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Autor: Degenkolb, H.J.
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Use of Computers in an American Consulting Firm

H.J. Degenkolb

Our firm practices only in the structural engineering field on a consultation basis.

We have 7 principals and 15 design engineers using 4 machines (mini-computer and three terminals into McAuto).

All the computer equipment is located in a separate room. Each engineer uses the equipment as needed.

The mini-computer is an Olivetti P 6060 that is used for

- 2D Truss and Frame Analysis
- Concrete Column Analysis and Design
- Steel Column Evaluation
- Continuous Beam Analysis
- Soldier Beam Evaluation (in-house program)

This computer has a thermal printer with graphics capabilities, 2 floppy discs, 48^{k} memory, and RS232 plug compatibility with mainframe computers.

We also utilize McAuto, a computer service bureau having both IBM and CDC equipment. Access via telephone connection with three terminals and the Olivetti P 6060. Used for:

- Major 2D and all 3D Static Analysis
- All Dynamic and Finite Element Analysis

All output and graphics printed at McAuto's San Francisco office.

Our use of the computer on a typical design project varies with the design phase:

- At the schematic stage, the computer is not used with all analysis being performed by hand, possibly with calculators.
- At the preliminary phase, key portions of the structural system will be analyzed by computer.
- At the working drawing stage, the final structural analysis is performed by computer.

It may be done on only parts of the structure or in some cases it may involve the entire structural system in a 3D model. Depending on the structure, the analysis will be either static or dynamic.

The computer is used for final member sizing of various structural elements. Members are never sized automatically without careful verfication of the analysis results and design routines.

We are just beginning to participate on design teams which use computer drawn plans for all disciplines. These are produced by a service bureau for the entire team. Results have been good, but production always takes longer than expected. Also, accuracy is always a big problem since we are dealing with a terminal operator, not a trained draftsman.

Eventually, we expect to bring all of our analysis capabilities in-house by purchasing a large computer or additional micro-computers.

We also expect to develop a computer-aided drafting capability. In order to do this, we must be able to purchase equipment which is compatible with equipment used by the other disciplines so that common plan information can be shared.