PROPOSED REHABILITATION OF SILLIMAN UNIVERSITY CAMPUS DISTRIBUTION LINE SYSTEM

A Special Paper
Presented to
The School of Graduate Studies
CENTRAL PHILIPPINE UNIVERSITY
Jaro, Iloilo City

In Fulfillment
Of the Requirements for the Degree
MASTER IN ENGINEERING

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October 2005

ABSTRACT

The purpose of this paper is to propose a rehabilitation plan and design of the distribution line system of Silliman University Campus, thus determine the appropriate ratings of transformers, sizes of conductors, types of pole and pole wire arrangement that would enhance the distribution line system to sustain the needed power of its load today and in the future.

Since the load already exists, actual determination of the individual loads and the type of service they are served, three (3) phases or single (1) phase, were done. Buildings and structures equipped with watt-hour meters, and load data gathered are classified as **average loads**, and without watt-hour meters, and load gathered are classified as **connected loads**. Using the two load data gathered, average and connected loads, the maximum demand of the buildings and structures were calculated using load factors and demand factors in Table 1, Appendix C and were tabulated in Table 4, Appendix C. Buildings and structures were grouped in the preference of their locations based on the actual campus plan. The maximum demand will be used to determine the transformer size and conductor sizes, with considerations of diversity factors among consumers in Table 2, Appendix C, 100 % load growth and 10 % distribution loss that would supply the particular group of loads.

After the loads have been grouped in Appendix B, the number of feeders and the number of group loads that will be supplied by the feeder transformer were

determined using the maximum demands of the grouped loads. Determination of feeder transformer size and conductor sizes were done with consideration of diversity factors among transformers, load growth, and distribution loss. Standard conductor sizes were determined in Table 3, Appendix C. The last transformer size to be determined was the main transformer size. This main transformer is the interconnection of the local electric cooperative and Silliman University. From the summed maximum demands of the feeders, the main transformer size was determined, with consideration of diversity factors among feeders, load growth, and distribution loss.

The one line diagram of the proposed distribution line rehabilitation is depicted in Figure 2, Appendix D. Figure 2 also includes transformer kVA rating, primary and secondary voltage ratings, and connections as well as specifications of the existing generator sets.

A plan is provided to show the route of the line, placement of poles, primary and secondary, and transformer bank stations.