX TABLES

DESIGN OF AN ELECTRICAL DISTRIBUTION SYSTEM FOR BARANGAY SANTA MERCEDES, MARAGONDON, CAVITE[1/]

RENEN NOVERO EROLES
NATHANIEL NOVERO PANTOJA

[1/]An undergraduate design project submitted to the faculty of the Department of Computer and Electronics Engineering, College of Engineering and Information Technology, Cavite State University (CvSU), Indang, Cavite in partial fulfilment of the requirements for the degree of Bachelor of Science in Electrical Engineering (BSEE).Contribution no. BSEE-2009-10-003 . Prepared under the supervision of Engr. Efren R. Rocillo.

INTRODUCTION

The discovery of electrical energy contributed much for the improvement of modern day technology. It may be either directly usable in other forms of energy such as light, heat and mechanical energy to operate the machine and all other forms of appliances that consume electricity. During the early days, the standard power system used to generate electricity was through the use of standby generating set with limited load capacity. In 1880s, it gave birth to a system which, the said electrical energy are delivered or distributed from the generation site to the end user. According to Alexandra Von Meier (2000), in general, they represent an interface between different levels or sections of the power system, with the capability to switch or reconfigure among various transmission distribution lines. And among those, Barangay Santa Mercedes, Maragondon, Cavite formerly known as Barangay Patungan was not benefited by the said system.