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NASA TECH BRIEF

Computer Program Simplifies Selection of Structural Steel Columns

The problem:

The selection of appropriate steel columns and base plates for the construction of a multistory structure is usually a tedious process. A method is required whereby the designer can rapidly select the size of steel columns which fulfill the American Institute of Steel Construction (AISC) specifications for a particular application.

The solution:

A computer program that will determine the size of steel columns and base plates required for given axial loads at points of lateral support. The program produces an easily followed printed record containing the size of section required at a particular elevation, the stress produced by the loads, and the allowable stresses for that section.

How it's done:

To use the program, a data deck containing the specifications from the AISC manual is entered into the computer, together with code data pertaining to the yield stress and the modulus of elasticity of the steel to be used, the allowable bearing stress for the concrete, elevations, and loading. The computer then prints an output table which includes the elevation of each load application, the load data, the size of column section needed for that elevation, the actual and allowable stresses on that section, and the size of base plate required.

Notes:

1. The program, available from the address below, has been written in the FORTRAN language for use on the IBM 7094 computer. It can be modified for use on other machines with little difficulty.
2. The original program was written at the time that the 1963 AISC specifications were in effect. Later specifications should have minor (if any) influence upon the program format.
3. Inquiries concerning this innovation may be directed to:

   Technology Utilization Officer
   AEC-NASA Space Nuclear Propulsion Office
   U.S. Atomic Energy Commission
   Washington, D.C., 20545
   Reference: B66-10097

Patent status:

No patent action is contemplated by NASA.

Source: G. S. Vissing
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(NU-0044)

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