PROPOSED DESIGN OF WATER SUPPLY DISTRIBUTION SYSTEM AT GAWAD KALINGA, DASMARIÑAS CITY, CAVITE

Undergraduate Design Project
Submitted to the Faculty of the
College of Engineering and Information Technology
Cavite State University
Indang, Cavite

In partial fulfillment
of the requirements for the degree of
Bachelor of Science in Civil Engineering

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ABSTRACT

TABLIZO, KRISTINE JOY C. and TOPACIO, NICOLE-ANN I. Proposed Design of Water Supply Distribution System at Gawad Kalinga, Dasmariñas City, Cavite. Undergraduate Design Project. Bachelor of Science in Civil Engineering. Cavite State University Indang, Cavite. June 2018. Adviser: Engr. Renato B. Cubilla.

The study was conducted at Gawad Kalinga, Dasmariñas City, Cavite and Cavite State University – Main Campus from August 2017 to June 2018 to provide a design of a water supply distribution system at Gawad Kalinga, Dasmariñas City, Cavite. Specifically, it aimed to: 1. enhance the skills of the researchers; 2. enhance the knowledge of the researchers in designing a water supply distribution system using EPANET; 3. provide a design of an elevated steel water tank; and 4. determine the estimated cost of the system, including earthworks, concrete works, elevated water tank, pipelines and fittings.

The study provided the architectural and structural details of the proposed elevated water tank designed to supply a projected population of 1,920 individuals within a 3.8 hectares land area. A simulation of water distribution network was presented using EPANET. Architectural plans included elevation plans of water tank; structural plans included details of elevated water tank, tie beam, concrete pedestal, and pedestal footing. The analysis of individual structural member was obtained with the aid of Structural Aided Analysis and Design (STAAD) software.

The design of the structural members was done following the procedures, requirements and specification as per American Institute of Steel Construction (AISC) manual, Association of Structural Engineering of the Philippines Inc., (ASEP) Handbook, and National Structural Code of the Philippines (NSCP) standard ACI Code. According

to the design computation and analysis, it can be concluded that all section and materials used were safe, efficient and economical.

The estimated total project direct cost of the proposed water supply distribution network is PhP 987,018.88.

The authors recommend an in-depth study about other structural member regarding the design of the elevated water tank; also to conduct a comparative analysis between manual hydraulics computation and software simulation results in the analysis of transmission and water distribution mains.

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