CASE STUDY: AN INTERACTIVE DESIGN PROGRAM FOR MODULAR BUILDING ELEVATIONS USING A MICROPROCESSOR

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ABSTRACT

This paper outlines the results of a research project dealing with building elevation design using a micro-computer. In recent years, rapidly changing economic and environmental factors have impressed upon the building industry professionals the need to save both time and money in developing new buildings and facilities. Although construction costs are high and climbing fast, operation costs account for three quarters of the costs encurred in the lifetime of a building; and most of the decisions that affect the cost of operation of a building are irrevocably set by the time construction begins. These facts emphasize the great importance of the design phase of a building project which, by contrast, absorbs less than 1% of the estimated life-cycle costs of a building. There is a good cause to allocate a greater portion of the project budget to design work and to improve current building design practices and techniques.

MODBED (Modular Building Elevation Design) is one of the first accomplishments in the CBS research Computer Aided Building Design laboratory on micro-computers. MODBED is a user oriented interactive program that handles architectural elevation designs. The MODBED graphics package, can be loaded into a standard desktop micro-computer such as the APPLE II, requiring only 20 Kbytes of its 48 Kbytes of memory. The remaining memory is being used for the design database. MODBED describes all elevation features in architectural terms, and requires no particular programming skill, since prompts, appearing on the video screen, describe and control the execution of the program. The user can proceed as he wishes; he can execute the actual program in a straightforward manner, or refer back to the dataset outline to effect changes, or request a primer: a point by point description of the design elements in MODBED complete with animated graphics and instructions. This, the user can accomplish easily with the desk-top convenience of a micro-computer like the APPLE II.

Succinctly put, the MODBED program assembles modules according to the types, quantities, and dimensions specified by the user and scales the overall design to a given factor. It performs predetermined calculations and organizes the results in numerical and coordinate data files for subsequent use. Using MODBED, the designer can produce an endless variety of models, or work to a degree of detail that is limited only by the resolution of the output equipment by simply varying the parameters and the sequence of assembly.

This paper is being presented in detail in the CAD Journal.