

DEVELOPMENT OF COMPUTER PROGRAM FOR THE
DESIGN OF SPREAD FOOTING,
AXIALLY LOADED SQUARE COLUMN,
AND
SIMPLY SUPPORTED SINGLY-REINFORCED
CONCRETE BEAM

A Special Problem

Presented to

The Faculty of the School of Graduate Studies

2777

Central Philippine University

Iloilo City

In Partial Fulfillment

Of the Requirement in the Degree

Master of Engineering

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ABSTRACT

The special project shall develop a program that would design commonly used reinforced concrete structures such as simple beam, column and isolated foundation footings. The language of programming to be used shall be Visual Basic.

The program will be structured in a way that would simplify the tremendous procedures in designing and undergoing through the lengthy formula being used. One will be able to acquire the needed results by simply inputting the known parameters and the given data for the structure. Moreover, it would increase the level of accuracy by eliminating possible errors of manual computation and at the same time acquire speed in doing the design.

The reinforced concrete structures to be designed will meet certain limitations that will be discussed later in the proceeding chapters. Among those are the available bar sizes, types of loading and etc. The design shall also conform to the ACI Code. The Method that will be used in the design shall be the ultimate Strength Design or commonly known as the Strength Design Method.

The commonly known parameters in the design for input would be the loading, value of concrete yield strength f_y , compressive strength of concrete f'_c , and the allowable soil bearing capacity q_a for footing design. As an output, the program will design the dimension of the specific structure as to its width and

depth, specify the needed number and size of steel reinforcements, and the minimum spacing of stirrups.

The manual design of the different concrete structures shall be illustrated in this project while a hard copy of the program shall be printed out for reader's reference. It shall then be used for purpose of comparison as to their accuracy. Moreover, a stored program in a disk shall be made available for program test and evaluation and a flow chart of the program shall also be illustrated.