A DISCRETE-ELEMENT METHOD OF MULTIPLE-LOADING ANALYSIS FOR TWO-WAY BRIDGE FLOOR SLABS

by

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Research Report Number 56-13

Development of Methods for Computer Simulation of Beam-Columns and Grid-Beam and Slab Systems

Research Project 3-5-63-56

conducted for

The Texas Highway Department

in cooperation with the
U. S. Department of Transportation
Federal Highway Administration
Bureau of Public Roads

by the

CENTER FOR HIGHWAY RESEARCH
THE UNIVERSITY OF TEXAS AT AUSTIN

January 1970

The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the Bureau of Public Roads.

PREFACE

This study presents a procedure which was developed for analysis of two-way bridge floor slabs. The methods are also applicable to analysis of one-way slabs, flat slabs, stiffened plates, or other similar structural elements. A planned structure to be constructed by the Texas Highway Department was chosen for study of a particular two-way slab.

The computer program described and included in this report is an improved version of many predecessors. The present study extends previous similar procedures, adding the ability to efficiently solve a series of loadings of the same structure. The program is written in ASA FORTRAN and is compatible with most computers.

Support for this project was provided by the Texas Highway Department in cooperation with the U. S. Department of Transportation, Bureau of Public Roads.

The continued assistance and advice of Messrs. Robert L. Reed, Farland C. Bundy, H. J. Dunlevy, H. D. Butler, and others of the Bridge Division of the Texas Highway Department is deeply appreciated.

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January 1970

LIST OF REPORTS

Report No. 56-1, "A Finite-Element Method of Solution for Linearly Elastic Beam-Columns" by Hudson Matlock and T. Allan Haliburton, presents a finite-element solution for beam-columns that is a basic tool in subsequent reports.

Report No. 56-2, "A Computer Program to Analyze Bending of Bent Caps" by Hudson Matlock and Wayne B. Ingram, describes the application of the beam-column solution to the particular problem of bent caps.

Report No. 56-3, "A Finite-Element Method of Solution for Structural Frames" by Hudson Matlock and Berry Ray Grubbs, describes a solution for frames with no sway.

Report No. 56-4, "A Computer Program to Analyze Beam-Columns under Movable Loads" by Hudson Matlock and Thomas P. Taylor, describes the application of the beam-column solution to problems with any configuration of movable non-dynamic loaas.

Report No. 56-5, "A Finite-Element Method for Bending Analysis of Layered Structural Systems" by Wayne B. Ingram and Hudson Matlock, describes an alternating-direction iteration method for solving two-dimensional systems of layered grids-over-beams and plates-over-beams.

Report No. 56-6, "Discontinuous Orthotropic Plates and Pavement Slabs" by W. Ronald Hudson and Hudson Matlock, describes an alternating-direction iteration method for solving complex two-dimensional plate and slab problems with emphasis on pavement slabs.

Report No. 56-7, "A Finite-Element Analysis of Structural Frames" by T. Allan Haliburton and Hudson Matlock, describes a method of analysis for rectangular plane frames with three degrees of freedom at each joint.

Report No. 56-8, "A Finite-Element Method for Transverse Vibrations of Beams and Plates" by Harold Salani and Hudson Matlock, describes an implicit procedure for determining the transient and steady-state vibrations of beams and plates, including pavement slabs.

Report No. 56-9, "A Direct Computer Solution for Plates and Pavement Slabs" by C. Fred Stelzer, Jr., and W. Ronald Hudson, describes a direct method for solving complex two-dimensional plate and slab problems.

Report No. 56-10, "A Finite-Element Method of Analysis for Composite Beams" by Thomas P. Taylor and Hudson Matlock, describes a method of analysis for composite beams with any degree of horizontal shear interaction.

Report No. 56-11, "A Discrete-Element Solution of Plates and Pavement Slabs Using a Variable-Increment-Length Model" by Charles M. Pearre, III, and W. Ronald Hudson, presents a method of solving for the deflected shape of freely discontinuous plates and pavement slabs subjected to a variety of loads.

Report No. 56-12, "A Discrete-Element Method of Analysis for Combined Bending and Shear Deformations of a Beam" by David F. Tankersley and William P. Dawkins, presents a method of analysis for the combined effects of bending and shear deformations.

Report No. 56-13, "A Discrete-Element Method of Multiple-Loading Analysis for Two-Way Bridge Floor Slabs" by John J. Panak and Hudson Matlock, includes a procedure for analysis of two-way bridge floor slabs continuous over many supports.

ABSTRACT

A procedure is developed for analysis of two-way floor slabs subjected to different concentrated load patterns and continuous over many supports. Partitioning methods are presented which are simple and direct in application.

A particular two-way slab structure planned by the Texas Highway Department was chosen for demonstration of results obtained utilizing the procedure for the analysis developed in the study. Additional one-way slab studies were made and the results were compared with other methods of analysis.

The analyses are made by application of an included computer program which is based on formulations derived from a discrete-element model representing the slab. The program has the capability of efficiently solving a series of loading problems for the same structure.

KEY WORDS: boundary restraints; bridge decks; computers; concrete bridges; discrete-element analysis; floors; grid systems; moments; multiple-loadings; partitioning; plates; two-way slabs.

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APPENDICES

NOMENCLATURE

Symbol	Typical Units	Definition
a	-	Term in stiffness matrix
[a]	-	Submatrix of stiffness matrix
A	-	Recursion coefficient
$\{A\}$	-	Recursion coefficient vector
b^1, b^2, b^3	-	Terms in stiffness matrix
[b]	-	Submatrix of stiffness matrix
B	-	Recursion coefficient
[B]	-	Recursion coefficient matrix
c^1, c^2, c^3, c^4, c^5	-	Terms in stiffness matrix
[c]	-	Submatrix of stiffness matrix
C	-	Recursion coefficient
C	$lb\text{-}in^2/in/rad$	Plate twisting stiffness
[C]	-	Recursion coefficient matrix
$d^1, d^2, d^3,$	-	Terms in stiffness matrix
[d]	-	Submatrix of stiffness matrix
D	-	Recursion coefficient multiplier
[D]	-	Recursion coefficient multiplier matrix
D^x, D^y	$lb\text{-}in^2/in$	Plate bending stiffness
e	-	Term in stiffness matrix
[e]	-	Submatrix of stiffness matrix
E	-	Recursion coefficient multiplier

Symbol	Typical Units	Definition
E	lb/in^2	Modulus of elasticity
$[E]$	-	Recursion coefficient multiplier matrix
f	lb	Load
$\{f\}$	-	Load vector
h_x, h_y	-	Discrete-element widths
H1 - H5	-	Truck load patterns
i	-	Numbering associated with x-direction
j	-	Numbering associated with y-direction
$[K]$	-	Stiffness matrix
M^x, M^y	in-lb	Bending moments
M^{xy}, M^{yx}	in-lb/rad	Twisting moments
M1 - M6	-	Special load patterns
n	-	Any number
P^x, P^y	lb	Axial tensions
Q	lb	Load
S	lb/in	Support spring
t	in.	Plate or slab thickness
w	in.	Deflection
$\{w\}$	-	Deflection vector
x	-	Coordinate in short slab direction
y	-	Coordinate in long slab direction
Z	ft	Variable dimension of load patterns
ν	-	Poisson's ratio

CHAPTER 1. INTRODUCTION

This study is primarily concerned with the development of a rational procedure for analysis of two-way bridge floor slabs continuous over many supports.

Statement of the Problem

Analysis of two-way slabs subjected to applied concentrated loads is a complex problem, and the practicing engineer has resorted to approximate solution procedures. His method for analysis is usually one of two choices. The first is an analysis limited to adapting conventional closed-form mathematical solutions for special simple cases. The second is to apply tabulated moment coefficients such as those given in the ACI Code (Ref 2). These coefficients are for uniformly loaded slabs and fundamentally stem from Westergaard's work (Ref 17) but have been modified by some later tests. The coefficients are also limited to simple cases of a free edge, simple supports, or complete fixity at the edges.

Presented in this report is an alternate procedure for analysis of two-way slabs continuous over many supports, using a numerical method which is efficient and direct in solution. A particular bridge deck which is to be constructed by the Texas Highway Department has been chosen as an example to show application of the method. Two-way bridge slabs are, however, not the only type of problem that can be analyzed. The procedure is also applicable to one-way slabs, uniformly supported slabs, and slabs with any diverse system of random supports.

Multiple Loadings

Most structural systems require several solutions in order to consider different loadings or placements. This is especially true for a bridge floor slab which is subjected to a variety of moving-load patterns. During the study of the two-way floor slab analysis procedure, a computer program was developed which analyzes a complete series of problems with different load patterns and positions in a much more efficient way than is possible by considering each loading individually. This multiple-loading procedure is described in Chapter 2. A general discussion of the computer program and its use is given in Chapter 3. The basic program is programmed differently than the one developed by Stelzer (Ref 3) but the solution technique is the same. The output format is condensed and simplified, and the program is included as an appendix to this study.

Confidence in the Method of Solution

For design of real two-way slabs, approximations and engineering judgment must be made, with the degree of approximation within reasonable bounds to give confidence in the results. The closed-form solutions for simply supported plates that are available, such as those given by Timoshenko (Ref 14), serve to instill confidence in other methods of solution for similar problems. If a new method of solution can be checked against a closed-form solution, and if the method is then applied to diverse problems which cannot be attempted by other methods, it gives the user confidence in the new approach.

The Example Slab

Chapter 4 describes the selected example which consists of a two-way slab bridge deck. The particular structure was chosen at the suggestion of bridge designers of the Texas Highway Department so that as work for the study advanced, immediate benefit could be given to the designers of the structure.

Partitioning of Slabs

Chapter 5 describes the developed procedure by which a slab can be partitioned into subpanels using the example structure of Chapter 4 for demonstration. An edge restraint is computed that represents the effect of the removed areas of the slab on the panels under study. By this means, the multiple-slab-span continuity effect can be included while only investigating two or three panels at one time.

Results of the Analyses

Chapter 6 presents the results of the analyses of the two-way slab example structure. Bending moments are presented for the various traffic patterns and areas of the deck which were studied.

Comparison Studies

Chapter 7 discusses three additional studies which were made on bridge slabs. The first study was of a usual type of bridge deck supported by girders parallel to the traffic. The second study was of a slab supported by widely spaced floor beams transverse to the traffic. The comparison of results between the solution procedure and the moments as would be predicted by the current AASHO formulas for one-way slabs (Ref 1) was surprisingly close, as will be seen. The third study was a brief check of a two-way bridge deck for a structure in California. These three studies also help yield confidence in the computer solution as a means of analysis. It should be emphasized, however, that this is analysis only and does not furnish justification for the specified loads and impact factors which were used in the examples.

The appendices contain the Guide for Data Input, general program flow chart, program listing, notation, and selected output for the example structure.

CHAPTER 2. MULTIPLE-LOADING RECURSIVE TECHNIQUE

Most structures are subjected to several different loading conditions which must be considered by the designer. Highway bridge structures must be designed for specified loadings which may be placed at any position on the bridge deck. In addition, various combinations of two or more loadings may need to be tried on the same structure to obtain the correct design criteria.

For any given structure with fixed geometric and support configurations and for a particular load condition, a set of simultaneous equations can be written and used for a solution of the problem.

Structural Plate Solutions

Several procedures are available for the solution of structural plate problems, including classical closed-form solutions of the applicable differential equations. A good discussion of differential plate equations is given by Timoshenko (Ref 14). Numerical procedures may be used to approximate the solution of the equations.

It has been shown by Matlock (Ref 11) that a pictorial discrete-element model can be used for visualization of the numerical technique as applied to beam columns. This same type of discrete-element model was also used to represent a plate or slab by Ingram (Ref 8) and Hudson (Ref 6). Their solution procedures consisted of alternating-direction-implicit processes which depended on an estimate of a closure parameter. These procedures were found to be successful for slabs which are well supported, such as a slab on subgrade. However, ill-supported slabs such as a bridge deck or a slab supported by only a few columns often have been difficult to solve by alternating-direction-implicit techniques.

Direct Slab Solution

With the advent of the third-generation computers and their great increase in solution speed and storage capacity, a direct solution of the equations generated from the discrete-element slab or plate model became feasible. Stelzer used the same model as Ingram and Hudson, but formulated the complete equations and arranged them in matrix form (Ref 13). By using the same recursive technique used by Matlock for solution of the beam-column equations (Ref 11), but applied to submatrices instead of individual terms, he was able to arrive at a reasonably efficient direct solution.

The Computer Model

A brief description of the discrete-element model will help the reader visualize how a slab or plate structure can be analyzed by this technique. The slab is replaced by an analogous mechanical assembly which models all stiffness, geometric, and support properties of the actual slab. The discrete-element model is shown in Fig 1. The joints of the model are connected by rigid bars which are in turn interconnected with one another by torsion bars which represent the plate twisting stiffness C . The flexible joint models the concentrated bending stiffness D . Also included are the effects of Poisson's ratio ν . The equations shown in Fig 1 are those normally used to compute the stiffness properties of a structural plate element. E is the appropriate modulus of elasticity and t is the plate thickness. Diverse systems, such as a stiffened plate, can thus be modeled by using an equivalent effective thickness as outlined by Huffington (Ref 7).

Equations of Equilibrium

The deflection at each discrete joint is the unknown in the basic equilibrium equation which is applied at each joint in the model. A complete derivation of the fourth-difference equation can be found in a previous report by Stelzer (Ref 13). The resulting equations can be arranged in the form shown at the top of Fig 2. The effects of the total applied load at each joint are on the right side of the equation and are represented by f . The thirteen coefficients of the unknown deflections w are functions of the physical properties of the model and are represented by a, b^1, etc, through e . The subscripts of the deflections define the particular joint deflection in relation to the central joint i,j about which the equation is written. This forms a pattern extending out from the central joint which results in the customary thirteen point operator for orthogonal plate systems. If there were no

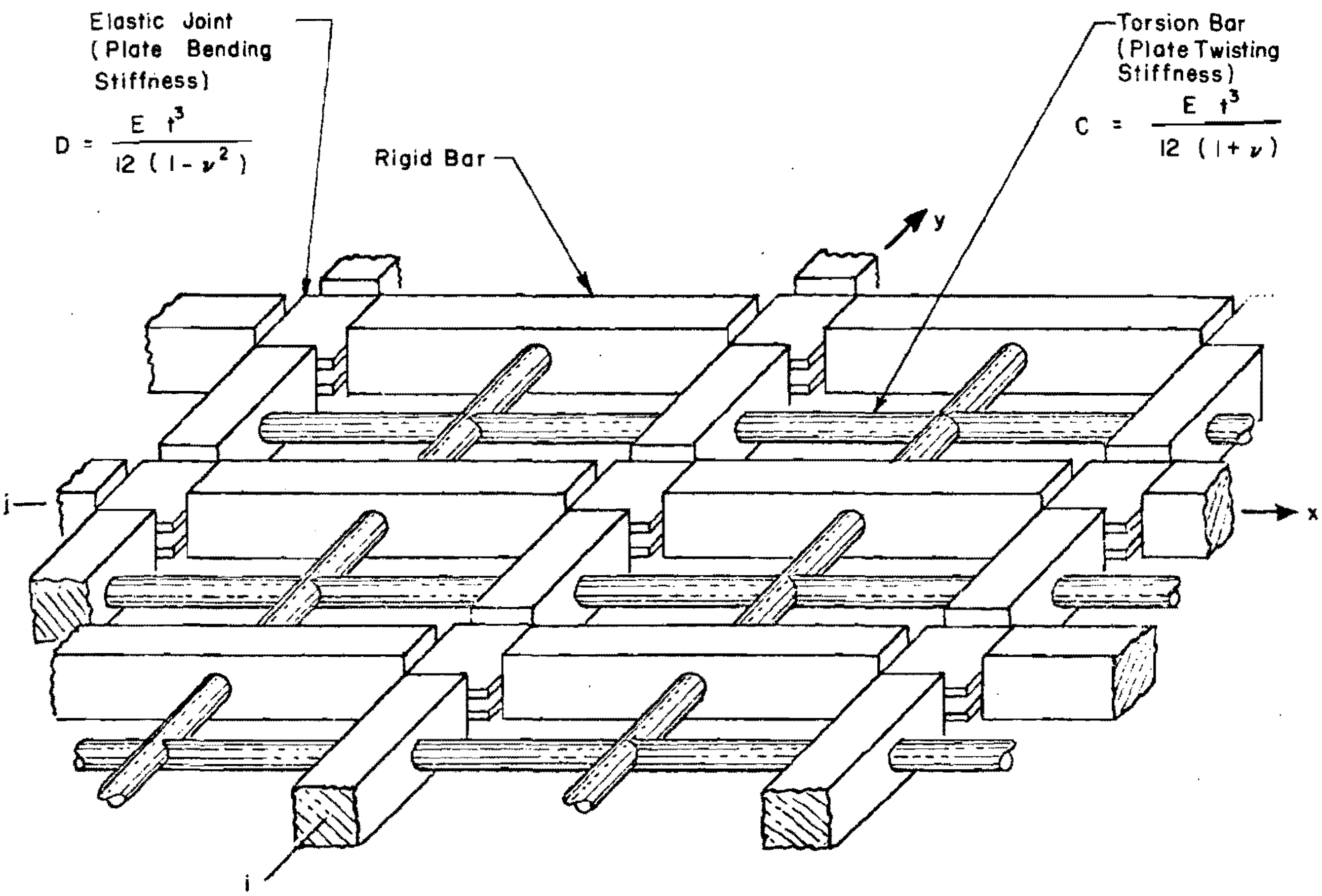


Fig 1. Discrete-element model of a plate or slab.

GENERAL SLAB EQUATION:

$$a_{i,j} w_{i,j-2} + b^1_{i,j} w_{i-1,j-1} + b^2_{i,j} w_{i,j-1} + b^3_{i,j} w_{i+1,j-1} + c^1_{i,j} w_{i-2,j} + c^2_{i,j} w_{i-1,j} + c^3_{i,j} w_{i,j} + c^4_{i,j} w_{i+1,j} + c^5_{i,j} w_{i+2,j} + d^1_{i,j} w_{i-1,j+1} + d^2_{i,j} w_{i,j+1} + d^3_{i,j} w_{i+1,j+1} + e_{i,j} w_{i,j+2} = f_{i,j}$$

OR IN MATRIX FORM:

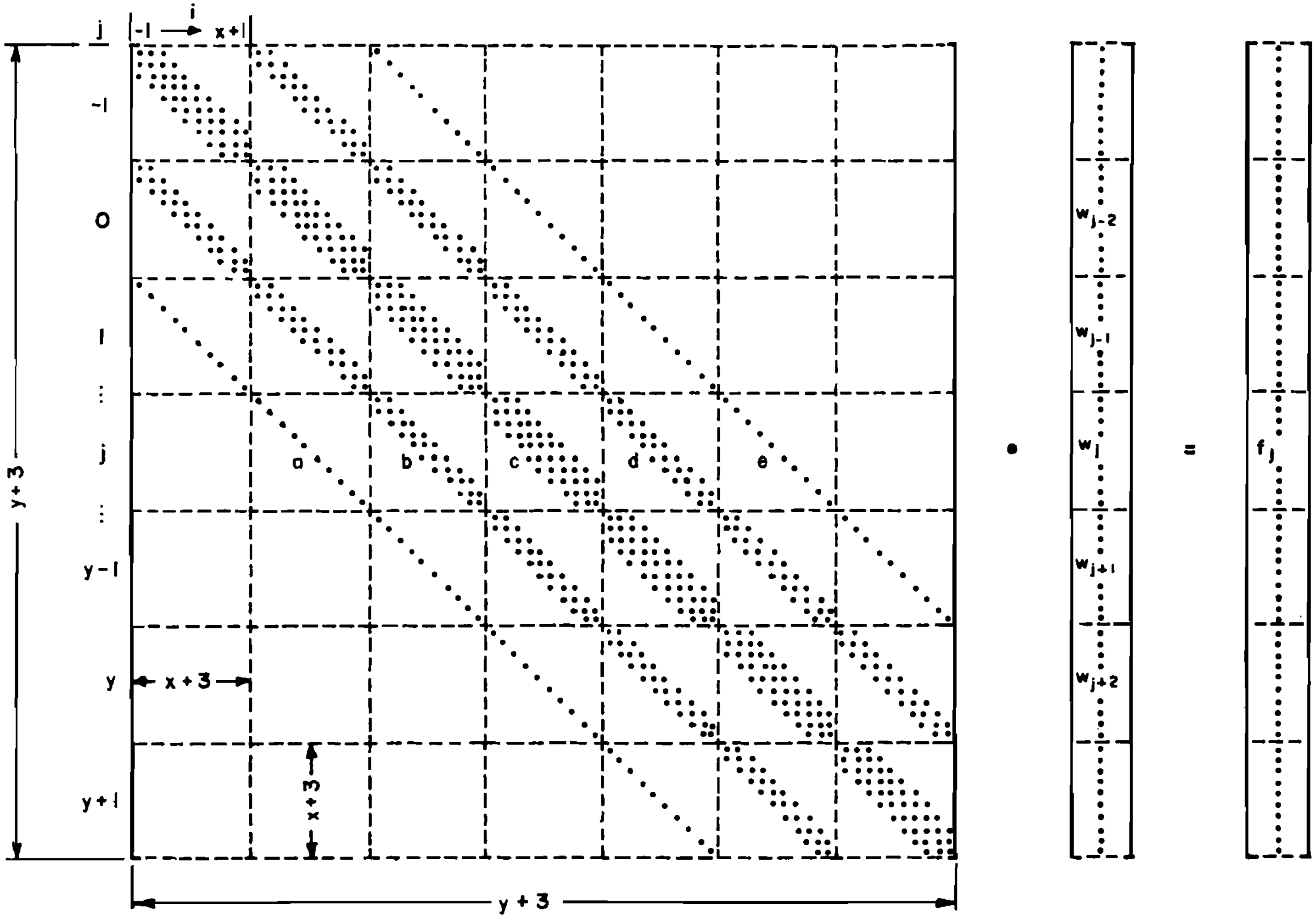


Fig 2. Form of the equations showing partitioned stiffness matrix (Ref 13).

twisting stiffness or Poisson's ratio effects in the model shown in Fig 1, the coefficients b^1, b^3, d^1, and d^3 would be eliminated, thus degenerating the equation to a nine-element operator, which is appropriate for a simple grid system.

The Stiffness Matrix

When the equations are arranged in the systematic form shown in Fig 2, the known coefficients create a stiffness matrix. The vertical collections of deflections and applied loads are called deflection and load vectors. There is only a single stiffness matrix or collection of coefficients for any given structure. Each coefficient of the stiffness matrix may be visualized as that force required to create a unit displacement at each joint when all other joints of the system are fixed against displacement. Each joint is successively displaced and the force measured. This collection of forces or coefficients is representative of the overall stiffness of the system.

Multiple Loadings

Various methods are available for multiple-loading solutions of a particular structure. One method is to simply re-solve the complete set of simultaneous equations for each loading condition. This is practical for small numbers of equations and few loadings. When the number of equations is large, as in a two-way bridge deck solved by application of discrete-element modeling techniques (possibly as many as 10,000 unknowns and equations), resolving the complete set of equations for each loading is obviously inefficient. Another method in common use is to invert the stiffness matrix, which can then be multiplied by any number of load vectors to obtain the appropriate deflections. The stiffness matrix, deflection vector, and load vector shown in Fig 2 may be represented as

$$\begin{bmatrix} K \end{bmatrix} \begin{Bmatrix} w \end{Bmatrix}_n = \begin{Bmatrix} f \end{Bmatrix}_n \tag{2.1}$$

where $\begin{bmatrix} K \end{bmatrix}$ is the stiffness matrix, and $\begin{Bmatrix} w \end{Bmatrix}_n$ the resultant deflection vector for the load vector $\begin{Bmatrix} f \end{Bmatrix}_n$. The inverted stiffness matrix procedure may then be written as

$$\left\{ w \right\}_n = \left[\quad K \quad \right]^{-1} \left\{ f \right\}_n \tag{2.2}$$

where $\left[K \right]^{-1}$ is the inverted stiffness matrix. Inverting a complete stiffness matrix is a time-consuming operation and would require an unobtainable amount of computer storage for most structures of the type being considered.

The ordered system of equations is seen to form a diagonally-banded and symmetrical stiffness matrix, as shown in Fig 2. This is the system of equations solved by the computer program given in Appendix 4. The reader is again referred to Stelzer (Ref 13) for a derivation of these equations. Some changes in notation have been made for the coefficients themselves.

Recursive Solution Process

To solve a system of equations without inverting the stiffness matrix, several direct procedures are available. The most common is Gaussian elimination. Various improvements and modifications make this procedure useful for a wide range of problems. One procedure eliminates as many unknowns as possible in each equation by application of preceding equations until an equation is reached which has but one unknown. Back-substitution is then made. This would amount to elimination of the unknown deflections and associated coefficients below the main diagonal of the stiffness matrix shown in Fig 2.

An analogous procedure is a back-and-forth recursion-equation process which is described by Matlock (Ref 11). The important difference between Gaussian elimination and the recursive-equation process is that the recursive equations are developed and applied consecutively in the forward pass rather than a mechanical elimination procedure. Each step in the elimination process is done in an orderly, systematic manner, proceeding from beginning to end by application of the recursion equations at each point in the system.

A restatement of the pertinent recursive equations applied by Matlock (Ref 11) for solution of beam-columns is made here for clarity. The general fourth-difference beam-column equation is of the form

$$a_j w_{j-2} + b_j w_{j-1} + c_j w_j + d_j w_{j+1} + e_j w_{j+2} = f_j \tag{2.3}$$

The coefficients a through e are the stiffness coefficients of the fourth-order difference equation which, when written for each joint of a discrete-element beam-column model and assembled in an ordered pattern, compose the banded beam-column stiffness matrix. The unknown deflections at five contiguous joints are labeled w_{j-2} through w_{j+2} with the deflection w_j that of the joint at which the equation is written. The right-hand side of the equation represents the sum of all the applied load effects that act at Joint j . The recursive equations used for the step-by-step forward elimination are

$$A_j = D_j \, (E_j A_{j-1} + a_j A_{j-2} - f_j) \tag{2.4}$$

$$B_j = D_j \, (E_j C_{j-1} + d_j) \tag{2.5}$$

$$C_j = D_j \, (e_j) \tag{2.6}$$

where

$$D_j = -1 \, / \, (a_j C_{j-2} + E_j B_{j-1} + c_j) \tag{2.7}$$

$$E_j = a_j B_{j-2} + b_j \tag{2.8}$$

The beginning, or boundary values, are automatically formed in the forward elimination by the physical discrete-element model on which the equations are based. The unknown deflections are obtained on the reverse pass by back-substitution in this equation

$$w_j = A_j + B_j w_{j+1} + C_j w_{j+2} \tag{2.9}$$

The solution of the system of equations generated from the discrete-element slab or plate model is done in exactly the same way as described above. The difference is that the terms, instead of being singular values as in the beam-column solution, are composed of small partitioned portions of the stiffness matrix and deflection and load vectors as outlined by the dashed lines of

Fig 2. The dashed lines show the partitioning of the stiffness matrix which has been done for each station in the y-direction of the model. The i subscripts are related to the x-direction and the j subscripts are related to the y-direction of the model. It has been shown by Endres (Ref 4) that it is efficient to always associate the larger number of stations with the y-direction. The partitioned submatrices are in themselves diagonally banded. The amount of central computer storage required for a solution is only a function of the total data and the small dimension width of the problem. The diagonal coefficients of the submatrices are the only terms stored and operated with in the solution. All zeroes are thus eliminated but implied. The partitioned submatrix equations of Fig 2 may be written in this form

$$\left[\, a \,\right]\left\{ w_{j-2} \right\} + \left[\, b \,\right]\left\{ w_{j-1} \right\} + \left[\, c \,\right]\left\{ w_{j} \right\} + \left[\, d \,\right]\left\{ w_{j+1} \right\} + \left[\, e \,\right]\left\{ w_{j+2} \right\} = \left\{ f \right\} \tag{2.10}$$

with the recursive equations written as

$$\left\{ A_j \right\} = \left[\, D_j \,\right]\left[\left[\, E_j \,\right]\left\{ A_{j-1} \right\} + \left[\, a \,\right]\left\{ A_{j-2} \right\} - \left\{ f \right\} \right] \tag{2.11}$$

$$\left[\, B_j \,\right] = \left[\, D_j \,\right]\left[\left[\, E_j \,\right]\left[\, C_{j-1} \,\right] + \left[\, d \,\right] \right] \tag{2.12}$$

$$\left[\, C_j \,\right] = \left[\, D_j \,\right]\left[\, e \,\right] \tag{2.13}$$

where

$$\left[\, D_j \,\right] = -\left[\left[\diagdown_{a} \diagdown \right] \left[\, C_{j-2} \,\right] + \left[\, E_j \,\right] \left[\, B_{j-1} \,\right] + \left[\diagdown\diagdown_{c} \diagdown\diagdown \right] \right]^{-1} \tag{2.14}$$

$$\left[\, E_j \,\right] = \left[\diagdown_{a} \diagdown \right] \left[\, B_{j-2} \,\right] + \left[\diagdown_{b} \diagdown \right] \tag{2.15}$$

and the back-substitution equation as

$$\left\{ w_j \right\} = \left\{ A_j \right\} + \left[\, B_j \,\right] \left\{ w_{j+1} \right\} + \left[\, C_j \,\right] \left\{ w_{j+2} \right\} \tag{2.16}$$

The above matrix equations are seen to be identical in form to those previously given for a beam-column solution. The long, or y, direction of a two-way slab or plate problem determines the number of partitions of the stiffness matrix and is directly analogous to the number of stations in a beam-column solution.

The Multiple-Loading Recursive Technique

The interesting and important property of the direct two-pass recursive technique as applied to beam-columns and two-way slabs or plates is that the f or load term appears in only the A coefficient of Eq 2.4 or in the $\{A\}$ recursion coefficient vector of Eq 2.11. The major amount of solution time is spent in generating the recursion coefficients. The $[B]$ coefficient matrix and the $[D]$ multiplier matrix consume the most time. The D multiplier of Eqs 2.4 through 2.6 is formed from a simple division operation, but in the case of the partitioned stiffness matrix of the direct slab or plate solution, the $[D]$ multiplier matrix of Eqs 2.11 through 2.13 is formed from an inverse of a small matrix the same size as one of those shown as $x + 3$ by $x + 3$ in Fig 2. It is for this reason, that x is associated with the short direction. The inversion of even these small matrices is seen to be unnecessary for multiple-loading problems. The $\{A\}$ recursion coefficient vector is simply modified for successive loadings. The $[E]$ and $[D]$ multipliers, and $[B]$ and $[C]$ coefficients are retained on auxillary tape storage as shown in the flow diagrams of Appendix 2 and are recalled as needed for each successive problem.

This procedure has been called the multiple-loading recursive technique. Its unique feature is the recursive-equation method in which the load appears in only the A back-substitution coefficient of Eqs 2.9 or 2.16.

As will be described in Chapter 3, the first problem in a multiple-loading series is designated as the "parent" problem and subsequent problems as the "offspring." One fortunate property that has been observed for the technique is that, as the problem gets larger, the percentage of total solution time for the offspring problems becomes smaller. A time as low as 8 percent of the parent problem time has been observed for the largest problems that have been solved to date. These were problems which had over 5,000 unknown deflections.

CHAPTER 3. THE COMPUTER PROGRAM

The computer program used for the two-way bridge floor slab study is an improved version of one developed by Stelzer (Ref 13). Some changes in formulation and added solution and size capabilities have been made. A major new development is added which allows a problem to be solved with many different loadings at a small fraction of the solution time required for individual solutions. This feature was discussed in Chapter 2 and is a unique property of the multiple-loading recursive technique. The multiple-loading capability is particularly applicable to problems confronted by the highway bridge designer, who is primarily concerned with moving loads.

The FORTRAN Program

The version of the program listed in Appendix 4 is referred to as SLAB 30. The number simply indicates that it is the thirtieth significantly distinct program in a chronological sequence of developments. The program is in FORTRAN, and is written for the CDC 6600 and IBM 360/50 computers. With minor changes, the program is also compatible with UNIVAC 1108 systems, or other comparable computers. The programming is as austere as possible and completely follows the guidelines given in ASA FORTRAN (Ref 3).

The program listing presented in Appendix 4 is specifically for the CDC 6600 computer. Those cards needed to operate on the IBM 360/50 are included as following companion cards and have a C in column one and the symbols IBM following the card preparation date in columns 78 through 80. Other additional cards such as the selective double precision statements are also tagged with IBM and nulled with a C . All variables do not need to be double precisioned to yield correct solutions with the IBM 360/50 computer. It is recommended, when converting to the IBM 360/50 system, that the companion CDC 6600 cards be retained and nulled with an added C in column one at the same time the C is omitted from the IBM 360/50 cards.

Storage Requirements

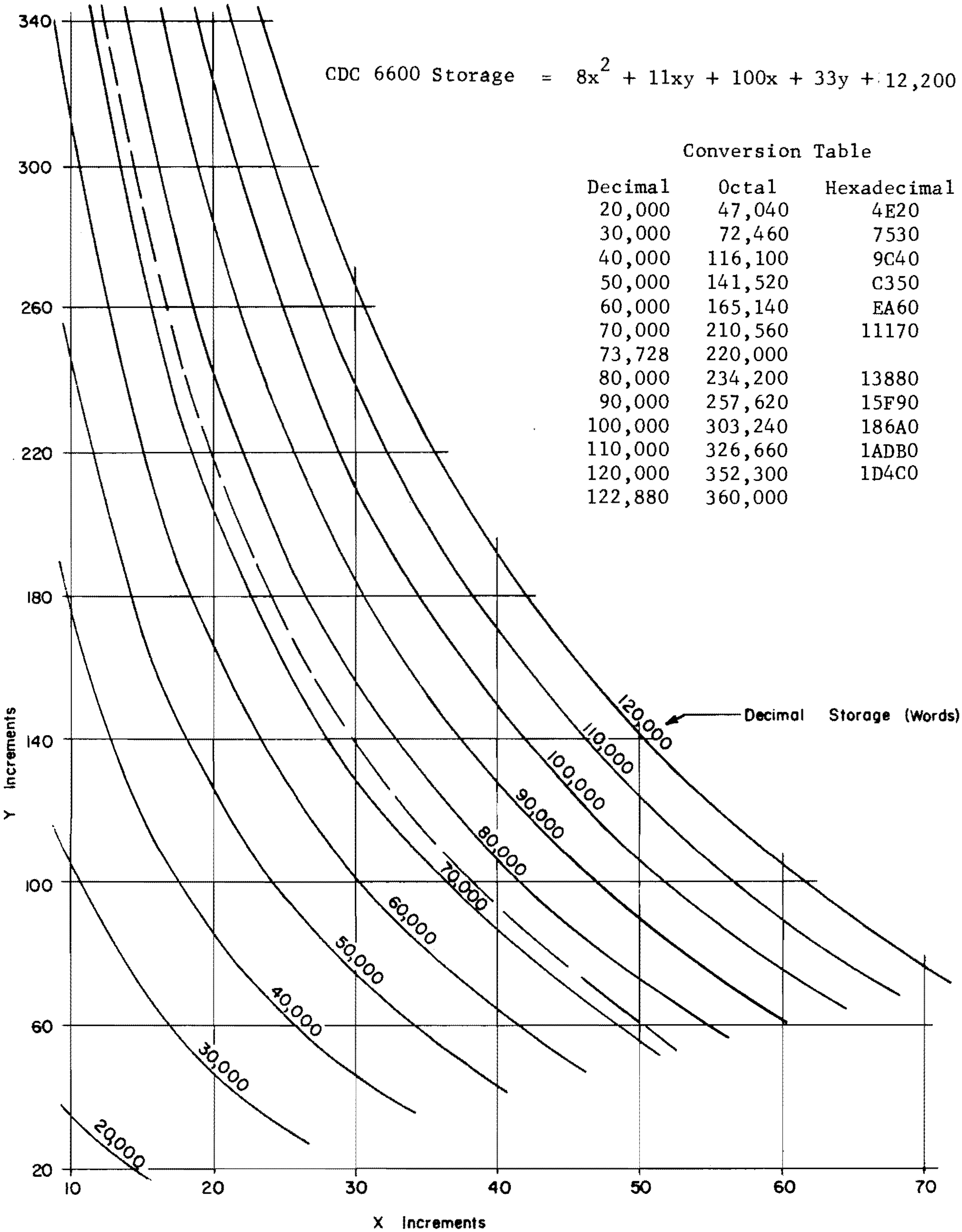
The storage requirements are variable, depending upon the size of the problem to be run. Cards which must be changed for different sized problems are specified at the beginning of the program and only include the dimension statements and two variables which define the number of increments in both directions. It is not necessary to match exactly the dimensioned storage to the problem; any size larger is also acceptable. It is recommended that several dimension packages be made of those cards with RE-DIMEN in columns 73 through 80 of the main program (refer to program listing, Appendix 4). These packages can be of multiples of width and length of 10 or 20 stations up to the maximum acceptable for the particular computer being used. A plot of the CDC 6600 storage requirements is shown in Fig 3. If necessary to gain more storage space, certain variables may be placed in common. In addition, others may be set equal to each other in storage by an equivalence declaration. Common and equivalence statements have not been added in the program for normal operation, so as to avoid initial confusion when converting to other computer systems.

A general flow diagram of the program is given in Appendix 2. A list of the variables used with their definitions is given in the Notation, in Appendix 3. A complete listing of the program is shown in Appendix 4. All subroutines in the program are variably dimensioned as functions of the short (x) and long (y) lengths, which are specified in the main driving program.

Input of a Problem Series

The general procedures to be followed for input of a problem are outlined in the Guide for Data Input of Appendix 1. The guide is designed so that additional copies may be made and used for routine reference. A parallel study of the guide will help the reader to understand the following discussion. Any number of problems may be run at the same time.

The first two cards of a problem series are for identification purposes. Any alphanumeric descriptive information desired can be entered by the user. It is suggested that the date of the run and the user's name always be entered within these two cards. The next card is the problem number card with a brief description of the particular problem. The problem number itself may contain



CDC 6600 Storage $= 8x^2 + 11xy + 100x + 33y + 12{,}200$

Conversion Table

Decimal	Octal	Hexadecimal
20,000	47,040	4E20
30,000	72,460	7530
40,000	116,100	9C40
50,000	141,520	C350
60,000	165,140	EA60
70,000	210,560	11170
73,728	220,000	
80,000	234,200	13880
90,000	257,620	15F90
100,000	303,240	186A0
110,000	326,660	1ADB0
120,000	352,300	1D4C0
122,880	360,000	

Fig 3. SLAB 30 storage requirements (approximate).

alphabetical characters if desired. The problem series terminates when a blank problem number is encountered.

Tables of Data Input

Table 1 is used to input the problem control data and is comprised of a single data card that specifies the multiple load option and the number of cards in the following data Tables 2 through 5. The Multiple Load Option in column 5 of Table 1 is left blank if each successive problem is independent of the preceding problem. If a following problem is for the same slab, but only the load pattern and placement are to change, the first problem in the loading series is specified with a +1 for the option. This will be the "parent" problem. Each successive loading must have a -1 for the option and these will be termed "offspring" problems. When a blank option or another +1 is encountered, that problem is then another independent problem or a new parent problem.

Table 2 is used to specify the constants for the problem which are the increment lengths in both directions, and Poisson's ratio. An additional space is provided for plate or slab pseudo-thickness. Leaving this blank causes computation of principal moments and their directions. When a thickness is entered, the principal moment is converted to a stress having the same sign by multiplication of the moment by the plate section modulus which is internally computed on the assumption of a uniform thickness of plate. The use of the thickness switch is only appropriate for plates of a constant thickness. For two-way concrete slabs, the principal moment is an important quantity. Table 2 is omitted for offspring problems since the constants must be the same as in the parent problem. The constants specified for the parent are retained and used by all successive offspring problems.

Table 3 is used to define the lines or areas of selected bending moment output and contains the number of cards specified in Table 1 up to a maximum of 10 cards. A concise printout of either or both bending moments in specific locations such as near wheel loads and support points can thus be obtained. Table 3 is especially useful when studying the moment variation along a line in the y-direction. Table 3 may be omitted if desired, since all selected output values are duplicated in the complete printout of results in Table 7. The selected moment output is controlled by the same input joint coordinate system described below for Table 4.

Table 4 has the number of cards as specified in Table 1. Card counts should be carefully checked. It is recommended that a listing of the data cards be checked by the user prior to submission of the program for a run.

Stiffness and load data are entered by a coordinate system notation. The coordinates refer to the discrete-element model of the slab. A joint is defined as occurring at the intersection of the station lines in each x and y-direction. A mesh is defined as that area surrounded by four joints. A bar is defined as the discrete-element length between adjacent joints. Fig A1 of Appendix 1 summarizes this notation. Note that mesh data cannot have either a zero x or zero y-coordinate; x-bar data cannot have a zero x-coordinate, and, similarly, the y-bar cannot have a zero y-coordinate. If the data occur only at one location (such as a concentrated load), the From and Through coordinate is simply repeated. If the data occur along a line, the coordinates will reflect this by having either both x or both y-coordinates the same. Data distributed over a rectangular area are specified by entering the lower left and upper right coordinates of the area.

The orthogonal bending stiffnesses D^x and D^y are entered in each direction and are specified on a per unit width basis. If the edge of the slab coincides with a station line, a half-value of stiffness should be input for both D^x and D^y along the edge. If the edge of the real slab is not on a station line, a proportionate value of full stiffness is entered. This is demonstrated by a sample input in Appendix 1, Fig A2. The stiffness proportionment may be thought of as a direct function of the plan area of real slab surrounding each joint.

Load Q is concentrated on a per joint basis and may be apportioned at each joint by the contributory area loaded around each joint. Positive loads act upward. Loads that occur between joints may be fractionally proportioned to the adjacent joints. Support springs S are concentrated values input and apportioned exactly like loads. A rigid support may be specified by introducing a large value of support spring. A maximum value of 1×10^{25} is suggested to avoid computational difficulties for some computers.

The twisting stiffness C is input on a per unit width basis for each mesh surrounded by four joints. When the geometric edges of the actual slab do not fall on a station line, proportionate values of unit twisting stiffness may be input similar to bending stiffness proportionment. Computations of twisting stiffnesses for slabs or plates are at best still approximate procedures. This is due to uncertainty in the defining of the shearing modulus of rigidity. The best procedure is to ascertain the twisting stiffness experimentally as outlined by Hudson (Ref 6). The formula shown on Fig 1 is correct for uniformly thick isotropic plates. An approximate value of twisting stiffness for orthotropic slabs or stiffened plates may be obtained by using procedures outlined by Huffington (Ref 7) or computations summarized by Troitsky in a recent publication (Ref 15). Fortunately, precise values of twisting stiffness are unnecessary to model a slab. The main load carrying capabilities of a slab are due to its bending stiffness which is more accurately definable.

By using a zero value of twisting stiffness and zero Poisson's ratio, a simple grid system may be modeled. Each beam would be modeled by an appropriate D^x or D^y term which would then be the per unit width stiffness. The beam stiffnesses entered should therefore be divided by the increment width.

Table 5 is for input of in-plane axial tensions P^x or P^y if present. These might be generated due to differential temperature between a slab and floor system, closing of a bridge expansion joint, or traffic braking and acceleration forces. There is no provision in the program for automatic distribution of applied axial forces since no in-plane supports are used which would restrain them. The user must specify the distribution of the axial tensions (+) and compressions (-) in each x-bar and y-bar of the model. Since these are bar forces, no data should be input which would represent forces outside the boundaries of the actual slab. A brief sample of data input is given in Fig A2 in Appendix 1.

All data in Tables 4 and 5 are algebraically accumulated and values therefore may be added or subtracted regardless of other values specified.

For offspring problems, only Table 1 and Table 4 are required. Table 3 may be again specified if desired. The new loads are input in Table 4 and the program replaces the loads in the previous problem with this new load system. All the stiffness terms of the previous Table 4 are retained, as are the preceding Table 5 axial effects if any were present.

Data Errors

All data are checked for compatibility with the geometry of the specified slab and consistancy of coordinate input. A count of the number of data errors is made and if any errors are encountered, the problem is terminated and a message showing the number of data errors made is printed. Typical errors are: (1) misuse of the multiple-load option, such as a -1 following a 0 in the preceding problem; (2) the number of increments in the x-direction exceeding those in the y-direction (If this were allowed, an inefficient and time consuming computer solution would result.); (3) a negative or zero increment length specified; (4) a negative Poisson's ratio or thickness input; (5) the "Through" x or y-coordinate in a data specification numerically less than the "From" coordinate; (6) data specified outside the geometric limits of the slab; (7) a zero x or y-coordinate specified for a twisting stiffness; (8) a zero x-coordinate used for x-bar axial tensions or a zero y-coordinate for y-bar tensions; (9) the number of increments specified are greater than the dimensioned storage the program can operate with; and (10) misuse of the selected output option.

Computed Results

All data cards are reflected in the printout of results exactly as they were input. It is good practice to again check these data for possible errors prior to inspection of the remainder of the results.

Table 6 of the printout lists the lines or areas of selected moment output if they are specified by Table 3. If the selected output is along an x or y-station line, the output is arranged to print in a column along that line. If an area is specified, the output is arranged by groups for each y-station as is done in the complete output of results in Table 7.

The complete computed final results are given in Table 7 of the printout. This table is arranged to give the x and y-joint coordinate, the transverse deflection at each joint (upward deflections are positive), the bending and twisting moments, the support reaction, the principal moment or stress and its direction. The tabulations are arranged in groups for each y-station. Output values of bending and twisting moments are given on a per unit width basis. Bending moments are positive for compression in the top of the plate or slab. The x-bending moments act in the x-direction and y-bending moments in the y-direction.

The per unit width x twisting moment is tabulated and is exactly equal to the y twisting moment with opposite sign. The x-twisting moment acts in the x-direction and is about the y-axis. Even though the input values of twisting stiffness were specified at each mesh, the output value of twisting moment is the average of four adjacent mesh areas and is therefore given at the joint. The user is cautioned that the output values of twisting moment along the edges or other discontinuities of a slab or plate reflect the average and therefore may be a one-quarter, one-half, or some other proportionate value of twisting moment.

The support reaction is the concentrated value of resistance to displacement offered by any support springs if present. A subgrade modulus spring will reflect the concentrated value of pressure under the slab. The value of support reaction is different than the similar value tabulated in prior versions of DSLAB (Ref 13) and SLAB (Ref 6) computer programs. In those programs, the value might have been better labeled Net Reaction, or Net Force, since it was the summation of the applied load and support reaction.

Internally in the program, a Mohr's circle analysis is made at each joint using the orthogonal bending moments and the twisting moments to yield the larger numeric value (positive or negative) of principal moment per unit width and the angle from the x-axis of the coordinate system to the acting direction of this larger value. Counterclockwise angles are positive. If the pseudo-thickness is specified in Table 2, the values are converted to the larger numeric value of principal stress instead of moment. A positive stress indicates tension in the bottom of the plate. The input value of thickness is properly used for only plates of constant thickness. For plates of variable stiffness and thickness, a direct conversion can be made for principal stress from the principal moment.

As both a check on the internal computer solution and a check on the input of the load system to a problem, a final result is listed at the end of Table 7 which is the algebraic sum of all the reaction values and should be equal to the sum of all the applied loads. This check should always be inspected to verify that the desired load system was specified and that the problem was properly solved.

Differences from Prior Developments

Versions of SLAB (Ref 6), LAYER (Ref 8), and previous DSLAB (Ref 13) programs all require a double value of twisting stiffness at each mesh. SLAB 30 requires but a single value of C to be entered for each mesh. This is a unit resistance to twisting and typical units are $lb\text{-}in^2/in/rad$. No matter what the two orthogonal bending stiffnesses of a plate or slab are, or the increment lengths, the unit twisting stiffness must be the same in both directions for equilibrium of an element.

Another modification included in the SLAB 30 program relates to the computation of anticlastic bending or Poisson's ratio effects. It has been shown (Ref 15) that, due to Maxwell's theorem of reciprocity, there must be a constant relationship between bending stiffness in one orthogonal direction and the Poisson's ratio in the opposing direction and vice versa. SLAB (Ref 6), LAYER (Ref 8) and previous DSLAB (Ref 13) programs had the capability for input of diverse bending stiffnesses, but only one Poisson's ratio was input. For slabs with different D^x and D^y at the same joint, it was therefore conceivable to create a slight anomaly. This has been overcome in SLAB 30, by testing the input value of D^x and D^y at each joint and using the smaller stiffness in combination with the input value of Poisson's ratio for the anticlastic effect. Therefore the input value of Poisson's ratio must be thought of as the maximum value for the basic slab or plate material. This correction has much greater effect when the program is applied to stiffened plates which are modeled by different equivalent thicknesses in opposing directions or when slabs are modeled with reduced stiffness in one direction due to a crack.

A last difference is that SLAB 30 has but two stations added to the external stationing for internal stationing as opposed to four. The internal stationing is related to the indexing and storage of the program itself. Therefore, by adding two instead of four, a slightly larger problem can be solved with no required increase in computer storage.

CHAPTER 4. THE SELECTED EXAMPLE STRUCTURE

Two-way bridge slab decks supported by widely spaced girders and floor beams have not been used extensively in bridge design. Some examples are now beginning to be used, due in part to developments in available analysis techniques, and more probably due to the advent of high-strength steels. These new steels make longer highway bridge spans more feasible and the girders or floor beams may be more widely spaced.

Types of Bridge Decks

A wider and longer span bridge generally can not be constructed by placing many long-span beams on narrow beam spacings. Economy of substructure and superstructure dictates that the girders be placed on much wider spacing than customary girder-slab structures which usually have main spans of less than 400 feet, and girder spacings of less than 10 feet.

Support of a concrete bridge deck on widely spaced girders can be accomplished in three ways. One method is to use one-way reinforced slabs spanning between the girders. For a girder spacing of over about 15 feet, the slab thickness required would create an intolerable amount of dead load. Another, and more usual method, is to again design the deck as a one-way slab but supported by closely spaced transverse floor beams which span between the main girders. By this means, an efficient slab thickness can be achieved without much additional dead load due to the floor beams. Post-stressing the deck in the longitudinal direction gives this method practicality. A third method is to use a slab which is reinforced in two directions and support it by both widely spaced main girders and floor beams or diaphragms.

Existing Two-Way Slab Design Procedures

Existing design procedures for two-way slabs are usually for uniformly loaded slabs like those encountered in building construction. The building code of the American Concrete Institute has design moment coefficients for two-way slabs of various rectangular configurations (Ref 2). Only combinations of either fully fixed or simply supported edges are considered. The Standard Specifications of the American Association of State Highway Officials (Ref 1) has a design specification for slabs simply supported on four sides which is limited to either uniform loads or a concentrated load at the center.

Neither of the above named methods of computing bending moments in two-way slabs is applicable to design of a two-way slab continuous over many supports subjected to moving, concentrated loads. The direct slab solution developed by Stelzer (Ref 13) was selected for use in the initial study since it had the capacity to solve plates and slabs supported in diverse ways.

The Example Structure

A large structure has been planned by the Texas Highway Department to span the ship navigation channel at the Port of Houston, Texas. Preliminary analysis showed that a structure composed of widely spaced plate girders with a two-way reinforced light-weight concrete deck would be desirable. At the suggestion of designers of the Bridge Division of the Texas Highway Department, a study was begun on analysis of two-way bridge slabs. The particular structure was chosen as an example so that as work for the study advanced, immediate benefit could be given to the designers of the structure.

The structure is shown in Fig 4. As planned, it is composed of six massive plate girders which will vary in depth from 6.5 feet at the ends to over 17 feet in depth at the center of the channel. The center span will have a 290-foot-long suspended span.

A Preliminary Girder Design

During preliminary planning of the geometry of the structure, study was made of a similar configuration but without the two support points shown as Bents B and E in Fig 4. This study was facilitated by application of a computer program which will analyze beam-columns under movable-load configurations (Ref 12). The analysis considered the unit as a five-span girder 1230 feet in length, supported at six points, but with the central four sloping members capable of rotation about the common supports at Bents C and D. The analysis showed that the positive moments (defined as compression in the top

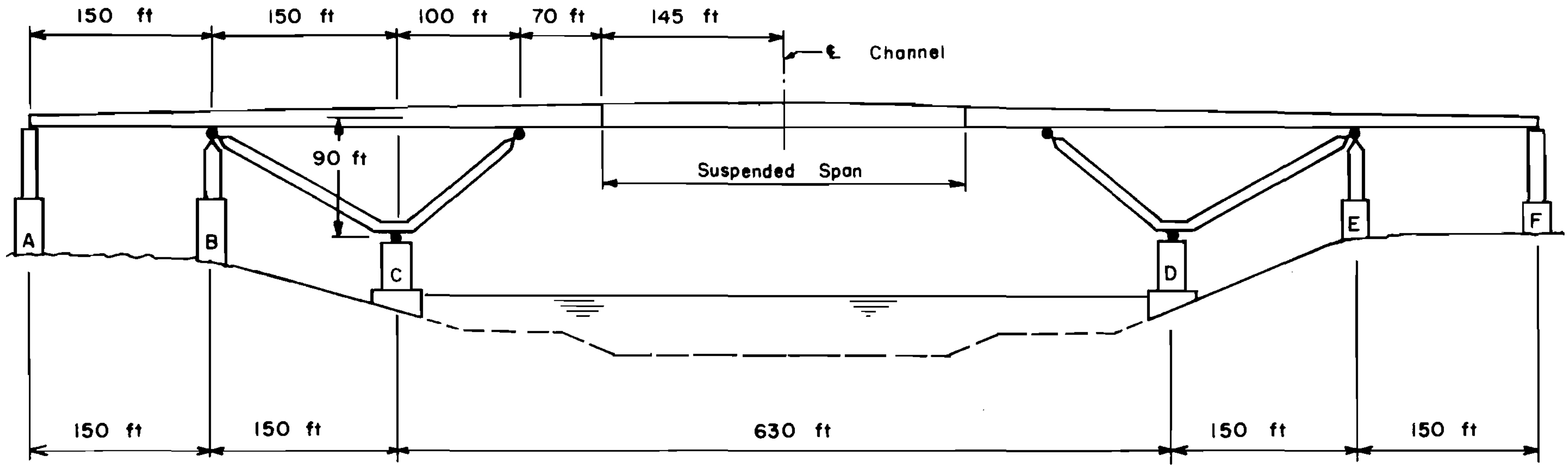


Fig 4. The selected example structure.

flanges) in the span were almost as much as would be created in a three-span unit with a 630-foot central span. Subsequent study showed that the addition of "tie-down" points by means of Bents B and E would restrain the major part of the sloping member rotations, and thereby create a true five-span unit with a 430-foot center span. Settlement and other considerations later indicated that suspension of the central 290 feet of the center span was desirable to disconnect effects of one side from the other.

Structure Details

The lower flanges of the girders will be almost level for the complete 1230 foot distance. A parabolic vertical curve will be constructed in the top of the girder webs which will effect the change in depth from ends to center.

A typical section of the central portion of the structure is shown in Fig 5. The deck is planned to be of light-weight concrete of 10.5-inch constant thickness. Longitudinal deck support will be by the main girders, which are 27.5 feet apart. Transverse deck support will be provided by the intermediate diaphragms, which are at 25 foot spacing.

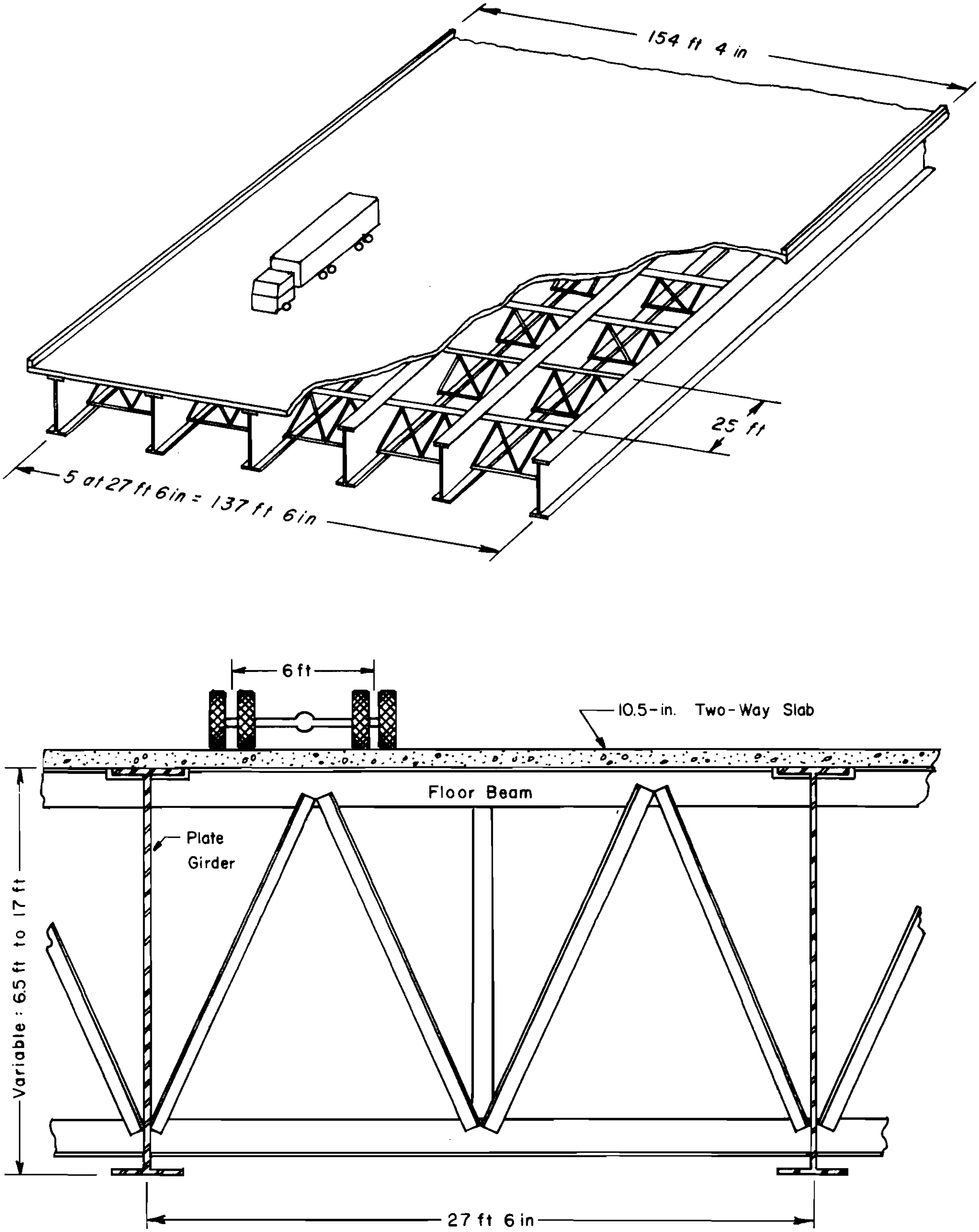
When the study was originally begun, the geometry of the example structure was incomplete, so the initial studies were of a slab supported transversely by the main girders at 28-foot spacing and diaphragms at 24-foot spacing. The main work of the study has been done using this geometry, which is seen to be slightly different than the configuration shown in Fig 5.

Specified Loadings

The deck is loaded locally by various numbers of the loads as shown in Fig 6, which are as specified in Refs 1 and 16. Also as specified, an impact factor of 30 percent is applied to these loads. This study does not attempt to justify the values of loading, nor the impact factor. It is merely an application of a method of analysis to a predetermined system of loadings.

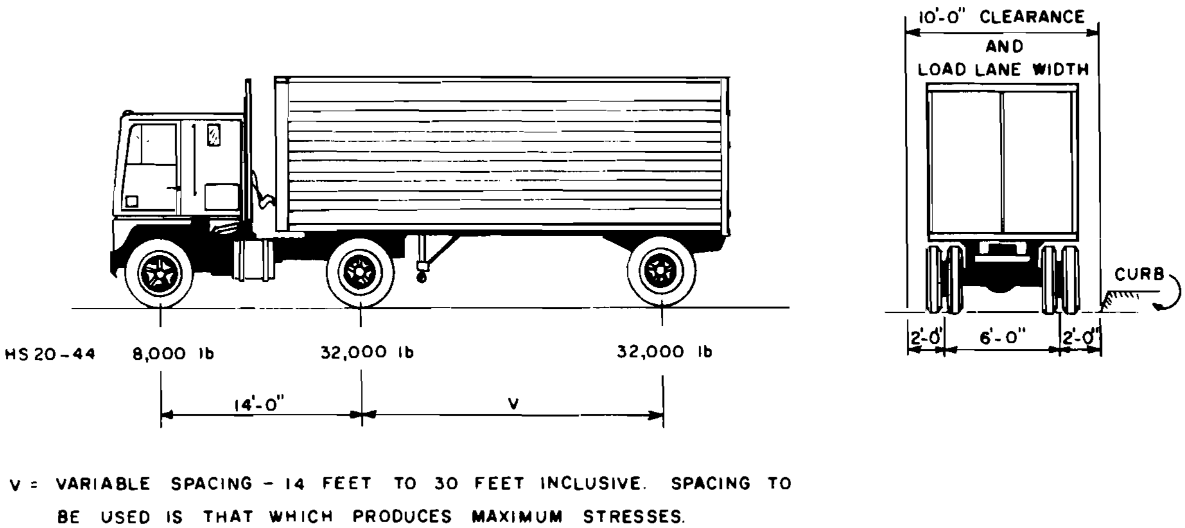
A One-Way Design

Slabs with reinforcement perpendicular to traffic are limited by the AASHO specification (Ref 1) to spans of less than 24 feet. For the highway bridge of Fig 4, the transverse deck span is 27.5 feet. Assuming it was desired to



A TYPICAL SLAB PANEL

Fig 5. A section of the structure.



(a) Standard HS-20 truck (Ref 1).

(b) Special loading (Ref 16).

Fig 6. The specified loads.

make the slab one-way in the transverse direction, and if the specification could be extended to this span, it would result in a design live-load with impact moment of 15.3 kip-ft/ft width of slab. Added to this, using light-weight concrete, would be a dead load moment of 8.7 kip-ft/ft. The resulting moment, assuming two inches to center of negative reinforcement, would require a total balanced slab thickness of approximately 13.5 inches.

The diaphragm spacing is planned to be 25 feet. Again, assuming it was desired to make the slab one-way in the traffic direction, supported only by the diaphragms or a transverse floor beam system, the required slab thickness would also be nearly 13.5 inches. The 29 percent increase in slab dead load that would result by using a 13.5-inch slab instead of a 10.5-inch slab would then require a proportionately larger system of main girders and substructure. The economy of using a two-way slab is therefore quite apparent.

The following chapter will describe how the slab was modeled and partitioned for computer solution and will show the multitude of load patterns which were considered during the course of the study.

CHAPTER 5. PARTITIONING A TWO-WAY SLAB

The main girders of the structure, described in Chapter 4, will be designed by application of a specified loading which approximates a heavy truck preceded and followed by a train of smaller trucks. Several of these truck trains may be placed side by side on the structure. The bridge deck slab itself, however, is primarily influenced by the application of one or two of the design truck loadings (Fig 6) in close proximity. For this reason, it is appropriate to analyze only selected portions of the complete bridge deck.

Size of the Model

As would be expected by application of a model (Fig 1) for solution of a beam or plate, the more discrete elements into which the model is divided, the more accurate the representation of the structure. This can be carried to extreme, however, because the use of a larger number of elements does not increase the accuracy of the solution proportionately. A good rule of thumb that has been found by this investigator is to use not less than about ten elements in each beam-column or slab span. The results are then accurate to within about one percent. Doubling the number of increments to 20 in a span reduces the error to about 0.2 percent. Any more increments than this are a waste of both designer's input calculation time and also computer time. Less than about ten increments increases the error, but, as has been shown by Matlock in Ref 11, as few as four increments can be used in a simple beam with an error of five percent. More elements are needed for study of negative moment at supports than for positive moment areas.

Ideally, for a two-way bridge deck, as many panels as possible should be partitioned from the structure to approximate the multiple-slab-span continuity effect. Selection of an area three panels by three panels in size might seem appropriate when studying effects of loads in the central panel. Initially, the computer program available for the study of two-way slabs had the capacity to solve a square slab model of about 28 by 28 increments or a rectangular model of about 16 by 45 increments. If the nine-panel area were selected, this would make available only about seven increments to model each slab span.

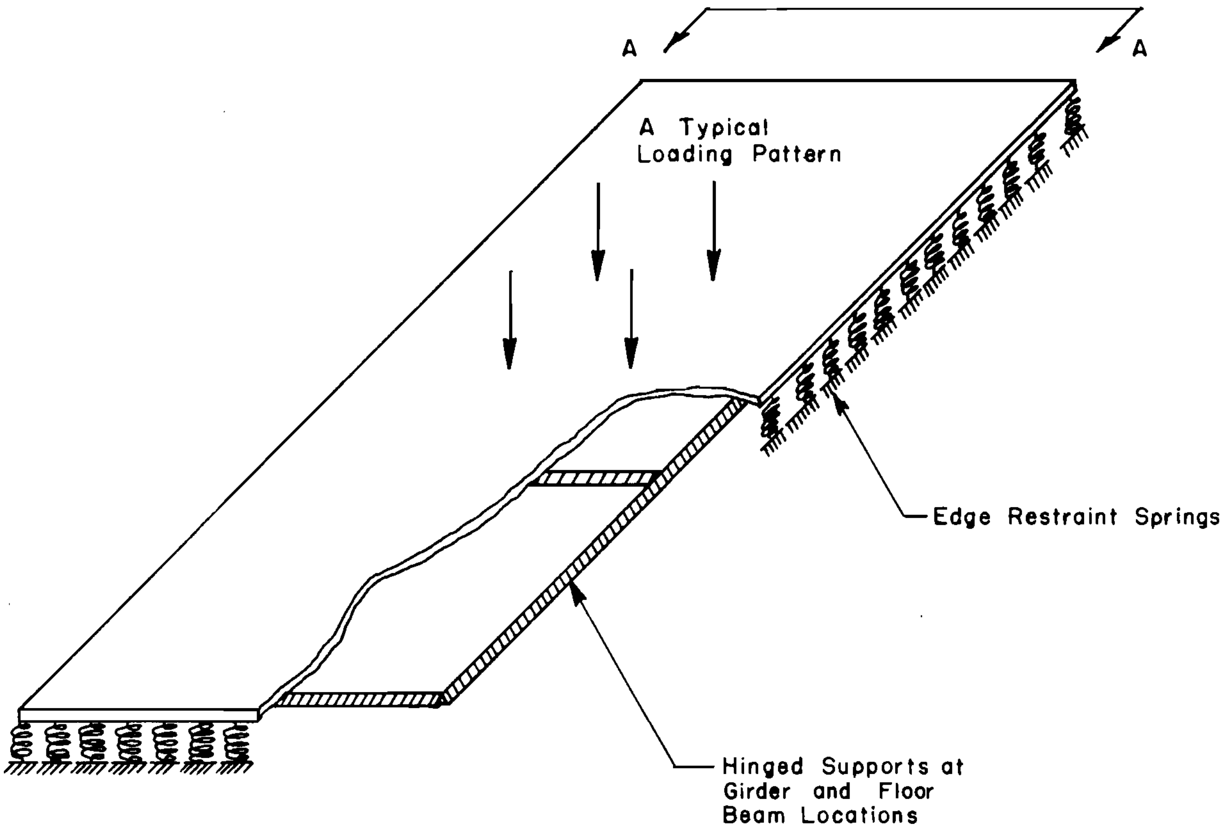
Edge Restraint Springs

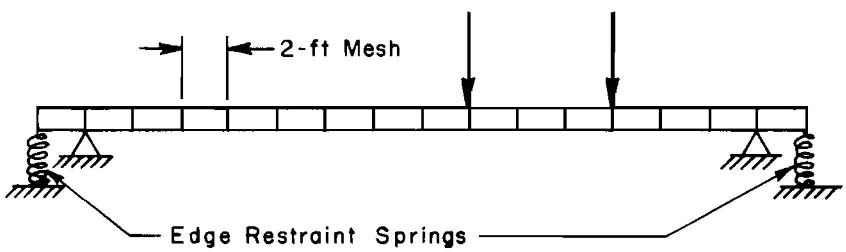
The solution accuracy within panels was desired to be as good as possible, but it also appeared to be necessary to use many panels in both directions to include the multiple-slab-span continuity effect. A method was therefore devised so that a few panels could be made to represent many panels in the deck slab. Since local deflection of the large deep girders and diaphragms was negligible, the slab was assumed to be supported by nondeflecting hinged supports along the lines of the girders and diaphragms.

A three-panel section of square 28-foot spans was modeled, each panel having 14 two-foot increments in both directions as shown in Fig 7. Two feet outside the perimeter of this three-panel section, a line of elastic springs was placed to partially restrain the edge of the slab against rotation. An arbitrary value was initially used for the modulus of each spring. A system of four concentrated wheel loads was symmetrically placed in the center of the middle panel, a computer solution made, and the results inspected. Since the restraint springs along the shorter sides of the three-panel section are one panel away from the loaded panel, their effects on the central panel deflection are not felt as much as those from springs along the long sides. If the loaded panel had been in the middle of a many-panel area, the bending and deflection would be equal in both orthogonal directions. Applying this symmetry principle to the three-panel restrained area, the spring value was then modified to cause the deflections and moments in the center panel to be symmetrical. Several trials were made, each time adjusting the edge restraint spring until the deflections and moments were symmetrical in the center square 28-foot panel.

It was found helpful to plot the edge restraint spring value against deflections of symmetrical joints. By this procedure, two solutions, each with arbitrary edge restraint values, can quickly pinpoint the appropriate edge restraint spring modulus.

A similar procedure was applied to a three-panel section composed of square 24-foot panels. The edge restraint value found to best represent 24-foot-slab spans was 5.4×10^5 lb/in and the value found for 28-foot-slab





VIEW A-A

Fig 7. The three-panel interior section of the deck as modeled for the computer solutions.

spans was 5.3×10^5 lb/in. These values were then applied to the edges of the actual 24-foot by 28-foot rectangular deck panels.

The selected values of edge restraint theoretically are not independent of the load system. A separate study using diverse loads and placements showed that the value of edge restraint is not particularly sensitive to load. A change in the support configuration or stiffness of the removed portions of the structure has much greater influence on the edge-restraint values.

Panels Selected for Study

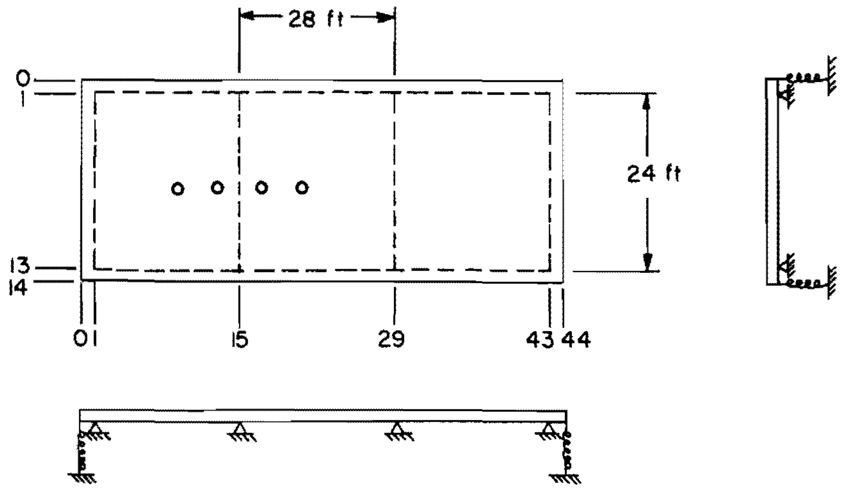
Since negative moments across the supporting girders and diaphragms were of primary interest, a three-panel section was chosen to use for study of the interior panels. Although two panels would have been sufficient, the third panel was used so that additional symmetry checks could be made on the individual solutions. As will be seen from the results in Chapter 6, the positive moments in the first and second panels for a negative moment loading are the same, as they should be if there were many panels extending away from the loaded panels.

Two three-panel configurations were used for study of moments in interior panels. Figure 8a was used for study of moments in the long span, perpendicular to traffic. Figure 8b was used for study of moments in the short slab span parallel to traffic.

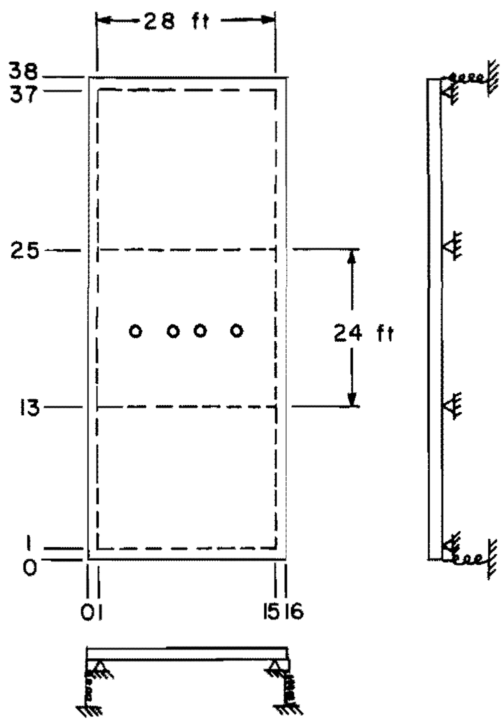
Four other three-panel sections were later used for study of moments in the first interior panels, corner panels, and the cantilever overhang portion of the bridge deck, as shown in Figs 8c and 9.

Load Patterns and Placements

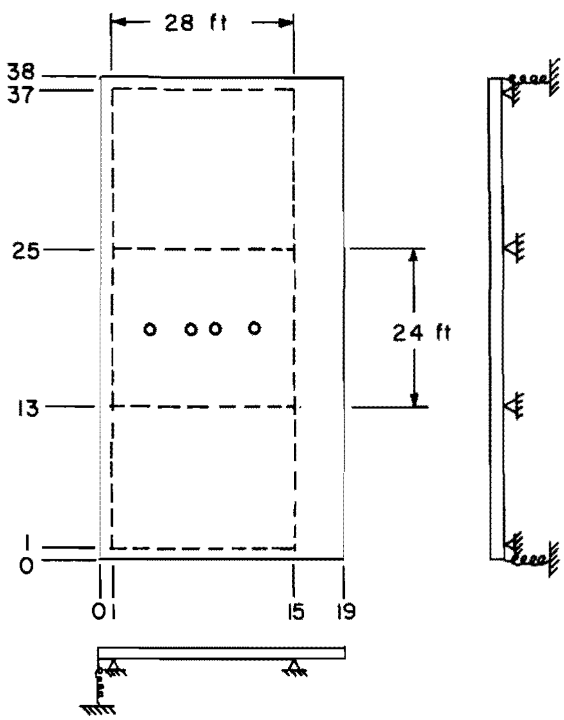
Two load types can possibly occur on the deck panels in addition to the dead load of the concrete. The standard HS truck shown in Fig 6a is the truck specified in Ref 1 to be applied to all primary highway structures. The additional special loading shown in Fig 6b is specified in Ref 16 to be considered for all interstate and other highways which are in the national defense system of highways. The various types of load patterns and relative placements which were studied are shown in Figs 10, 11, and 12. The Z-dimension shown in the figures is the dimension which was varied in each case to arrive at the load position which created the maximum bending moment. For instance, a load



(a) Interior panels, moments in 28-foot direction.

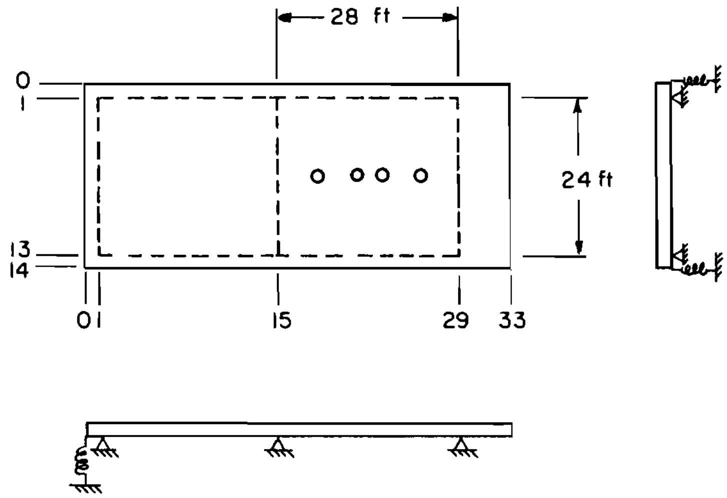


(b) Interior panels, moments in 24-foot direction.

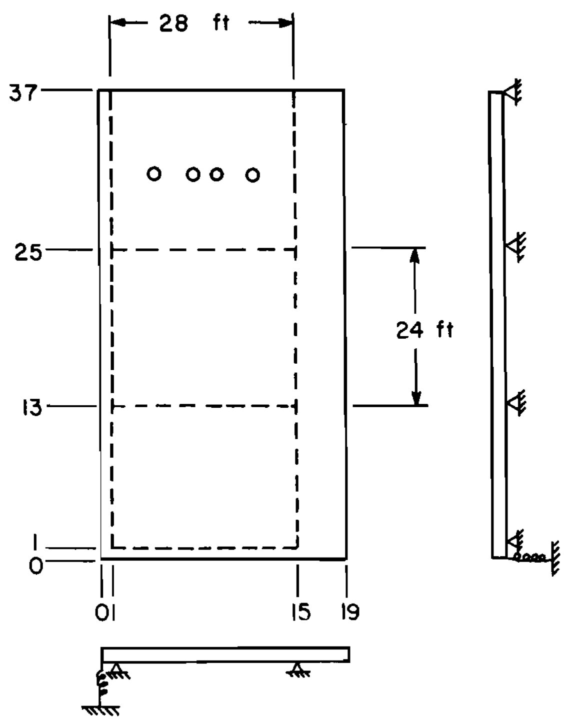


(c) First interior panels, moments in 24-foot direction.

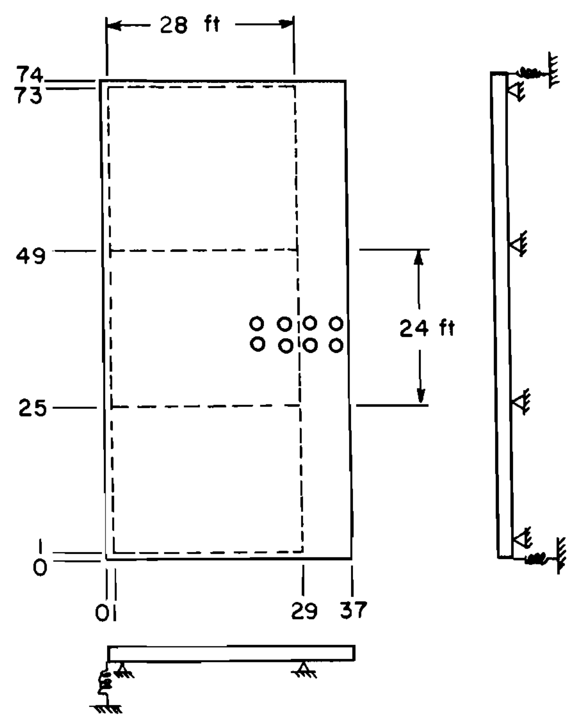
Fig 8. Panels used for study of maximum moments.



(a) First interior panels, moments in 28-foot direction.

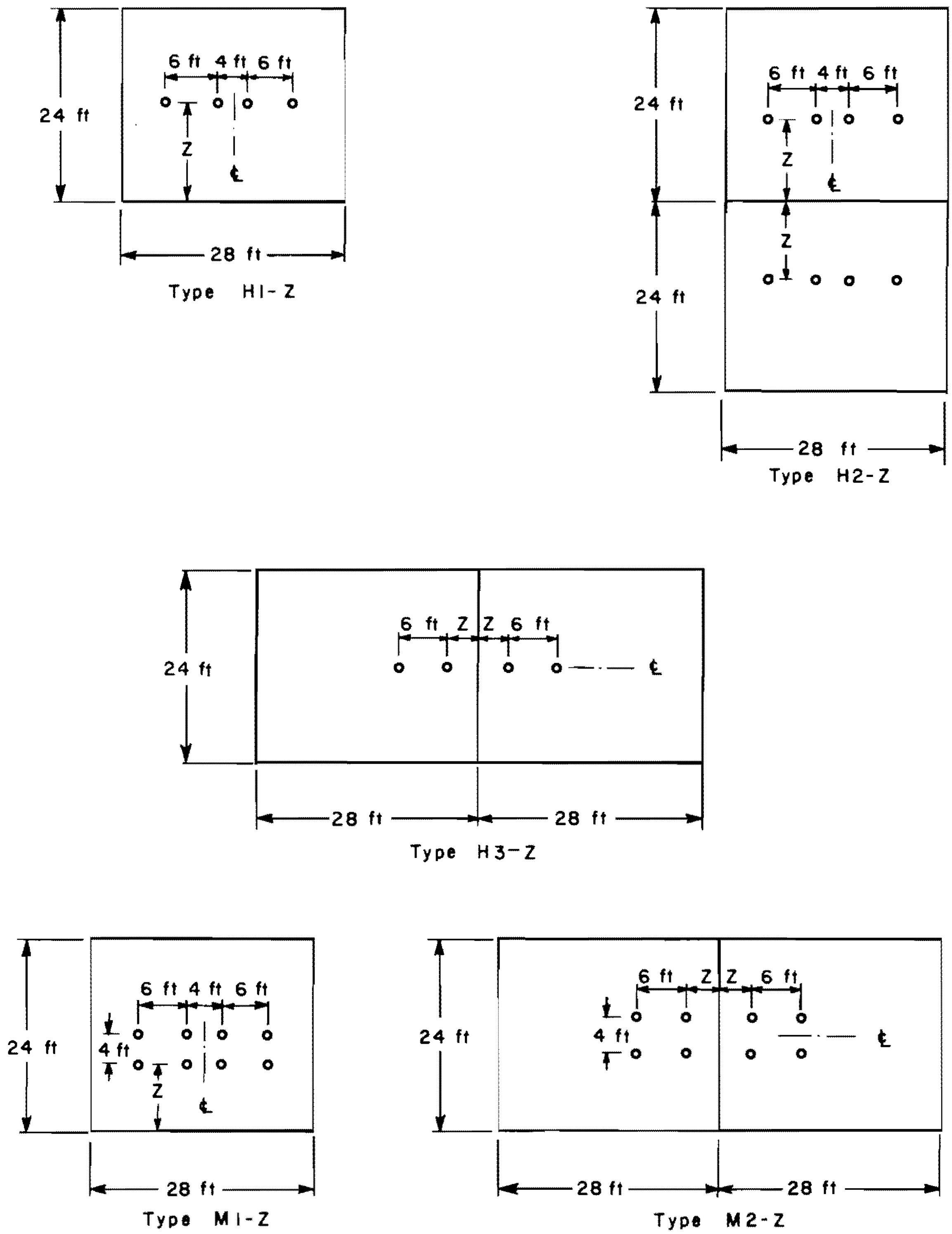


(b) Corner panel, positive moments.



(c) Cantilever moments.

Fig 9. The panels used for study of maximum moments.



H loads are 20.8 Kips

M loads are 15.6 Kips

Fig 10. Load patterns for interior, first interior, and corner panels.

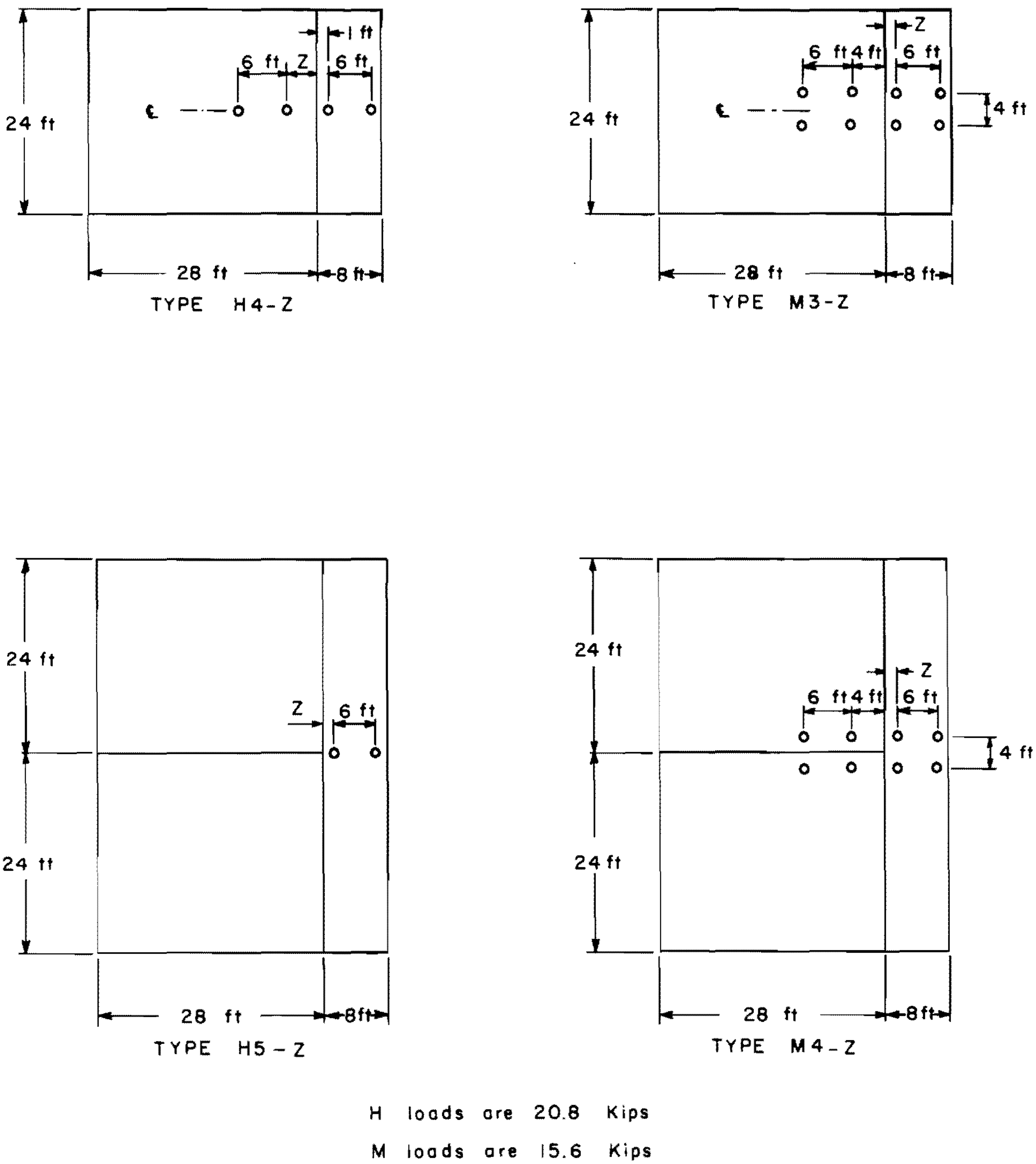
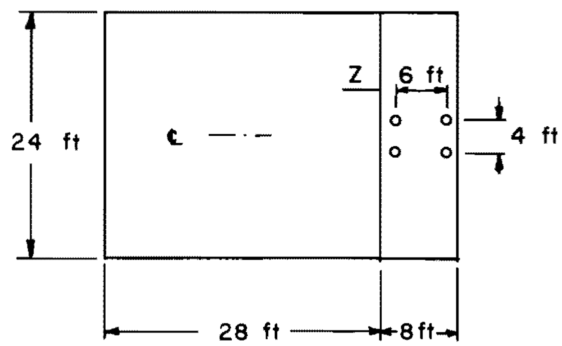
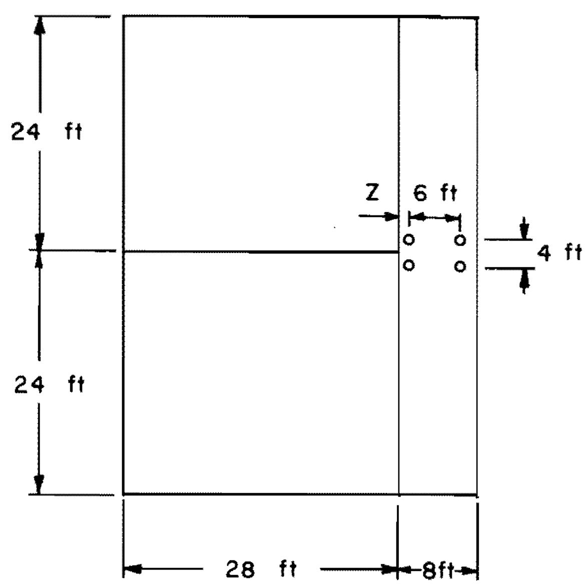


Fig 11. Load patterns for cantilever overhang.



TYPE M5 - Z



TYPE M6 - Z

M loads are 15.6 Kips

Fig 12. Load patterns for cantilever overhang.

pattern designated as H1-10 (Fig 10) means that four concentrated loads from the rear wheels of two standard HS trucks were centered transversely on a 28-foot panel, and were placed 10 feet from a diaphragm. The load patterns used for the cantilever overhang study are shown in Figs 11 and 12. It will be noticed that no pattern included the front axle of the standard truck. Inspection of the load patterns will show that had it been used, it would have been placed at or near a diaphragm location for most of the loading conditions studied. For this reason, and for simplicity, it was not applied, since its effect would be small or negligible.

The following chapter describes the results of the analyses which were made for the example structure.

CHAPTER 6. RESULTS OF THE EXAMPLE SLAB ANALYSES

A complete presentation of all the analyses which have been carried out will not be made here. A summary of the critical load conditions and results will be shown in graphical form, however, for the four areas of the deck slab which have been studied. A particular difficulty which has necessitated the numerous solutions is that the number, type, and placement of the specified loadings to create the maximum bending moments could not be predetermined. As one result of this study, future similar problems will benefit, since some general statements about the load types and placements for maximums in two-way slabs can now be made. Dead load of the light-weight concrete slab is included in all results.

Interior Panels

Since the predominant portion of the bridge deck consists of panels surrounded by other identical panels, the first studies were of this type. An interior panel is defined as one spanning between the central four girders of the structure (Fig 5) and not adjacent to the transverse end joints or suspended span joints. As discussed in Chapter 5, a three-panel section of the deck was modeled by using hinged supports at the beam and diaphragm locations. A restraint spring was added along the boundaries to represent the restraint of the continuous adjacent panels (Fig 7).

All of the loading types shown in Fig 10 were used for the interior panels. The Z-dimension of each was varied to determine the position which created the maximum moments. All interior panel loadings were of two specified trucks or special loadings (Fig 6). Three trucks could possibly have caused more negative moment across a girder than a loading of the H3-Z type, but when three loads are present, a load reduction factor of 90 percent is specified (Ref 1) which would have the result of reducing the values below the two-truck maximum. All solutions include dead load of the light-weight-concrete deck slab.

Positive moments in the 24-foot direction were computed by using a three-panel section as shown in Fig 8b. Some symmetry checks were made in which a load pattern was placed in the first panel instead of in the center panel; these showed positive moments almost identical to those in the center panel. This gave an additional check on the value of the edge restraint springs. Load types H1-Z and M1-Z were placed to create the maximum moment in the 24-foot span direction. Several solutions were made varying the Z-load placement dimension. A composite plot of the results is shown in Fig 13. The maximum moment of +12.60 kip-ft/ft occurred under a wheel of the H1-12 pattern loading. A value of +11.88 kip-ft/ft occurred with pattern M1-10. Comparison plots of the values from patterns H3-8 and M2-4 are also shown in Fig 13 to indicate the positive moment that might be expected with only one truck axle in a panel.

Positive moments in the 28-foot direction were computed by using the same load patterns as in the 24-foot direction. The orientation of the three panels is shown in Fig 8a. Values of moment in the 24-foot direction were again almost the same as those above which also gave an added check to the edge restraint values. The maximum positive moment in the 28-foot direction was +9.36 kip-ft/ft under a wheel of the special loading using pattern M1-10 (Fig 10). Even though the H1-12 loading has heavier individual wheels, the closer spaced special wheels caused the moment to exceed that of the H1-12 pattern. A composite plot of these results is shown in Fig 14.

Negative moments in the 24-foot direction were studied using the three-panel section of Fig 8b and patterns of type H2-Z shown in Fig 10. The plots of some of these results are shown in Fig 15. The maximum moment occurred with pattern H2-6 and was -15.83 kip-ft/ft. This pattern has two trucks with their axles 12 feet apart which is less than the minimum of 14 feet shown in Fig 6a. A pattern with 14 feet between axles is H2-7 and gives a slightly smaller maximum of -15.75 kip-ft/ft. It is interesting to note that the maximum occurred with the concentrated loads acting at the one-quarter point of the span. The comparable point for concentrated loads on a continuous beam is at four-tenths of the span.

Negative moments in the 28-foot direction were similarly obtained by use of the three-panel section of Fig 8a and load patterns of types H3-Z and M2-Z shown in Fig 10. Results of these solutions are shown in Fig 16. The maximum negative moment occurred midway between diaphragms and was -15.30

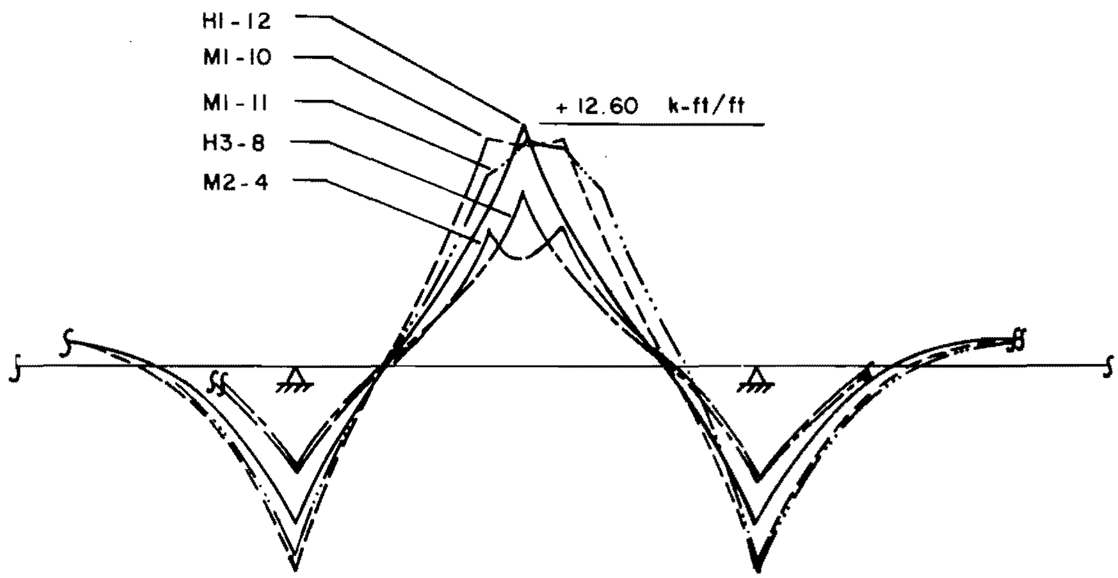


Fig 13. Maximum positive moment in 24-foot direction.

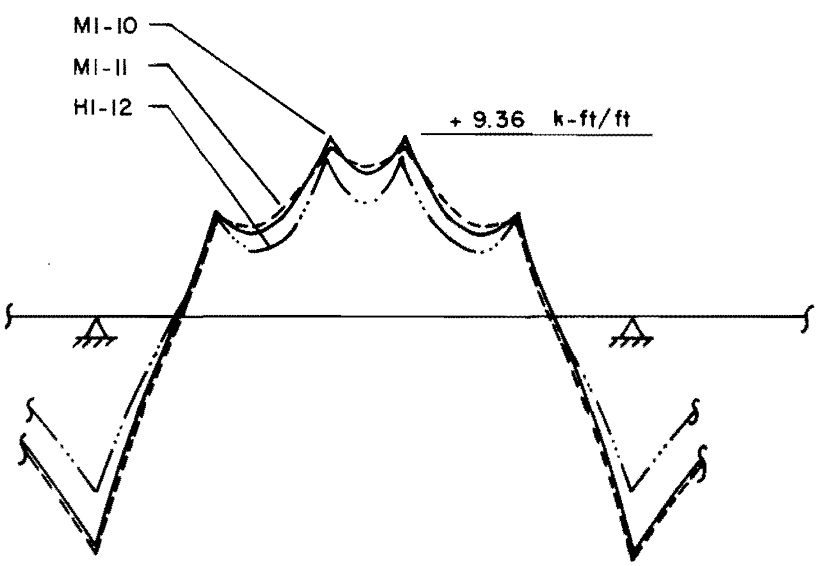


Fig 14. Maximum positive moment in 28-foot direction.

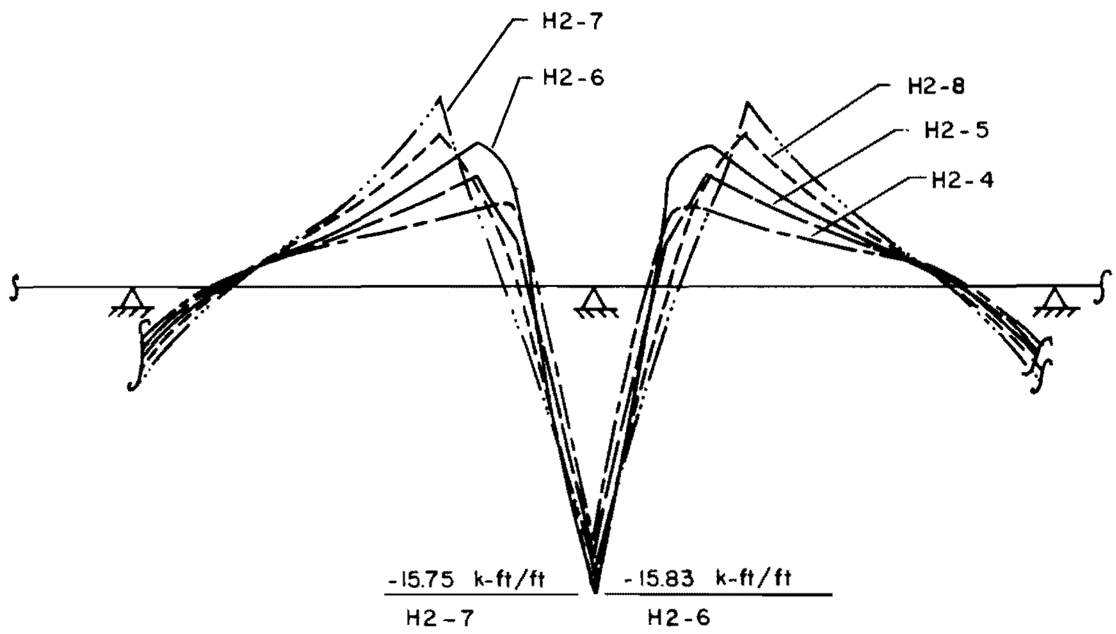


Fig 15. Maximum negative moment in 24-foot direction.

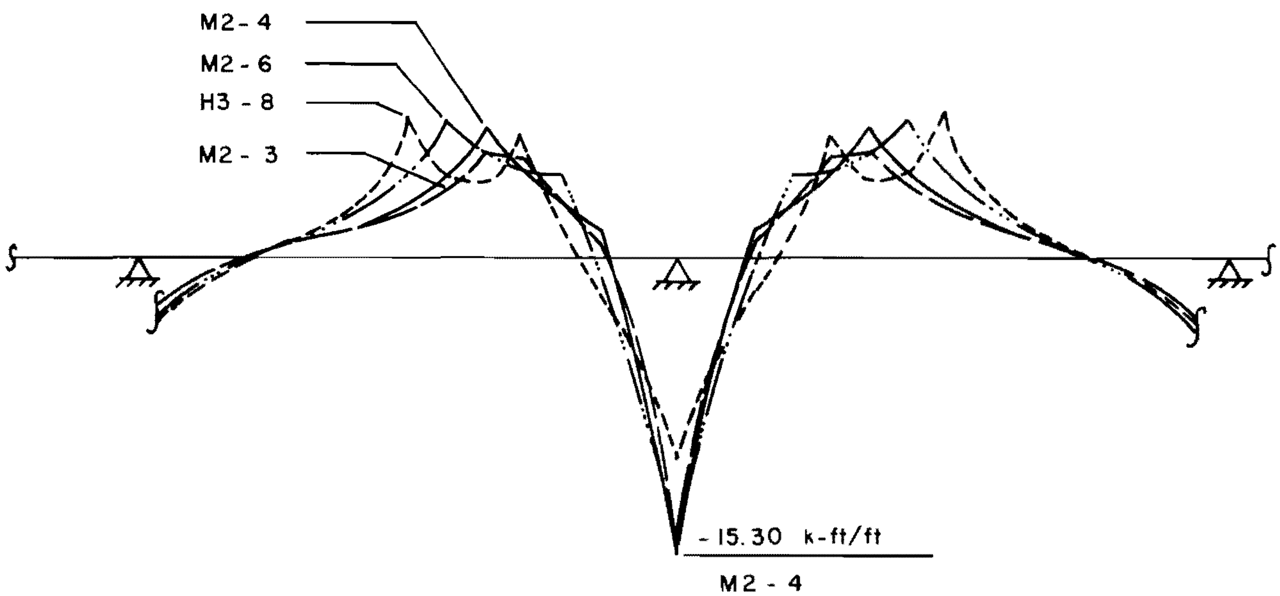


Fig 16. Maximum negative moment in 28-foot direction.

kip-ft/ft. This was for load pattern M2-4. Again note that the maximum was with the centroid of the load pattern at the one-quarter point of the 28-foot slab span.

First Interior Panels

The slab areas between the outside girders and the interior girders were initially assumed to be less stiff than the interior panels as would be expected when comparing to the first span of a continuous beam. After analysis, these panels were found to be nearly the same as an interior panel except for the edge along the outside girder. The maximum positive moment in the traffic direction (24-foot-slab span) was with a load pattern of the H1-12 type and was +12.71 kip-ft/ft. This compares to the +12.60 kip-ft/ft value in the interior panels.

Positive moment in the 28-foot direction was found to be maximum with a M1-10 type loading (Fig 10). The value obtained was +9.19 kip-ft/ft compared to the maximum of +9.36 with the same loading in an interior panel.

Negative moments at a supporting diaphragm in the traffic direction were computed by application of the same pattern which created the maximum in the interior panels. This loading was an H2-7 type (Fig 10), and the maximum negative moment value was -15.72 kip-ft/ft. This compares closely to the -15.75 kip-ft/ft interior panel maximum for the same load pattern.

Due to the similarity of bending moments in a first interior panel as compared to interior panels, no negative moment solutions were made for the first interior girder. This value would surely be nearly the same as that between interior panels, which is -15.30 kip-ft/ft with load pattern M2-4.

Many-Panel Comparison Study

As the two-way slab investigations proceeded, developments and improvements in the computer program discussed in Chapter 3 allowed a much larger section of the bridge deck to be partitioned for solution. A 50 by 100-element solution with 24 panels including the overhang was partitioned as shown in Fig 17. The loading was the same as that which created the maximum negative moment in a first interior panel which is also shown. The computed many-panel negative moment was almost exactly the same as that computed with the three-panel section with edge restraint springs as indicated in Fig 17.

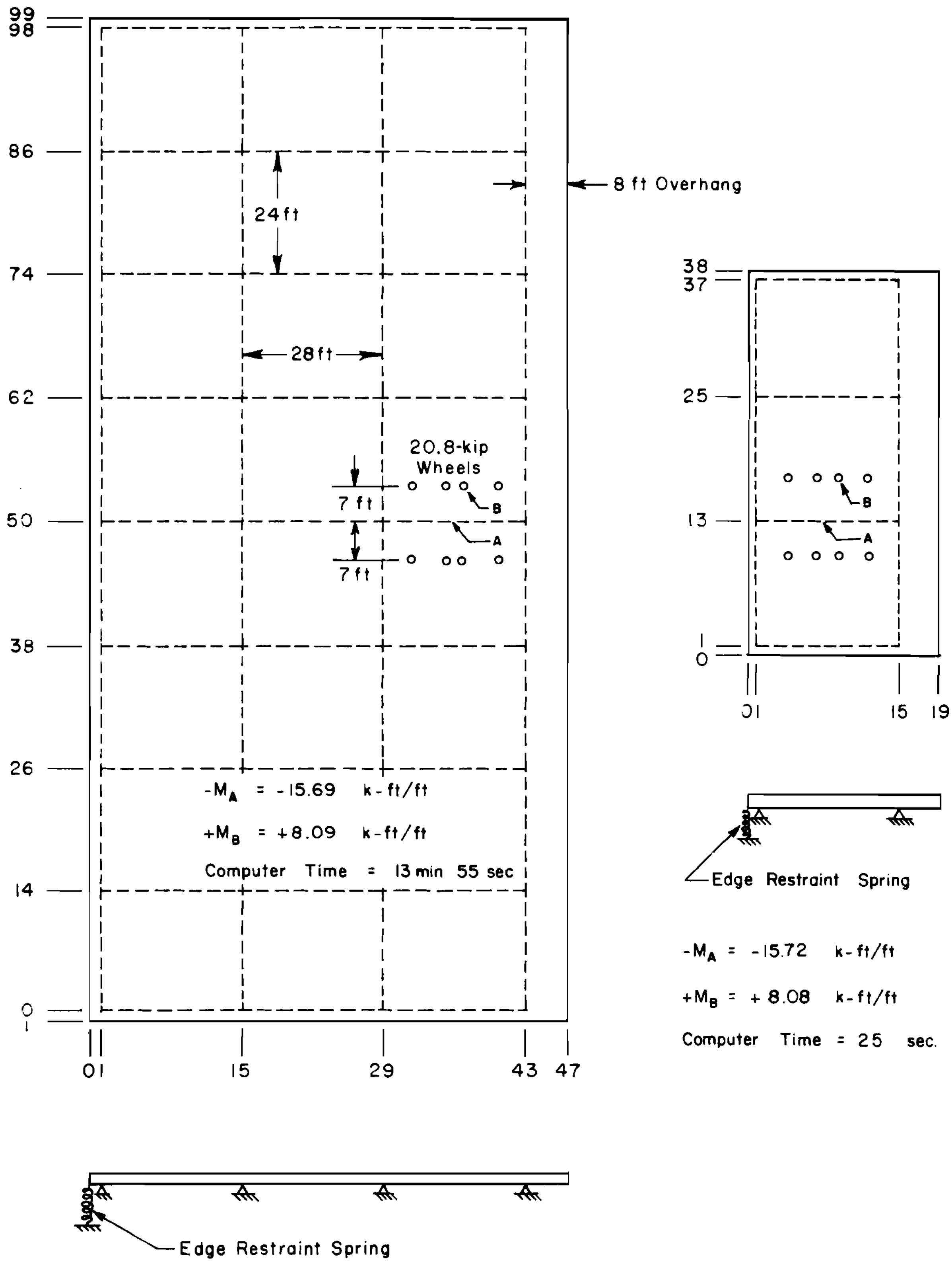


Fig 17. Comparison between a three-panel solution and a many-panel solution.

Two major points can be obtained from this many-panel comparison solution. The first is that a few panels with appropriate but approximate edge restraint springs representing the rest of the continuous slab can correctly model a many-panel deck slab continuous over numerous supports. The second point is the comparison of computer solution time which is directly proportional to costs of solution. The three-panel solution took 25 sec to solve on the CDC 6600 computer, while the 24-panel solution took almost 14 min to solve or about 31 times longer. In addition, less input information is required, and less output must be examined in the case of the three-panel configuration.

Corner Panels

Corner panels were examined by application of the load patterns which were found to control the maximum positive moments in the other panels. A typical corner panel is shown in Fig 18. No edge restraint was used along the slab edge which is adjacent to the transverse expansion joint of the structure. These joints will have a system of interfitting steel fingers which will create a "finger-joint" expansion and contraction device to bridge over the gap which must be left between adjacent units and at the suspended span joints (Figs 4 and 5). The total thermal movement in a structure of this size may be several inches at each joint, thereby requiring this special treatment to avoid a bump in the roadway surface. The finger-joint support brackets will attach to the end diaphragms and an additional cantilever bracket which will extend from the outside girder. This bracket will act as a support to the corners of the cantilever slab. For this reason, even though there was no edge restraint used along the edge of the end panel, the additional support from the cantilever joint support bracket caused the positive moments in the corner panel to be not much more than those in an interior panel. The maximum moment in the traffic direction was +13.76 kip-ft/ft for a load pattern M1-10 (Fig 10). Note that as opposed to the interior panels, the maximum was found with a special loading combination and not the normal HS-20 truck (Fig 6). The H1-14 loading created a slightly smaller maximum in the corner panel of +13.42 kip-ft/ft. Positive moments in the transverse 28-foot span direction were also due to a M1-10 pattern and were +10.71 kip-ft/ft.

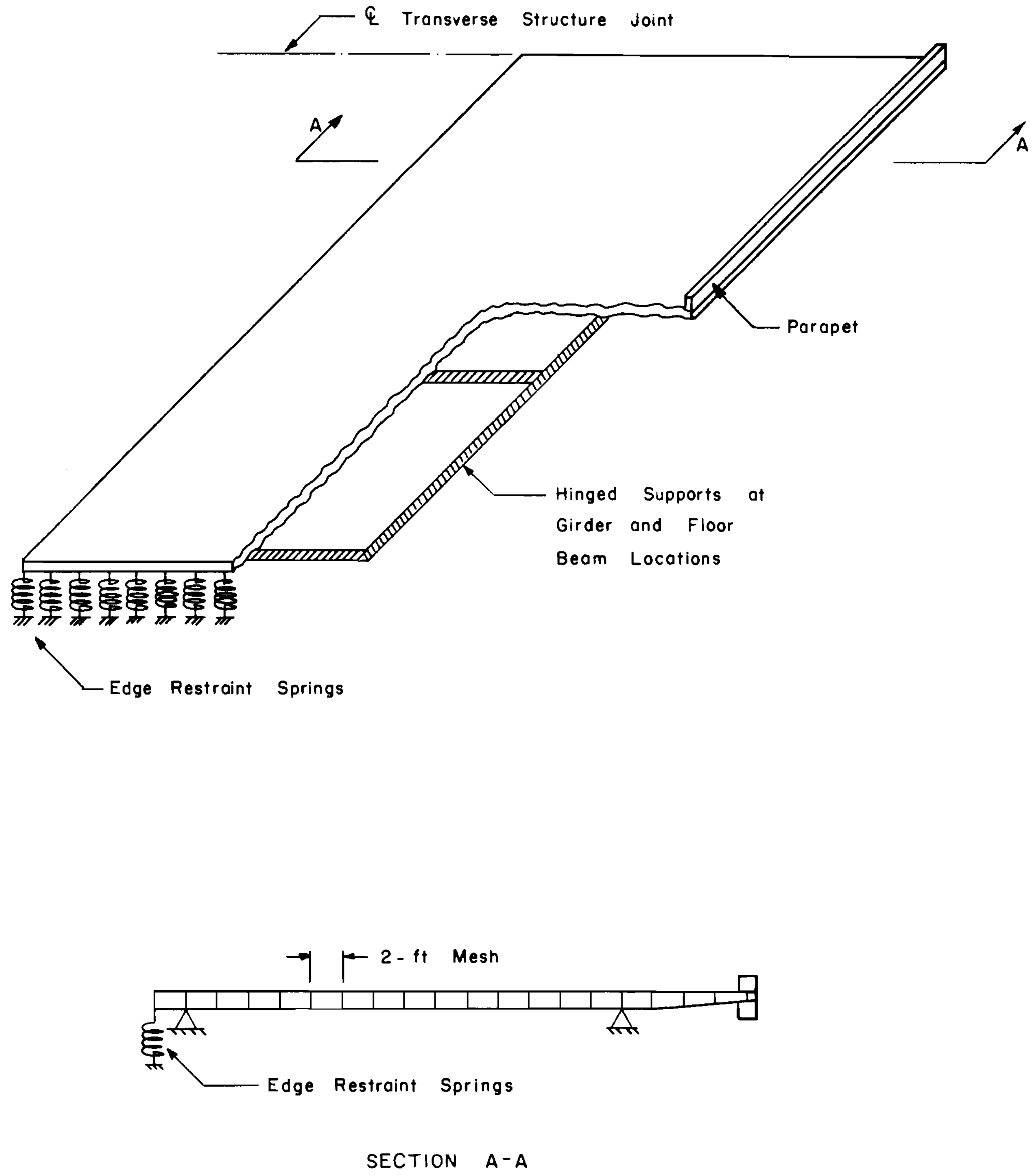


Fig 18. The three-panel exterior section of the deck as modeled for the computer solutions.

Cantilever Overhang

The areas of the bridge deck which were most difficult to analyze were the overhanging portions of the deck. The studies for the first interior panels used a model which included the overhang and parapet as shown in Fig 18. Note, however, that there are only four elements modeling the cantilever. This mesh size is adequate for the interior panels but was found to be too coarse for the overhang itself since a slight shift in lateral placement of loads on the cantilever changed the bending moments appreciably. The coarse grid was used, however, to determine the position and placement of the wheels which created the maximum cantilever bending moment. Pattern type H4-Z (Fig 11) was used with the Z-dimension varying for several solutions. A pattern with Z equal to 4 feet gave the highest value for the H4 type of loading. This dimension was then fixed for the other load patterns in which the distance from the outside truck to the interior girder was varied as shown in the other patterns of Figs 11 and 12.

To determine an adequate mesh size to use for the overhang solutions, a comparison was made by using two-foot, one-foot, and six-inch mesh sizes as shown in Fig 19. The support configuration using two adjacent hinged lines of support was arbitrary. Bending moment variation as a function of mesh size was the factor being compared. A long enough length was chosen in the traffic direction so that results would be unaffected by length; that is, the moment approached the dead load moment near the ends of the chosen length of 74 feet. It was necessary to compare on this basis because the computer available could not solve interior panels coupled to the overhang with the six-inch mesh size. The required problem would be at least 78 by 100 increments which would exceed the available computer capacity. The cantilever-increment study showed an appreciable difference between the two-foot mesh solution and the one-foot mesh solution. Very little difference, however, was observed between the six-inch mesh solution and the one-foot solution. Based on these results, it was determined that one-foot would then be adequate for modeling of the overhang. A series of solutions was made with the six-inch mesh size, varying the load patterns from M6-0 to M6-2 in six-inch steps. These results could then be interpolated and compared to the one-foot mesh size solutions to achieve a predicted maximum cantilever bending moment with the M6 pattern.

The one-foot mesh size solutions were made with a three panel plus overhang section as shown in Figs 9c and 18. Since a load pattern using the

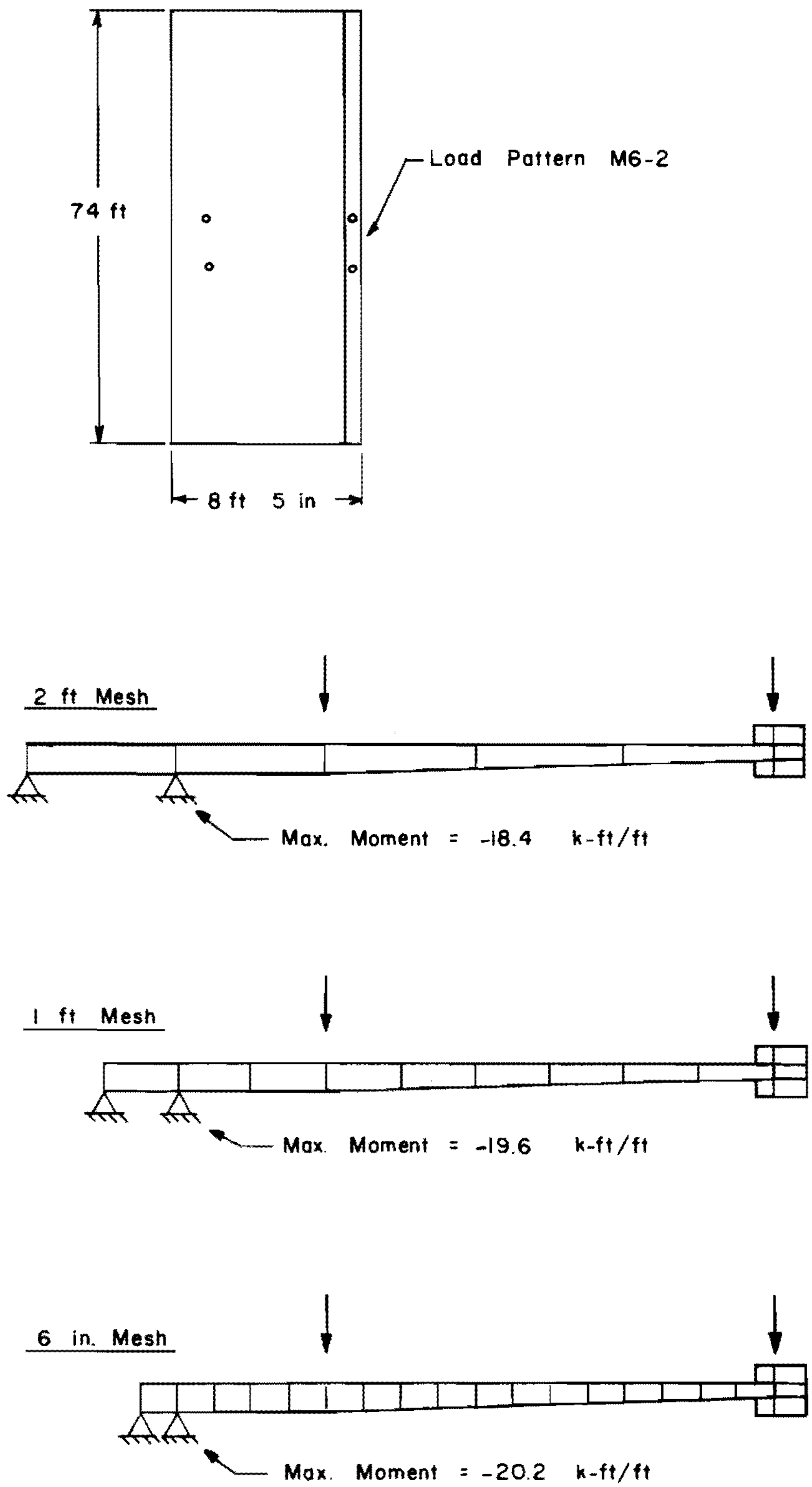


Fig 19. Cantilever-increment study.

special loading (Fig 6) was previously found to be the controlling overhang load condition, several variations of this pattern were applied for the final cantilever loading series shown in Fig 20. Dead load is included in all solutions. As previously noted in Figs 10, 11, and 12, an H type load pattern is of the standard HS truck and an M type is of the special loading. The maximum transverse negative bending moment at the outside girder is shown in parentheses in Fig 20 for each of the load patterns tested. Note that the maximum bending moment at a diaphragm is with a single special loading of the M6 type, but the maximum between diaphragms is with two special loadings of the M3 load pattern.

Figure 21 shows the cantilever slab and how it was modeled with the one-foot mesh. Three panels in the traffic direction were used as shown in Fig 18. By correlating these results with those of the six-inch mesh cantilever-increment study (Fig 19), values of maximum cantilever negative moment can be obtained for the actual design loading condition shown in Fig 21 in which the wheels are placed nine inches from the centerline of the girder. Allowing for some reduction in effective overhang due to the girder flange, the moments are interpolated for the point C shown in Fig 21 which is six inches from the girder centerline. The interpolated value of maximum negative moment is -16.27 kip-ft/ft for the area between diaphragms and -21.20 kip-ft/ft when the wheels are located at a floor beam. The reason the moment is higher adjacent to the floor beam is that it effectively stiffens the slab, thereby drawing more moment to that area. It is interesting to note, however, that the cantilever moment reduces rapidly as the wheels move away from the floor beam location. Special reinforcement or a slight change in the support or slab configurations near the floor beam might be used to resist this localized high value of negative bending moment.

Summary of Results

A composite presentation of all the results with the critical load pattern which created each is given in Fig 22. The moments are in parentheses and are in kip-ft/ft. All values include dead load of the slab computed from a 10.5-inch thickness and using 115 pounds per cubic foot for the light-weight concrete. Dead load of the parapet is also included. The double direction arrows shown in Fig 22 adjacent to the moments indicate the direction in which the moment acts.

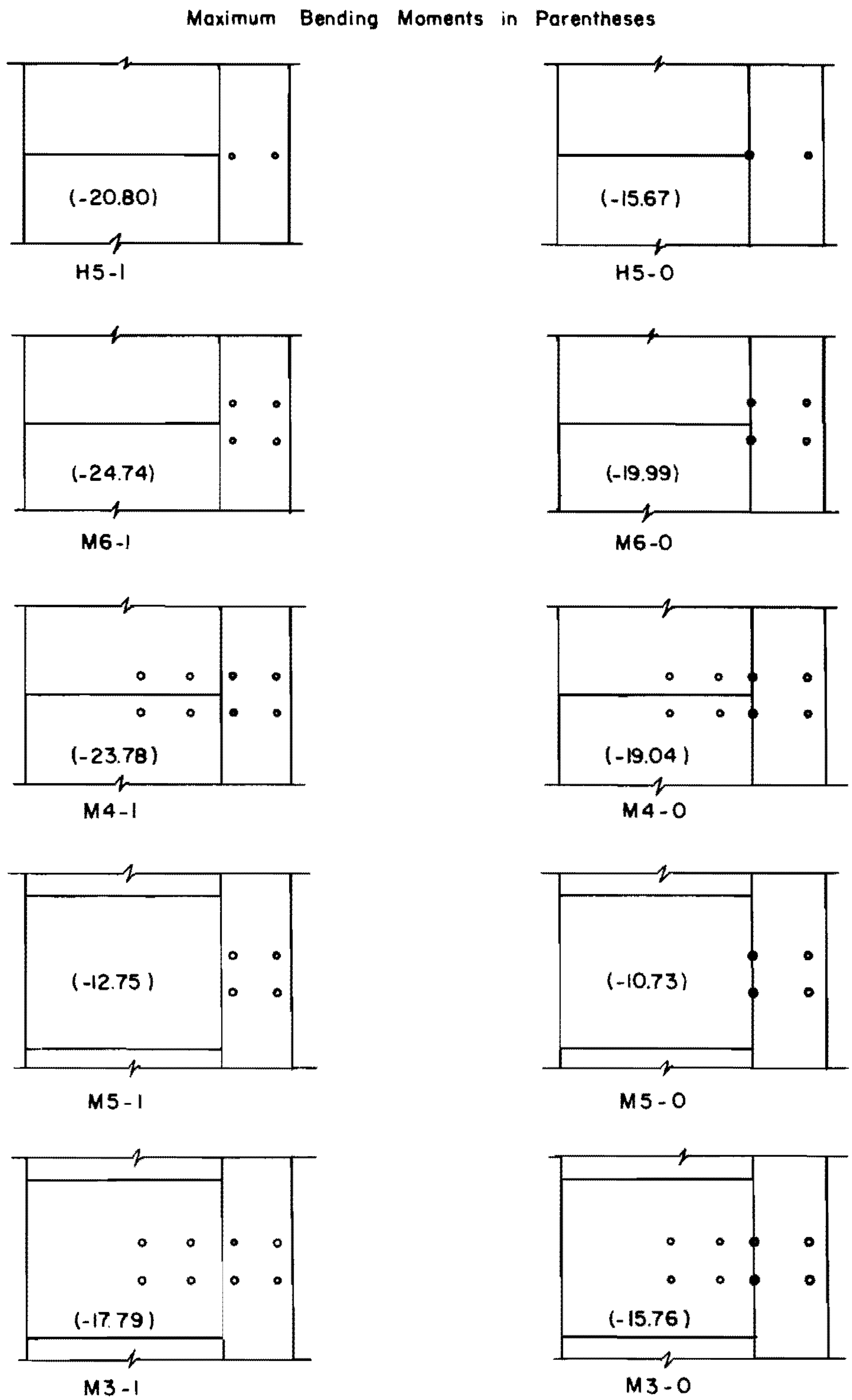


Fig 20. Cantilever problem series.

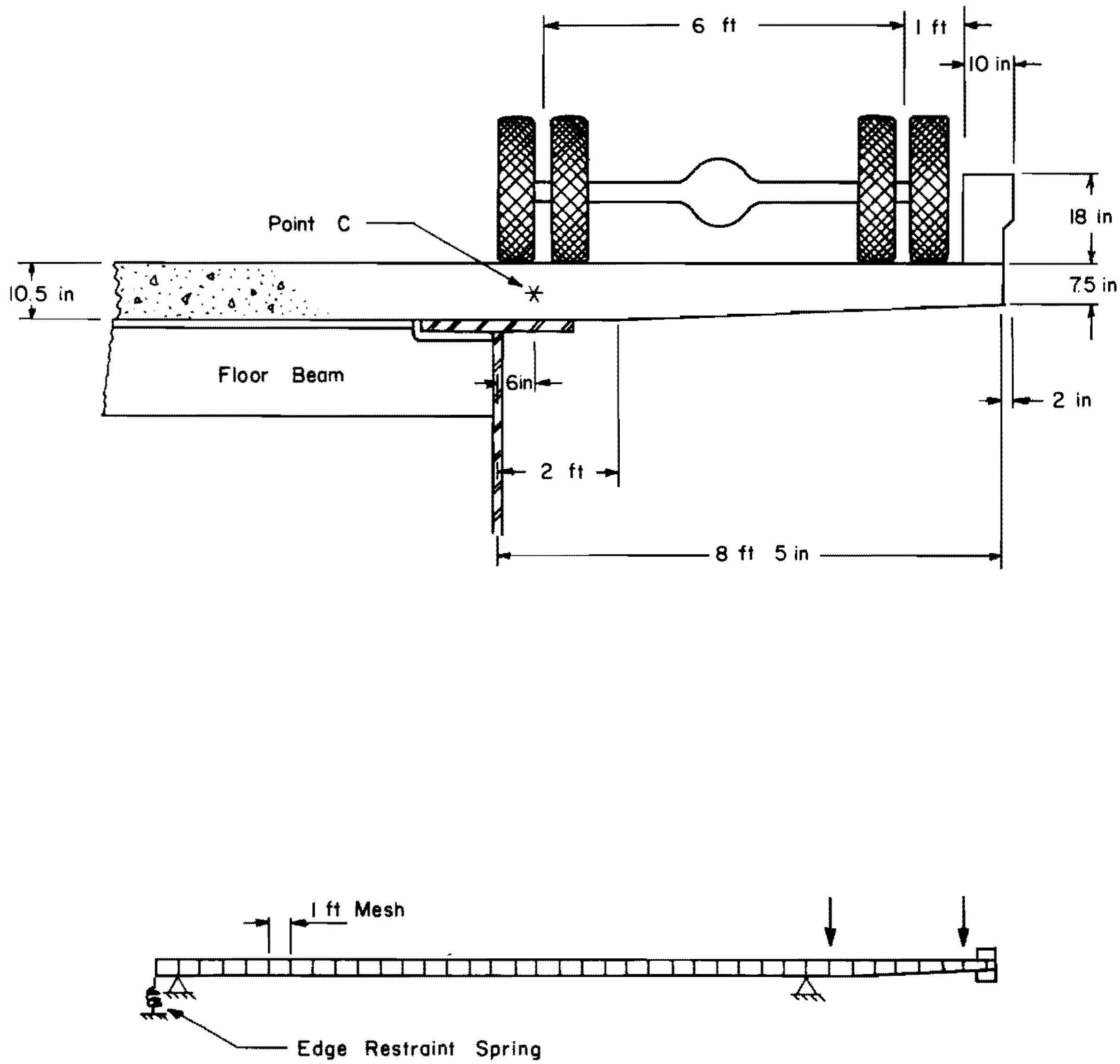


Fig 21. The cantilever slab.

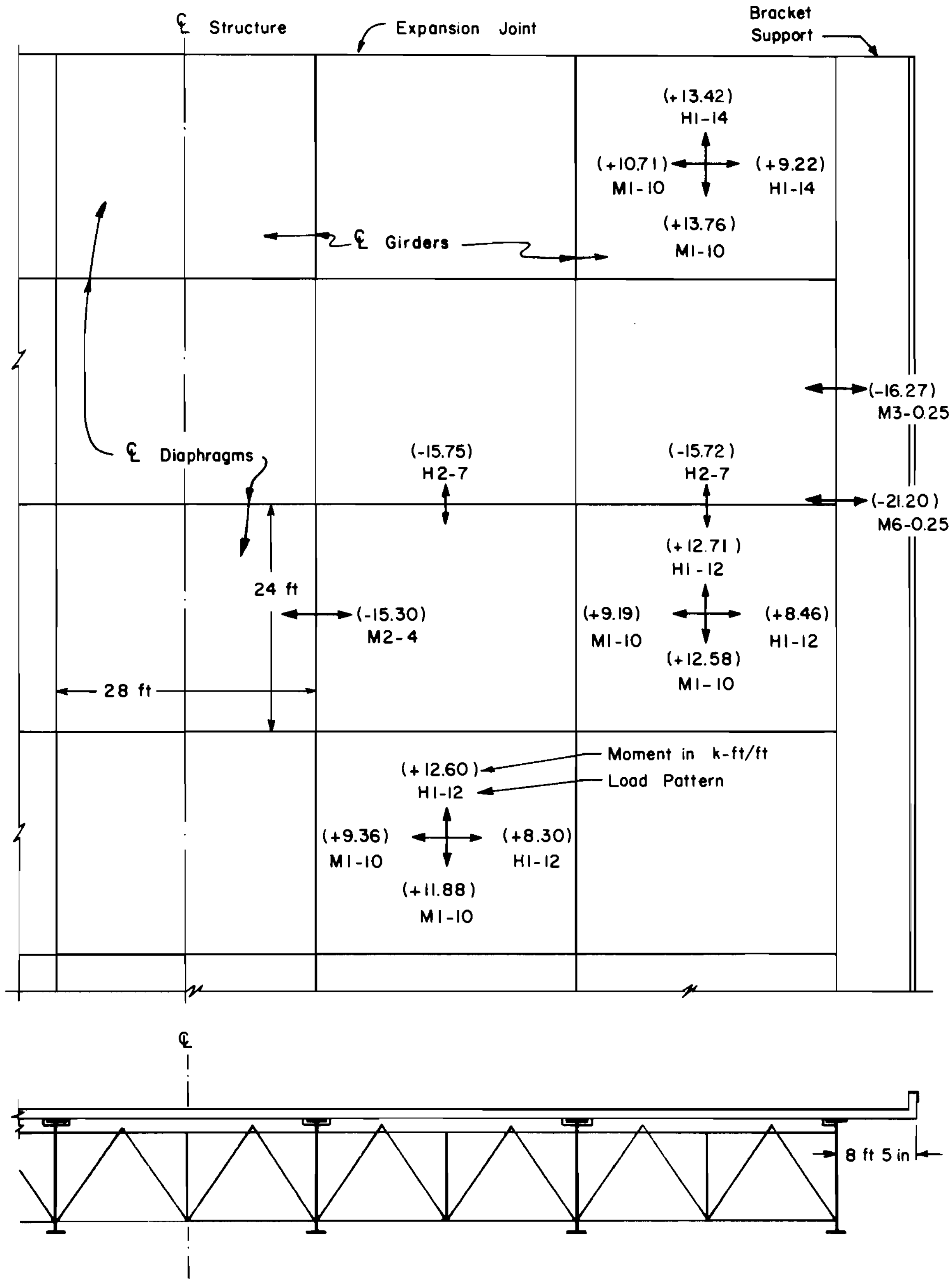


Fig 22. Summary of results.

CHAPTER 7. COMPARISON STUDIES

Most highway bridge decks are composed of one-way slabs either supported transversely by floor beams or diaphragms or supported longitudinally by the stringers. Specified loads, allowable stresses, load-distribution multipliers, and impact factors all contribute to create an over-all or inherent factor of safety in a one-way bridge deck. One question which remained after the analysis procedure was developed for two-way slabs was whether or not the resulting deck would have a different inherent factor of safety than the normal type of one-way bridge deck.

Comparison of One-Way and Two-Way AASHO Design Specifications

The AASHO specifications (Ref 6) do not presently include detailed design formulas for two-way slabs continuous over many supports. One-way slab formulas are well defined and include a continuity factor for slabs continuous over three or more supports. The only two-way slab design formulas are for slabs simply supported on four sides and either loaded uniformly or with a concentrated center load. Through experience and tests, the one-way formulas and the spcified loads (Fig 6) with impact have been shown to give adequate results for one-way slabs when coupled with the specified allowable stresses. It remains to be determined, however, if coupling the same loads, impact factors, and allowable stresses for design of two-way slabs also will give similar adequate results.

In order to help determine the relative safety factors of two-way slabs, comparison studies were made by applying the two-way slab analysis procedures to one-way slabs. The computed values of positive and negative moments were then compared to those obtained by application of the current AASHO one-way distribution formulas (Ref 1).

One-Way Slab Reinforced Perpendicular to Traffic

This study was of a one-way bridge deck supported by six girders as shown in Fig 23. A length of structure was chosen such that in the area of loading, it would act as a true one-way slab. Three deck sections and the

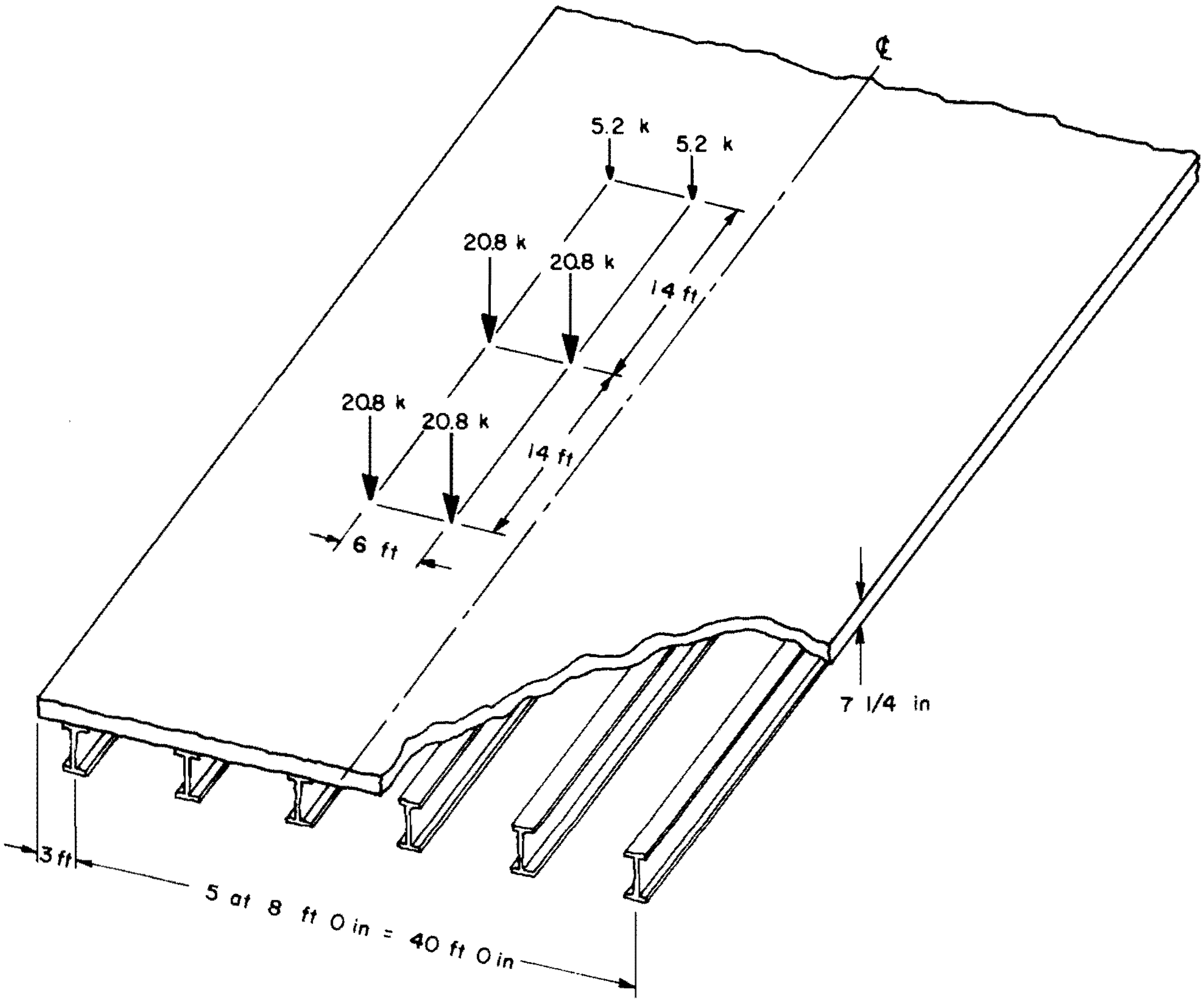


Fig 23. A typical one-way bridge deck reinforced perpendicular to traffic.

overhang were analyzed, with the other two sections replaced by a line of edge restraint springs as shown in Fig 24. For a structure of this width, it would not have been necessary to partition, but this was done to show again the procedure used to arrive at a value for an edge restraint spring. This procedure is the same as that developed for obtaining edge restraints for two-way slabs in Chapter 5.

The area of the deck between supports 3 and 4 (Fig 24) was loaded with a single line of wheels placed on the centerline. An arbitrary value of edge restraint was selected, a computer solution made, and the results inspected. Since this is the center of the actual structure, for this loading condition, the deflections and moments between supports 3 and 4 should be symmetrical about the centerline. The edge restraint value was adjusted until, after the third trial, results were symmetrical. This value of edge restraint was then used for all subsequent loadings with the load pattern shown in Fig 24. Edge restraint-values theoretically cannot be completely separated from loading influence. It has been found, however, by using diverse load systems, that the edge restraint value is not sensitive to load or placement of load. It is more influenced by changes in the structure or support geometry of the removed portions.

The HS-20 loading (Fig 6) plus an impact factor of 30 percent yields the load pattern shown in Fig 23. This pattern was moved incrementally across the width of the model of Fig 24 by a series of one parent and seven offspring problems.

The resulting envelopes of maximum live-load positive moment are shown by dashed lines in Figs 25 and 26. Dead load of slab was not included. The indicated maximum of +4.93 kip-ft/ft shown in Fig 25 is seen to occur in the first interior deck section. The AASHO design formula (Ref 1) makes no distinction between first interior sections and other interior sections, when the deck is continuous over three or more supports. It is seen that the positive moment in an interior section is somewhat less as indicated by the value of +4.38 kip-ft/ft in Fig 26. The maximum negative moment occurred at the first interior girder and was -5.07 kip-ft/ft as shown in Fig 25.

The AASHO moment formula (Ref 1) for an 8.0-foot effective beam spacing, with the continuity factor of 0.8, yields a value of design positive or negative live-load moment of ±5.20 kip-ft/ft. By reducing the effective span by one-half the flange width, a value of ±4.94 kip-ft/ft was obtained. These

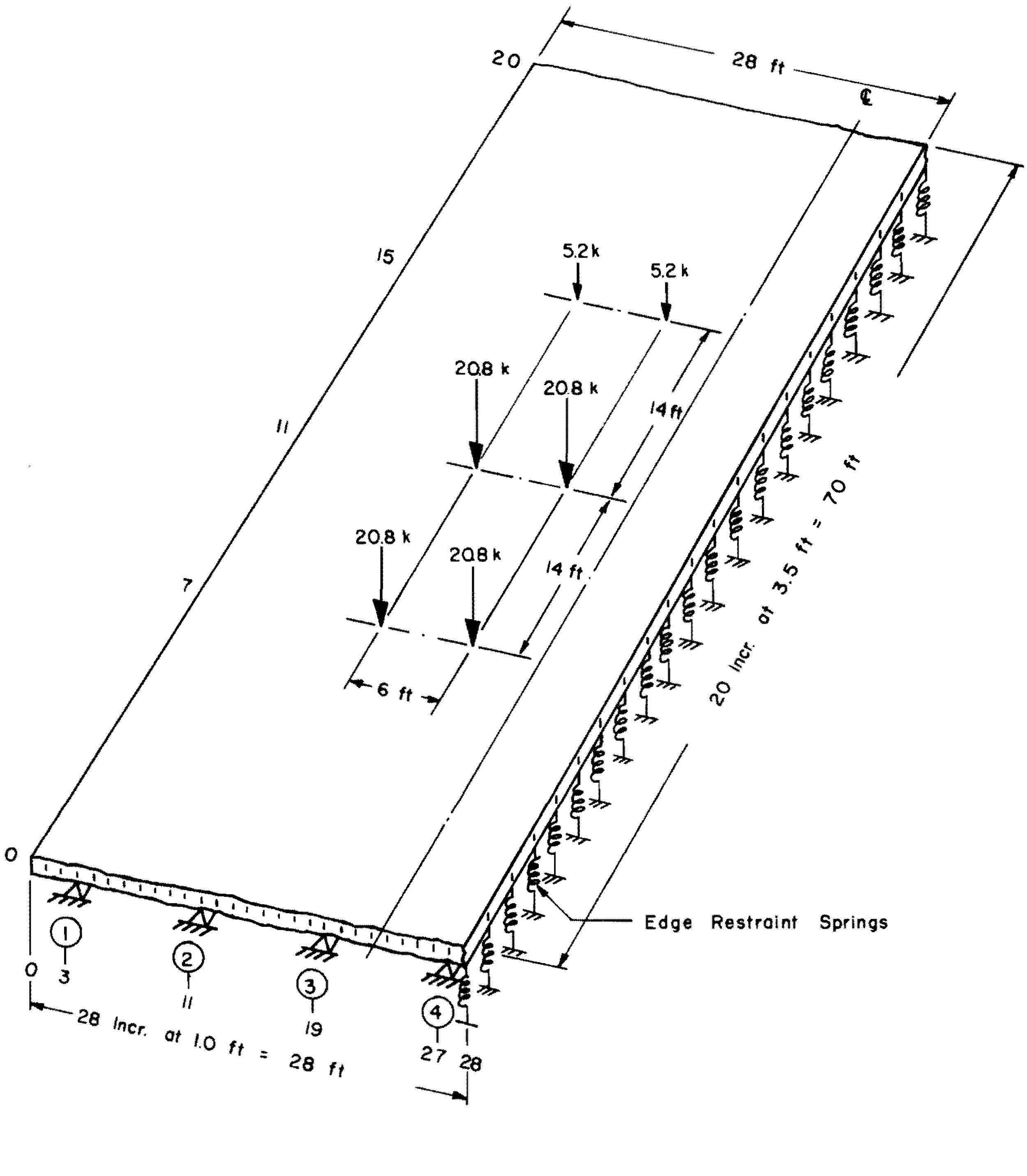


Fig 24. The computer model of a one-way slab.

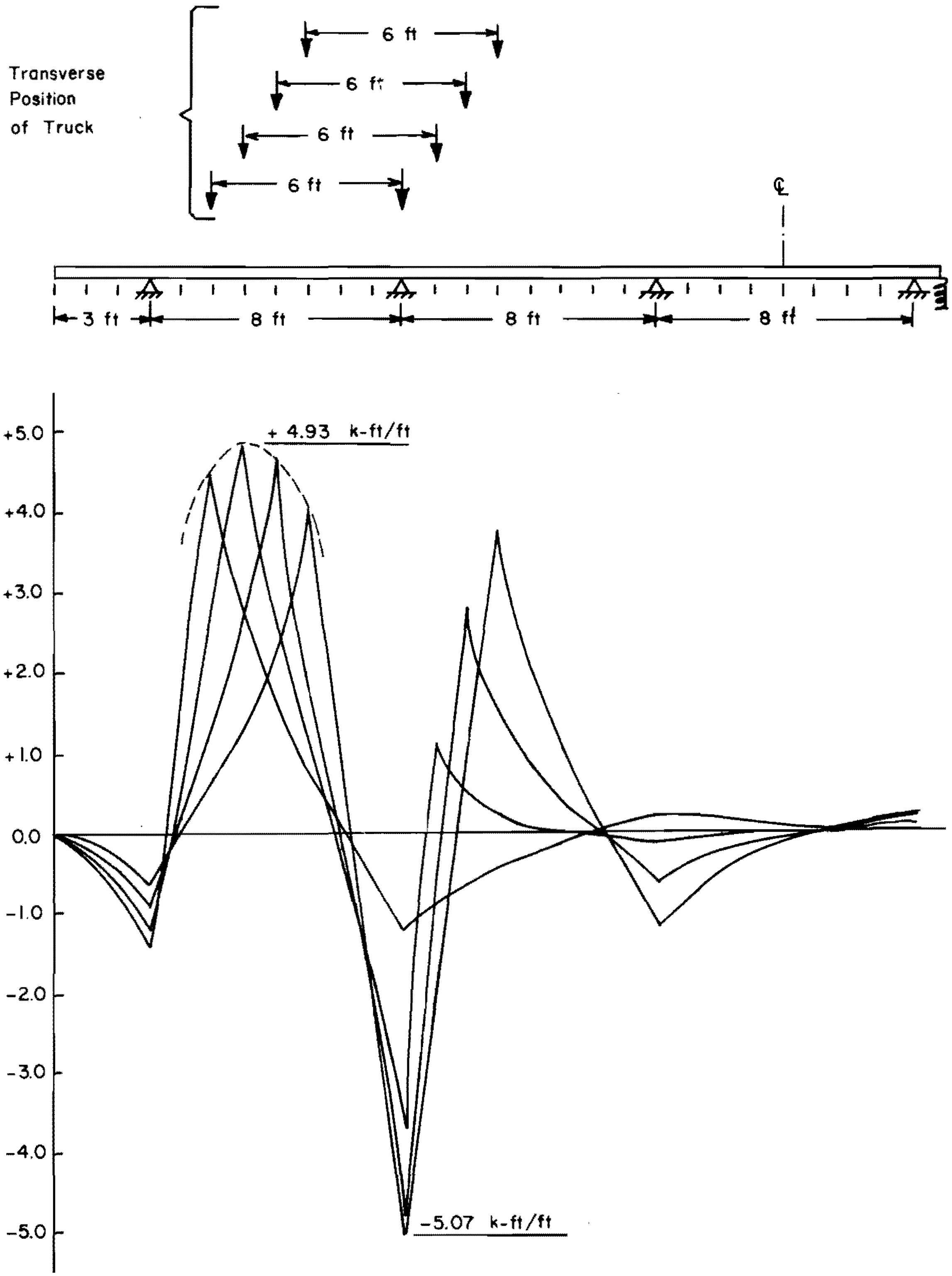


Fig 25. Maximum moments in outside span and at first interior support.

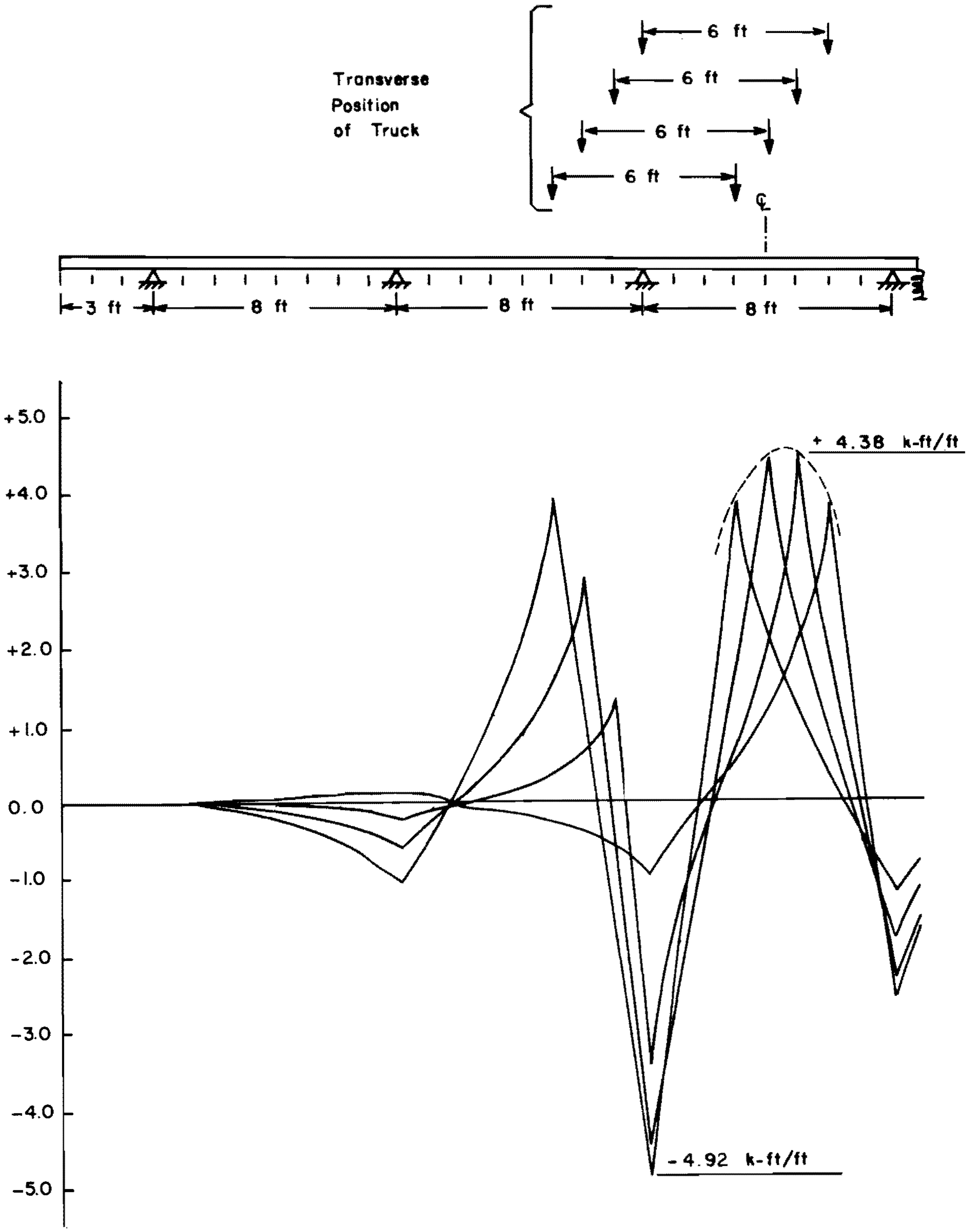


Fig 26. Maximum moments in interior spans and at interior supports.

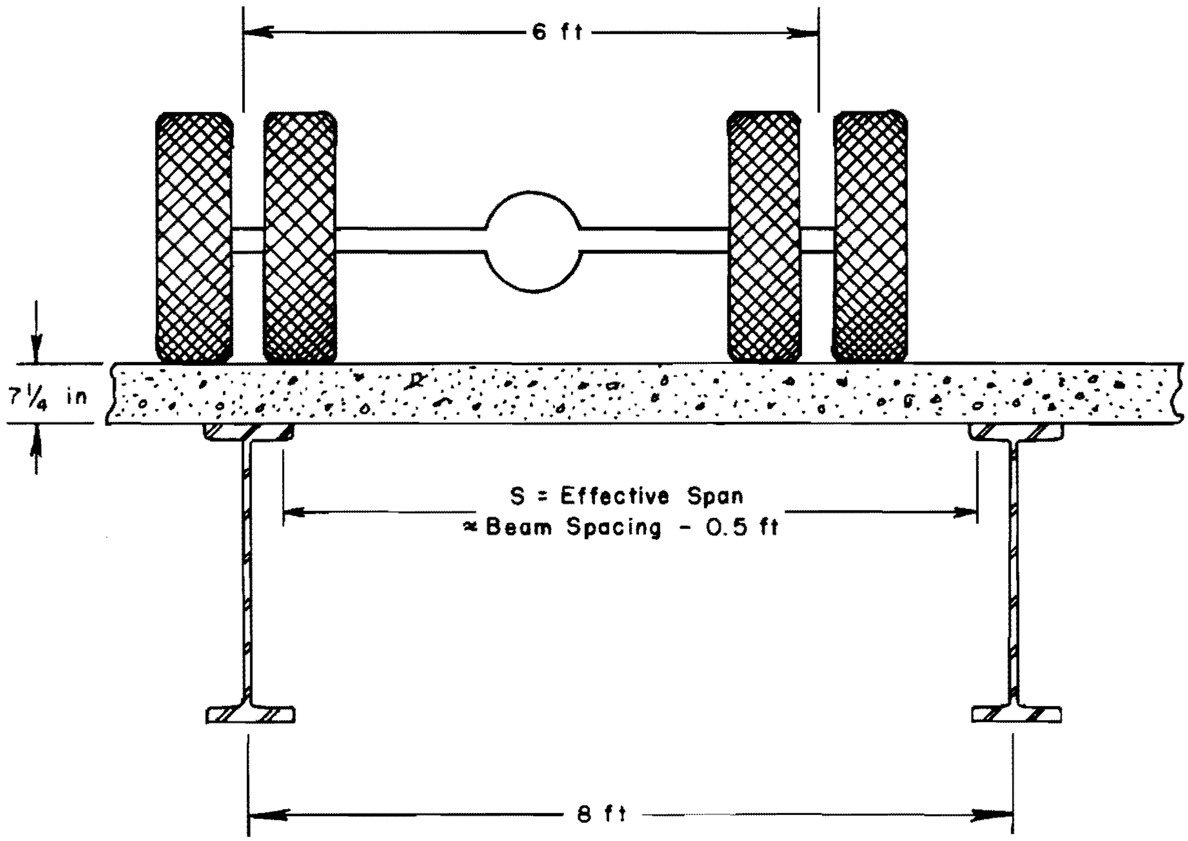
calculations are shown in Fig 27. It is noted that the values indicated by the computer in Figs 25 and 26 are surprisingly close to these values. The conclusion can therefore be drawn that the AASHO formulas effect approximately the same load distribution as the computer solution for this particular beam spacing. The AASHO formulas are based mainly on studies made by Westergaard (Ref 17). The formulas have been modified over the years, with the last notable modification, made in 1961, increasing the load distribution width for slabs on supports.

An interesting aspect of the computer solution is the secondary moments which occur under the load points in the longitudinal or traffic direction. A maximum value of +2.1 kip-ft/ft was computed. The AASHO specifications give no way of computing this longitudinal moment, but do specify a certain amount of longitudinal distribution reinforcement as a percentage of the transverse reinforcement. In a usual bridge deck of this thickness, the distribution reinforcement would yield a resisting moment of +2.8 kip-ft/ft of width in the center area between the beams.

One point should be clarified in regard to the close comparison between the computer solution and the moment as predicted by the AASHO formulas. The comparison was for an 8.0-foot effective beam spacing; other support spacings may not compare nearly so well. The specification change made in 1961 for the load distribution width was quite different for each beam spacing.

One-Way Slab Reinforced Parallel to Traffic

Another one-way slab study was made of a deck supported by transverse floor beams spaced at 18 and 21 feet (Fig 28). The slab is to be prestressed, and the thickness will be 10.5 inches. A four-span section of the deck including dead load was solved by use of the developed computer program, with a resulting total maximum positive moment of +20.3 kip-ft/ft and maximum negative moment of -19.0 kip-ft/ft. By application of the appropriate AASHO distribution widths to one line of specified wheels (Fig 6), comparable moments of +20.4 kip-ft/ft and -19.1 kip-ft/ft were obtained. These included dead load. Again, the close correlation between the computer solution and current design practice is seen. In this case the maximum transverse secondary moment from the computer solutions was +7.9 kip-ft/ft.



AASHO 1965 Specifications for Panels Continuous Over 3 or More Beams :

$$\text{Live Load Moment} = \pm\frac{0.8\,(S+2)}{32}\,(16^{K})(130\,\%)$$

Beam Spacing	Effective Span	Live Load Moment
8.0 ft	7.5 ft	± 4.94 k-ft/ft
8.5 ft	8.0 ft	± 5.20 k-ft/ft

Fig 27. One-way slabs reinforced perpendicular to traffic (Ref 1).

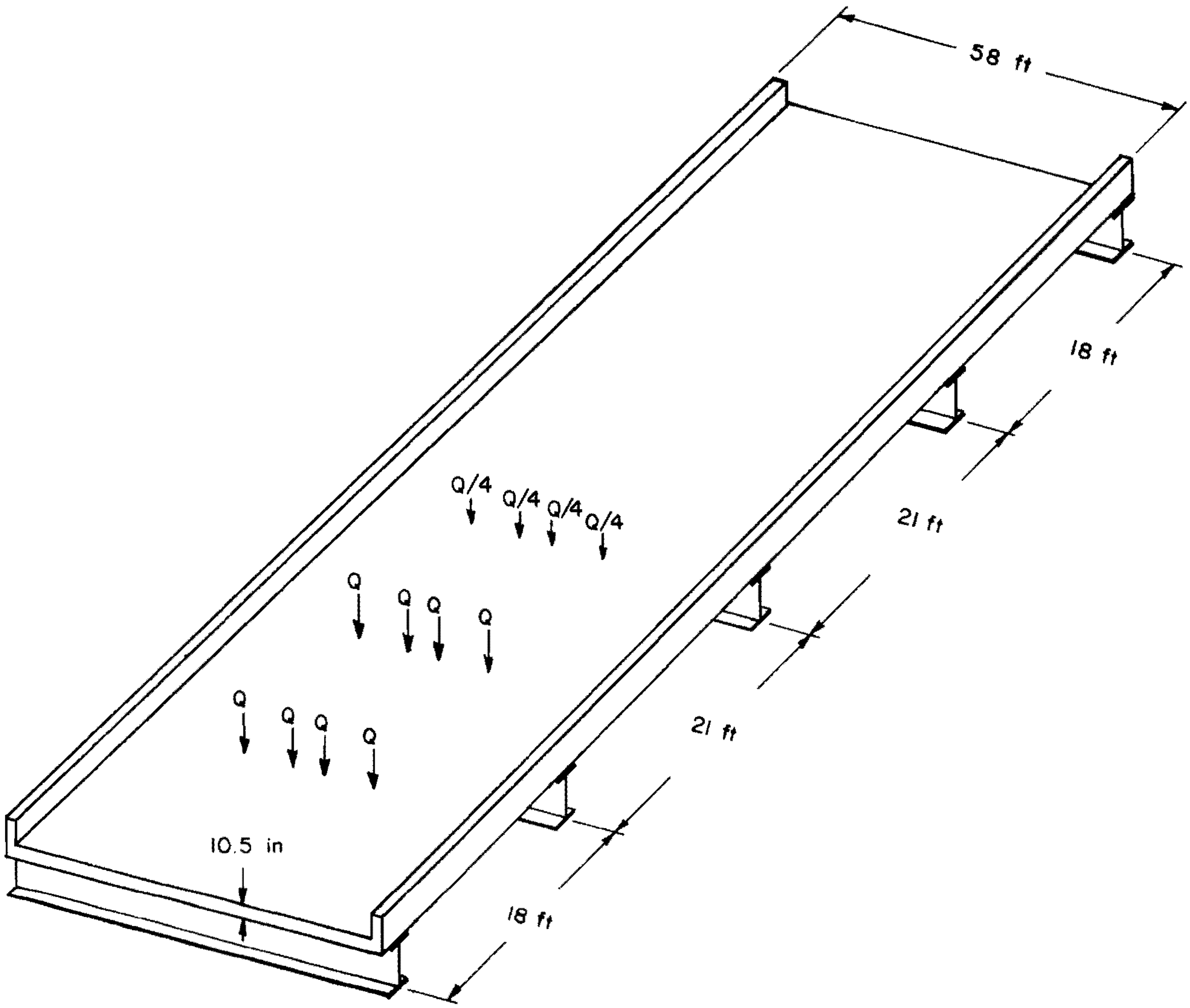


Fig 28. A typical one-way bridge deck reinforced parallel to traffic.

Two-Way Slab

A third study was of a two-way slab constructed for a bridge in California. The slab for this structure was designed by application of the limited AASHO specification for slabs supported on four sides (Ref 1). No drawing is shown here, but a good description is given by Jacobs and Cassano in Civil Engineering Magazine for November, 1967 (Ref 9). The structure is the San Mateo Creek Bridge constructed for the State of California and is located on the San Francisco Peninsula near San Mateo. The main girders are spaced at 20 feet, with transverse cross-frames spaced at 25 feet.

Experience obtained in the two-way slab study described in Chapters 5 and 6 greatly reduced the number of patterns necessary to be tried, and it is felt that the results are close to the maximum condition that might be obtained from a more thorough study. Only a central panel was studied, since the overhang is well supported by brackets. The maximum total slab moments that were computed would result in a total balanced slab thickness of approximately 9.5 inches for negative moments and 8.5 inches for positive moments. This structure has a 0.5-inch concrete-grout wearing surface which was included in the analysis. The actual slab deck thickness used for the construction of this bridge was 9 inches except in the central portion which was thickened for construction loads.

Confidence in the Computer Solution

The three additional studies help yield confidence in the two-way slab computer solution as a means of analysis. It is re-emphasized however, that this is analysis only, and not to be construed as justification for the specified loads and impact factors which were used. These loads and factors have been shown from experience to be adequate for design of most highway structures which have one-way deck slabs, but it will remain to be determined if they are also adequate for two-way slab design. It is hoped that with new analysis tools and techniques being developed, study of the actual measured static and dynamic loads on structures will be made. A traffic load measuring device developed by Lee (Ref 10) could be used to measure actual wheel loads under moving traffic conditions on bridge structures. By coupling these results with a dynamic two-way slab computer program, a study could be made of bridge decks with conditions modeled much closer to those experienced in actual structures.

CHAPTER 8. SUMMARY AND RECOMMENDATIONS

The problem of analysis of two-way reinforced concrete bridge decks has been studied by application of a computer program. Procedures have been outlined for partitioning portions of the slab. The method of analysis is not limited, however, to two-way bridge floor decks. Flat-plate building slabs, one-way slabs, slabs on subgrade, and stiffened steel or aluminum plates are among the structures to which the method can be applied.

Multiple Loadings

A computer program, DSLAB 30, was developed during the course of the study. The program is based on discrete-element modeling using numerical difference methods. The solution technique is a two-pass recursive procedure developed by Matlock and others (Refs 11 and 12) and extended to two dimensional systems by Stelzer (Ref 13). A further development has been added which has been called the multiple-loading recursive technique. This technique allows numerous loading conditions to be studied at a fraction of the computer time of individual solutions.

Partitioning of a Slab

A procedure was developed to partition out sections of a bridge deck or other type of slab structure supported by hinged supports. The partitioning procedure is approximate, but has been shown to give surprisingly good results when compared to solutions using a much larger or even complete structure. Procedures similar to this are commonly used in hand methods in which sections of a continuous beam or frame are removed, and modified stiffnesses are applied to the members which are adjacent to the removed portions as outlined by Ferguson (Ref 5). Partitioning gives the engineer a useful method of studying portions of a structure in great detail, without the necessity or expense of solving the complete structure for each loading condition.

Recommendations for Further Study

An important aspect of the study related to partitioning of structures and particularly to slabs on subgrade is the capability of having edge restraints which are not adjacent to a hinged support. These would be rotational restraints similar to those used in the beam-column methods (Refs 11 and 12). The addition of rotational restraints to the computer program included in this report has been begun but not completed.

AASHO design procedures (Ref 1) are presently limited to particular types of two-way slabs and loadings. By application of the methods outlined in this report, a number of solutions could be made, varying the girder and diaphragm spacings. These solutions might then be used to evolve a two-way slab design method which could be similar to the distribution coefficients for one-way slabs.

A further extension of the multiple-loading recursive technique to slabs on nonlinear foundations has been investigated. The nonlinear support is initially represented by an elastic spring and the nonlinear force-displacement characteristics adjusted from the linear spring by means of an additional equivalent applied load. This procedure has been shown to be successful for certain types of problems, and further development is underway.

The multiple-loading recursive technique would be appropriately used to simulate the movement of a truck across a bridge deck as is done in the moving-load beam-column program (Ref 12). This program presently solves a complete beam-column solution for each position of movable load. By incorporating the multiple-loading recursive technique, a decrease in computer computation time could be achieved, although computation time is not too critical for beam-column solutions.

Two-way slabs designed by elastic methods are inherently good structures. A concrete slab is not perfectly elastic in nature; any overloading of particular areas may cause slight cracking to occur which decreases the stiffness in the distressed area. This causes the bending resistance to be partly shifted to other less highly stressed areas, thereby distributing the load over a larger portion of the structure. This effect can be studied by application of the procedures outlined in this report. After an elastic analysis is made, the highly stressed areas could be inspected and lines of cracking predicted. These cracks would be modeled by means of appropriate reduced stiffness in another solution which then should reflect the results of the re-distribution due to cracking. This effect could also be introduced by revising the program to automatically use stiffnesses from an input moment-curvature relationship.

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APPENDIX 1

GUIDE FOR DATA INPUT

GUIDE FOR DATA INPUT FOR SLAB 30

with supplementary notes

extract from

A DISCRETE-ELEMENT METHOD OF MULTIPLE-LOADING ANALYSIS FOR TWO-WAY BRIDGE FLOOR SLABS

by

John J. Panak and Hudson Matlock

January 1970

SLAB 30 GUIDE FOR DATA INPUT - CARD FORMS

IDENTIFICATION OF RUN (two alphanumeric cards per run)

1 … 80

1 … 80

IDENTIFICATION OF PROBLEM (one card for each problem; program stops if PROB NUM is left blank)

PROB NUM

Description of problem (alphanumeric)

1 5 11 … 80

TABLE 1. CONTROL DATA (one card for each problem)

Multiple Load Option
+1 for Parent problems
-1 for Offspring problems

Number of Cards for
Table 2, Table 3, Table 4, Table 5

(for offspring problems, only Tables 3 and 4 may be used, Tables 2 and 5 are omitted)

5 25 30 35 40

TABLE 2. CONSTANTS (one card, omit for offspring problems)

Num Incrs X, Y; Incr Length in X-Direction h_x; Incr Length in Y-Direction h_y; Poisson's Ratio ν; Thickness t

5 10 20 30 40 50

Entering t causes replacement of the principal moment by the principal stress with the same sign (use only for constant thickness slabs).

TABLE 3. SPECIFIED AREAS FOR SELECTED MOMENT OUTPUT (number of cards as shown in Table 1, 10 maximum)

From X, Y; Through X, Y; PRINT (1=YES) X-MOM, Y-MOM

5 10 15 20 25 30

TABLE 4. STIFFNESS AND LOAD DATA (number of cards as shown in Table 1, enter only load for offspring problems)

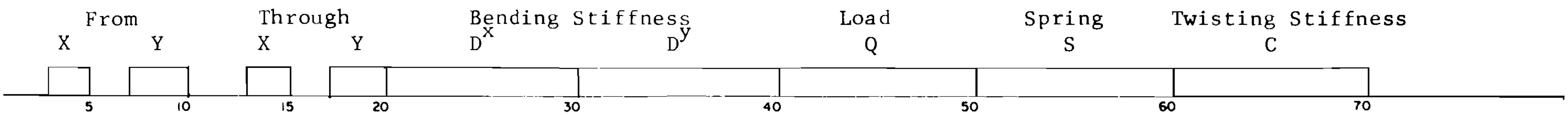


TABLE 5. AXIAL THRUST DATA (number of cards as shown in Table 1, omit for offspring problems)

GENERAL PROGRAM NOTES

The data cards must be assembled in proper order for the program to run.

A consistent system of units must be used for all input data, for example, kips and feet.

All 2 to 5-space words are understood to be right-justified integers or whole decimal numbers . . . | + 4 3 2 1 |

All 10-space words are floating-point decimal numbers . . . . | - 4 . 3 2 1 E + 0 3 |

TABLE 1. CONTROL DATA

The multiple-load option is exercised for problem series in which only the load positions and magnitudes will vary. The first problem in a series is the Parent and is specified by entering +1, successive loadings are the Offspring and are specified by entering -1. If the option is left blank, the problem is complete within itself.

The number of cards input for Table 2 through Table 5 should be carefully checked after coding is completed.

TABLE 2. CONSTANTS

Variables:	h_x	h_y	ν	t
Typical Input Units:	in.	in.	none	in.

Only one card is needed for Parent or Independent problems. This table is omitted for Offspring problems.

Poisson's ratio will be taken as zero unless specified (always positive).

Slab or plate thickness is specified if the user desires principal bending stress to be computed. If left blank the largest principal moments are computed. The use of the thickness switch is appropriate for only slabs of constant thickness. The stress has the same sign as the principal moment.

TABLE 3. SPECIFIED AREAS FOR SELECTED MOMENT OUTPUT

A maximum of ten cards may be used.

The selected moment results are printed if one or both of the print options are exercised.

Table 3 may be omitted if desired since all selected output values are duplicated in the complete printout of results.

The selected moment output is controlled by the same joint coordinate system shown in Fig A1 and described below for Table 4.

TABLE 4. STIFFNESS AND LOAD DATA

Variables:	D^x	D^y	Q	S	C
Typical Input Units:	$\frac{\text{lb-in}^2}{\text{in.}}$	$\frac{\text{lb-in}^2}{\text{in.}}$	lb	$\frac{\text{lb}}{\text{in.}}$	$\frac{\text{lb-in}^2}{\text{in/rad}}$

All data are described with a coordinate system notation which is related to the discrete-element model of the slab. This is shown in Fig A1.

To distribute data over a rectangular area, the lower left-hand and the upper right-hand coordinates must be specified. Figure A2 illustrates a sample data input.

To specify data at a single location, the same coordinates must be specified in both the "From" and "Through" columns.

The "Through" coordinates must always be equal to or numerically greater than the "From" coordinates.

The user may input values on the edges of the slab and the corners to represent the proportionate area desired as illustrated in Fig A2.

There are no restrictions on the order of cards in Table 4. Cummulative input is used, with full values at each coordinate.

Unit stiffness values D^x and D^y are input at all joints. The values are reduced proportionately for edges.

Load values Q , and support springs S for any joint are determined by multiplying the unit load or unit support value by the appropriate area of the real slab assigned to that joint. Hinged supports are provided by using large S values. Concentrated loads that occur between joints can be proportioned geometrically to adjacent joints.

Unit twisting stiffness C is defined for the mesh of the plate or slab surrounded by four rigid bars and four joints. The mesh is numbered according to the joint number at the upper right corner of the mesh as shown in Fig A1.

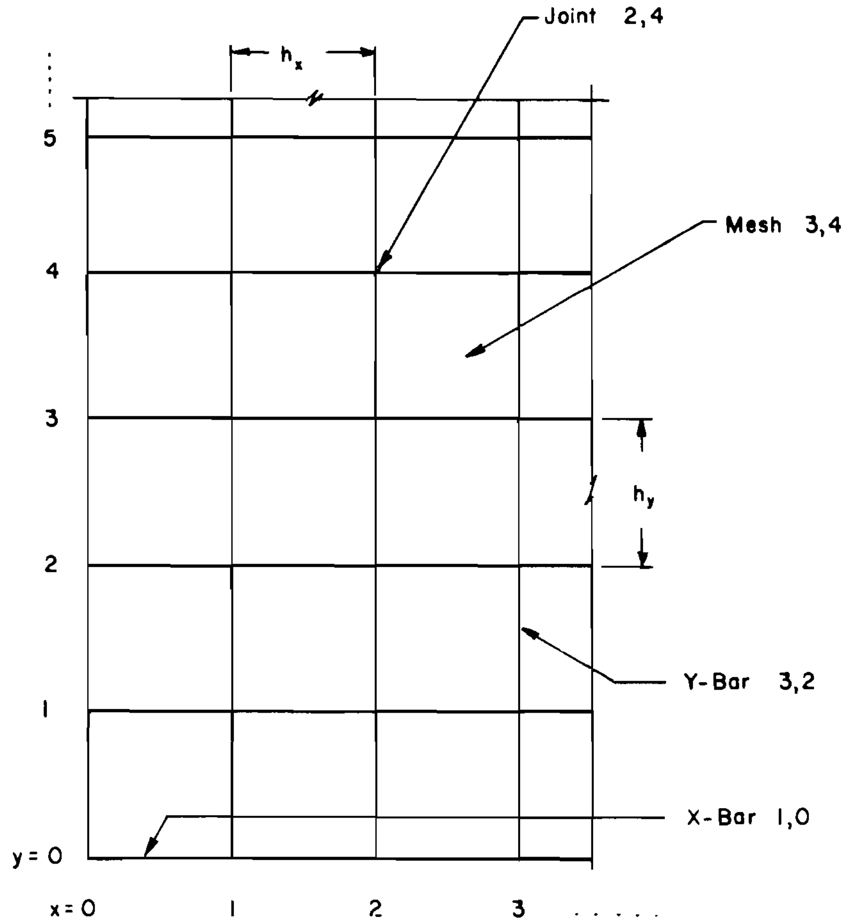
TABLE 5. AXIAL THRUST DATA

Variables:	P^x	P^y
Typical Input Units:	lb	lb

All data in this table are concentrated. Distributed data must be summed over the width of the increment involved. Proportionate values can be used along edges.

Axial tension (+) or compression (-) values P are specified for each x-bar or y-bar. There is no mechanism in the program to automatically distribute the internal effects of any externally applied axial loads.

The axial thrust P^x refers to the force in the x-bar in the x-direction. Since it is a bar value, no coordinate should be used which would specify a P^x value in a bar outside the real plate or slab. The bars are numbered according to the joint number as shown in Fig A1.



Joint Data : D^x , D^y , Q , S

(D^x and D^y are per unit width, Q and S are concentrated)

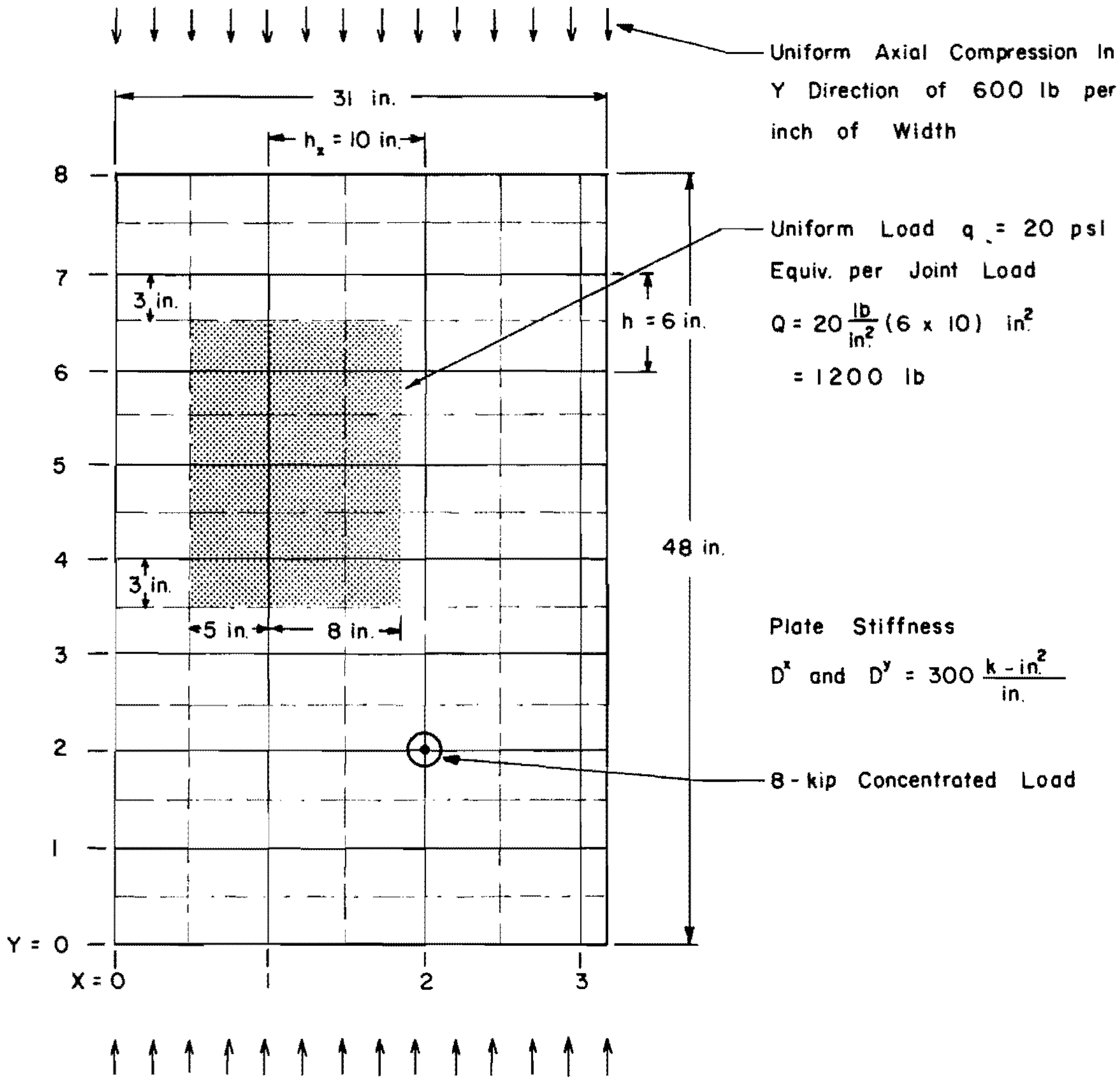
Mesh Data : C

(C is per unit width)

Bar Data : P^x, P^y

(P^x and P^y are concentrated)

Fig A1. Data coordinate numbering system.



From X	From Y	Through X	Through Y	D^x and D^y	Q	P^y
0	0	2	8	7.500E+04		
0	1	2	7	7.500E+04		
1	1	2	7	1.500E+05		
3	0	3	8	9.000E+04		
3	1	3	7	9.000E+04		
1	4	1	6		-1.200E+03	
2	4	2	6		-3.600E+02	
2	2	2	2		-8.000E+03	
0	1	0	8			-3.000E+03
1	1	2	8			-6.000E+03
3	1	3	8			-3.600E+03

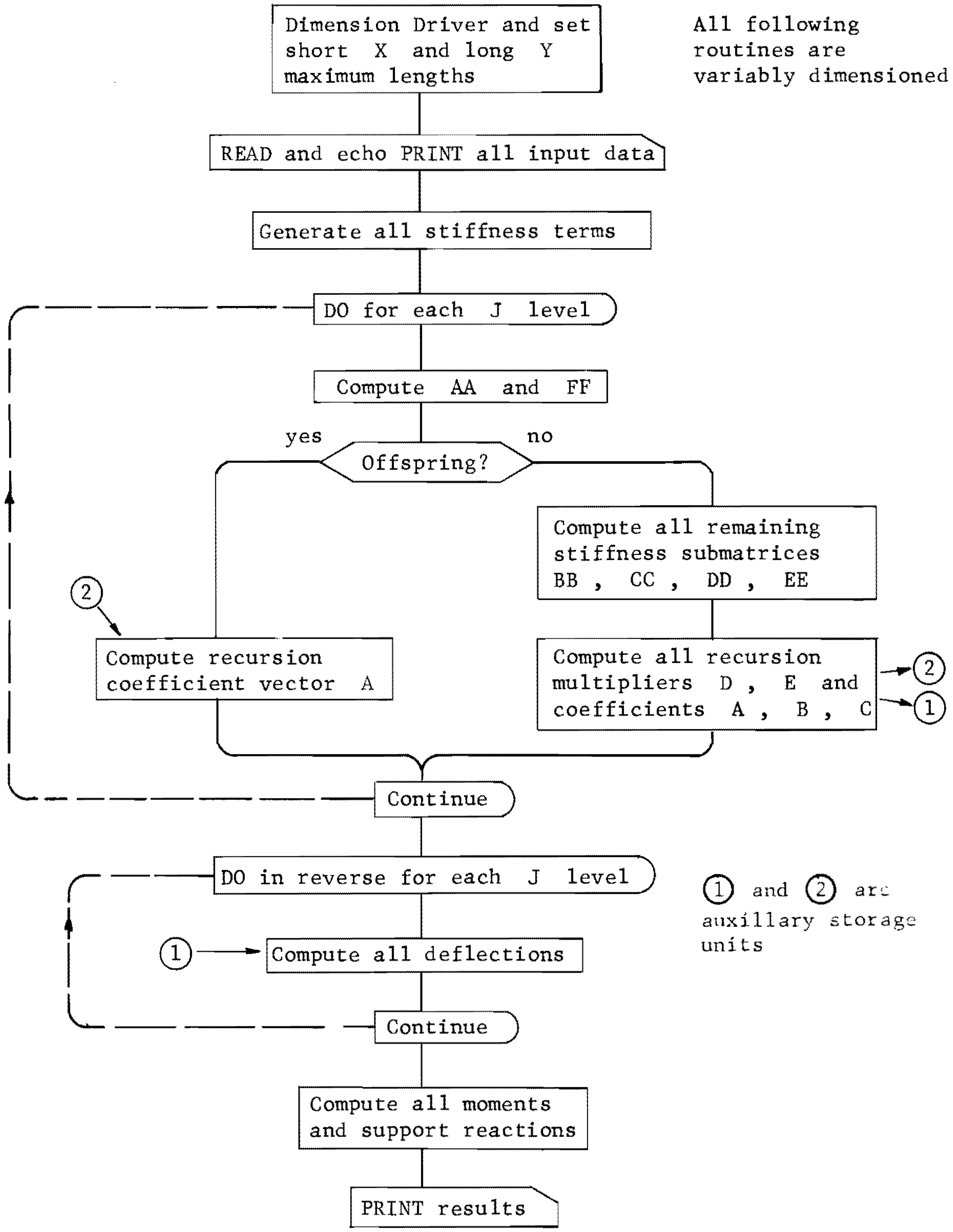
data incomplete for this sample

Fig A2. Sample data input.

APPENDIX 2

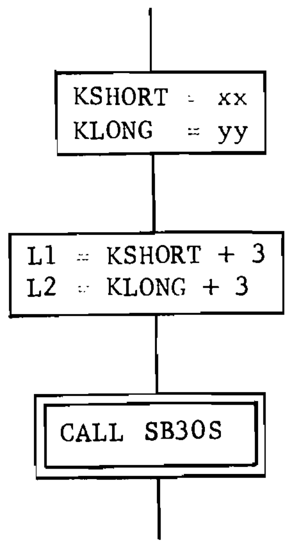
FLOW DIAGRAMS

SUMMARY FLOW DIAGRAM FOR PROGRAM SLAB 30



GENERAL FLOW DIAGRAM FOR SLAB 30

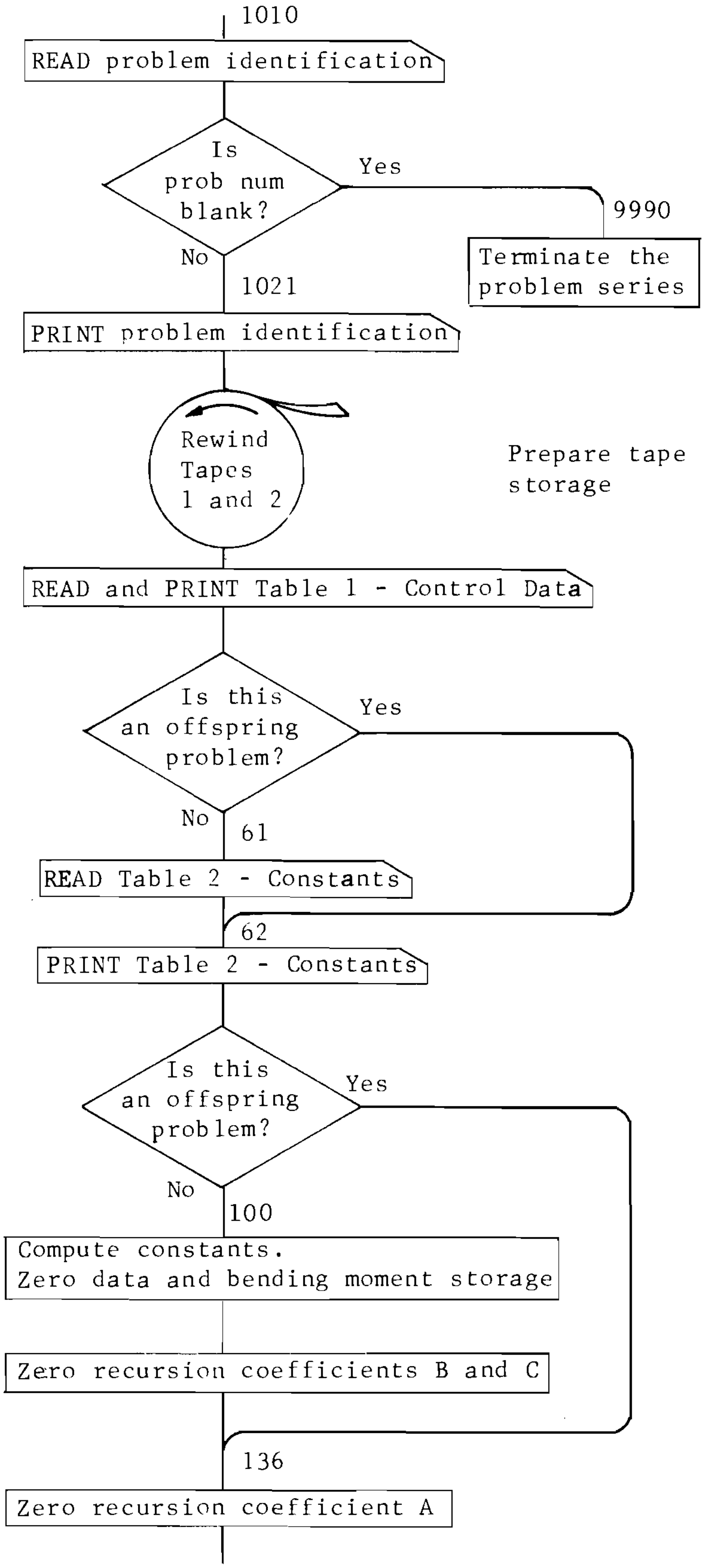
All variables are dimensioned in this main driving routine. For different sized problems only the cards labeled RED in columns 78, 79, and 80 must be changed. The main problem and all subroutines are variably dimensioned.

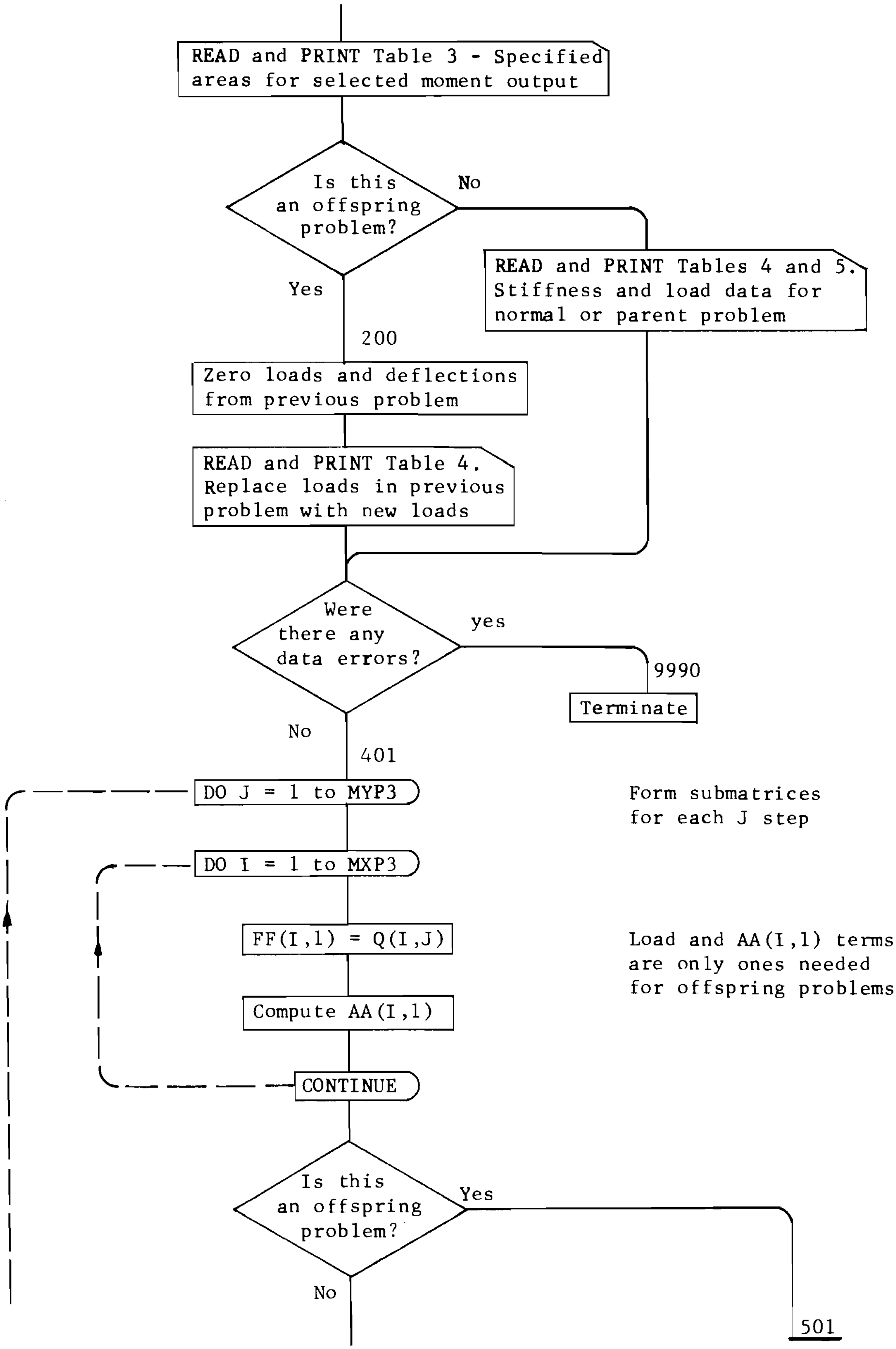


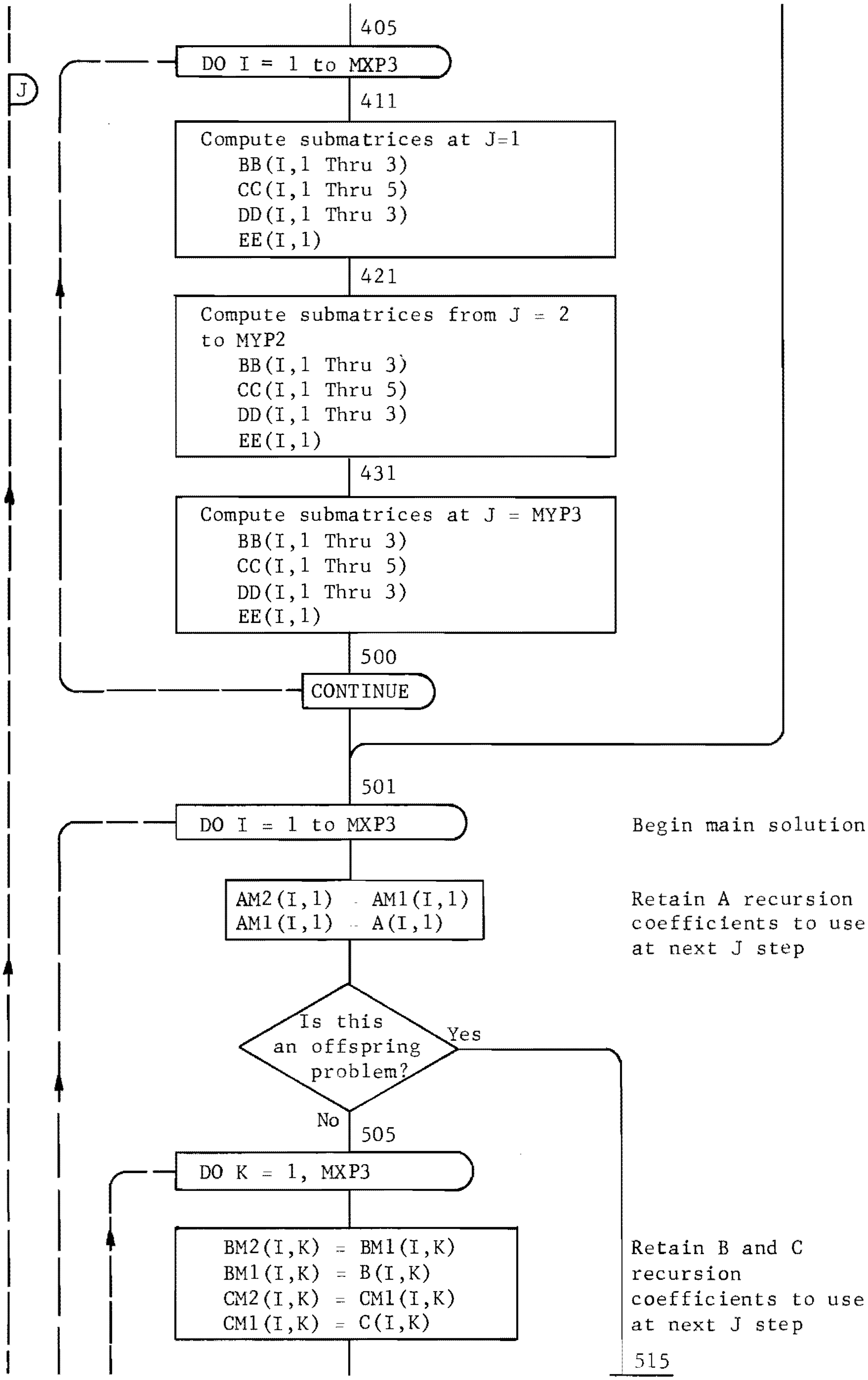
To gain more storage space, an L1 by L2 variable such as CH(L1,L2) may be placed in common. In addition, the variables B and BMX , and C and BMY , may be set equal to each other by an equivalence declaration.

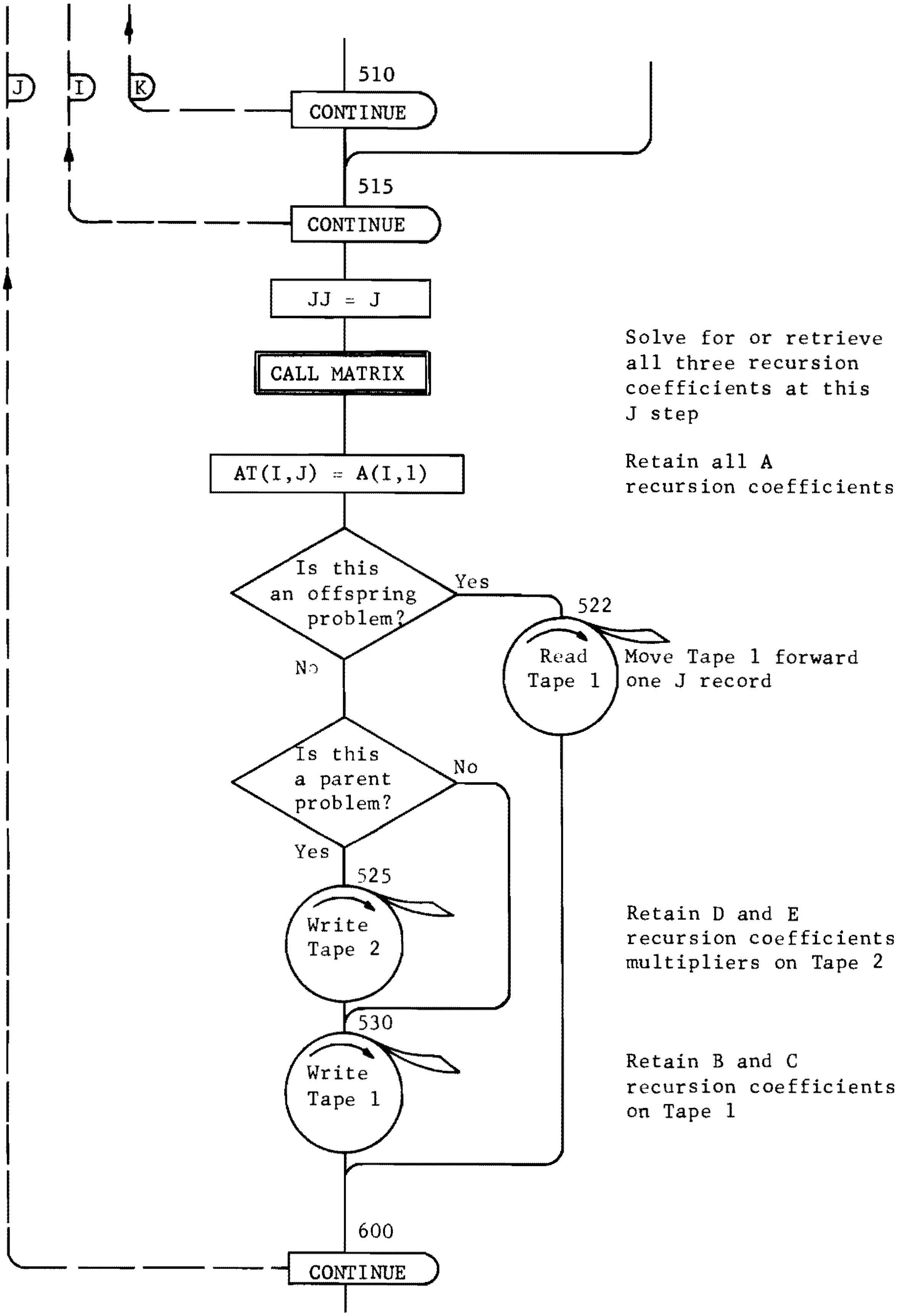
SUBROUTINE SB30S

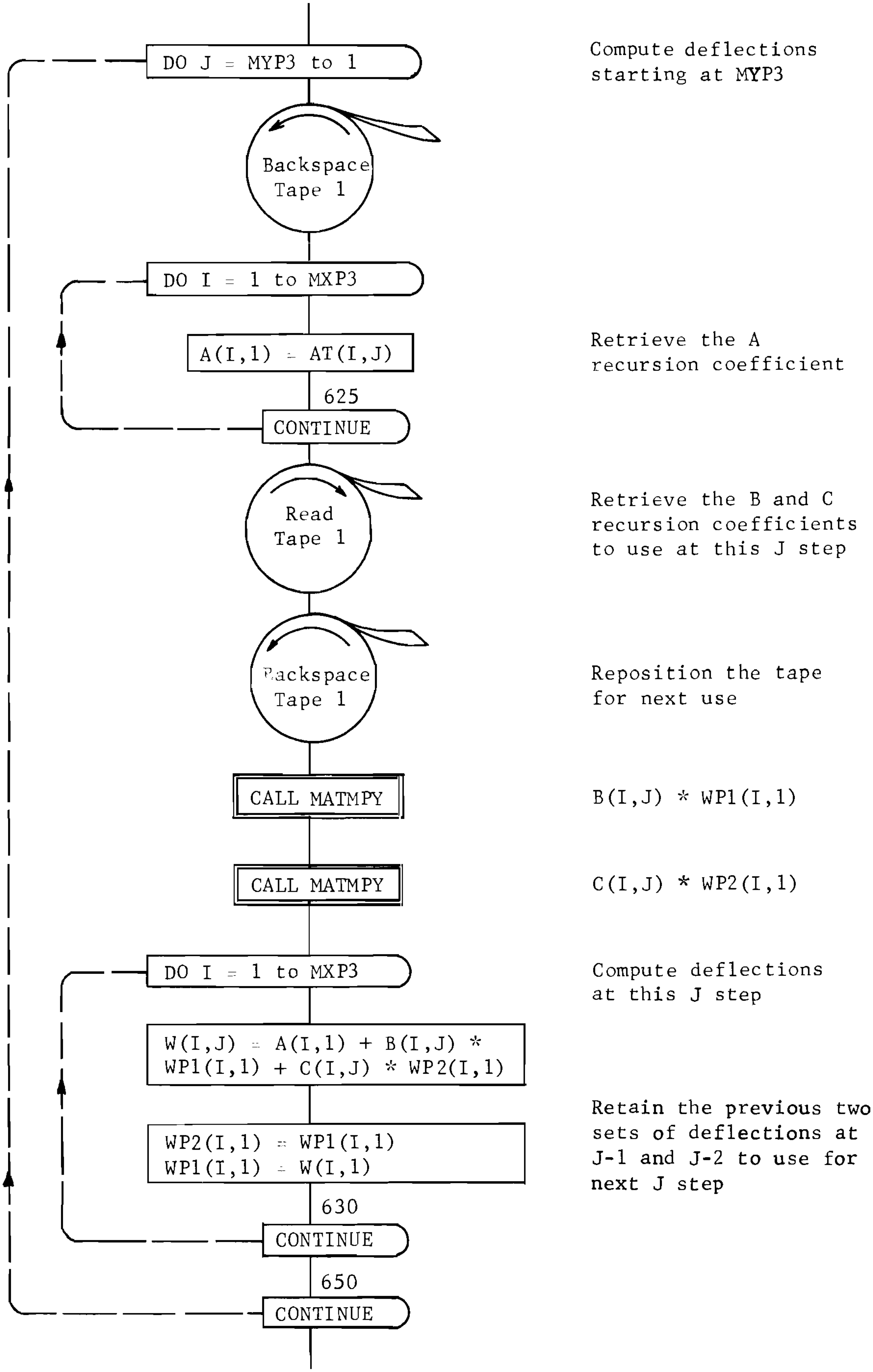
This is the main computational program

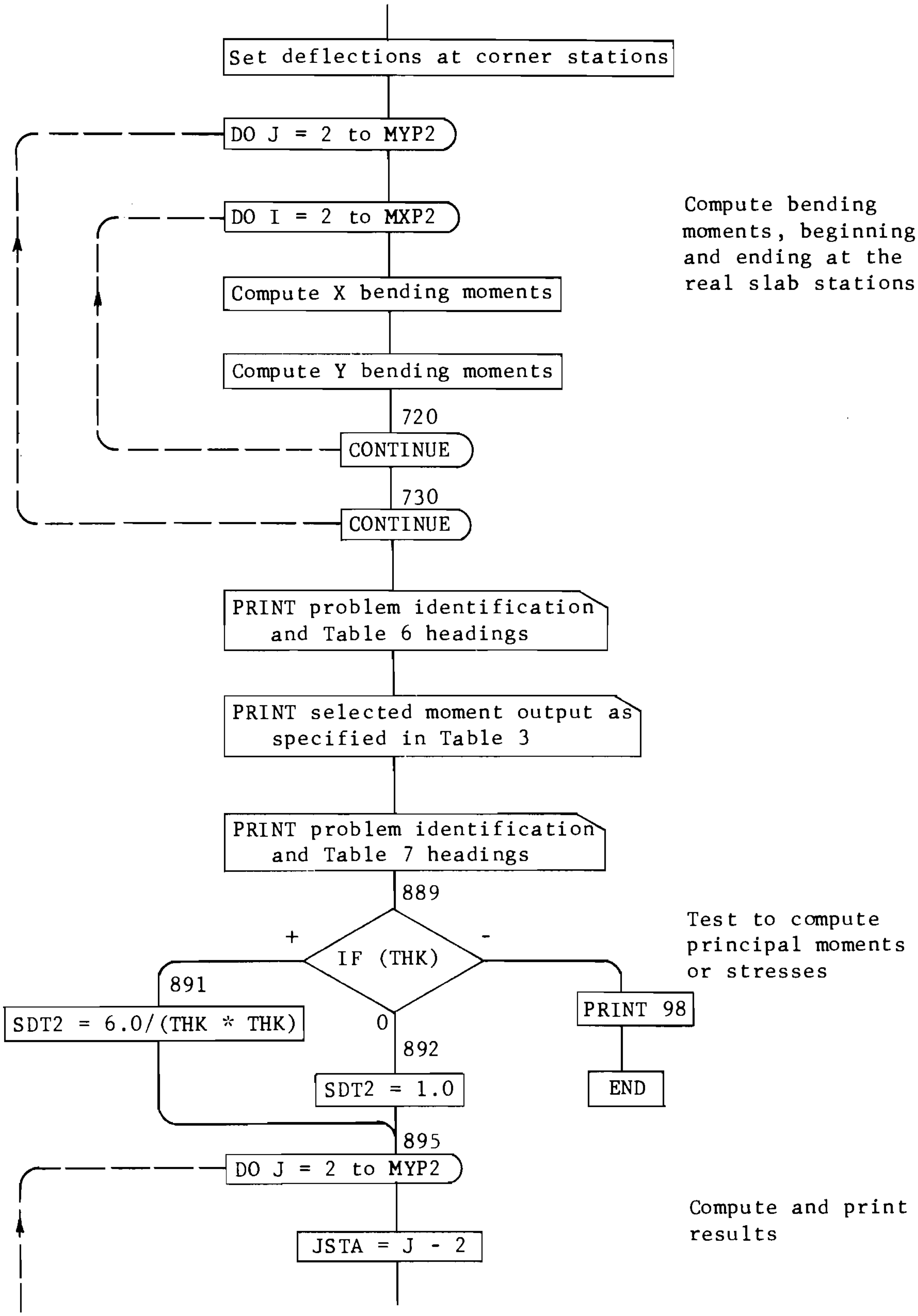


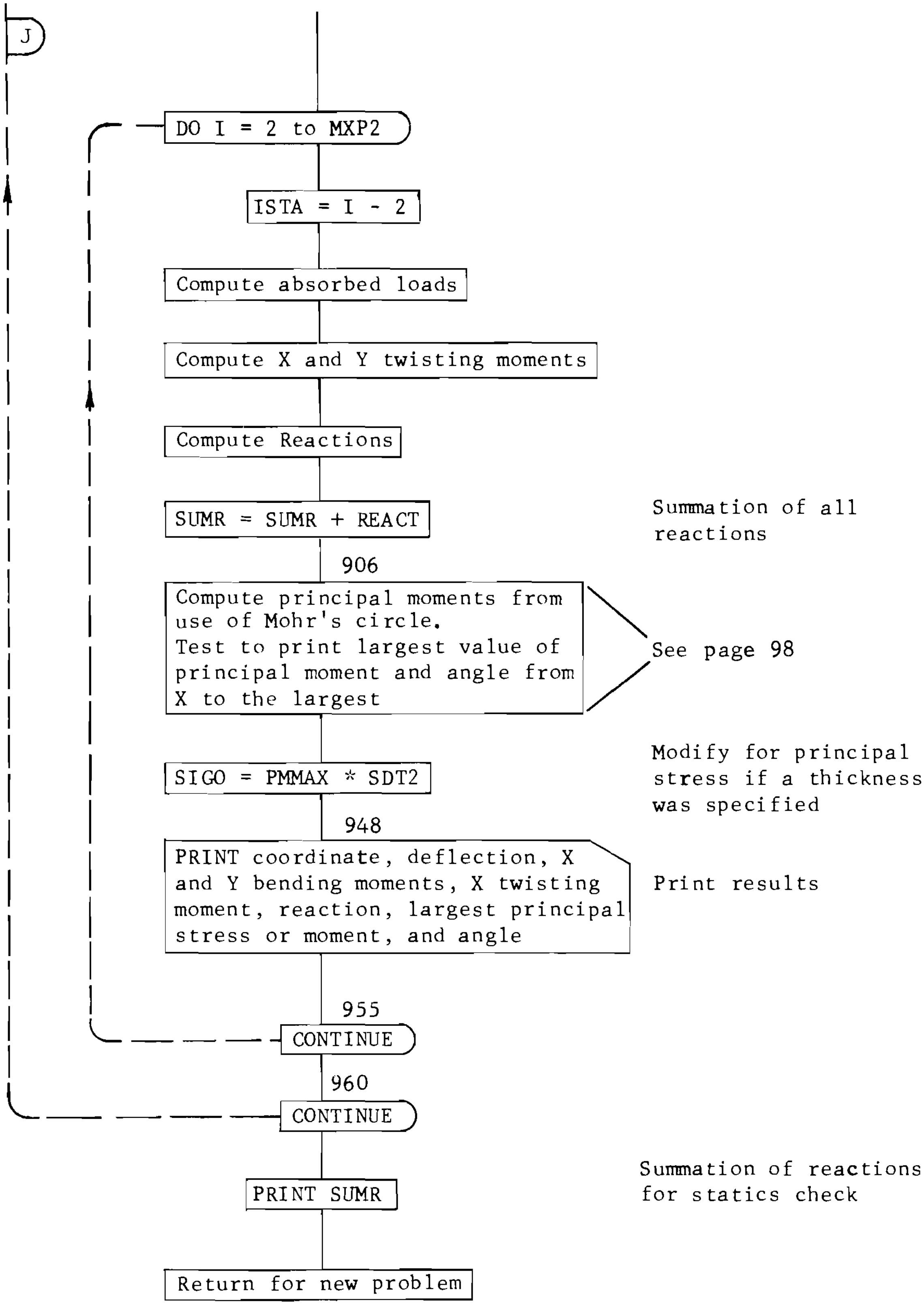

READ and PRINT Table 3 - Specified areas for selected moment output
Is this an offspring problem?
No
READ and PRINT Tables 4 and 5. Stiffness and load data for normal or parent problem
Yes
200
Zero loads and deflections from previous problem
READ and PRINT Table 4. Replace loads in previous problem with new loads
Were there any data errors?
yes
9990
Terminate
No
401
DO J = 1 to MYP3
Form submatrices for each J step
DO I = 1 to MXP3
FF(I,1) = Q(I,J)
Load and AA(I,1) terms are only ones needed for offspring problems
Compute AA(I,1)
CONTINUE
Is this an offspring problem?
Yes
No
501


405
DO I = 1 to MXP3
J
411
Compute submatrices at J=1
BB(I,1 Thru 3)
CC(I,1 Thru 5)
DD(I,1 Thru 3)
EE(I,1)
421
Compute submatrices from J = 2 to MYP2
BB(I,1 Thru 3)
CC(I,1 Thru 5)
DD(I,1 Thru 3)
EE(I,1)
431
Compute submatrices at J = MYP3
BB(I,1 Thru 3)
CC(I,1 Thru 5)
DD(I,1 Thru 3)
EE(I,1)
500
CONTINUE
501
DO I = 1 to MXP3
Begin main solution
AM2(I,1) = AM1(I,1)
AM1(I,1) = A(I,1)
Retain A recursion coefficients to use at next J step
Is this an offspring problem?
Yes
No
505
DO K = 1, MXP3
BM2(I,K) = BM1(I,K)
BM1(I,K) = B(I,K)
CM2(I,K) = CM1(I,K)
CM1(I,K) = C(I,K)
Retain B and C recursion coefficients to use at next J step
515

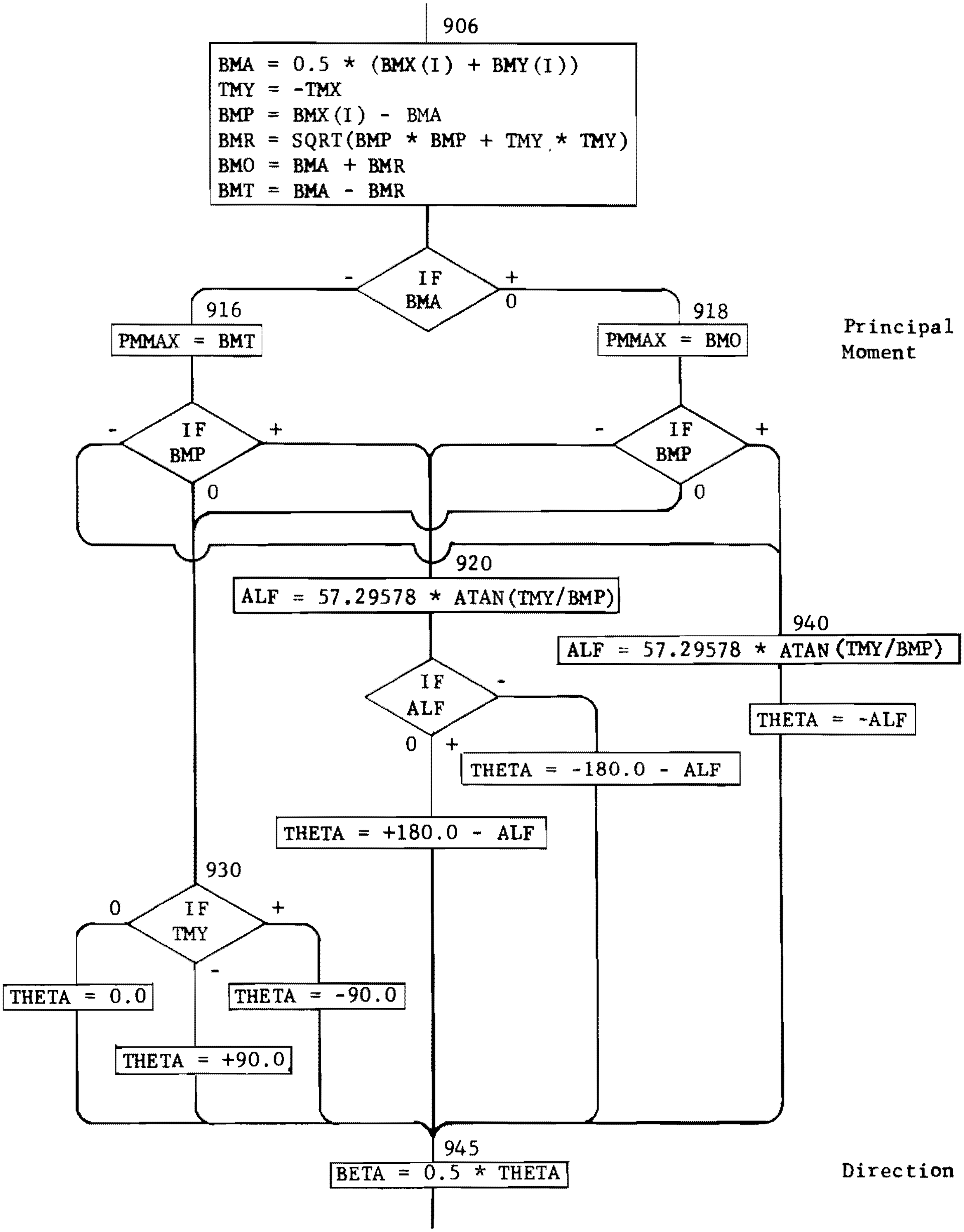

J
I
K
510
CONTINUE
515
CONTINUE
JJ = J
CALL MATRIX
AT(I,J) = A(I,1)
Is this an offspring problem?
Yes
No
522
Read Tape 1
Is this a parent problem?
No
Yes
525
Write Tape 2
530
Write Tape 1
600
CONTINUE
Solve for or retrieve all three recursion coefficients at this J step
Retain all A recursion coefficients
Move Tape 1 forward one J record
Retain D and E recursion coefficients multipliers on Tape 2
Retain B and C recursion coefficients on Tape 1


DO J = MYP3 to 1
Backspace Tape 1
DO I = 1 to MXP3
A(I,1) = AT(I,J)
625
CONTINUE
Read Tape 1
Backspace Tape 1
CALL MATMPY
CALL MATMPY
DO I = 1 to MXP3
W(I,J) = A(I,1) + B(I,J) * WP1(I,1) + C(I,J) * WP2(I,1)
WP2(I,1) = WP1(I,1)
WP1(I,1) = W(I,1)
630
CONTINUE
650
CONTINUE
Compute deflections starting at MYP3
Retrieve the A recursion coefficient
Retrieve the B and C recursion coefficients to use at this J step
Reposition the tape for next use
B(I,J) * WP1(I,1)
C(I,J) * WP2(I,1)
Compute deflections at this J step
Retain the previous two sets of deflections at J-1 and J-2 to use for next J step

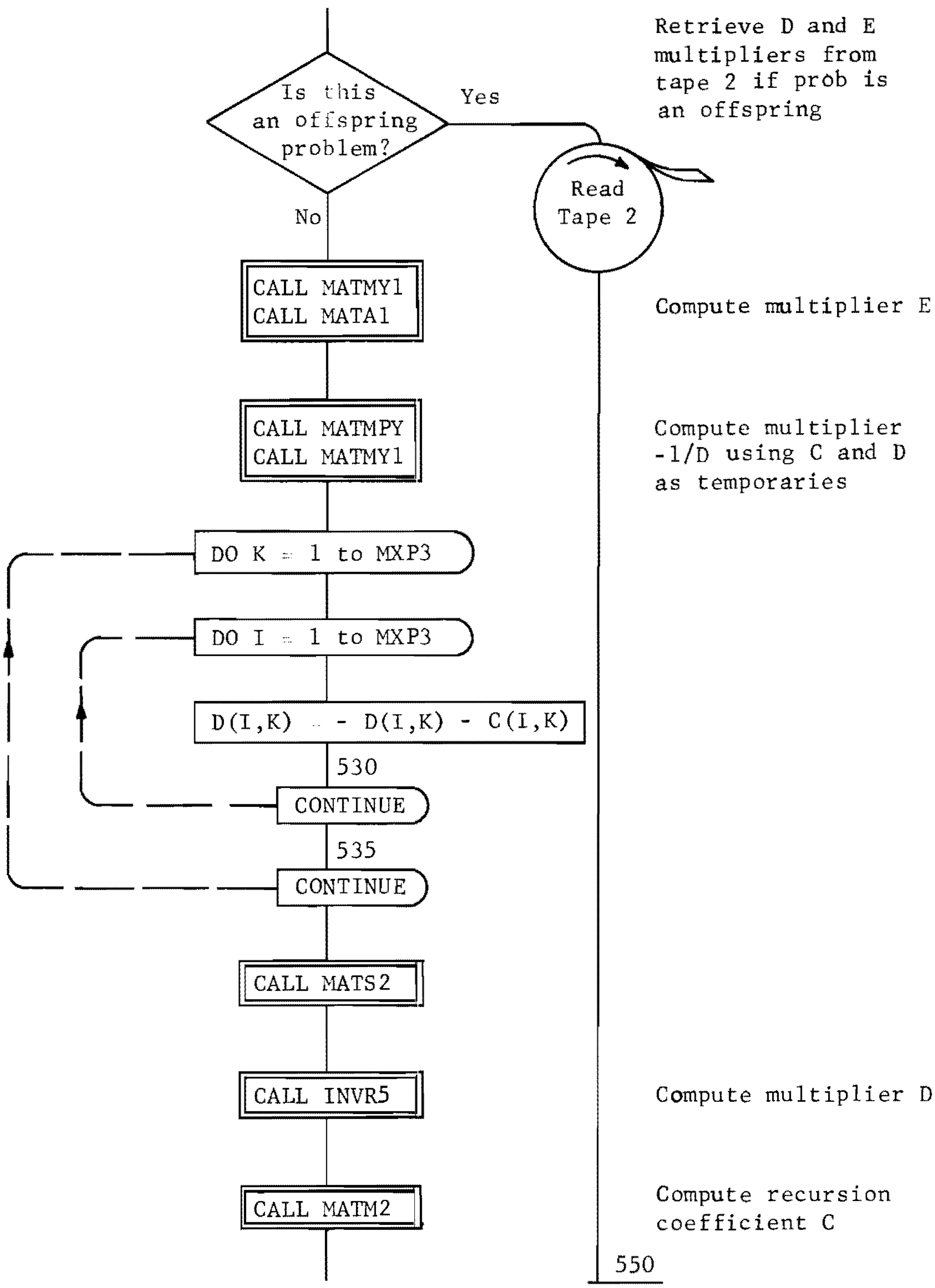

Set deflections at corner stations
DO J = 2 to MYP2
DO I = 2 to MXP2
Compute X bending moments
Compute Y bending moments
720
CONTINUE
730
CONTINUE
Compute bending moments, beginning and ending at the real slab stations
PRINT problem identification and Table 6 headings
PRINT selected moment output as specified in Table 3
PRINT problem identification and Table 7 headings
889
IF (THK)
+
-
0
Test to compute principal moments or stresses
891
SDT2 = 6.0/(THK * THK)
892
SDT2 = 1.0
PRINT 98
END
895
DO J = 2 to MYP2
JSTA = J - 2
Compute and print results

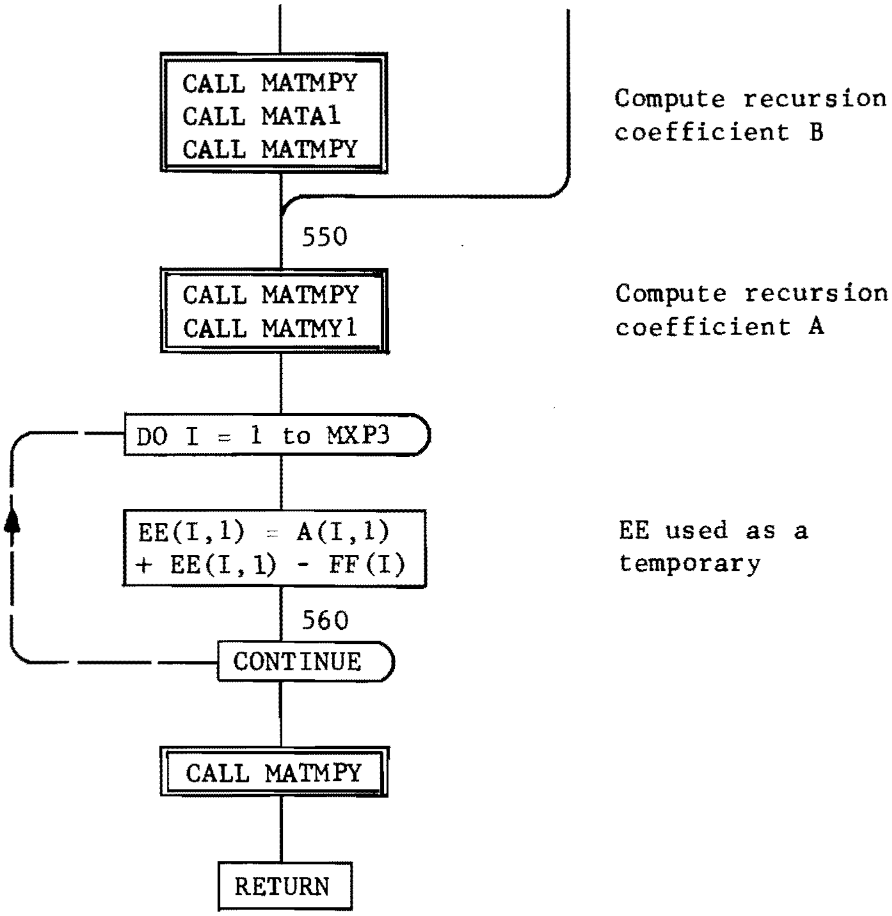

J
DO I = 2 to MXP2
ISTA = I - 2
Compute absorbed loads
Compute X and Y twisting moments
Compute Reactions
SUMR = SUMR + REACT
Summation of all reactions
906
Compute principal moments from use of Mohr's circle. Test to print largest value of principal moment and angle from X to the largest
See page 98
SIGO = PMMAX * SDT2
Modify for principal stress if a thickness was specified
948
PRINT coordinate, deflection, X and Y bending moments, X twisting moment, reaction, largest principal stress or moment, and angle
Print results
955
CONTINUE
960
CONTINUE
PRINT SUMR
Summation of reactions for statics check
Return for new problem

Compute Principal Moment and Direction



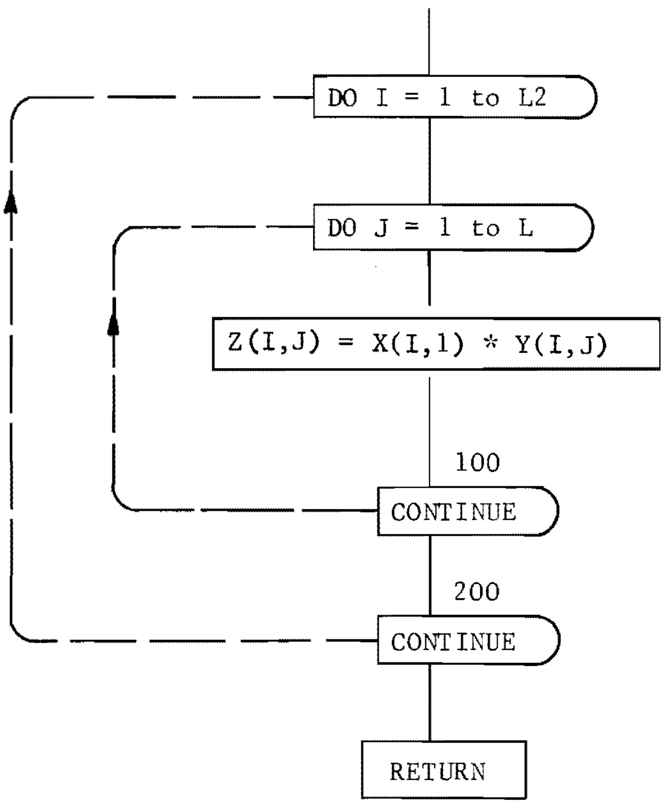
SUBROUTINE MATRIX




CALL MATMPY
CALL MATA1
CALL MATMPY
Compute recursion coefficient B
550
CALL MATMPY
CALL MATMY1
Compute recursion coefficient A
DO I = 1 to MXP3
EE(I,1) = A(I,1) + EE(I,1) - FF(I)
EE used as a temporary
560
CONTINUE
CALL MATMPY
RETURN

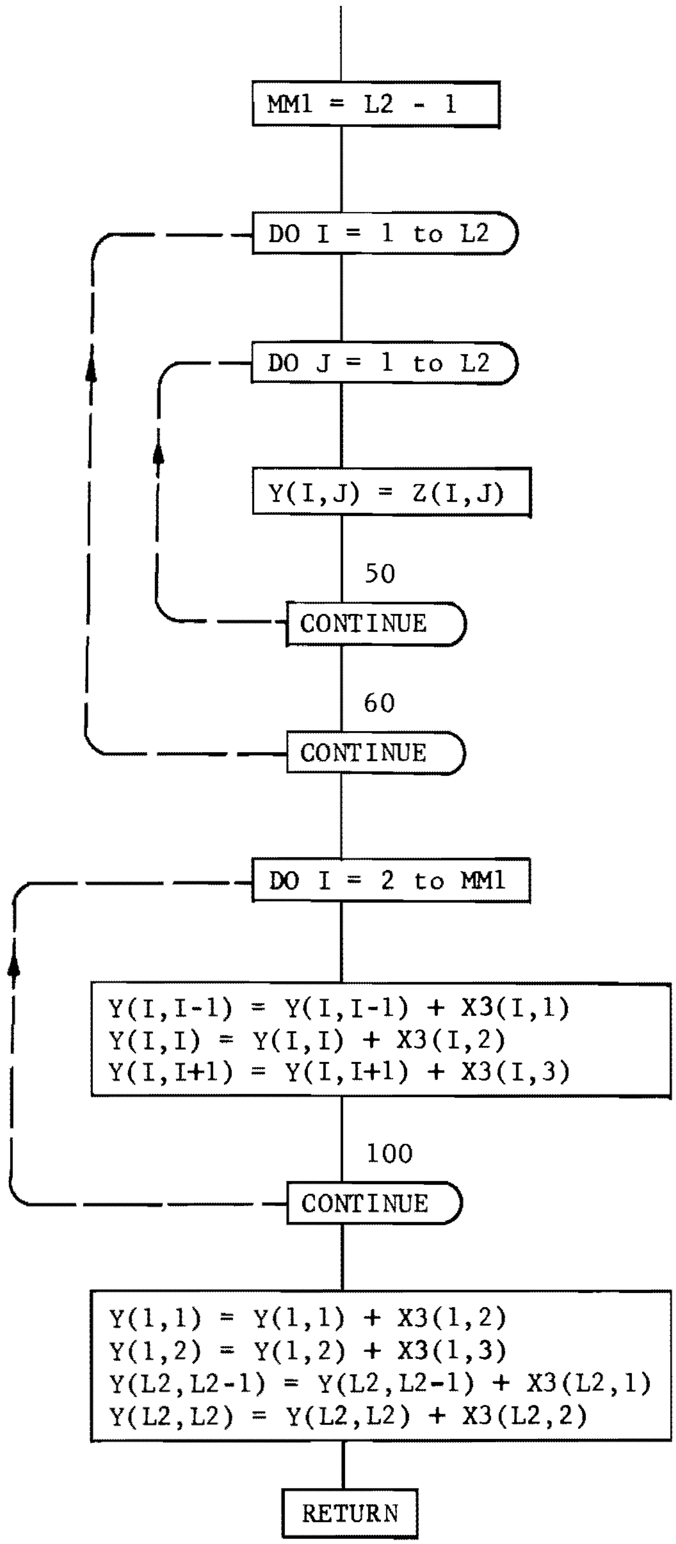
SUBROUTINE MATMY1

This subroutine multiplies a one-wide diagonal matrix by a square matrix or if L = 1, a one-wide diagonal matrix by another one-wide diagonal matrix



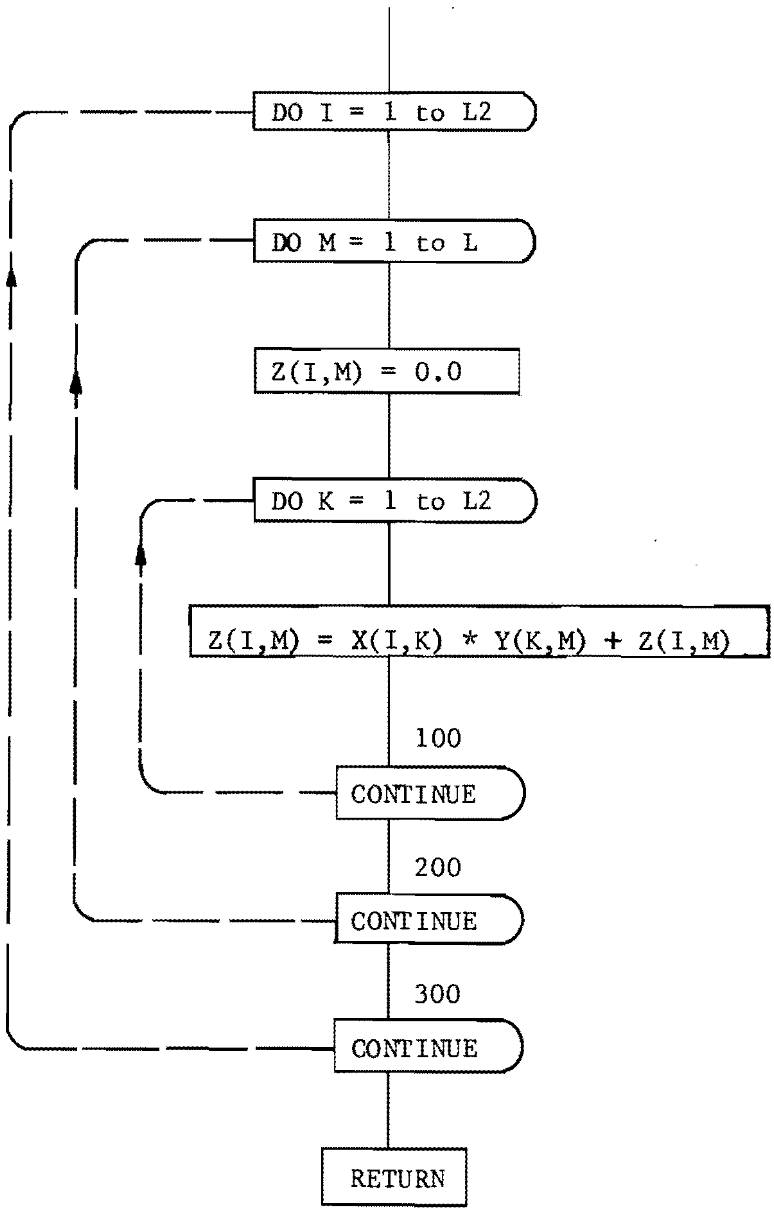
SUBROUTINE MATA1

This subroutine adds a square matrix
to a three-wide diagonally banded matrix.



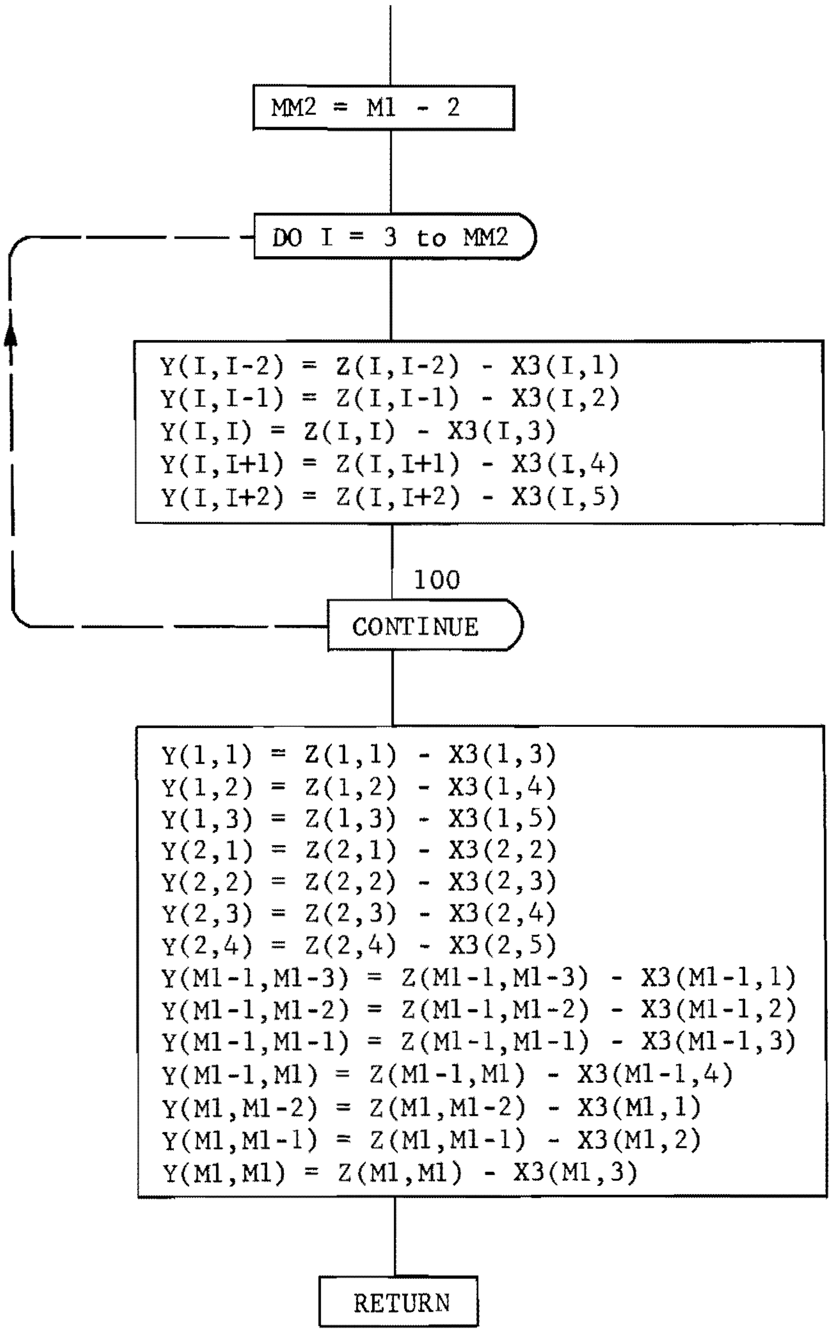
SUBROUTINE MATMPY

This subroutine multiplies a square matrix by another square matrix or if L = 1, a square matrix by a column vector.



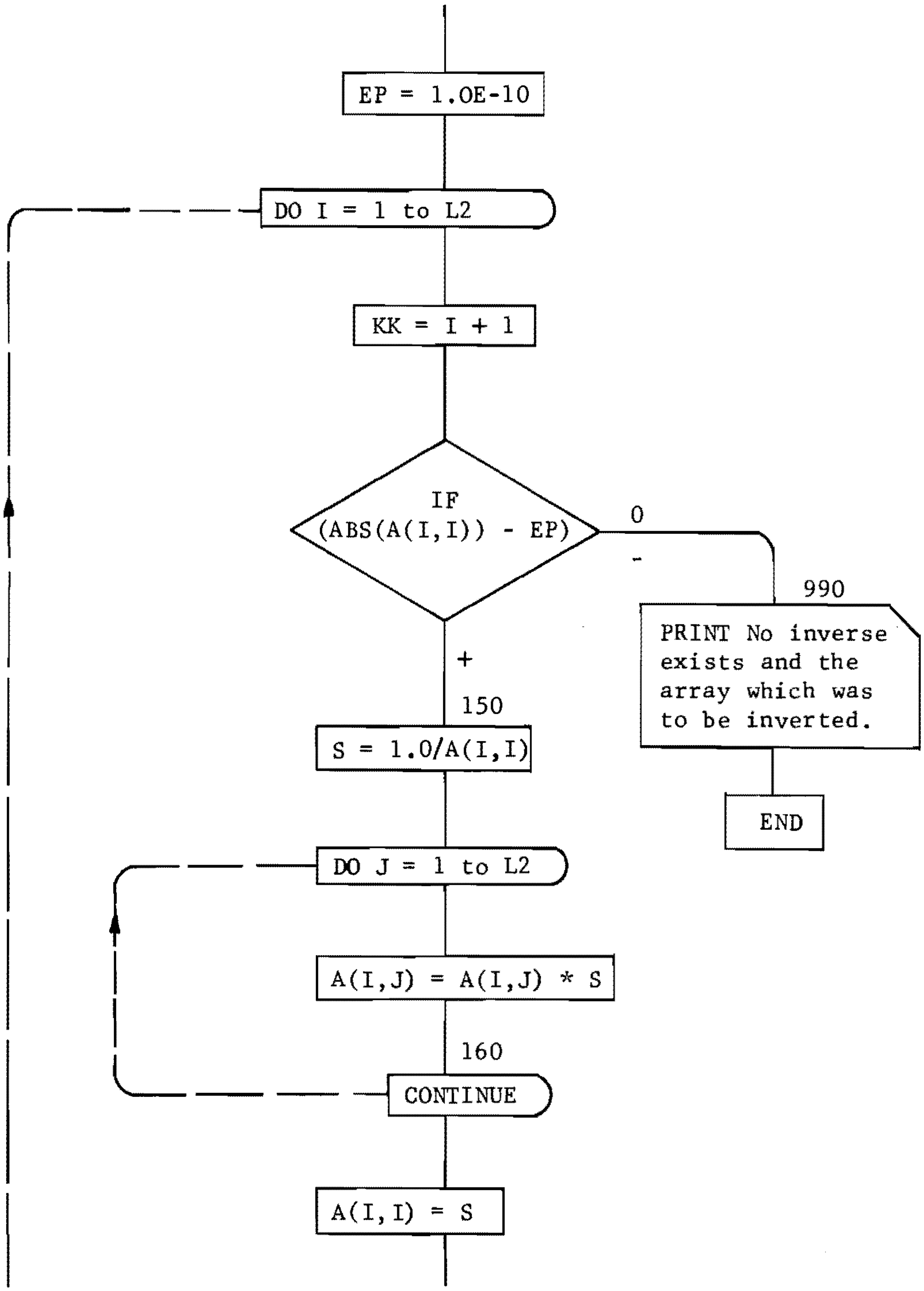
SUBROUTINE MATS2

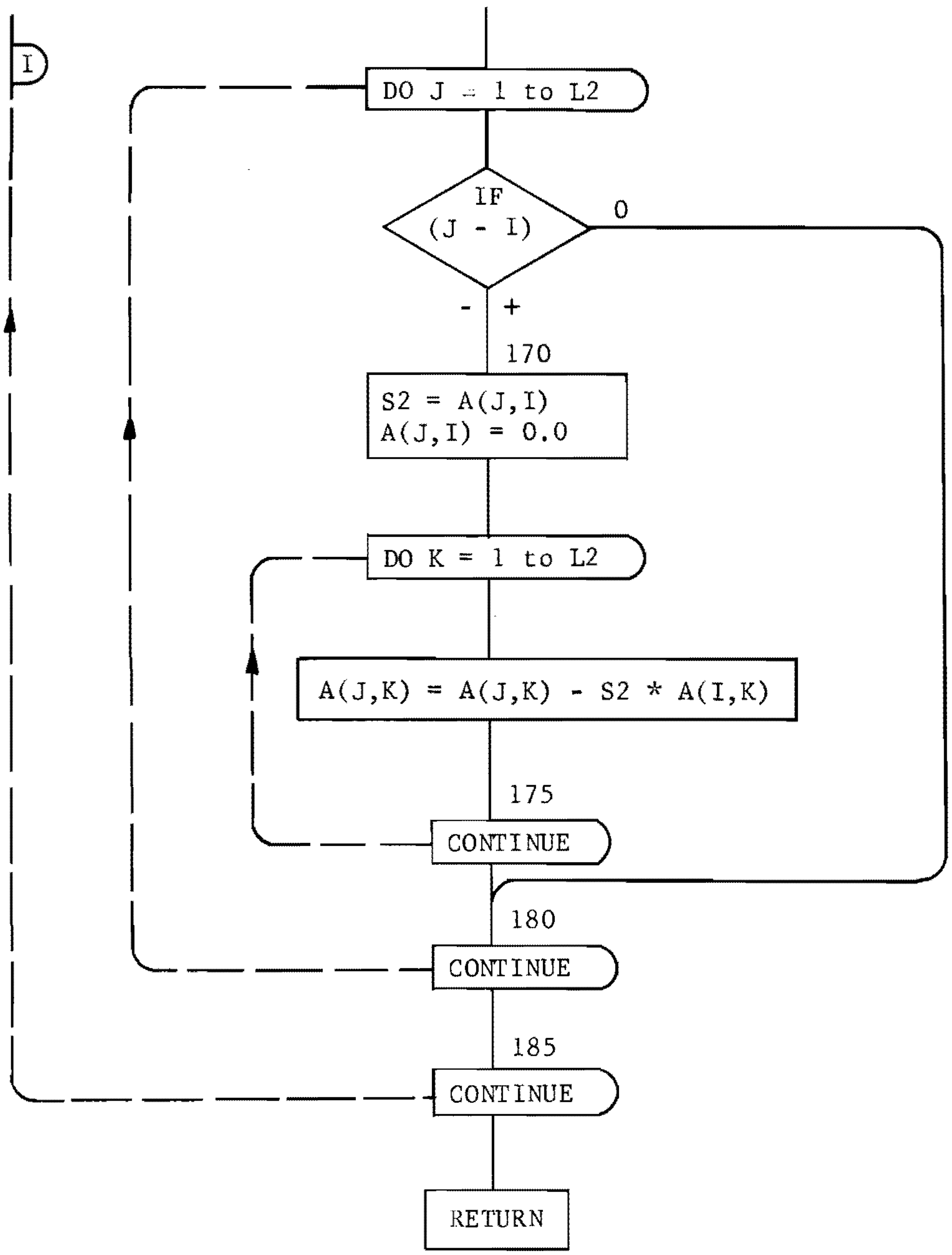
This subroutine subtracts a five-wide diagonally banded matrix from a square matrix.



SUBROUTINE INVER5

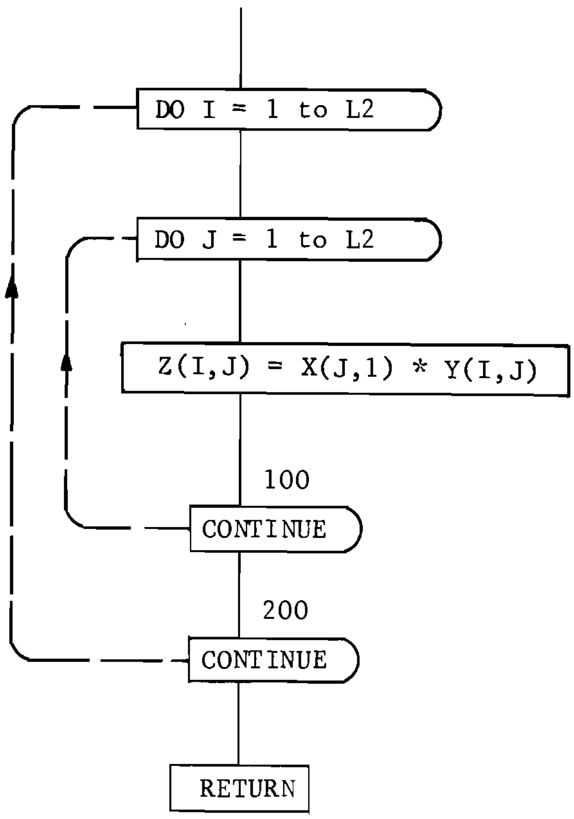
This subroutine inverts a square matrix.




I
DO J = 1 to L2
IF
(J - I)
0
-
+
170
S2 = A(J,I)
A(J,I) = 0.0
DO K = 1 to L2
A(J,K) = A(J,K) - S2 * A(I,K)
175
CONTINUE
180
CONTINUE
185
CONTINUE
RETURN

SUBROUTINE MATM2

This subroutine multiplies a square matrix by a one-wide diagonal matrix.



SUBROUTINE TIC TOC is a CDC 6600 dependent routine that prints the elapsed computer time for each problem. It is suggested that for other computer systems, a similar routine or call for time be added at the appropriate locations.

APPENDIX 3

GLOSSARY OF NOTATION

```
C         NOTATION FOR SLAB 30
C
C         A( ,1)                  RECURSION COEFFICIENT                       12NO9
C         AA( ,1)                 COEFF IN STIFFNESS MATRIX                   19AP8
C         ALF                     ANGLE ON MOHRS CIRCLE                       17NO9
C         AM1( ,1)                RECURSION COEFFICIENT A( ,1) AT J-1         12NO9
C         AM2( ,1)                RECURSION COEFFICIENT A( ,1) AT J-2         12NO9
C         AN1( ), AN2( )          IDENTIFICATION AND REMARKS (ALPHA - NUM)    28DE7
C         AT( , )                 TEMP STORAGE FOR A( ,1) RECURSION COEFF     12NO9
C         B( , )                  RECURSION COEFFICIENT                       12NO9
C         BB( ,3)                 COEFFS IN STIFFNESS MATRIX                  03JA8
C         BETA                    HALF THETA (COUNTER CLOCKWISE IS +)         17NO9
C         BMA                     AVERAGE OF X AND Y BENDING MOMENTS          28DE7
C         BMO                     FIRST PRINCIPAL BENDING MOMENT              03JA8
C         BMP                     BMX - BMA                                   28DE7
C         BMR                     RADIUS OF MOHRS CIRCLE                      28DE7
C         BMT                     SECOND PRINCIPAL BENDING MOMENT             03JA8
C         BMX( , )                BENDING MOMENT IN THE X DIRECTION           03JA8
C         BMY( , )                BENDING MOMENT IN THE Y DIRECTION           03JA8
C         BM1( , )                RECURSION COEFFICIENT B( , ) AT J-1         12NO9
C         BM2( , )                RECURSION COEFFICIENT B( , ) AT J-2         12NO9
C         C( , )                  RECURSION COEFFICIENT                       12NO9
C         CC( ,5)                 COEFFS IN STIFFNESS MATRIX                  03JA8
C         CH( , )                 TWISTING STIFFNESS PER  UNIT WIDTH          05JE8
C         CHN                     INPUT VALUE OF TWISTING STIFFNESS           05JE8
C         CM1( , )                RECURSION COEFFICIENT C( , ) AT J-1         12NO9
C         CM2( , )                RECURSION COEFFICIENT C( , ) AT J-2         12NO9
C         CRD( )                  CROSS BENDING STIFFNESS FOR PR EFFECTS      30JL8
C         D( , )                  RECURSION MULTIPLIER                        12NO9
C         DD( ,3)                 COEFFS IN STIFFNESS MATRIX                  03JA8
C         DX( , ) , DY( , )       BENDING STIFFNESSES PER UNIT WIDTH          28DE7
C         DXN , DYN               INPUT VALUES OF BENDING STIFFNESSES         03JA8
C         E( )                    RECURSION MULTIPLIER                        12NO9
C         EE( )                   COEFF IN  STIFFNESS MATRIX                  03JA8
C         ER                      A TEST TO ELIMINATE REMNANT REACTIONS       28DE7
C         FF( )                   COEFF IN LOAD VECTOR                        03JA8
C         HX                      INCREMENT LENGTH IN X DIRECTION             03JA8
C         HXDHY                   HX DIVIDED BY HY                            28DE7
C         HXDHY3                  HX DIVIDED BY HY CUBED                      28DE7
C         HY                      INCREMENT LENGTH IN Y DIRECTION             28DE7
C         HYDHX                   HY DIVIDED BY HX                            28DE7
C         HYDHX3                  HY DIVIDED BY HX CUBED                      28DE7
C         I                       STATION NUMBER IN X DIRECTION               28DE7
C         IN1                     INITIAL EXTERNAL X COORDINATE               03JA8
C         IN2                     FINAL EXTERNAL X COORDINATE                 28DE7
C         IN13( )                 INITIAL EXTERNAL X COORDINATE IN TABLE 3    12NO9
C         IN23( )                 FINAL EXTERNAL X COORDINATE IN TABLE 3      12NO9
C         ISTA                    EXTERNAL X COORDINATE NUMBER                12NO9
C         ITEST( )                ALPHANUMERIC BLANKS USED TO TERMINATE       12NO9
C                                 THE PROGRAM                                 12NO9
C         I1 , I2                 IN1 AND IN2 PLUS 2                          28DE7
C         J                       STATION NUMBER IN Y DIRECTION               28DE7
C         JJ                      J FOR SUBROUTINE MATRIX                     28DE7
C         JN1                     INITIAL EXTERNAL Y COORDINATE               28DE7
C         JN2                     FINAL EXTERNAL Y  COORDINATE                28DE7
```

```
C          JN13( )              INITIAL EXTERNAL Y COORDINATE IN TABLE 3  12NO9
C          JN23( )              FINAL EXTERNAL Y COORDINATE IN TABLE 3    12NO9
C          JSTA                 EXTERNAL Y COORDINATE NUMBER              12NO9
C          J1 , J2              JN1 AND JN2 PLUS  2                       28DE7
C          K                    DO LOOP INDEX USED INSTEAD OF I           03JA8
C          KASEX( )             OPTION FOR SELECTED PRINT OF BMX          12NO9
C          KASEY( )             OPTION FOR SELECTED PRINT OF BMY          12NO9
C          KLONG                MAXIMUM REAL Y DIMENSION SIZE             01AG8
C          KSHORT               MAXIMUM REAL X DIMENSION SIZE             01AG8
C          KML                  KEEP MULTIPLE LOADING FOR ERROR CHECKS    28DE7
C          KPROB( )             PROBLEM NUMBER FROM PARENT                12NO9
C          LL                   DO LOOP INDEX FOR REVERSED J              03JA8
C          L2                   KLONG+3,  USED FOR VARIABLE DIMENSIONING  19AP8
C          L1                   KSHORT+3, USED FOR VARIABLE DIMENSIONING  19AP8
C          ML                   MULTIPLE LOADING SWITCH                   03JA8
C          MX                   NUMBER OF INCREMENTS IN X DIRECTION       28DE7
C          MXP1 THRU MXP5       MX + 1 THRU MX + 5                        01AG8
C          MY                   NUMBER OF INCREMENTS IN Y DIRECTION       28DE7
C          MYP1 THRU MYP5       MY + 1 THRU MY + 5                        01AG8
C          N                    INDEX FOR READING CARDS                   03JA8
C          NCT2                 NUMBER OF CARDS IN TABLE 2                03JA8
C          NCT3                 NUMBER OF CARDS IN TABLE 3                01AG8
C          NDE                  NUMBER OF DATA ERRORS                     03JA8
C          NPROB( )             PROBLEM NUMBER (PROG STOPS IF BLANK)      12NO9
C          ODHX                 ONE DIVIDED BY HX                         28DE7
C          ODHXHY               ONE DIVIDED BY HX TIMES HY                28DE7
C          ODHX2                ONE DIVIDED BY HX SQUARED                 03JA8
C          ODHY                 ONE DIVIDED BY HY                         28DE7
C          ODHY2                ONE DIVIDED BY HY SQUARED                 03JA8
C          PDHXHY               POISSONS RATIO DIVIDED BY HX TIMES HY     28DE7
C          PMMAX                LARGEST PRINCIPAL MOMENT                  03JA8
C          PR                   POISSONS RATIO                            28DE7
C          PX( , ) , PY( , )    AXIAL TENSIONS IN X AND Y DIRECTIONS      01AG8
C          PXN , PYN            INPUT VALUES OF X AND Y AXIAL TENSIONS    01AG8
C          Q( , )               TRANSVERSE LOAD PER JOINT                 01AG8
C          QBMX , QBMY          LOAD ABSORBED IN BENDING                  01AG8
C          QN                   INPUT VALUE OF TRANSVERSE LOAD            03JA8
C          QPX , QPY            LAOD ABSORBED DUE TO AXIAL TENSIONS       01AG8
C          QTMX , QTMY          LOAD ABSORBED IN TWISTING                 01AG8
C          REACT                SUPPORT REACTION PER JOINT                01AG8
C          S( , )               SPRING SUPPORT, VALUE PER JOINT           01AG8
C          SDT2                 MOMENT MULTIPLIER FOR PLATE STRESS        03JA8
C          SIGO                 LARGEST PRINCIPAL MOMENT OR STRESS        03JA8
C          SN                   INPUT VALUE OF SUPPORT SPRINGS            28DE7
C          SUMR                 SUMMATION OF REACTIONS FOR STATICS CHECK  03JA8
C          THETA                MOHRS CIRCLE ANGLE BETWEEN X AND          17NO9
C                               PRINCIPAL MOMENT                          17NO9
C          THK                  THICKNESS OF SLAB FOR STRESS CALCULATIONS 03JA8
C          TMX                  TWISTING MOMENT IN X DIRECTION (ABOUT Y)  12NO9
C          TMY                  TWISTING MOMENT IN Y DIRECTION (ABOUT X)  12NO9
C          W( , )               DEFLECTION AT EACH JOINT                  01AG8
C          WP1( ,1)             DEFLECTION W( , ) AT J+1                  01AG8
C          WP2( ,1)             DEFLECTION W( , ) AT J+2                  01AG8
C          WSUM1, WSUM2         MULTIPLIERS FOR BMX AND BMY               03JA8
C          WSUM3                MULTIPLIER FOR TMX AND TMY                03JA8
```

APPENDIX 4

LISTING OF PROGRAM DECK

```
      PROGRAM SLAB30 ( INPUT, OUTPUT, TAPE1, TAPE2 )
C
C-----FOR DIFFERENT SIZED PROBLEMS ONLY THE DIMENSION CARDS OF THIS
C     DRIVER NEED BE CHANGED.  FOR EXAMPLE,  AA(S+3,1) , BB(S+3,3) ,
C     CC(S+3,5) , B(S+3,S+3) , BMX(S+3,L+3)   WHERE S AND L REFER
C     TO THE SHORT AND LONG LENGTHS OF THE REAL PROBLEM.
C     ALSO CHANGE KSHORT AND KLONG TO EQUAL THE REAL X AND Y STATIONS.
C
C-----THIS PROGRAM IS NOW DIMENSIONED TO SOLVE A 20 BY  40 GRID.         RE-DIMEN
C
C
C-----THIS PROGRAM WILL OPERATE ON EITHER CDC6600 OR IBM360/50 SYSTEMS.
C     THOSE CARDS NEEDED TO OPERATE ON THE IBM360/50 ARE INCLUDED AS
C     FOLLOWING COMPANION CARDS TO THE CDC CARDS AND HAVE A C IN COLUMN
C     ONE AND THE SYMBOLS IBM IN COLUMNS 78 THRU 80. OTHER ADDITIONAL
C     CARDS SUCH AS THE SELECTIVE DOUBLE PRECISION STATEMENTS ARE ALSO
C     TAGGED WITH IBM AND NULLED WITH A C. WHEN CONVERTING TO THE
C     IBM360/50 SYSTEM, THE COMPANION CDC6600 CARDS SHOULD BE RETAINED
C     AND NULLED WITH AN ADDED C.
C
C     DOUBLE PRECISION  AA,    BB,    CC,    DD,    EE,    FF,     W,    26SE9IBM
C    1                   A,   AM1,   AM2,     B,   BM1,   BM2,   WP1,    26SE9IBM
C    2                   C,   CM1,   CM2,     D,     E,    AT,   WP2,    26SE9IBM
C    3                 ALF,  BETA,   BMA,   BMO,   BMP,   BMR,   BMT,    26SE9IBM
C    4                        CRD,                  ER,    HX, HXDHY,    26SE9IBM
C    5            HXDHY3,      HY, HYDHX,HYDHX3, ODHX,ODHXHY, ODHX2,     26SE9IBM
C    6            PDHXHY,      PI, PMMAX,    PR,                QBMX,    26SE9IBM
C    7               QBMY, REACT,  SDT2,  SIGO,         SUMR, THETA,     26SE9IBM
C    8                THK,    TMA,   TMX,   TMY,WSUM1, WSUM2, WSUM3,     26SE9IBM
C    9                       QPX,    QPY,  QTMX, QTMY                    26SE9IBM
      DIMENSION                       AA( 23 , 1  ),      EE( 23 , 1  ),  RE-DIMEN
     1          FF( 23 , 1  ),         A( 23 , 1  ),     AM1( 23 , 1  ),  RE-DIMEN
     2         AM2( 23 , 1  ),       WP1( 23 , 1  ),     WP2( 23 , 1  ),  RE-DIMEN
     3          BB( 23 , 3  ),        DD( 23 , 3  ),                      RE-DIMEN
     4         CC ( 23 , 5  ),                                            RE-DIMEN
     5           B( 23 , 23 ),       BM1( 23 , 23 ),     BM2( 23 , 23 ),  RE-DIMEN
     6           C( 23 , 23 ),       CM1( 23 , 23 ),     CM2( 23 , 23 ),  RE-DIMEN
     7           D( 23 , 23 ),         E( 23 , 23 ),                      RE-DIMEN
     8         BMX( 23 , 43 ),       BMY( 23 , 43 ),       Q( 23 , 43 ),  RE-DIMEN
     9           S( 23 , 43 ),        CH( 23 , 43 ),                      RE-DIMEN
     A          DX( 23 , 43 ),        DY( 23 , 43 ),      PX( 23 , 43 ),  RE-DIMEN
     B          PY( 23 , 43 ),         W( 23 , 43 ),      AT( 23 , 43 )   RE-DIMEN
               KSHORT = 20                                                RE-DIMEN
               KLONG = 40                                                 RE-DIMEN
               L1 = KSHORT + 3                                            05JA8
               L2 = KLONG + 3                                             05JA8
      CALL SB30S          (  AA,   BB,  CC,  DD,   EE,  FF,   A,  AT, AM1, 22OC9
     1                      AM2,    B, BM1, BM2,    C, CM1, CM2,   D,   E, 05JA8
     2                      WP1,  WP2, BMX, BMY,   CH,       DX,  DY,   Q, 27MY8
     3                        S,   PX,  PY,   W,   L1,  L2                ) 19AP8
      END                                                                 05JA8
```

```
      SUBROUTINE SB30S  (  AA,  BB,  CC,  DD,  EE,  FF,   A,  AT, AM1,  220C9
     1                    AM2,   B, BM1, BM2,   C, CM1, CM2,   D,   E,  05JA8
     2                    WP1, WP2, BMX, BMY,  CH,       DX,  DY,   Q,  07MY8
     3                      S,  PX,  PY,   W,  L1,  L2                ) 19AP8
C
    1 FORMAT (    52H      PROGRAM  SLAB 30  FINAL REPORT DECK  - PANAK   220C9
     1    ,                          28H  REVISION DATE 20 NOV 69    )REVISED
C
C     DOUBLE PRECISION  AA,     BB,     CC,     DD,    EE,     FF,      W,  26SE9IBM
C    1                   A,    AM1,    AM2,      B,   BM1,    BM2,    WP1,  26SE9IBM
C    2                   C,    CM1,    CM2,      D,     E,     AT,    WP2,  26SE9IBM
C    3                ALF,  BETA,    BMA,    BMO,   BMP,    BMR,    BMT,  26SE9IBM
C    4                      CRD,                     ER,     HX, HXDHY,  26SE9IBM
C    5            HXDHY3,     HY, HYDHX,HYDHX3, ODHX,ODHXHY, ODHX2,  26SE9IBM
C    6            PDHXHY,     PI, PMMAX,     PR,                  QBMX,  26SE9IBM
C    7              QBMY, REACT,  SDT2,  SIGO,          SUMR, THETA,  26SE9IBM
C    8               THK,    TMA,    TMX,    TMY,WSUM1, WSUM2, WSUM3,  26SE9IBM
C    9                      QPX,    QPY,  QTMX, QTMY                   26SE9IBM
      DIMENSION                         AA( L1  , 1   ),      EE( L1  , 1   ),  05JA8
     1           FF( L1  , 1   ),       A( L1  , 1   ),     AM1( L1  , 1   ),  05JA8
     2          AM2( L1  , 1   ),     WP1( L1  , 1   ),     WP2( L1  , 1   ),  05JA8
     3           BB( L1  , 3   ),      DD( L1  , 3   ),                       05JA8
     4          CC ( L1  , 5   ),                                              05JA8
     5            B( L1  ,L1   ),     BM1( L1  ,L1   ),     BM2( L1  ,L1   ),  19AP8
     6            C( L1  ,L1   ),     CM1( L1  ,L1   ),     CM2( L1  , L1  ),  19AP8
     7            D( L1  , L1  ),       E( L1  , L1  ),                       19AP8
     8          BMX( L1  , L2  ),     BMY( L1  , L2  ),       Q( L1  , L2  ),  19AP8
     9            S( L1  , L2  ),      CH( L1  , L2  ),                       07MY8
     A           DX( L1  , L2  ),      DY( L1  , L2  ),      PX( L1  , L2  ),  19AP8
     B           PY( L1  , L2  ),       W( L1  , L2  ),      AT( L1  , L2  )   310C9
      DIMENSION                       IN13(  10        ),    JN13(  10        ),  03NO9
     1         IN23(  10       ),    JN23(  10        ),   KASEX(  10        ),  03NO9
     2        KASEY(  10       ),   NPROB(   2        ),   KPROB(   2        ),  03NO9
     3        ITEST(   2       ),     AN1( 40         ),     AN2(  18        ),  03NO9
     4          CRD(   5       )                                               03NO9
    6 FORMAT ( )                                                            04MY3
   10 FORMAT (     5H      , 80X, 10HI-----TRIM )                           03FE4
   11 FORMAT (     5H1     , 80X, 10HI-----TRIM )                           03FE4
   12 FORMAT ( 20A4 )                                                       170C9
   13 FORMAT ( 5X, 20A4 )                                                   170C9
   14 FORMAT ( A1, A4, 5X, 17A4, A2 )                                       170C9
   15 FORMAT (///10H      PROB  , /5X, A1, A4, 5X, 17A4, A2 )               170C9
   16 FORMAT (///17H      PROB (CONTD), /5X, A1, A4, 5X, 17A4, A2 )         170C9
   19 FORMAT (///51H      RETURN THIS PAGE AND THE FOLLOWING PAGE TO THE  05JA8
     1             30H TIME RECORD FILE -- HM            )                  05JA8
   20 FORMAT ( I5, 15X, 4I5 )                                               24SE9
   21 FORMAT ( 2(2X,I3), 4E10.3 )                                           080C9
   22 FORMAT ( //30H      TABLE 2.  CONSTANTS                          /   20NO9
     1           /42H             NUM INCREMENTS IN X DIRECTION    ,35X,I3,/ 07NO9
     2            42H             NUM INCREMENTS IN Y DIRECTION    ,35X,I3,/ 07NO9
     3      8X,   30H   INCR LENGTH IN X DIRECTION      ,32X,E10.3,/       07NO9CDC
C    3      8X,   30H   INCR LENGTH IN X DIRECTION      ,32X,1PE10.3,/     07NO9IBM
     4      8X,   30H   INCR LENGTH IN Y DIRECTION      ,32X,E10.3,/       07NO9CDC
C    4      8X,   30H   INCR LENGTH IN Y DIRECTION      ,32X,1PE10.3,/     07NO9IBM
     5            30H             POISSONS RATIO       , 40X, E10.3,      /  04NO9CDC
```

```
C     5            30H           POISSONS RATIO      , 40X, 1PE10.3,     /  04NO9IBM
      6            48H           SLAB THICKNESS (IF BLANK OR ZERO, MAX      14OC9
      7            22HPRINCIPAL MOMENT IS           , E10.3,                05NO9CDC
C     7            22HPRINCIPAL MOMENT IS           , 1PE10.3,              05NO9IBM
      8   / 15X,  48HCOMPUTED -- IF SPECIFIED, MAX PRINCIPAL STRESS)       )14OC9
   23 FORMAT (  4( 2X, I3 ),   6E10.3 )                                     21JL7
   24 FORMAT (  4( 2X, I3 ),  40X,  2E10.3 )                                14NO7
   26 FORMAT ( 4(2X,I3),20X,E10.3 )                                         23OC7
   30 FORMAT ( //30H      TABLE 1.  CONTROL DATA    ,           / ,         05NO9
     1          //50H          MULTIPLE LOAD OPTION (IF BLANK OR ZERO,      14OC9
     2             25HPROB IS INDEPENDENT --     , I5,                      14OC9
     3     /  15X,51HIF +1, PARENT FOR NEXT PROB -- IF -1, AN OFFSPRING     23SE9
     4              5HPROB)    , //,                                        23SE9
     5     64X,    17H  TABLE NUMBER                               , /      06NO9
     6    60X,     25H    2    3    4    5                        , //     17NO9
     7             40H           NUM CARDS INPUT THIS PROBLEM  20X,4I5,/ ) 07NO9
   33 FORMAT ( //40H      TABLE 4.  STIFFNESS AND LOAD DATA       ,/        04NO9
     1          / 50H        FROM   THRU       DX          DY        Q      17NO9
     2             45H        S            C                          ,/)   04NO9
   34 FORMAT ( //50H      TABLE 4.  LOAD DATA -- REPLACES LOAD IN PREVI     02OC9
     1             12HOUS PROBLEM , A1, A4,                                 17OC9
     2    /  10X, 40H      ALL STIFFNESS TERMS ARE RETAINED     , /         15DE7
     3          / 50H        FROM   THRU                             Q   /)17NO9
   37 FORMAT ( //35H      TABLE 5.  AXIAL THRUST DATA             ,/        04NO9
     1          / 50H        FROM   THRU                                    17NO9
     2             45H                    PX          PY               ,/)  04NO9
   38 FORMAT ( // 15H             NONE   )                                  27NO7
   39 FORMAT ( //25H      TABLE 7.  RESULTS      )                          02OC9
   40 FORMAT ( / 50H                                                  X,   12DE7
     1             35H                    LARGEST     BETA   ,              12DE7
     2          / 50H                              X          Y       TWIS, 12DE7
     3             35HTING    SUPPORT    PRINCIPAL    X TO   ,              12DE7
     4          / 50H       X , Y     DEFL       MOMENT      MOMENT     MOM, 15DE7
     5             35HENT     REACTION    STRESS    LARGEST )               12DE7
   41 FORMAT ( / 50H                                                  X,   12DE7
     1             35H                    LARGEST     BETA   ,              12DE7
     2          / 50H                              X          Y       TWIS, 12DE7
     3             35HTING    SUPPORT    PRINCIPAL    X TO   ,              12DE7
     4          / 50H       X , Y     DEFL       MOMENT      MOMENT     MOM, 15DE7
     5             35HENT     REACTION    MOMENT    LARGEST )               12DE7
   42 FORMAT ( //45H      TABLE 7.  RESULTS--USING STIFFNESS DATA ,         02OC9
     1             22HFROM PREVIOUS PROBLEM , A1, A4 )                      17OC9
   43 FORMAT  ( 5X,   2( 1X,I2,1X, I3    ),   6E11.3)                       01SE7CDC
C  43 FORMAT  ( 5X,   2( 1X,I2,1X, I3    ),   1P6E11.3 )                     17OC9IBM
   44 FORMAT  ( 5X,   2(    1X,   I3,   I3 ), 44X, 2E11.3 )                 14NO7CDC
C  44 FORMAT  ( 5X,   2(    1X,   I3,   I3 ), 44X, 1P2E11.3 )               17OC9IBM
   45 FORMAT(      48H                    X MOMENT ACTS IN THE X DIRECTION   04NO9
     1             15H(ABOUT Y AXIS)      )                                 04NO9
   46 FORMAT (5X, 2(1X,I2,1X,I3),22X,E11.3)                                 23OC7CDC
C  46 FORMAT (5X, 2(1X,I2,1X,I3),22X,1PE11.3 )                              17OC9IBM
   47 FORMAT ( 5X, I2, 1X, I3, 6E11.3,       F6.1       )                   12DE7CDC
C  47 FORMAT ( 5X, I2, 1X, I3, 1P6E11.3,    0PF6.1 )                        17OC9IBM
   48 FORMAT(      52H                    X MOMENT AND X TWISTING MOMENT ACT IN04NO9
     1             32H THE X DIRECTION (ABOUT Y AXIS),    ,/,               04NO9
     2             50H                    Y TWISTING MOMENT = -X TWISTING MOM  04NO9
```

```
     3            35HENT, COUNTERCLOCKWISE BETA ANGLES  ,/,                04NO9
     4            50H                ARE POSITIVE FROM X AXIS TO THE DIR  04NO9
     5            35HECTION OF LARGEST PRINCIPAL MOMENT          )         04NO9
   50 FORMAT (///50H     STATICS CHECK.        SUMMATION OF REACTION,     12DE7
     1              6HS =    , E10.3   )                                   25JA8CDC
C    1              6HS =    , 1PE10.3 )                                   17OC9IBM
   55 FORMAT ( //44H     TABLE 3.  SPECIFIED AREAS FOR SELECTED            04NO9
     1            15HMOMENT OUTPUT       ,//                               05NO9
     2            45H                          PRINT (1=YES)       ,/      04NO9
     3            45H       FROM   THRU    X MOMENTS    Y MOMENTS    , / ) 17NO9
   56 FORMAT ( 4( 2X, I3 ), 4X, I1, 4X, I1 )                               02OC9
   57 FORMAT ( 5X, 2( 1X, I2, 1X, I3 ), 6X, I2, 11X, I2 )                  14OC9
   63 FORMAT ( //40H     TABLE 6.  SELECTED MOMENT OUTPUT              )   20NO9
   64 FORMAT ( //47H     TABLE 6.  SELECTED MOMENT OUTPUT -- USING         20NO9
     1            34HSTIFFNESS DATA FROM PREVIOUS PROB      ,A1, A4 )      17OC9
   65 FORMAT (///,15X,26HX MOMENTS ONLY, BETWEEN  (          ,I3,1H,,I3,   05NO9
     1              8H ) AND ( ,I3, 1H,,I3,2H )     ,  / /,                23SE9
     2    10X,    30H       X , Y           X MOMENT , /           )       04NO9
   66 FORMAT ( 15X, I2, 1X, I3, 10X, E10.3 )                               23SE9CDC
C  66 FORMAT ( 15X, I2, 1X, I3, 10X, 1PE10.3 )                             17OC9IBM
   67 FORMAT (///,15X,26HY MOMENTS ONLY, BETWEEN  (          ,I3,1H,,I3,   05NO9
     1              8H ) AND ( ,I3, 1H,,I3,2H )     ,  //,                 23SE9
     2    10X,    30H       X , Y           Y MOMENT ,/            )       04NO9
   68 FORMAT ( 15X, I2, 1X, I3, 10X, E10.3 )                               23SE9CDC
C  68 FORMAT ( 15X, I2, 1X, I3, 10X, 1PE10.3 )                             17OC9IBM
   69 FORMAT (///,15X,32HBOTH X AND Y MOMENTS, BETWEEN  (          ,I3,    05NO9
     1              1H,,I3, 8H ) AND ( ,I3, 1H,,I3, 2H )       ,//,        23SE9
     2    10X,    45H       X , Y           X MOMENT     Y MOMENT    ,/ )  04NO9
   74 FORMAT ( 15X, I2, 1X, I3, 10X, E10.3, 3X, E10.3 )                    30OC9CDC
C  74 FORMAT ( 15X, I2, 1X, I3, 10X, 1PE10.3, 3X, 1PE10.3 )                30OC9IBM
   91 FORMAT (///30H     **** PROBLEM TERMINATED   , I4   ,                18DE7
     1            20H  DATA ERRORS ****   )                                18DE7
   92 FORMAT ( //51H     **** CAUTION.  MULTIPLE LOADING OPTION MISUSED    18DE7
     1            35H FOR THIS OR PRIOR PROBLEM ****      )                18DE7
   93 FORMAT (///38H     **** PROBLEM WILL BE TERMINATED,                  29OC9
     1            40HTHE DIMENSION STORAGE IS TOO SMALL **** )             29OC9
   98 FORMAT (///40H     **** UNDESIGNATED ERROR STOP ****   )             18DE7
C
C-----PROGRAM AND PROBLEM IDENTIFICATION
C
              ITEST(1) = 1H                                                17OC9
              ITEST(2) = 4H                                                17OC9
              KML = 0                                                      15DE7
      READ  12, ( AN1(N), N = 1, 40 )                                      17OC9
      CALL TIC TOC (1)                                                     26SE6
 1010 READ  14,  NPROB, ( AN2(N), N = 1, 18 )                              17OC9
          IF ( NPROB(1) - ITEST(1) ) 1020, 1015, 1020                      02OC9
 1015     IF ( NPROB(2) - ITEST(2) ) 1020, 9990, 1020                      02OC9
 1020 PRINT 11                                                             26AG3
 1021 PRINT  1                                                             19MR5
      PRINT 13, ( AN1(N), N = 1, 40 )                                      17OC9
      PRINT 15, NPROB, ( AN2(N), N = 1, 18 )                               17OC9
      REWIND 1                                                             20OC7
      REWIND 2                                                             20OC7
C
```

```
C-----INPUT TABLE 1
C
      READ  20, ML, NCT2, NCT3, NCT4, NCT5                          24SE9
      PRINT 30, ML, NCT2, NCT3, NCT4, NCT5                          24SE9
          IF ( ML ) 62, 61, 61                                      070C9
C
C-----INPUT TABLE 2
C
   61 READ  21, MX, MY, HX, HY, PR, THK                             080C9
   62 PRINT 22, MX, MY, HX, HY, PR, THK                             080C9
               NDE = 0                                              18DE7
          IF ( KML ) 75, 70, 72                                     15DE7
   70     IF ( ML ) 71, 75, 75                                      15DE7
   71          NDE = NDE + 1                                        18DE7
          GO TO 75                                                  15DE7
   72     IF ( ML ) 75, 73, 73                                      15DE7
   73 PRINT 92                                                      15DE7
   75          KML = ML                                             15DE7
          IF ( L1-3-MX ) 76, 77, 77                                 290C9
   76 PRINT 93                                                      290C9
               NDE = NDE + 1                                        290C9
   77     IF ( L2-3-MY ) 78, 79, 79                                 290C9
   78 PRINT 93                                                      290C9
               NDE = NDE + 1                                        290C9
   79     IF ( MX - MY ) 81, 81, 80                                 290C9
   80          NDE = NDE + 1                                        18DE7
   81     IF ( HX * HY ) 82, 82, 83                                 29NO7
   82          NDE = NDE + 1                                        18DE7
   83     IF ( PR + THK ) 84, 85, 85                                29NO7
   84          NDE = NDE + 1                                        18DE7
   85     CONTINUE                                                  29NO7
C
C-----COMPUTE FOR CONVENIENCE
C
          IF ( ML ) 136, 100, 100                                   29NO7
  100          MXP1 = MX + 1                                        29NO7
               MYP1 = MY + 1                                        29NO7
               MXP2 = MX + 2                                        08DE7
               MYP2 = MY + 2                                        29NO7
               MXP3 = MX + 3                                        08DE7
               MYP3 = MY + 3                                        08DE7
               MXP4 = MX + 4                                        08DE7
               MYP4 = MY + 4                                        08DE7
               MXP5 = MX + 5                                        08DE7
               MYP5 = MY + 5                                        08DE7
               ODHX = 1.0 / HX                                      14SE6
               ODHY = 1.0 / HY                                      14SE6
               ODHXHY = ODHX * ODHY                                 14NO7
               PDHXHY = PR * ODHXHY                                 14NO7
               ODHY2 = ODHY * ODHY                                  14NO7
               ODHX2 = ODHX * ODHX                                  14NO7
               HXDHY = HX * ODHY                                    14NO7
               HYDHX = HY * ODHX                                    14NO7
               HYDHX3 = HYDHX * ODHX2                               14NO7
               HXDHY3 = HXDHY * ODHY2                               14NO7
```

```
                KPROB(1) = NPROB(1)                                      170C9
                KPROB(2) = NPROB(2)                                      170C9
          DO 105  J = 1, MYP3                                            29NO7
          DO 103  I = 1, MXP3                                            29NO7
                DX(I,J) = 0.0                                            01NO6
                DY(I,J) = 0.0                                            01NO6
                 Q(I,J) = 0.0                                            01NO6
                 S(I,J) = 0.0                                            01NO6
                CH(I,J) = 0.0                                            07MY8
                PX(I,J) = 0.0                                            23JE7
                PY(I,J) = 0.0                                            23JE7
                BMX(I,J) = 0.0                                           29NO7
                BMY(I,J) = 0.0                                           29NO7
  103     CONTINUE                                                       29NO7
  105     CONTINUE                                                       23JE7
          DO  135  K = 1, MXP3                                           29NO7
          DO  130  I = 1, MXP3                                           29NO7
                B(I,K) = 0.0                                             29NO7
                BM1(I,K) = 0.0                                           21DE7
                C(I,K) = 0.0                                             29NO7
                CM1(I,K) = 0.0                                           21DE7
  130 CONTINUE                                                           16AG7
  135 CONTINUE                                                           16AG7
  136     DO  138  K = 1, MXP3                                           29NO7
                A(K,1) = 0.0                                             21DE7
                AM1(K,1) = 0.0                                           29NO7
                W(K,MYP3) = 0.0                                          28DE7
                WP1(K,1) = 0.0                                           29NO7
                WP2(K,1) = 0.0                                           28DE7
  138     CONTINUE                                                       29NO7
C
C-----INPUT TABLE 3
C
      PRINT 55                                                           24SE9
          IF ( NCT3 ) 9980, 180, 150                                     24SE9
  150     DO  170  N = 1, NCT3                                           24SE9
      READ  56, IN13(N), JN13(N), IN23(N), JN23(N), KASEX(N), KASEY(N)   020C9
      PRINT 57, IN13(N), JN13(N), IN23(N), JN23(N), KASEX(N), KASEY(N)   020C9
          IF ( IN13(N) - IN23(N) ) 154, 154, 153                         020C9
  153           NDE = NDE + 1                                            24SE9
  154     IF ( JN13(N) - JN23(N) ) 156, 156, 155                         24SE9
  155           NDE = NDE + 1                                            24SE9
  156     IF ( IN23(N) - MX ) 158, 158, 157                              24SE9
  157           NDE = NDE + 1                                            24SE9
  158     IF ( JN23(N) - MY ) 160, 160, 159                              24SE9
  159           NDE = NDE + 1                                            24SE9
  160     IF ( KASEX(N) - 1 ) 162, 162, 161                              090C9
  161           NDE = NDE + 1                                            090C9
  162     IF ( KASEY(N) - 1 ) 164, 164, 163                              090C9
  163           NDE = NDE + 1                                            090C9
  164     IF ( KASEX(N) + KASEY(N) ) 165, 165, 166                       090C9
  165           NDE = NDE + 1                                            090C9
  166     CONTINUE                                                       090C9
  170     CONTINUE                                                       24SE9
          GO TO 181                                                      24SE9
```

```
  180 PRINT  38                                                          24SE9
  181     CONTINUE                                                       24SE9
C
C-----INPUT TABLE 4
C
          IF ( NCT4 ) 9980, 362, 190                                     24SE9
  190     IF ( ML ) 200, 320, 320                                        15DE7
  200 PRINT 34, KPROB                                                    15DE7
          DO  220  J = 1, MYP3                                           15DE7
          DO  210  I = 1, MXP3                                           29NO7
               W(I,J) = 0.0                                              24OC7
               Q(I,J) = 0.0                                              24OC7
  210     CONTINUE                                                       24OC7
  220     CONTINUE                                                       24OC7
          DO  260  N = 1, NCT4                                           24SE9
      READ 26 , IN1, JN1, IN2, JN2, QN                                   20OC7
      PRINT 46, IN1, JN1, IN2, JN2, QN                                   20OC7
               I1  =  IN1 + 2                                            29NO7
               J1  =  JN1 + 2                                            29NO7
               I2  =  IN2 + 2                                            29NO7
               J2  =  JN2 + 2                                            29NO7
          IF ( IN1 - IN2 ) 232, 232, 231                                 29NO7
  231          NDE = NDE + 1                                             18DE7
  232     IF ( JN1 - JN2 ) 234, 234, 233                                 29NO7
  233          NDE = NDE + 1                                             18DE7
  234     IF ( IN2 - MX ) 236, 236, 235                                  29NO7
  235          NDE = NDE + 1                                             18DE7
  236     IF ( JN2 - MY ) 238, 238, 237                                  29NO7
  237          NDE = NDE + 1                                             18DE7
  238     DO  255  I = I1, I2                                            29NO7
          DO 250  J = J1, J2                                             20OC7
               Q(I,J) = Q(I,J) + QN                                      20OC7
  250     CONTINUE                                                       20OC7
  255     CONTINUE                                                       20OC7
  260     CONTINUE                                                       20OC7
          GO TO 386                                                      19DE7
  320 PRINT 33                                                           15DE7
          DO  360  N = 1, NCT4                                           24SE9
      READ  23,  IN1, JN1, IN2, JN2, DXN, DYN, QN, SN, CHN               07MY8
      PRINT 43,  IN1, JN1, IN2, JN2, DXN, DYN, QN, SN, CHN               07MY8
          IF ( CHN        ) 331, 335, 331                                07MY8
  331     IF ( IN1 * IN2 * JN1 * JN2 ) 9980, 333, 335                    18DE7
  333          NDE = NDE + 1                                             18DE7
  335          I1  =  IN1 + 2                                            15DE7
               J1  =  JN1 + 2                                            29NO7
               I2  =  IN2 + 2                                            29NO7
               J2  =  JN2 + 2                                            29NO7
          IF ( IN1 - IN2 ) 342, 342, 341                                 29NO7
  341          NDE = NDE + 1                                             18DE7
  342     IF ( JN1 - JN2 ) 344, 344, 343                                 29NO7
  343          NDE = NDE + 1                                             18DE7
  344     IF ( IN2 - MX ) 346, 346, 345                                  29NO7
  345          NDE = NDE + 1                                             18DE7
  346     IF ( JN2 - MY ) 348, 348, 347                                  29NO7
  347          NDE = NDE + 1                                             18DE7
```

```
  348      DO  355  I = I1, I2                                                    29NO7
           DO 350  J = J1, J2                                                     01DE7
                 DX(I,J) = DX(I,J) + DXN                                          4SE64
                 DY(I,J) = DY(I,J) + DYN                                          4SE64
                  Q(I,J) =  Q(I,J) +  QN                                          13AP3
                  S(I,J) =  S(I,J) +  SN                                          13AP3
                 CH(I,J) = CH(I,J) + CHN                                          07MY8
  350      CONTINUE                                                               13AP3
  355      CONTINUE                                                               22JE7
  360      CONTINUE                                                               13AP3
  362      CONTINUE                                                               18DE7
C
C-----INPUT TABLE 5
C
      PRINT 37                                                                    22AP5
           IF ( NCT5 ) 9980, 385, 364                                             24SE9
  364      DO  382  N = 1, NCT5                                                   24SE9
      READ  24,  IN1, JN1, IN2, JN2, PXN, PYN                                     11DE7
      PRINT 44,  IN1, JN1, IN2, JN2, PXN, PYN                                     11DE7
           IF ( PXN ) 365, 367, 365                                               18DE7
  365      IF ( IN1 * IN2 ) 9980, 366, 367                                        18DE7
  366            NDE = NDE + 1                                                    18DE7
  367      IF ( PYN ) 368, 370, 368                                               18DE7
  368      IF ( JN1 * JN2 ) 9980, 369, 370                                        18DE7
  369            NDE = NDE + 1                                                    18DE7
  370            I1  =  IN1 + 2                                                   18DE7
                 J1  =  JN1 + 2                                                   29NO7
                 I2  =  IN2 + 2                                                   29NO7
                 J2  =  JN2 + 2                                                   29NO7
           IF ( IN1 - IN2 ) 372, 372, 371                                         29NO7
  371            NDE = NDE + 1                                                    18DE7
  372      IF ( JN1 - JN2 ) 374, 374, 373                                         29NO7
  373            NDE = NDE + 1                                                    18DE7
  374      IF ( IN2 - MX ) 376, 376, 375                                          29NO7
  375            NDE = NDE + 1                                                    18DE7
  376      IF ( JN2 - MY ) 378, 378, 377                                          29NO7
  377            NDE = NDE + 1                                                    18DE7
  378      DO  380  I = I1, I2                                                    12DE7
           DO  379  J = J1, J2                                                    12DE7
                 PX(I,J) = PX(I,J) + PXN                                          20AP5
                 PY(I,J) = PY(I,J) + PYN                                          20AP5
  379      CONTINUE                                                               29NO7
  380      CONTINUE                                                               12DE7
  382      CONTINUE                                                               12DE7
           GO TO 386                                                              19DE7
  385 PRINT 38                                                                    15DE7
  386      IF ( NDE ) 9980, 401, 387                                              19DE7
  387 PRINT 91, NDF                                                               19DE7
           GO TO 9990                                                             29NO7
C
C-----FORM SUB-MATRICES
C
C-----A SPRING IS PLACED AT PTS BEYOND BOUNDARIES OF THE REAL SLAB
C          TO MAKE SOLUTION OF NON-RECTANGULAR SLABS OR SLABS WITH
C          HOLES POSSIBLE. THIS IS DONE BY TESTING ON THE CC(I,3)
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```
C         TERMS, AND IF ZERO, SET EQUAL TO 1.0
C
C-----Q(I,J) IS THE INPUT LOAD FOR THIS PROBLEM, OTHER PRIOR PROBLEM
C     LOADS ARE DISCARDED
C
  401     DO  600  J = 1, MYP3                                          29NO7
          DO 404  I = 1, MXP3                                           08DE7
              FF(I,1) = Q(I,J)                                          30OC9
          IF (J-1) 9980, 402, 403                                       08DE7
  402         AA(I,1) = 0.0                                             03JA8
          GO TO 404                                                     08DE7
  403         AA(I,1) = DY(I,J-1) * HXDHY3                              03JA8
  404     CONTINUE                                                      08DE7
          IF ( ML ) 501, 405, 405                                       08DE7
  405     DO 500  I = 1, MXP3                                           08DE7
          IF (J-1) 9980, 410, 407                                       13DE7
  407     IF (MYP3-J) 9980, 438, 420                                    05NO9
C-----COEFFICIENTS COMPUTED AT J = 1
  410     IF (I-1) 9980, 411, 412                                       08DE7
  411         BB(I,2)     = 0.0                                         08DE7
              BB(I,3)     = 0.0                                         08DE7
              CC(I,3)     = 1.0                                         17OC9
              CC(I,4)     = 0.0                                         08DE7
              CC(I,5)     = 0.0                                         08DE7
              DD(I,2)     = 0.0                                         08DE7
              DD(I,3)     = 0.0                                         08DE7
              EE(I,1)     = 0.0                                         03JA8
          GO TO 500                                                     08DE7
  412     IF (MXP3-I) 9980, 419, 413                                    13DE7
  413         CRD(5) = AMIN1 ( DX(I   ,J+1) , DY(I   ,J+1) )            29JL8
              BB(I,1)     = 0.0                                         29JL8
              BB(I,2)     = 0.0                                         08DE7
              BB(I,3)     = 0.0                                         08DE7
              CC(I,2)     = 0.0                                         08DE7
              CC(I,3)     = HXDHY3 * DY(I,J+1)                          08DE7
     1                       + ODHY * PY(I,J+1)                         11DE7
          IF ( CC(I,3) )  415, 414, 415                                 14DE7
  414         CC(I,3)     = 1.0                                         17OC9
  415         CC(I,4)     = 0.0                                         13DE7
              DD(I,1)     = PDHXHY * CRD(5)                             29JL8
              DD(I,2)     = -2.0 * ( HXDHY3 * DY(I,J+1)                 08DE7
     1                       + PDHXHY * CRD(5) )                        29JL8
     2                       - ODHY * PY(I,J+1)                         08DE7
              DD(I,3)     = PDHXHY * CRD(5)                             29JL8
              EE(I,1)     = HXDHY3 * DY(I,J+1)                          03JA8
         IF (I-2) 9980, 417, 416                                        13DE7
  416         CC(I,1)     = 0.0                                         13DE7
  417     IF (MXP2-I) 9980, 500, 418                                    13DE7
  418         CC(I,5)     = 0.0                                         13DE7
          GO TO 500                                                     08DE7
  419         BB(I,1)     = 0.0                                         13DE7
              BB(I,2)     = 0.0                                         08DE7
              CC(I,1)     = 0.0                                         08DE7
              CC(I,2)     = 0.0                                         08DE7
              CC(I,3)     = 1.0                                         17OC9
```

```
                DD(I,1)     = 0.0                                         08DE7
                DD(I,2)     = 0.0                                         08DE7
                EE(I,1)     = 0.0                                         03JA8
           GO TO 500                                                      08DE7
C-----COEFFICIENTS COMPUTED FROM J = 2 TO MYP2
  420      IF (I-1) 9980, 421, 424                                        05NO9
  421           CRD(3) = AMIN1 ( DX(I+1,J   ) , DY(I+1,J   ) )            29JL8
                BB(I,2)     = 0.0                                         29JL8
                BB(I,3)     = PDHXHY * CRD(3)                             29JL8
                CC(I,3)     = HYDHX3 * DX(I+1,J)                          08DE7
     1                        + ODHX * PX(I+1,J)                          08DE7
           IF ( CC(I,3) )  441, 422, 423                                  05NO9
  422           CC(I,3)     = 1.0                                         05NO9
  423           CC(I,4)     = -2.0 * (HYDHX3 * DX(I+1,J)                  05NO9
     1                        + PDHXHY * CRD(3) )                         29JL8
     2                        - ODHX * PX(I+1,J)                          08DE7
                CC(I,5)     = HYDHX3 * DX(I+1,J)                          11DE7
                DD(I,2)     = 0.0                                         08DE7
                DD(I,3)     = PDHXHY * CRD(3)                             29JL8
                EE(I,1)     = 0.0                                         03JA8
           GO TO 500                                                      08DE7
  424      IF (MXP3-I) 9980, 431, 425                                     05NO9
  425           CRD(1) = AMIN1 ( DX(I-1,J   ) , DY(I-1,J   ) )            05NO9
                CRD(2) = AMIN1 ( DX(I   ,J   ) , DY(I   ,J   ) )          29JL8
                CRD(3) = AMIN1 ( DX(I+1,J   ) , DY(I+1,J   ) )            29JL8
                CRD(4) = AMIN1 ( DX(I   ,J-1) , DY(I   ,J-1) )            29JL8
                CRD(5) = AMIN1 ( DX(I   ,J+1) , DY(I   ,J+1) )            29JL8
                BB(I,1)       = PDHXHY * ( CRD(1) + CRD(4) ) +            30JL8
     1                        ODHXHY * ( CH(I,J) + CH(I,J) )              07MY8
                BB(I,2)     = -2.0 * ( PDHXHY * ( CRD(2) + CRD(4) )       29JL8
     1                        + HXDHY3 * ( DY(I,J-1) + DY(I,J) ) )        14SE6
     2                        + ODHXHY * ( - CH(I,J) - CH(I+1,J)          07MY8
     3                        - CH(I,J) - CH(I+1,J) ) - ODHY * PY(I,J)    07MY8
                BB(I,3)       = PDHXHY * ( CRD(3) + CRD(4) )              29JL8
     1                        + ODHXHY * ( CH(I+1,J) + CH(I+1,J) )        07MY8
                CC(I,2)       = -2.0 * ( HYDHX3 * ( DX(I-1,J) + DX(I,J) ) 29NO7
     1                        + PDHXHY * ( CRD(1) + CRD(2) ) )            29JL8
     2                        + ODHXHY * ( - CH(I,J) - CH(I,J+1)          07MY8
     3                        - CH(I,J) - CH(I,J+1) ) - ODHX * PX(I,J)    07MY8
                CC(I,3)     = HYDHX3 * ( DX(I-1,J) + 4.0 * DX(I,J)        29NO7
     1                        + DX(I+1,J) ) + HXDHY3 * ( DY(I,J-1) + 4.014SE6
     2                        * DY(I,J) + DY(I,J+1) ) + PDHXHY * 4.0      14SE6
     3                        * ( CRD(2) + CRD(2) )    + ODHXHY           29JL8
     4                        * ( CH(I,J) + CH(I,J+1) + CH(I+1,J)         09MY8
     5                        + CH(I+1,J+1) + CH(I,J) + CH(I+1,J)         07MY8
     6                        + CH(I,J+1) + CH(I+1,J+1) ) + ODHX          07MY8
     7                        * ( PX(I,J) + PX(I+1,J) ) + ODHY            14SE6
     8                        * ( PY(I,J) + PY(I,J+1) ) + S(I,J)          14SE6
           IF ( CC(I,3) )  427, 426, 427                                  05NO9
  426           CC(I,3)     = 1.0                                         05NO9
  427           CC(I,4)       = -2.0 * ( HYDHX3 * ( DX(I,J) + DX(I+1,J) ) 05NO9
     1                        + PDHXHY * ( CRD(3) + CRD(2) ) )            29JL8
     2                        + ODHXHY * ( - CH(I+1,J) - CH(I+1,J+1)      07MY8
     3                        - CH(I+1,J) - CH(I+1,J+1) ) - ODHX          07MY8
     4                        * PX(I+1,J)                                 14SE6
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```
            DD(I,1)       = PDHXHY * ( CRD(1) + CRD(5) )                    29JL8
     1                      + ODHXHY * ( CH(I,J+1) + CH(I,J+1) )            09MY8
            DD(I,2)     = -2.0 * ( HXDHY3 * ( DY(I,J) + DY(I,J+1) )         29NO7
     1                      + PDHXHY * ( CRD(2) + CRD(5) ) )                29JL8
     2                      + ODHXHY * ( - CH(I,J+1) - CH(I+1,J+1)          07MY8
     3                      - CH(I,J+1) - CH(I+1,J+1) ) - ODHY              07MY8
     4                      * PY(I,J+1)                                     14SE6
            DD(I,3)       = PDHXHY * ( CRD(3) + CRD(5) )                    29JL8
     1                      + ODHXHY * ( CH(I+1,J+1) + CH(I+1,J+1) )        07MY8
            EE(I,1)     = HXDHY3 * DY(I,J+1)                                03JA8
        IF (I-2) 9980, 429, 428                                             05NO9
  428       CC(I,1)     = DX(I-1,J) * HYDHX3                                05NO9
  429   IF (MXP2 - I) 9980, 500, 430                                        05NO9
  430       CC(I,5)     = HYDHX3 * DX(I+1,J)                                05NO9
        GO TO 500                                                           08DE7
  431       CRD(1) = AMIN1 ( DX(I-1,J   ) , DY(I-1,J   ) )                  05NO9
            BB(I,1)     = CRD(1)     * PDHXHY                               29JL8
            BB(I,2)     = 0.0                                               08DE7
            CC(I,1)     = DX(I-1,J) * HYDHX3                                08DE7
            CC(I,2)     = -2.0 * ( HYDHX3 * DX(I-1,J)                       08DE7
     1                      + PDHXHY * CRD(1) )                             29JL8
            CC(I,3)     = HYDHX3 * DX(I-1,J)                                08DE7
        IF ( CC(I,3) )  436, 435, 436                                       05NO9
  435       CC(I,3)     = 1.0                                               05NO9
  436       DD(I,1)     = PDHXHY * CRD(1)                                   05NO9
            DD(I,2)     = 0.0                                               08DE7
            EE(I,1)     = 0.0                                               03JA8
        GO TO 500                                                           08DE7
C-----COEFFICIENTS COMPUTED AT J = MYP3
  438   IF (I-1) 9980, 439, 440                                             05NO9
  439       BB(I,2)     = 0.0                                               05NO9
            BB(I,3)     = 0.0                                               08DE7
            CC(I,3)     = 1.0                                               17OC9
            CC(I,4)     = 0.0                                               08DE7
            CC(I,5)     = 0.0                                               08DE7
            DD(I,2)     = 0.0                                               08DE7
            DD(I,3)     = 0.0                                               08DE7
            EE(I,1)     = 0.0                                               03JA8
        GO TO 500                                                           08DE7
  440   IF (MXP3-I) 9980, 447, 441                                          05NO9
  441       CRD(4) = AMIN1 ( DX(I   ,J-1) , DY(I   ,J-1) )                  05NO9
            BB(I,1)     = CRD(4)     * PDHXHY                               29JL8
            BB(I,2)     = -2.0 * ( PDHXHY * CRD(4)                          29JL8
     1                      + HXDHY3 * DY(I,J-1) )                          08DE7
            BB(I,3)     = PDHXHY * CRD(4)                                   29JL8
            CC(I,2)     = 0.0                                               08DE7
            CC(I,3)     = HXDHY3 * DY(I,J-1)                                08DE7
        IF ( CC(I,3) ) 9980, 442, 443                                       05NO9
  442       CC(I,3)     = 1.0                                               05NO9
  443       CC(I,4)     = 0.0                                               05NO9
            DD(I,1)     = 0.0                                               08DE7
            DD(I,2)     = 0.0                                               08DE7
            DD(I,3)     = 0.0                                               08DE7
            EE(I,1)     = 0.0                                               03JA8
        IF (I-2) 9980, 445, 444                                             05NO9
```

```
 444          CC(I,1)     = 0.0                                       05NO9
 445      IF (MXP2-I) 9980, 500, 446                                  05NO9
 446          CC(I,5)     = 0.0                                       05NO9
          GO TO 500                                                   08DE7
 447          BB(I,1)     = 0.0                                       05NO9
              BB(I,2)     = 0.0                                       08DE7
              CC(I,1)     = 0.0                                       08DE7
              CC(I,2)     = 0.0                                       08DE7
              CC(I,3)     = 1.0                                       17OC9
              DD(I,1)     = 0.0                                       08DE7
              DD(I,2)     = 0.0                                       08DE7
              EE(I,1)     = 0.0                                       03JA8
 500      CONTINUE                                                    04MY7
C
C-----BEGIN MAIN SOLUTION
C
 501      DO  515  I = 1, MXP3                                        29NO7
C-----RETAIN RECURSION COEFFICIENTS TO USE AT NEXT J STEP
              AM2(I,1) = AM1(I,1)                                     21DE7
              AM1(I,1) = A(I,1)                                       21DE7
 504      IF ( ML ) 515, 505, 505                                     29NO7
 505      DO  510  K = 1, MXP3                                        20OC7
              BM2(I,K) = BM1(I,K)                                     21DE7
              BM1(I,K) = B(I,K)                                       21DE7
              CM2(I,K) = CM1(I,K)                                     21DE7
              CM1(I,K) = C(I,K)                                       21DE7
 510      CONTINUE                                                    04MY7
 515      CONTINUE                                                    30JE7
C-----SOLVE FOR ALL RECURSION COEFFICIENTS AND RETAIN THE A(I,1)
C         COEFFICIENT AT THIS J STEP IN THE AT(I,J) ARRAY
              JJ = J                                                  08AG7
      CALL MATRIX ( L1,JJ,MXP3,MY,AA,BB,CC,DD,EE,FF,A,AM1,            29NO7
     1                 AM2,B,BM1,BM2,C,CM1,CM2,D,E,ML   )             19AP8
          DO 520  I = 1, MXP3                                         20OC7
              AT(I,J) = A(I,1)                                        29NO7
 520      CONTINUE                                                    20OC7
C
C-----TEST FOR MULTIPLE LOADING --
C         IF ZERO, RETAIN B AND C COEFFICIENTS ON TAPE 1.
C         IF PARENT, ALSO RETAIN D AND E MULTIPLIERS ON TAPE 2.
C         IF OFFSPRING, MOVE TAPE 1 COMPLETELY FORWARD IN STEPS.
C
          IF( ML ) 522, 530, 525                                      25OC7
 522 READ (1)                                                         25OC7
          GO TO 600                                                   25OC7
 525 WRITE (2)  (( D(I,K),E(I,K), I=1,MXP3), K=1,MXP3 )               20OC7
 530 WRITE (1) (( B (I,K), C (I,K), I=1,MXP3), K=1,MXP3 )             29NO7
 600      CONTINUE                                                    04MY7
C
C-----COMPUTE AND PRINT RESULTS
C
          DO  650  LL = 1, MYP3                                       29NO7
              J = MYP4 - LL                                           29NO7
C-----POSITION TAPE 1 FOR READING AND RETRIEVE THE A RECURSION COEFF
      BACKSPACE 1                                                     16AG7
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         DO  625  I = 1, MXP3                                          21JL7
               A(I,1) = AT(I,J)                                        28DE7
  625    CONTINUE                                                      22JE7
C-----RETRIEVE B AND C RECURSION COEFFICIENTS AT THIS J STEP
      READ (1) ((B (I,K), C (I,K),I=1,MXP3) , K=1,MXP3 )               29NO7
C-----REPOSITION TAPE
      BACKSPACE 1                                                      16AG7
C
C-----COMPUTE DEFLECTIONS
C
C        AM1 AND AM2 ARE NOW TEMPS USED TO REPRESENT B*WP1 AND C*WP2
      CALL MATMPY (L1, MXP3, 1, B, WP1, AM1     )                      26JA8
      CALL MATMPY (L1, MXP3, 1, C, WP2, AM2     )                      26JA8
         DO  630  I = 1, MXP3                                          21JL7
               W(I,J) = A(I,1) + AM1(I,1) + AM2(I,1)                   29NO7
               WP2(I,1) = WP1(I,1)                                     28DE7
               WP1(I,1) = W(I,J)                                       28DE7
  630    CONTINUE                                                      04MY7
  650    CONTINUE                                                      04MY7
C-----SET DEFLECTIONS AT CORNER STATIONS OUTSIDE THE BOUNDARIES
               W(1,1)= 2.0 * W(1,2) - W(1,3)                           29NO7
               W(MXP3,1) = 2.0* W( MXP3,2) -W(MXP3,3)                  29NO7
               W(1,MYP3) = 2.0* W(1,MYP2) -W (1,MYP1)                  29NO7
               W(MXP3,MYP3) = 2.0 * W(MXP3,MYP2) -W(MXP3,MYP1)         29NO7
C
C-----COMPUTE BENDING MOMENTS, REACTIONS AND TWISTING MOMENTS
C
         DO  730  J  = 2, MYP2                                         24SE9
         DO  720  I = 2, MXP2                                          29NO7
               CRD(2) = AMIN1 ( DX(I   ,J  ) , DY(I   ,J  ) )          29JL8
               WSUM1 =   ODHX2 * ( W(I-1,J) - 2.0 * W(I,J) + W(I+1,J) ) 06NO7
               WSUM2 =   ODHY2 * ( W(I,J-1) - 2.0 * W(I,J) + W(I,J+1) ) 06NO7
               BMX(I,J)  =  DX(I,J) * WSUM1 + CRD(2)  * PR * WSUM2     29JL8
               BMY(I,J) =  DY(I,J) * WSUM2 + CRD(2)  * PR * WSUM1      29JL8
  720    CONTINUE                                                      08SE7
  730    CONTINUE                                                      08SE7
         IF ( NCT3 ) 9980, 885, 740                                    05NO9
  740    CONTINUE                                                      24SE9
C
C-----OUTPUT TABLE 6
C
      PRINT 11                                                         24SE9
      PRINT  1                                                         24SE9
      PRINT 13, ( AN1(I), I=1, 40 )                                    17OC9
      PRINT 16, NPROB, ( AN2(I), I = 1, 18 )                           17OC9
         IF ( ML ) 812, 811, 811                                       05NO9
  811 PRINT 63                                                         05NO9
      PRINT 45                                                         04NO9
         GO TO 813                                                     05NO9
  812 PRINT 64, KPROB                                                  05NO9
      PRINT 45                                                         04NO9
  813    CONTINUE                                                      05NO9
         DO  880  N = 1, NCT3                                          05NO9
         IF ( KASEX(N) * KASEY(N) - 1 ) 821, 820, 9980                 05NO9
  820 PRINT 69, IN13(N), JN13(N), IN23(N), JN23(N)                     05NO9
```

```
          GO TO 825                                                      05NO9
  821     IF ( KASEX(N) - 1 ) 823, 822, 9980                             05NO9
  822 PRINT 65, IN13(N), JN13(N), IN23(N), JN23(N)                       05NO9
          GO TO 825                                                      05NO9
  823     IF ( KASEY(N) - 1 ) 9980, 824, 9980                            05NO9
  824 PRINT 67, IN13(N), JN13(N), IN23(N), JN23(N)                       05NO9
  825     CONTINUE                                                       05NO9
                I1 = IN13(N) + 2                                         24SE9
                J1 = JN13(N) + 2                                         24SE9
                I2 = IN23(N) + 2                                         24SE9
                J2 = JN23(N) + 2                                         24SE9
          DO  870  J = J1, J2                                            05NO9
                JSTA = J - 2                                             24SE9
          DO  860  I = I1, I2                                            05NO9
                ISTA = I - 2                                             24SE9
          IF ( KASEX(N) * KASEY(N) - 1 ) 839, 838, 9980                  05NO9
  838 PRINT 74, ISTA, JSTA, BMX(I,J), BMY(I,J)                           05NO9
          GO TO 860                                                      05NO9
  839     IF ( KASEX(N) - 1 ) 841, 840, 9980                             05NO9
  840 PRINT 66, ISTA, JSTA, BMX(I,J)                                     05NO9
          GO TO 860                                                      05NO9
  841     IF ( KASEY(N) - 1 ) 9980, 842, 9980                            05NO9
  842 PRINT 68, ISTA, JSTA, BMY(I,J)                                     05NO9
  860     CONTINUE                                                       05NO9
  870     CONTINUE                                                       05NO9
  880     CONTINUE                                                       05NO9
  885     CONTINUE                                                       05NO9
C
C-----OUTPUT TABLE 7
C
      PRINT 11                                                           15SE6
      PRINT  1                                                           21JL7
      PRINT 13, ( AN1(N), N = 1, 40 )                                    17OC9
      PRINT 16, NPROB, ( AN2(N), N = 1, 18 )                             17OC9
          IF ( ML ) 888, 887, 887                                        06NO9
  887 PRINT 39                                                           06NO9
      PRINT 48                                                           12DE7
          GO TO 889                                                      06NO9
  888 PRINT 42, KPROB                                                    06NO9
      PRINT 48                                                           12DE7
  889     IF ( THK ) 9980, 892, 891                                      06NO9
  891 PRINT 40                                                           06NO9
                SDT2 = 6.0 / ( THK * THK )                               20NO7
          GO TO 895                                                      06NO9
  892 PRINT 41                                                           06NO9
                SDT2 = 1.0                                               20NO7
  895     CONTINUE                                                       06NO9
                ER = 1.0E-12                                             21NO7
                SUMR = 0.0                                               12DE7
          DO  960  J = 2, MYP2                                           29NO7
      PRINT  6                                                           21JL7
C-----COMPUTE ABSORBED LOADS
                JSTA = J - 2                                             29NO7
          DO  955  I = 2, MXP2                                           29NO7
                ISTA = I - 2                                             29NO7
```

```
                QBMX = ( BMX(I-1,J) - 2.0 * BMX(I,J) + BMX(I+1,J) )        02NO6CDC
C               QBMX = ( BMX(I-1,J)*1.0D0 - 2.0D0 * BMX(I,J) + BMX(I+1,J)300C9IBM
     1                     * HYDHX                                         06NO7CDC
C    1                   * 1.0D0 ) * HYDHX                                 300C9IBM
                QBMY = ( BMY(I,J-1) - 2.0 * BMY(I,J) + BMY(I,J+1) )        02NO6CDC
C               QBMY = ( BMY(I,J-1)*1.0D0 - 2.0D0 * BMY(I,J) + BMY(I,J+1)300C9IBM
     1                     * HXDHY                                         06NO7CDC
C    1                   * 1.0D0 ) * HXDHY                                 300C9IBM
                QTMX = ( W(I-1,J-1) * CH(I,J) - W(I-1,J) * ( CH(I,J)       07MY8
     1                 + CH(I,J+1) ) + W(I-1,J+1) * CH(I,J+1)              07MY8
     2                 - W(I,J-1) * ( CH(I,J) + CH(I+1,J))+ W(I,J)         07MY8
     3                 * ( CH(I,J) + CH(I,J+1) + CH(I+1,J) + CH(I+1,J 07MY8
     4                 +1) ) - W(I,J+1) * ( CH(I,J+1) + CH(I+1,J+1) ) 07MY8
     5                 + W(I+1,J-1) * CH(I+1,J) - W(I+1,J) * ( CH(I      07MY8
     6                 +1,J) + CH(I+1,J+1) ) + W(I+1,J+1) * CH(I+1,J    07MY8
     7                 +1) ) * ODHXHY                                      06NO7
                QTMY = QTMX                                                07MY8
                QPX =      ODHX      * ( PX(I,J) * W(I-1,J) - ( PX(I,J)    06NO7
     1                 + PX(I+1,J) ) * W(I,J) + PX(I+1,J) * W(I+1,J) )02NO6CDC
C    1            + 0.0D0 + PX(I+1,J) ) * W(I,J) + PX(I+1,J) * W(I+1,J))300C9IBM
                QPY =     ODHY       * ( PY(I,J) * W(I,J-1) - (PY(I,J)     06NO7
     1                 + PY(I,J+1) ) * W(I,J) + PY(I,J+1) * W(I,J+1) )02NO6CDC
C    1            + 0.0D0 + PY(I,J+1) ) * W(I,J) + PY(I,J+1) * W(I,J+1))300C9IBM
C-----COMPUTE TWISTING MOMENTS
                WSUM3  =   ( W(I-1,J-1) - W(I-1,J+1) - W(I+1,J-1) +        14DE7
     1                 W(I+1,J+1)   )   *   0.0625 * ODHXHY                06NO7
                TMX          =     ( CH(I,J) + CH(I,J+1) + CH(I+1,J) +     07MY8CDC
C               TMX          =     ( CH(I,J) + CH(I,J+1) + CH(I+1,J) + 0.0D0+300C9IBM
     1                             CH(I+1,J+1) ) * WSUM3                   07MY8
C-----SUBTRACT APPLIED LOAD FROM SUM OF ABSORBED LOADS TO GET REACT
                REACT = QBMX + QBMY + QTMX + QTMY - QPX - QPY   -Q(I,J)    06NO7
C-----SUMMATION OF REACTIONS FOR STATICS CHECK
                SUMR = SUMR + REACT                                        17JA8
           IF( REACT * REACT - ER ) 905, 905, 906                          10NO7
  905           REACT = 0.0                                                10NO7
C
C-----COMPUTE PRINCIPAL MOMENTS OR STRESSES
C
  906           BMA   =    ( BMX(I,J) + BMY(I,J) ) * 0.50                  17JA8
C      BMX IS BENDING MOMENT IN X DIRECTION (COMPRESSION IN TOP IS + )
C      TMX IS TWISTING MOMENT IN X DIRECTION (ABOUT Y AXIS)
C      SIGO IS THE MAXIMUM NUMERIC VALUE OF PRINCIPAL MOMENT ( + OR - ) .
C          IF THICKNESS SWITCH IS INPUT IT IS THE PLATE STRESS AND IS +
C          FOR TENSION IN BOTTOM OF PLATE
C      COUNTER CLOCKWISE BETA ANGLES ARE POSITIVE AND ARE MEASURED FROM
C          THE X AXIS TO THE DIRECTION OF THE LARGEST PRINCIPAL STRESS
C          OR MOMENT (POSITIVE OR NEGATIVE)
                TMY = -TMX                                                 10SE9
                BMP = BMX(I,J) - BMA                                       15DE7
                BMR = SQRT ( BMP * BMP + TMY * TMY )                       10SE9CDC
C               BMR = DSQRT ( BMP * BMP + TMY * TMY )                      310C9IBM
                BMO = BMA + BMR                                            15DE7
                BMT = BMA - BMR                                            15DE7
C-----TEST TO PRINT ONLY THE MAXIMUM VALUE
           IF ( BMA ) 916, 918, 918                                        15DE7
```

```
  916          PMMAX = BMT                                                    10SE9
         IF ( BMP ) 940, 930, 920                                             15DE7
  918          PMMAX = BMO                                                    15DE7
         IF ( BMP ) 920, 930, 940                                             15DE7
  920          ALF = TMY / BMP                                                10SE9
               ALF = ATAN ( ALF ) * 57.29578                                  10SE9CDC
C              ALF = DATAN ( ALF ) * 57.29578                                 17OC9IBM
         IF ( ALF ) 922, 924, 924                                             10SE9
  922          THETA =-ALF  - 180.0                                           10SE9
         GO TO 945                                                            15DE7
  924          THETA = + 180.0 - ALF                                          10SE9
         GO TO 945                                                            15DE7
  930    IF ( TMY ) 932, 934, 936                                             10SE9
  932          THETA = + 90.0                                                 10SE9
         GO TO 945                                                            15DE7
  934          THETA = 0.0                                                    15DE7
         GO TO 945                                                            15DE7
  936          THETA = - 90.0                                                 10SE9
         GO TO 945                                                            15DE7
  940          ALF = TMY / BMP                                                10SE9
               ALF = ATAN ( ALF ) * 57.29578                                  10SE9CDC
C              ALF = DATAN ( ALF ) * 57.29578                                 17OC9IBM
               THETA =-ALF                                                    10SE9
C-----CLOCKWISE ANGLES ARE NEGATIVE
  945          BETA = 0.5 * THETA                                             15DE7
               SIGO = PMMAX * SDT2                                            15DE7
  948 PRINT 47 , ISTA, JSTA, W(I,J),BMX(I,J),BMY(I,J),TMX , REACT,            08DE7
     1           SIGO,      BETA                                              14DE7
  955    CONTINUE                                                             11SE7
  960    CONTINUE                                                             09AG7
      PRINT 50, SUMR                                                          12DE7
      CALL TIC TOC (4)                                                        25SE6
         GO TO 1010                                                           26AG3
 9980 PRINT 98                                                                29NO7
 9990    CONTINUE                                                             19MR5
 9999    CONTINUE                                                             04MY3
      PRINT 11                                                                08MY3
      PRINT 1                                                                 21JL7
      PRINT 13, ( AN1(N), N = 1, 40 )                                         17OC9
      CALL TIC TOC (2)                                                        26SE6
      PRINT 19                                                                26AG3
      END
```

```
      SUBROUTINE MATRIX ( L1,JJ,MXP3,MY,AA,BB,CC,DD,EE,FF,A,AM1,        29NO7
     1                    AM2,B,BM1,BM2,C,CM1,CM2,D,E,ML   )            19AP8
C     DOUBLE PRECISION AA, BB, CC, DD, EE, FF, A, AM1, AM2, B, BM1, BM2,16OC9IBM
C    1                C, CM1, CM2, D, E                                 16OC9IBM
      DIMENSION      AA (L1,1) ,        BB (L1,3) ,        CC (L1,5),   03JA8
     2               DD (L1,3) ,        EE (L1,1) ,        FF (L1,1),   19AP8
     3               A (L1,1) ,         AM1(L1,1),         AM2(L1,1),   29NO7
     4               B (L1,L1) ,        BM1(L1,L1) ,       BM2(L1,L1) ,29NO7
     5               C (L1,L1) ,        CM1(L1,L1) ,       CM2(L1,L1) ,29NO7
     6                                  D(L1,L1) ,         E(L1,L1)     26JA8
C
C-----TEST FOR MULTIPLE LOADING, IF OFFSPRING, RETRIEVE D AND E
C          RECURSION MULTIPLIERS FROM TAPE 2
C
          IF( ML ) 500, 520, 520                                        20OC7
  500 READ (2) (( D(I,K) , E(I,K) , I= 1,MXP3) , K= 1,MXP3 )           20OC7
          GO TO 550                                                     20OC7
C
C-----COMPUTE RECURSION MULTIPLIER E
  520 CALL MATMY1 (L1 , MXP3 , MXP3 , AA  , BM2 , E)                    29NO7
      CALL MATA1 (L1 , MXP3 , E , BB  , E)                              29NO7
C
C-----COMPUTE RECURSION MULTIPLIER  -1/D, C USED AS A TEMPORARY
      CALL MATMPY (L1 , MXP3 , MXP3 , E , BM1 , D)                      29NO7
      CALL MATMY1 (L1 , MXP3 , MXP3 , AA  , CM2 , C )                   29NO7
          DO  535  K = 1, MXP3                                          21JL7
          DO  530  I = 1, MXP3                                          21JL7
              D(I,K) = - D(I,K) - C(I,K)                                01DE7
  530     CONTINUE                                                      04MY7
  535     CONTINUE                                                      22JE7
      CALL MATS2 (L1, MXP3, D, CC, D )                                  29NO7
C
C-----COMPUTE RECURSION MULTIPLIER D
      CALL INVR5 ( D, L1, MXP3, JJ )                                    19AP8
C-----COMPUTE RECURSION COEFFICIENT C
      CALL MATM2 (L1 , MXP3 , D , EE  , C )                             29NO7
C-----COMPUTE RECURSION COEFFICIENT B, NOW USING BM2 AS A TEMPORARY
      CALL MATMPY (L1 , MXP3 , MXP3 , E , CM1 , B )                     29NO7
      CALL MATA1 (L1 , MXP3 , B  , DD  , BM2)                           21DE7
      CALL MATMPY (L1 , MXP3 , MXP3 , D , BM2 , B )                     21DE7
C-----COMPUTE RECURSION COEFFICIENT A, EE USED AS A TEMPORARY
  550 CALL MATMPY (L1 , MXP3 , 1 , E , AM1, A )                         29NO7
      CALL MATMY1 (L1 , MXP3 , 1 , AA  , AM2, EE )                      02JA8
          DO  560  I = 1, MXP3                                          21JL7
              EE(I,1) = A(I,1) + EE (I,1) - FF(I,1)                     30OC9
  560     CONTINUE                                                      04MY7
      CALL MATMPY (L1 , MXP3 , 1 , D , EE ,A  )                         02JA8
      RETURN                                                            08AG7
      END                                                               08AG7
```

```
      SUBROUTINE MATMY1 (M1 , L2 , L , X , Y , Z)                       25JL7
C     DOUBLE PRECISION X, Y, Z                                          160C9IBM
      DIMENSION  X(M1,1) , Z(M1,L) , Y(M1,L)                            03JA8
          DO 200  I = 1 , L2                                            19AP8
          DO 100  J = 1,L                                               13JL7
               Z(I,J) = X(I,1) * Y(I,J)                                 03JA8
  100     CONTINUE                                                      13JL7
  200     CONTINUE                                                      19AP8
      RETURN                                                            13JL7
      END                                                               13JL7
```

```
      SUBROUTINE MATA1 (M1 , L2 , Z , X3 , Y)                           25JL7
C     DOUBLE PRECISION X3, Z, Y                                         160C9IBM
      DIMENSION X3(M1,3), Z(M1,M1), Y(M1,M1)                            13JL7
               MM1 = L2 - 1                                             25JL7
          DO 60  I = 1 , L2                                             19AP8
          DO 50  J = 1 , L2                                             25JL7
               Y(I,J) = Z(I,J)                                          13JL7
   50     CONTINUE                                                      13JL7
   60     CONTINUE                                                      19AP8
          DO 100 I = 2, MM1                                             13JL7
               Y(I,I-1) = Y(I,I-1) + X3(I,1)                            13JL7
               Y(I,I) = Y(I,I) + X3(I,2)                                13JL7
               Y(I,I+1) = Y(I,I+1) + X3(I,3)                            13JL7
  100     CONTINUE                                                      13JL7
               Y(1,1) = Y(1,1) + X3(1,2)                                13JL7
               Y(1,2) = Y(1,2) + X3(1,3)                                13JL7
               Y(L2,L2-1) = Y(L2,L2-1) + X3(L2,1)                       25JL7
               Y(L2,L2) = Y(L2,L2) + X3(L2,2)                           25JL7
      RETURN                                                            13JL7
      END                                                               13JL7
```

```
      SUBROUTINE MATMPY (M1 , L2 , L , X , Y , Z)                       25JL7
C     DOUBLE PRECISION X, Y, Z                                          16OC9IBM
      DIMENSION X(M1,M1), Y(M1,L ), Z(M1,L )                            27JE7
          DO 300  I = 1 , L2                                            19AP8
          DO 200  M = 1,L                                               19AP8
               Z(I,M) = 0.0                                             27JE7
          DO 100  K = 1 , L2                                            25JL7
               Z(I,M) = X(I,K) * Y(K,M) + Z(I,M)                        27JE7
  100 CONTINUE                                                          27JE7
  200     CONTINUE                                                      19AP8
  300     CONTINUE                                                      19AP8
      RETURN                                                            27JE7
      END                                                               27JE7
```

```
      SUBROUTINE MATS2 (L1 , M1 , Z , X3 , Y)                           30NO7
C     DOUBLE PRECISION Z, X3, Y                                         16OC9IBM
      DIMENSION X3(L1,5) , Z(L1,L1) , Y(L1,L1)                          25JL7
               MM2 = M1 - 2                                             13JL7
          DO 100 I = 3, MM2                                             13JL7
               Y(I,I-2) = Z(I,I-2) - X3(I,1)                            30NO7
               Y(I,I-1) = Z(I,I-1) - X3(I,2)                            30NO7
               Y(I,I) = Z(I,I) - X3(I,3)                                30NO7
               Y(I,I+1) = Z(I,I+1) - X3(I,4)                            30NO7
               Y(I,I+2) = Z(I,I+2) - X3(I,5)                            30NO7
  100     CONTINUE                                                      13JL7
               Y(1,1) = Z(1,1) - X3(1,3)                                30NO7
               Y(1,2) = Z(1,2) - X3(1,4)                                30NO7
               Y(1,3) = Z(1,3) - X3(1,5)                                30NO7
               Y(2,1) = Z(2,1) - X3(2,2)                                30NO7
               Y(2,2) = Z(2,2) - X3(2,3)                                30NO7
               Y(2,3) = Z(2,3) - X3(2,4)                                30NO7
               Y(2,4) = Z(2,4) - X3(2,5)                                30NO7
               Y(M1-1,M1-3) = Z(M1-1,M1-3) - X3(M1-1,1)                 30NO7
               Y(M1-1,M1-2) = Z(M1-1,M1-2) - X3(M1-1,2)                 30NO7
               Y(M1-1,M1-1) = Z(M1-1,M1-1) - X3(M1-1,3)                 30NO7
               Y(M1-1,M1) = Z(M1-1,M1) - X3(M1-1,4)                     30NO7
               Y(M1,M1-2) = Z(M1,M1-2) - X3(M1,1)                       30NO7
               Y(M1,M1-1) = Z(M1,M1-1) - X3(M1,2)                       30NO7
               Y(M1,M1) = Z(M1,M1) - X3(M1,3)                           30NO7
      RETURN                                                            13JL7
      END                                                               13JL7
```

```
      SUBROUTINE INVR5 ( A, L1, L2, JJ )                                19AP8
C     DOUBLE PRECISION A, S, S2                                         16OC9IBM
      DIMENSION  A(L1,L1)                                               25JA8
   20 FORMAT (///28H      NO INVERSE EXISTS   JJ=, I5 , 10H  A(I,J) =  ) 30OC9
   30 FORMAT ( 1X,10E10.3 )                                             10OC7
            EP = 1.0E-10                                                21DE7
         DO 185  I = 1 , L2                                             20OC7
            KK = I + 1                                                  20OC7
         IF ( ABS(A(I,I) ) - EP ) 990, 990, 150                         19AP8CDC
C        IF ( DABS(A(I,I) ) - EP ) 990, 990, 150                        30OC9IBM
  150       S = 1 / A(I,I)                                              20OC7
         DO 160  J = 1, L2                                              25JA8
            A(I,J) = A(I,J) * S                                         20OC7
  160    CONTINUE                                                       20OC7
            A(I,I) = S                                                  25JA8
         DO 180  J = 1 , L2                                             20OC7
         IF ( J-I ) 170, 180, 170                                       20OC7
  170       S2 = A(J,I)                                                 20OC7
            A(J,I) = 0.0                                                25JA8
         DO 175  K = 1, L2                                              25JA8
            A(J,K) = A(J,K) - S2 * A(I,K)                               20OC7
  175    CONTINUE                                                       20OC7
  180    CONTINUE                                                       20OC7
  185    CONTINUE                                                       20OC7
      RETURN                                                            20OC7
  990 PRINT 20, JJ                                                      10JA8
      PRINT 30, (( A(I,J), J=1,L2) , I=1, L2 )                          25JA8
      END                                                               20OC7
```

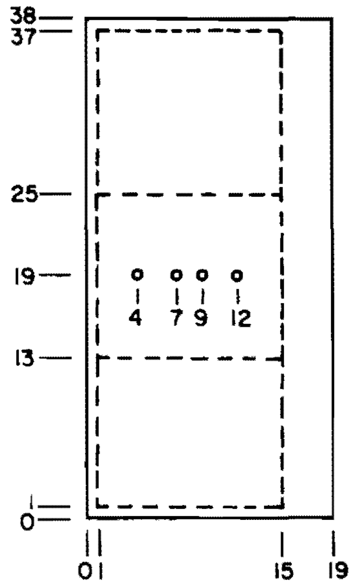
```
      SUBROUTINE MATM2 (M1 , L2 , Y , X , Z)                            25JL7
C     DOUBLE PRECISION X, Y, Z                                          16OC9IBM
      DIMENSION  X(M1,1) , Z(M1,M1) , Y(M1, M1)                         03JA8
         DO 200  I = 1 , L2                                             19AP8
         DO 100  J = 1 , L2                                             25JL7
            Z(I,J) = X(J,1) * Y(I,J)                                    03JA8
  100    CONTINUE                                                       13JL7
  200    CONTINUE                                                       19AP8
      RETURN                                                            13JL7
      END                                                               13JL7
```

```
      SUBROUTINE TIC TOC (J)                                            240C6
C
C-----THIS ROUTINE IS SPECIFICALLY FOR THE CDC6600. WHEN USING THE
C     IBM360/50 SYSTEM THE INDICATED IBM CARDS WILL CALL THE SUBROUTINE
C     PRTIME TO PRINTOUT THE REQUIRED TIME.
C
C-----  TIC TOC (1)  =  COMPILE TIME                                    20DE7
C       TIC TOC (2)  =  ELAPSED  TM TIME                                300C9
C       TIC TOC (3)  =  TIME FOR THIS PROBLEM                           20DE7
C       TIC TOC (4)  =  TIME FOR THIS PROBLEM  AND  ELAPSED  TM TIME    300C9
   10 FORMAT(///30X19HELAPSED  TM TIME = I5,8H MINUTESF9.3,8H SECONDS ) 300C9
   11 FORMAT(///30X15HCOMPILE TIME = ,I5,8H MINUTES,F9.3,8H SECONDS   ) 25SE6
   12 FORMAT(///30X24HTIME FOR THIS PROBLEM = ,I5,8H MINUTES,F9.3,      25SE6
     1       8H SECONDS   )                                             25SE6
               I = J - 2                                                21JY7
          IF ( I-1 ) 40, 30, 30                                         21JY7
   30          FI4 = F                                                  25SE6
   40 CALL SECOND (F)                                                   25SE6CDC
C  40 CALL PRTIME                                                       300C9IBM
C         GO TO 990                                                     300C9IBM
               II1 = F                                                  25SE6
               I1 = II1 / 60                                            25SE6
               FI2 =  F - I1*60                                         25SE6
          IF ( I ) 50, 70, 60                                           24JL7
   50 PRINT 11, I1, FI2                                                 21JY7
          GO TO 990                                                     25SE6
   60          FI3 = F - FI4                                            25SE6
               I2 = FI3 / 60                                            25SE6
               FI3 = FI3 - I2*60                                        25SE6
      PRINT 12, I2, FI3                                                 25SE6
          IF ( I-1 ) 990, 990, 70                                       21JY7
   70 PRINT 10, I1, FI2                                                 21JY7
  990     CONTINUE                                                      06SE7
      RETURN                                                            25SE6
      END                                                               25SE6
```

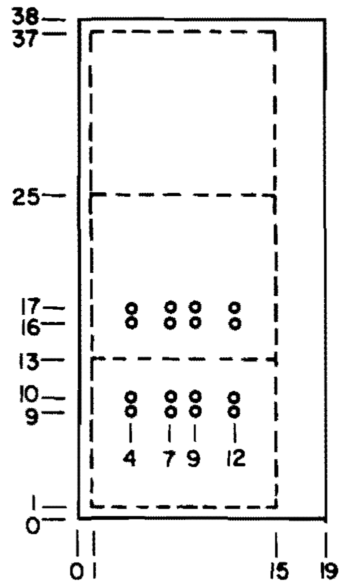
```
COMPILE TIME =      0 MINUTES    13.104 SECONDS
```

APPENDIX 5

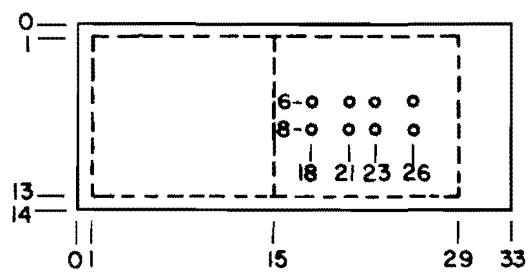
SELECTED INPUT AND OUTPUT FROM THE FIRST INTERIOR PANEL OF THE EXAMPLE STRUCTURE



Problem 201
Load Pattern H1-12



Problem 202
Load Pattern H2-7



Problem 203
Load Pattern M1-10

Fig A3. Geometry of the included problems.

```
CHG CE 909099       CODED AND RUN  1 DEC 69  HUA       FT-KIP UNITS
HOUSTON SHIP CHANNEL STRUCTURE     TWO-WAY LIGHT-WEIGHT DECK
  201     LOAD PATTERN H1-12       FIRST INTERIOR PANELS
   +1                   1    2   27    0
   19   38 2.000E+00 2.000E+00 1.500E-01
    0   19   19   19    1
    7   10    9   20         1
    0    0   16   38 1.233E+04 1.233E+04
   17    0   17   38 8.883E+03 8.883E+03
   18    0   18   38 6.138E+03 6.138E+03
   19    0   19   38 4.028E+03 4.028E+03
   19    0   19   38           5.453E+04
    1    1   16   38                                         1.048E+04
   17    1   17   38                                         9.017E+03
   18    1   18   38                                         6.383E+03
   19    1   19   38                                         4.320E+03
    1    1    1   37                               1.000E+25
   15    1   15   37                               1.000E+25
    1    1   15    1                               1.000E+25
    1   13   15   13                               1.000E+25
    1   25   15   25                               1.000E+25
    1   37   15   37                               1.000E+25
    0    0    0   38                               6.360E+03
    0    0   15    0                               6.480E+03
    0   38   15   38                               6.480E+03
    0    0   16   38                    -4.025E-01
   17    0   17   38                    -3.608E-01
   18    0   18   38                    -3.188E-01
   19    0   19   38                    -2.131E-01
   19    0   19   38                    -2.588E-01
    4   19    4   19                    -2.080E+01
    7   19    7   19                    -2.080E+01
    9   19    9   19                    -2.080E+01
   12   19   12   19                    -2.080E+01
  202     LOAD PATTERN H2-7        FIRST INTERIOR PANELS
   -1                        4   21
    7    5    9   20         1
    0    9   19    9    1
    0   17   19   17    1
    0   13   19   13    1    1
    0    0   16   38                    -4.025E-01
   17    0   17   38                    -3.608E-01
   18    0   18   38                    -3.188E-01
   19    0   19   38                    -2.131E-01
   19    0   19   38                    -2.588E-01
    4    9    4    9                    -1.040E+01
    7    9    7    9                    -1.040E+01
    9    9    9    9                    -1.040E+01
   12    9   12    9                    -1.040E+01
    4   10    4   10                    -1.040E+01
    7   10    7   10                    -1.040E+01
    9   10    9   10                    -1.040E+01
   12   10   12   10                    -1.040E+01
    4   16    4   16                    -1.040E+01
    7   16    7   16                    -1.040E+01
```

```
    9   16    9   16                    -1.040E+01
   12   16   12   16                    -1.040E+01
    4   17    4   17                    -1.040E+01
    7   17    7   17                    -1.040E+01
    9   17    9   17                    -1.040E+01
   12   17   12   17                    -1.040E+01
  203     LOAD PATTERN M1-10       FIRST INTERIOR PANELS
                        1    2   30    0
   14   33 2.000E+00 2.000E+00 1.500E-01
    6   15    8   30         1
    4   23   11   23    1
    0    0   14   30 1.233E+04 1.233E+04
    0   31   14   31 8.883E+03 8.883E+03
    0   32   14   32 6.138E+03 6.138E+03
    0   33   14   33 4.028E+03 4.028E+03
    0   33   14   33 5.453E+04
    1    1   14   30                                         1.048E+04
    1   31   14   31                                         9.017E+03
    1   32   14   32                                         6.383E+03
    1   33   14   33                                         4.320E+03
    1   29   13   29                               1.000E+25
    1   15   13   15                               1.000E+25
    1    1   13    1                               1.000E+25
   13    1   13   29                               1.000E+25
    1    1    1   29                               1.000E+25
    0    0   14    0                               6.360E+03
   14    0   14   29                               6.480E+03
    0    0    0   29                               6.480E+03
    0    0   14   30                    -4.025E-01
    0   31   14   31                    -3.608E-01
    0   32   14   32                    -3.188E-01
    0   33   14   33                    -2.131E-01
    0   33   14   33                    -2.588E-01
    6   18    6   18                    -1.560E+01
    8   18    8   18                    -1.560E+01
    6   21    6   21                    -1.560E+01
    8   21    8   21                    -1.560E+01
    6   23    6   23                    -1.560E+01
    8   23    8   23                    -1.560E+01
    6   26    6   26                    -1.560E+01
    8   26    8   26                    -1.560E+01
```

PROGRAM SLAB 30 FINAL REPORT DECK - PANAK REVISION DATE 20 NOV 69
CHG CE 909099 CODED AND RUN 1 DEC 69 HUA FT-KIP UNITS
HOUSTON SHIP CHANNEL STRUCTURE TWO-WAY LIGHT-WEIGHT DECK

PROB
201 LOAD PATTERN H1-12 FIRST INTERIOR PANELS

TABLE 1. CONTROL DATA

MULTIPLE LOAD OPTION (IF BLANK OR ZERO, PROB IS INDEPENDENT -- 1
IF +1, PARENT FOR NEXT PROB -- IF -1, AN OFFSPRING PROB)

	TABLE NUMBER 2	3	4	5
NUM CARDS INPUT THIS PROBLEM	1	2	27	0

TABLE 2. CONSTANTS

NUM INCREMENTS IN X DIRECTION	19
NUM INCREMENTS IN Y DIRECTION	38
INCR LENGTH IN X DIRECTION	2.000E+00
INCR LENGTH IN Y DIRECTION	2.000E+00
POISSONS RATIO	1.500E-01
SLAB THICKNESS (IF BLANK OR ZERO, MAX PRINCIPAL MOMENT IS COMPUTED -- IF SPECIFIED, MAX PRINCIPAL STRESS)	-0.

TABLE 3. SPECIFIED AREAS FOR SELECTED MOMENT OUTPUT

FROM		THRU		PRINT (1=YES) X MOMENTS	Y MOMENTS
0	19	19	19	1	-0
7	10	9	20	-0	1

TABLE 4. STIFFNESS AND LOAD DATA

FROM		THRU		DX	DY	Q	S	
0	0	16	38	1.233E+04	1.233E+04	-0.	-0.	-0.
17	0	17	38	8.883E+03	8.883E+03	-0.	-0.	-0.
18	0	18	38	6.138E+03	6.138E+03	-0.	-0.	-0.
19	0	19	38	4.028E+03	4.028E+03	-0.	-0.	-0.
19	0	19	38	-0.	5.453E+04	-0.	-0.	-0.
1	1	16	38	-0.	-0.	-0.	-0.	1.048E+04
17	1	17	38	-0.	-0.	-0.	-0.	9.017E+03
18	1	18	38	-0.	-0.	-0.	-0.	6.383E+03
19	1	19	38	-0.	-0.	-0.	-0.	4.320E+03
1	1	1	37	-0.	-0.	-0.	1.000E+25	-0.
15	1	15	37	-0.	-0.	-0.	1.000E+25	-0.
1	1	15	1	-0.	-0.	-0.	1.000E+25	-0.
1	13	15	13	-0.	-0.	-0.	1.000E+25	-0.

1	25	15	25	-0.	-0.	-0.	1.000E+25	-0.
1	37	15	37	-0.	-0.	-0.	1.000E+25	-0.
0	0	0	38	-0.	-0.	-0.	6.360E+03	-0.
0	0	15	0	-0.	-0.	-0.	6.480E+03	-0.
0	38	15	38	-0.	-0.	-0.	6.480E+03	-0.
0	0	16	38	-0.	-0.	-4.025E-01	-0.	-0.
17	0	17	38	-0.	-0.	-3.608E-01	-0.	-0.
18	0	18	38	-0.	-0.	-3.188E-01	-0.	-0.
19	0	19	38	-0.	-0.	-2.131E-01	-0.	-0.
19	0	19	38	-0.	-0.	-2.588E-01	-0.	-0.
4	19	4	19	-0.	-0.	-2.080E+01	-0.	-0.
7	19	7	19	-0.	-0.	-2.080E+01	-0.	-0.
9	19	9	19	-0.	-0.	-2.080E+01	-0.	-0.
12	19	12	19	-0.	-0.	-2.080E+01	-0.	-0.

TABLE 5. AXIAL THRUST DATA

FROM	THRU	PX	PY

NONE

PROGRAM SLAB 30 FINAL REPORT DECK - PANAK REVISION DATE 20 NOV 69
CHG CE 909099 CODED AND RUN 1 DEC 69 HUA FT-KIP UNITS
HOUSTON SHIP CHANNEL STRUCTURE TWO-WAY LIGHT-WEIGHT DECK

PROB (CONTD)
201 LOAD PATTERN H1-12 FIRST INTERIOR PANELS

TABLE 6. SELECTED MOMENT OUTPUT
X MOMENT ACTS IN THE X DIRECTION (ABOUT Y AXIS)

X MOMENTS ONLY, BETWEEN (0, 19) AND (19, 19)

X	Y	X MOMENT
0	19	3.055E-13
1	19	-9.163E+00
2	19	-4.216E+00
3	19	-2.036E-01
4	19	5.505E+00
5	19	3.435E+00
6	19	4.309E+00
7	19	8.417E+00
8	19	5.850E+00
9	19	8.455E+00
10	19	4.379E+00
11	19	3.532E+00
12	19	5.627E+00
13	19	-3.846E-02
14	19	-3.937E+00
15	19	-8.593E+00
16	19	-4.818E+00
17	19	-2.452E+00
18	19	-9.675E-01
19	19	5.218E-14

Y MOMENTS ONLY, BETWEEN (7, 10) AND (9, 20)

X	Y	Y MOMENT
7	10	-8.585E-01
8	10	-9.240E-01
9	10	-9.277E-01
7	11	-2.475E+00
8	11	-2.569E+00
9	11	-2.495E+00
7	12	-4.824E+00
8	12	-4.958E+00
9	12	-4.773E+00
7	13	-8.169E+00
8	13	-8.364E+00
9	13	-8.037E+00
7	14	-4.152E+00
8	14	-4.243E+00

9	14	-4.069E+00
7	15	-9.653E-01
8	15	-9.678E-01
9	15	-9.226E-01
7	16	1.827E+00
8	16	1.919E+00
9	16	1.847E+00
7	17	4.603E+00
8	17	4.843E+00
9	17	4.615E+00
7	18	7.783E+00
8	18	8.215E+00
9	18	7.794E+00
7	19	1.270E+01
8	19	1.183E+01
9	19	1.271E+01
7	20	7.783E+00
8	20	8.215E+00
9	20	7.794E+00

PROGRAM SLAB 30 FINAL REPORT DECK - PANAK REVISION DATE 20 NOV 69
CHG CE 909099 CODED AND RUN 1 DEC 69 HUA FT-KIP UNITS
HOUSTON SHIP CHANNEL STRUCTURE TWO-WAY LIGHT-WEIGHT DECK

PROB (CONTD)
201 LOAD PATTERN H1-12 FIRST INTERIOR PANELS

TABLE 7. RESULTS
X MOMENT AND X TWISTING MOMENT ACT IN THE X DIRECTION (ABOUT Y AXIS), Y TWISTING MOMENT = -X TWISTING MOMENT. COUNTERCLOCKWISE BETA ANGLES ARE POSITIVE FROM X AXIS TO THE DIRECTION OF LARGEST PRINCIPAL MOMENT

X	Y	DEFL	X MOMENT	Y MOMENT	X TWISTING MOMENT	SUPPORT REACTION	LARGEST PRINCIPAL MOMENT	BETA X TO LARGEST
0	0	-3.741E-05	2.824E-15	1.404E-15	-1.751E-03	4.803E-01	1.751E-03	-45.0
1	0	-1.638E-05	5.137E-02	2.165E-15	-2.728E-02	1.061E-01	6.316E-02	-23.4
2	0	2.170E-05	4.009E-02	-1.277E-15	-5.946E-02	-1.406E-01	8.279E-02	-35.7
3	0	7.308E-05	-1.344E-03	-6.151E-15	-6.817E-02	-4.736E-01	-6.884E-02	44.7
4	0	1.240E-04	-3.048E-02	-1.221E-15	-6.080E-02	-8.036E-01	-7.792E-02	38.0
5	0	1.648E-04	-4.430E-02	-7.272E-15	-4.415E-02	-1.068E+00	-7.154E-02	31.7
6	0	1.910E-04	-4.898E-02	-3.525E-15	-2.366E-02	-1.237E+00	-5.854E-02	22.0
7	0	2.008E-04	-4.973E-02	-1.060E-14	-2.104E-03	-1.301E+00	-4.982E-02	2.4
8	0	1.942E-04	-4.868E-02	-1.113E-14	1.938E-02	-1.258E+00	-5.545E-02	-19.3
9	0	1.714E-04	-4.405E-02	-8.604E-15	3.977E-02	-1.110E+00	-6.749E-02	-30.5
10	0	1.340E-04	-2.845E-02	-5.551E-15	5.610E-02	-8.680E-01	-7.210E-02	-37.9
11	0	8.710E-05	1.105E-02	-4.975E-15	6.063E-02	-5.644E-01	6.640E-02	42.4
12	0	4.390E-05	7.220E-02	-2.054E-15	4.125E-02	-2.845E-01	9.092E-02	24.4
13	0	2.467E-05	3.307E-02	-1.166E-15	5.800E-03	-1.599E-01	3.406E-02	9.7
14	0	1.642E-05	-6.763E-01	-2.665E-15	9.706E-02	-1.064E-01	-6.899E-01	-8.0
15	0	-2.163E-04	-3.694E+00	2.132E-14	5.542E-02	1.401E+00	-3.695E+00	-.9
16	0	-1.675E-03	-2.577E+00	4.796E-14	-7.519E-02	0.	-2.579E+00	1.7
17	0	-3.989E-03	-1.393E+00	3.082E-13	-2.412E-02	0.	-1.393E+00	1.0
18	0	-6.944E-03	-5.362E-01	1.745E-13	1.109E-02	0.	-5.364E-01	-1.2
19	0	-1.026E-02	5.031E-14	4.876E-12	5.142E-03	0.	5.142E-03	45.0
0	1	-1.646E-05	2.665E-15	5.036E-02	-2.709E-02	1.047E-01	6.217E-02	-66.5
1	1	-3.943E-28	-5.831E-02	-5.810E-02	-1.610E-01	7.886E-03	-2.192E-01	45.0
2	1	-1.041E-25	-6.649E-02	-4.432E-01	-2.957E-01	1.041E+00	-6.055E-01	61.2
3	1	-2.129E-25	-1.336E-01	-8.907E-01	-3.107E-01	2.129E+00	-1.002E+00	70.3
4	1	-2.877E-25	-1.912E-01	-1.274E+00	-2.617E-01	2.877E+00	-1.334E+00	77.1
5	1	-3.381E-25	-2.335E-01	-1.557E+00	-1.843E-01	3.381E+00	-1.582E+00	82.2
6	1	-3.674E-25	-2.593E-01	-1.729E+00	-9.713E-02	3.674E+00	-1.735E+00	86.2
7	1	-3.780E-25	-2.688E-01	-1.792E+00	-8.461E-03	3.780E+00	-1.792E+00	89.7
8	1	-3.712E-25	-2.623E-01	-1.749E+00	7.925E-02	3.712E+00	-1.753E+00	-87.0
9	1	-3.472E-25	-2.401E-01	-1.601E+00	1.649E-01	3.472E+00	-1.620E+00	-83.2
10	1	-3.050E-25	-2.016E-01	-1.344E+00	2.445E-01	3.050E+00	-1.394E+00	-78.4
11	1	-2.409E-25	-1.454E-01	-9.693E-01	3.055E-01	2.409E+00	-1.070E+00	-71.7
12	1	-1.410E-25	-6.917E-02	-4.611E-01	3.229E-01	1.410E+00	-6.429E-01	-60.6
13	1	4.372E-26	2.480E-02	1.653E-01	2.664E-01	-4.372E-01	3.706E-01	52.4
14	1	9.342E-25	9.348E-02	6.232E-01	1.388E-01	-9.342E+00	6.574E-01	76.2
15	1	-6.330E-25	-4.907E+00	-1.388E+00	-2.739E-02	1.266E+01	-4.907E+00	.4
16	1	-1.559E-03	-2.579E+00	-6.987E-01	-9.047E-02	0.	-2.583E+00	2.7
17	1	-3.940E-03	-1.334E+00	-2.660E-01	-3.505E-02	0.	-1.335E+00	1.9
18	1	-6.916E-03	-5.074E-01	-7.823E-02	1.900E-03	0.	-5.074E-01	-.3
19	1	-1.022E-02	-3.354E-14	7.733E-02	4.787E-03	0.	7.762E-02	86.5

0	2	2.120E-05	1.069E-14	3.464E-02	-5.790E-02	-1.348E-01	7.776E-02	-53.3
1	2	-1.048E-25	-4.448E-01	-6.672E-02	-2.911E-01	1.048E+00	-6.028E-01	28.5
2	2	-1.655E-04	-1.080E-01	-9.630E-02	-5.130E-01	0.	-6.152E-01	44.7
3	2	-3.620E-04	3.772E-02	-1.725E-01	-5.298E-01	0.	-6.075E-01	50.6
4	2	-5.375E-04	9.030E-02	-2.621E-01	-4.415E-01	0.	-5.613E-01	55.9
5	2	-6.699E-04	1.012E-01	-3.389E-01	-3.085E-01	0.	-4.977E-01	62.7
6	2	-7.519E-04	9.742E-02	-3.880E-01	-1.608E-01	0.	-4.364E-01	73.2
7	2	-7.822E-04	9.307E-02	-4.032E-01	-1.162E-02	0.	-4.034E-01	88.7
8	2	-7.615E-04	9.402E-02	-3.835E-01	1.351E-01	0.	-4.191E-01	-75.2
9	2	-6.906E-04	1.001E-01	-3.324E-01	2.779E-01	0.	-4.683E-01	-63.9
10	2	-5.699E-04	1.049E-01	-2.582E-01	4.123E-01	0.	-5.271E-01	-56.9
11	2	-4.016E-04	9.272E-02	-1.790E-01	5.229E-01	0.	-5.834E-01	-52.3
12	2	-1.935E-04	2.337E-02	-1.335E-01	5.705E-01	0.	-6.309E-01	-48.9
13	2	2.896E-05	-2.275E-01	-1.972E-01	4.629E-01	0.	-6.755E-01	-44.1
14	2	1.858E-04	-1.101E+00	-4.581E-01	-2.503E-03	0.	-1.101E+00	.2
15	2	-3.780E-25	-4.197E+00	-6.295E-01	-1.796E-01	3.780E+00	-4.206E+00	2.9
16	2	-1.547E-03	-2.558E+00	-4.559E-01	1.212E-02	0.	-2.558E+00	-.3
17	2	-3.921E-03	-1.327E+00	-2.372E-01	2.465E-02	0.	-1.328E+00	-1.3
18	2	-6.890E-03	-5.001E-01	-7.801E-02	2.437E-02	0.	-5.015E-01	-3.3
19	2	-1.018E-02	-3.633E-13	2.046E-01	1.076E-02	0.	2.052E-01	87.0
0	3	7.036E-05	4.802E-15	-1.340E-02	-6.285E-02	-4.475E-01	-6.991E-02	48.0
1	3	-2.142E-25	-8.853E-01	-1.328E-01	-2.915E-01	2.142E+00	-9.850E-01	18.9
2	3	-3.576E-04	-1.945E-01	7.042E-02	-5.058E-01	0.	-5.849E-01	37.7
3	3	-7.832E-04	1.630E-01	2.354E-01	-5.273E-01	0.	7.278E-01	-47.0
4	3	-1.166E-03	3.317E-01	3.563E-01	-4.431E-01	0.	7.874E-01	-45.8
5	3	-1.457E-03	3.997E-01	4.393E-01	-3.094E-01	0.	7.296E-01	-46.8
6	3	-1.637E-03	4.191E-01	4.919E-01	-1.579E-01	0.	6.175E-01	-51.5
7	3	-1.703E-03	4.189E-01	5.188E-01	-3.999E-03	0.	5.190E-01	-87.7
8	3	-1.655E-03	4.119E-01	5.209E-01	1.456E-01	0.	6.218E-01	55.3
9	3	-1.497E-03	3.973E-01	4.941E-01	2.865E-01	0.	7.363E-01	49.8
10	3	-1.231E-03	3.592E-01	4.290E-01	4.101E-01	0.	8.057E-01	47.4
11	3	-8.672E-04	2.605E-01	3.094E-01	4.956E-01	0.	7.812E-01	46.4
12	3	-4.325E-04	2.216E-02	1.157E-01	5.008E-01	0.	5.719E-01	47.7
13	3	3.822E-06	-5.235E-01	-1.589E-01	3.614E-01	0.	-7.460E-01	-31.6
14	3	2.743E-04	-1.709E+00	-4.548E-01	5.040E-02	0.	-1.711E+00	-2.3
15	3	-3.786E-25	-3.961E+00	-5.941E-01	-8.668E-02	3.786E+00	-3.963E+00	1.5
16	3	-1.559E-03	-2.469E+00	-3.620E-01	3.646E-03	0.	-2.469E+00	-.1
17	3	-3.920E-03	-1.297E+00	-1.866E-01	3.999E-02	0.	-1.299E+00	-2.1
18	3	-6.865E-03	-4.886E-01	-5.426E-02	4.274E-02	0.	-4.928E-01	-5.6
19	3	-1.013E-02	1.124E-12	3.946E-01	1.879E-02	0.	3.955E-01	87.3
0	4	1.151E-04	2.220E-16	-4.938E-02	-4.872E-02	-7.318E-01	-7.931E-02	58.4
1	4	-2.861E-25	-1.238E+00	-1.857E-01	-2.149E-01	2.861E+00	-1.280E+00	11.1
2	4	-5.166E-04	-2.826E-01	1.475E-01	-3.686E-01	0.	-4.943E-01	29.9
3	4	-1.134E-03	2.447E-01	4.570E-01	-3.853E-01	0.	7.505E-01	-52.7
4	4	-1.694E-03	5.111E-01	7.127E-01	-3.219E-01	0.	9.492E-01	-53.7
5	4	-2.119E-03	6.281E-01	9.038E-01	-2.193E-01	0.	1.025E+00	-61.1
6	4	-2.380E-03	6.665E-01	1.028E+00	-1.028E-01	0.	1.055E+00	-75.2
7	4	-2.472E-03	6.678E-01	1.087E+00	1.402E-02	0.	1.087E+00	88.1
8	4	-2.396E-03	6.502E-01	1.079E+00	1.244E-01	0.	1.112E+00	74.9
9	4	-2.158E-03	6.118E-01	1.002E+00	2.232E-01	0.	1.103E+00	65.6
10	4	-1.767E-03	5.288E-01	8.530E-01	3.016E-01	0.	1.033E+00	59.1
11	4	-1.243E-03	3.496E-01	6.277E-01	3.427E-01	0.	8.585E-01	56.0
12	4	-6.341E-04	-1.904E-02	3.303E-01	3.205E-01	0.	5.206E-01	59.3
13	4	-4.798E-05	-7.287E-01	-1.278E-02	2.126E-01	0.	-7.871E-01	-15.4
14	4	2.969E-04	-1.985E+00	-3.385E-01	4.688E-02	0.	-1.986E+00	-1.6
15	4	-3.821E-25	-3.919E+00	-5.879E-01	-2.864E-02	3.821E+00	-3.920E+00	.5
16	4	-1.568E-03	-2.395E+00	-3.397E-01	1.407E-02	0.	-2.395E+00	-.4

17	4	-3.915E-03	-1.253E+00	-1.587E-01	5.417E-02	0.	-1.256E+00	-2.8
18	4	-6.828E-03	-4.694E-01	-3.139E-02	6.051E-02	0.	-4.776E-01	-7.7
19	4	-1.005E-02	1.319E-12	6.323E-01	2.720E-02	0.	6.334E-01	87.5
0	5	1.434E-04	9.548E-15	-6.782E-02	-2.273E-02	-9.119E-01	-7.473E-02	73.1
1	5	-3.266E-25	-1.446E+00	-2.169E-01	-9.805E-02	3.266E+00	-1.454E+00	4.5
2	5	-6.126E-04	-3.370E-01	1.797E-01	-1.646E-01	0.	-3.850E-01	16.3
3	5	-1.346E-03	2.942E-01	5.623E-01	-1.653E-01	0.	6.411E-01	-64.5
4	5	-2.010E-03	6.212E-01	8.893E-01	-1.272E-01	0.	9.401E-01	-68.2
5	5	-2.512E-03	7.673E-01	1.140E+00	-7.182E-02	0.	1.153E+00	-79.5
6	5	-2.815E-03	8.144E-01	1.305E+00	-1.340E-02	0.	1.305E+00	-88.4
7	5	-2.914E-03	8.122E-01	1.381E+00	4.039E-02	0.	1.384E+00	86.0
8	5	-2.812E-03	7.829E-01	1.368E+00	8.596E-02	0.	1.381E+00	81.8
9	5	-2.518E-03	7.238E-01	1.267E+00	1.208E-01	0.	1.293E+00	78.0
10	5	-2.047E-03	6.068E-01	1.078E+00	1.406E-01	0.	1.117E+00	74.6
11	5	-1.428E-03	3.743E-01	8.087E-01	1.374E-01	0.	8.485E-01	73.8
12	5	-7.252E-04	-6.537E-02	4.738E-01	1.029E-01	0.	4.928E-01	79.6
13	5	-6.775E-05	-8.389E-01	1.046E-01	3.859E-02	0.	-8.405E-01	-2.3
14	5	3.061E-04	-2.087E+00	-2.561E-01	-2.419E-02	0.	-2.087E+00	.8
15	5	-3.923E-25	-3.899E+00	-5.849E-01	-2.505E-02	3.923E+00	-3.900E+00	.4
16	5	-1.571E-03	-2.323E+00	-3.355E-01	3.299E-02	0.	-2.324E+00	-1.0
17	5	-3.897E-03	-1.198E+00	-1.415E-01	7.951E-02	0.	-1.204E+00	-4.3
18	5	-6.764E-03	-4.433E-01	-1.026E-02	8.529E-02	0.	-4.595E-01	-10.7
19	5	-9.927E-03	1.101E-12	9.046E-01	3.836E-02	0.	9.063E-01	87.6
0	6	1.492E-04	1.282E-14	-7.230E-02	8.148E-03	-9.489E-01	-7.321E-02	-83.6
1	6	-3.356E-25	-1.489E+00	-2.233E-01	3.419E-02	3.356E+00	-1.490E+00	-1.5
2	6	-6.322E-04	-3.375E-01	1.874E-01	6.503E-02	0.	-3.454E-01	-7.0
3	6	-1.386E-03	3.217E-01	5.866E-01	8.662E-02	0.	6.124E-01	73.4
4	6	-2.062E-03	6.616E-01	9.305E-01	9.926E-02	0.	9.631E-01	71.8
5	6	-2.564E-03	8.086E-01	1.195E+00	1.013E-01	0.	1.220E+00	76.2
6	6	-2.858E-03	8.495E-01	1.369E+00	9.150E-02	0.	1.384E+00	80.3
7	6	-2.938E-03	8.375E-01	1.448E+00	7.072E-02	0.	1.456E+00	83.5
8	6	-2.812E-03	7.973E-01	1.432E+00	4.065E-02	0.	1.435E+00	86.4
9	6	-2.493E-03	7.262E-01	1.323E+00	3.932E-03	0.	1.323E+00	89.6
10	6	-1.999E-03	5.946E-01	1.127E+00	-3.723E-02	0.	1.130E+00	-86.0
11	6	-1.363E-03	3.445E-01	8.540E-01	-8.085E-02	0.	8.665E-01	-81.2
12	6	-6.558E-04	-1.103E-01	5.212E-01	-1.226E-01	0.	5.442E-01	-79.4
13	6	-1.105E-05	-8.794E-01	1.554E-01	-1.499E-01	0.	-9.007E-01	8.1
14	6	3.341E-04	-2.079E+00	-2.146E-01	-1.367E-01	0.	-2.089E+00	4.2
15	6	-3.925E-25	-3.808E+00	-5.712E-01	-5.286E-02	3.925E+00	-3.809E+00	.9
16	6	-1.569E-03	-2.223E+00	-3.202E-01	5.800E-02	0.	-2.225E+00	-1.7
17	6	-3.861E-03	-1.128E+00	-1.182E-01	1.177E-01	0.	-1.141E+00	-6.6
18	6	-6.663E-03	-4.101E-01	1.431E-02	1.197E-01	0.	-4.415E-01	-14.7
19	6	-9.741E-03	1.079E-12	1.201E+00	5.344E-02	0.	1.204E+00	87.5
0	7	1.310E-04	1.554E-15	-6.516E-02	3.843E-02	-8.332E-01	-8.296E-02	-65.1
1	7	-3.137E-25	-1.362E+00	-2.043E-01	1.632E-01	3.137E+00	-1.384E+00	-7.9
2	7	-5.728E-04	-2.784E-01	1.762E-01	2.887E-01	0.	-4.186E-01	-25.9
3	7	-1.247E-03	3.312E-01	5.405E-01	3.323E-01	0.	7.842E-01	53.7
4	7	-1.838E-03	6.333E-01	8.498E-01	3.201E-01	0.	1.079E+00	54.3
5	7	-2.261E-03	7.503E-01	1.084E+00	2.696E-01	0.	1.234E+00	60.9
6	7	-2.489E-03	7.679E-01	1.234E+00	1.925E-01	0.	1.303E+00	70.2
7	7	-2.523E-03	7.397E-01	1.298E+00	9.801E-02	0.	1.315E+00	80.3
8	7	-2.377E-03	6.909E-01	1.277E+00	-5.699E-03	0.	1.277E+00	-89.4
9	7	-2.065E-03	6.193E-01	1.174E+00	-1.104E-01	0.	1.196E+00	-79.2
10	7	-1.606E-03	4.957E-01	9.960E-01	-2.072E-01	0.	1.071E+00	-70.2
11	7	-1.032E-03	2.638E-01	7.514E-01	-2.857E-01	0.	8.832E-01	-65.2
12	7	-4.080E-04	-1.581E-01	4.559E-01	-3.328E-01	0.	6.017E-01	-66.3
13	7	1.410E-04	-8.709E-01	1.293E-01	-3.305E-01	0.	-9.702E-01	16.7

14	7	3.945E-04	-1.984E+00	-2.080E-01	-2.557E-01	0.	-2.020E+00	8.0
15	7	-3.778E-25	-3.603E+00	-5.405E-01	-8.396E-02	3.778E+00	-3.606E+00	1.6
16	7	-1.563E-03	-2.075E+00	-2.807E-01	9.388E-02	0.	-2.080E+00	-3.0
17	7	-3.801E-03	-1.038E+00	-7.879E-02	1.675E-01	0.	-1.066E+00	-9.6
18	7	-6.512E-03	-3.690E-01	4.587E-02	1.620E-01	0.	-4.247E-01	-19.0
19	7	-9.473E-03	1.314E-12	1.504E+00	7.157E-02	0.	1.508E+00	87.3
0	8	9.120E-05	-9.770E-15	-4.538E-02	6.294E-02	-5.800E-01	-8.960E-02	-54.9
1	8	-2.619E-25	-1.078E+00	-1.617E-01	2.707E-01	2.619E+00	-1.152E+00	-15.3
2	8	-4.410E-04	-1.681E-01	1.407E-01	4.751E-01	0.	-5.133E-01	-36.0
3	8	-9.448E-04	3.199E-01	4.146E-01	5.333E-01	0.	9.026E-01	47.5
4	8	-1.363E-03	5.372E-01	6.343E-01	4.972E-01	0.	1.085E+00	47.8
5	8	-1.635E-03	5.955E-01	7.900E-01	4.011E-01	0.	1.105E+00	51.8
6	8	-1.748E-03	5.741E-01	8.807E-01	2.676E-01	0.	1.036E+00	59.9
7	8	-1.715E-03	5.241E-01	9.089E-01	1.128E-01	0.	9.395E-01	74.8
8	8	-1.553E-03	4.698E-01	8.785E-01	-5.002E-02	0.	8.846E-01	-83.1
9	8	-1.278E-03	4.096E-01	7.934E-01	-2.082E-01	0.	8.846E-01	-66.3
10	8	-9.075E-04	3.158E-01	6.572E-01	-3.477E-01	0.	8.738E-01	-58.1
11	8	-4.647E-04	1.346E-01	4.754E-01	-4.515E-01	0.	7.876E-01	-55.3
12	8	-9.225E-07	-2.132E-01	2.571E-01	-4.998E-01	0.	5.743E-01	-57.6
13	8	3.793E-04	-8.265E-01	1.502E-02	-4.706E-01	0.	-1.037E+00	24.1
14	8	4.845E-04	-1.813E+00	-2.375E-01	-3.424E-01	0.	-1.884E+00	11.7
15	8	-3.460E-25	-3.276E+00	-4.914E-01	-8.935E-02	3.460E+00	-3.279E+00	1.8
16	8	-1.547E-03	-1.876E+00	-2.129E-01	1.489E-01	0.	-1.890E+00	-5.1
17	8	-3.707E-03	-9.302E-01	-2.041E-02	2.267E-01	0.	-9.835E-01	-13.2
18	8	-6.293E-03	-3.217E-01	8.431E-02	2.069E-01	0.	-4.086E-01	-22.8
19	8	-9.103E-03	6.484E-13	1.781E+00	9.031E-02	0.	1.785E+00	87.1
0	9	3.633E-05	-4.580E-15	-8.729E-03	7.535E-02	-2.310E-01	-7.984E-02	-46.7
1	9	-1.831E-25	-6.716E-01	-1.007E-01	3.335E-01	1.831E+00	-8.252E-01	-24.7
2	9	-2.542E-04	-2.911E-02	6.469E-02	5.850E-01	0.	6.047E-01	47.3
3	9	-5.213E-04	2.787E-01	1.806E-01	6.436E-01	0.	8.751E-01	42.8
4	9	-7.049E-04	3.750E-01	2.449E-01	5.859E-01	0.	8.995E-01	41.8
5	9	-7.762E-04	3.529E-01	2.657E-01	4.586E-01	0.	7.699E-01	42.3
6	9	-7.436E-04	2.813E-01	2.544E-01	2.911E-01	0.	5.592E-01	43.7
7	9	-6.304E-04	2.060E-01	2.222E-01	1.033E-01	0.	3.177E-01	47.2
8	9	-4.598E-04	1.493E-01	1.772E-01	-8.980E-02	0.	2.541E-01	-49.4
9	9	-2.485E-04	1.105E-01	1.232E-01	-2.741E-01	0.	3.911E-01	-45.7
10	9	-6.659E-06	6.474E-02	5.964E-02	-4.333E-01	0.	4.955E-01	-44.8
11	9	2.537E-04	-3.855E-02	-1.637E-02	-5.463E-01	0.	-5.738E-01	44.4
12	9	5.021E-04	-2.771E-01	-1.066E-01	-5.869E-01	0.	-7.849E-01	40.9
13	9	6.638E-04	-7.529E-01	-2.082E-01	-5.287E-01	0.	-1.075E+00	31.4
14	9	5.860E-04	-1.578E+00	-3.142E-01	-3.519E-01	0.	-1.670E+00	14.6
15	9	-2.959E-25	-2.843E+00	-4.265E-01	-3.741E-02	2.959E+00	-2.844E+00	.9
16	9	-1.508E-03	-1.646E+00	-1.197E-01	2.315E-01	0.	-1.681E+00	-8.4
17	9	-3.557E-03	-8.173E-01	5.275E-02	2.913E-01	0.	-9.059E-01	-16.9
18	9	-5.986E-03	-2.742E-01	1.254E-01	2.476E-01	0.	-3.926E-01	-25.5
19	9	-8.610E-03	7.155E-13	1.979E+00	1.062E-01	0.	1.985E+00	86.9
0	10	-2.145E-05	-3.220E-15	5.085E-02	6.699E-02	1.364E-01	9.707E-02	55.4
1	10	-8.248E-26	-2.032E-01	-3.048E-02	3.186E-01	8.248E-01	-4.470E-01	-37.4
2	10	-4.448E-05	1.002E-01	-8.040E-02	5.633E-01	0.	5.804E-01	40.4
3	10	-5.169E-05	1.942E-01	-2.096E-01	6.020E-01	0.	-6.427E-01	-54.3
4	10	1.598E-05	1.512E-01	-3.837E-01	5.289E-01	0.	-7.089E-01	-58.4
5	10	1.529E-04	3.914E-02	-5.690E-01	3.950E-01	0.	-7.634E-01	-63.8
6	10	3.312E-04	-8.629E-02	-7.352E-01	2.309E-01	0.	-8.089E-01	-72.3
7	10	5.174E-04	-1.869E-01	-8.585E-01	5.487E-02	0.	-8.629E-01	-85.4
8	10	6.844E-04	-2.430E-01	-9.240E-01	-1.211E-01	0.	-9.449E-01	80.2
9	10	8.167E-04	-2.542E-01	-9.277E-01	-2.866E-01	0.	-1.033E+00	69.8
10	10	9.108E-04	-2.409E-01	-8.762E-01	-4.282E-01	0.	-1.092E+00	63.3

11	10	9.686E-04	-2.473E-01	-7.859E-01	-5.246E-01	0.	-1.106E+00	58.6
12	10	9.834E-04	-3.477E-01	-6.778E-01	-5.447E-01	0.	-1.082E+00	53.4
13	10	9.166E-04	-6.519E-01	-5.677E-01	-4.527E-01	0.	-1.064E+00	42.3
14	10	6.618E-04	-1.295E+00	-4.578E-01	-2.291E-01	0.	-1.353E+00	14.3
15	10	-2.282E-25	-2.359E+00	-3.539E-01	1.079E-01	2.282E+00	-2.365E+00	-3.1
16	10	-1.427E-03	-1.425E+00	-1.340E-02	3.471E-01	0.	-1.506E+00	-13.1
17	10	-3.327E-03	-7.221E-01	1.282E-01	3.552E-01	0.	-8.510E-01	-19.9
18	10	-5.568E-03	-2.364E-01	1.602E-01	2.759E-01	0.	-3.779E-01	-27.1
19	10	-7.982E-03	8.720E-13	2.033E+00	1.157E-01	0.	2.040E+00	86.8
0	11	-6.234E-05	5.662E-15	1.359E-01	2.697E-02	3.965E-01	1.411E-01	79.2
1	11	2.956E-26	2.196E-01	3.294E-02	1.790E-01	-2.956E-01	3.281E-01	31.2
2	11	1.336E-04	1.652E-01	-3.353E-01	3.308E-01	0.	-4.998E-01	-63.6
3	11	3.387E-04	5.177E-02	-8.231E-01	3.244E-01	0.	-9.303E-01	-71.7
4	11	6.020E-04	-1.232E-01	-1.344E+00	2.491E-01	0.	-1.393E+00	-78.9
5	11	8.913E-04	-3.174E-01	-1.829E+00	1.479E-01	0.	-1.844E+00	-84.5
6	11	1.166E-03	-4.890E-01	-2.220E+00	4.443E-02	0.	-2.221E+00	-88.5
7	11	1.390E-03	-6.090E-01	-2.475E+00	-5.120E-02	0.	-2.476E+00	88.4
8	11	1.534E-03	-6.615E-01	-2.569E+00	-1.371E-01	0.	-2.578E+00	85.9
9	11	1.587E-03	-6.450E-01	-2.495E+00	-2.137E-01	0.	-2.519E+00	83.5
10	11	1.549E-03	-5.731E-01	-2.267E+00	-2.780E-01	0.	-2.312E+00	80.9
11	11	1.435E-03	-4.787E-01	-1.920E+00	-3.169E-01	0.	-1.986E+00	78.1
12	11	1.257E-03	-4.241E-01	-1.504E+00	-2.999E-01	0.	-1.582E+00	75.5
13	11	1.014E-03	-5.229E-01	-1.079E+00	-1.775E-01	0.	-1.131E+00	73.7
14	11	6.500E-04	-9.656E-01	-6.812E-01	9.066E-02	0.	-9.921E-01	-16.3
15	11	-1.535E-25	-1.940E+00	-2.910E-01	3.841E-01	1.535E+00	-2.025E+00	-12.5
16	11	-1.279E-03	-1.279E+00	7.842E-02	4.934E-01	0.	-1.439E+00	-18.0
17	11	-2.987E-03	-6.755E-01	1.831E-01	4.098E-01	0.	-8.397E-01	-21.8
18	11	-5.019E-03	-2.208E-01	1.756E-01	2.850E-01	0.	-3.697E-01	-27.6
19	11	-7.215E-03	4.555E-13	1.870E+00	1.157E-01	0.	1.877E+00	86.5
0	12	-5.812E-05	1.221E-14	2.319E-01	-5.350E-02	3.697E-01	2.436E-01	-77.6
1	12	1.318E-25	4.131E-01	6.197E-02	-1.434E-01	-1.318E+00	4.643E-01	-19.6
2	12	1.921E-04	9.685E-02	-7.409E-01	-2.218E-01	0.	-7.960E-01	76.0
3	12	4.533E-04	-1.597E-01	-1.735E+00	-3.068E-01	0.	-1.793E+00	79.4
4	12	7.479E-04	-4.260E-01	-2.757E+00	-3.619E-01	0.	-2.812E+00	81.4
5	12	1.038E-03	-6.708E-01	-3.672E+00	-3.696E-01	0.	-3.717E+00	83.1
6	12	1.289E-03	-8.650E-01	-4.383E+00	-3.264E-01	0.	-4.413E+00	84.7
7	12	1.471E-03	-9.900E-01	-4.824E+00	-2.408E-01	0.	-4.839E+00	86.4
8	12	1.564E-03	-1.035E+00	-4.958E+00	-1.291E-01	0.	-4.962E+00	88.1
9	12	1.561E-03	-9.968E-01	-4.773E+00	-1.018E-02	0.	-4.773E+00	89.8
10	12	1.464E-03	-8.826E-01	-4.287E+00	9.931E-02	0.	-4.290E+00	-88.3
11	12	1.288E-03	-7.099E-01	-3.545E+00	1.914E-01	0.	-3.558E+00	-86.2
12	12	1.053E-03	-5.145E-01	-2.634E+00	2.761E-01	0.	-2.670E+00	-82.7
13	12	7.782E-04	-3.841E-01	-1.693E+00	3.977E-01	0.	-1.805E+00	-74.4
14	12	4.603E-04	-5.642E-01	-9.001E-01	6.639E-01	0.	-1.417E+00	-52.1
15	12	-1.167E-25	-1.793E+00	-2.690E-01	8.025E-01	1.167E+00	-2.138E+00	-23.2
16	12	-1.042E-03	-1.287E+00	1.093E-01	6.553E-01	0.	-1.547E+00	-21.6
17	12	-2.517E-03	-7.088E-01	1.863E-01	4.469E-01	0.	-8.938E-01	-22.5
18	12	-4.331E-03	-2.393E-01	1.563E-01	2.716E-01	0.	-3.775E-01	-27.0
19	12	-6.321E-03	6.121E-13	1.431E+00	1.053E-01	0.	1.439E+00	85.8
0	13	2.305E-05	2.220E-16	2.850E-01	-1.686E-01	-1.466E-01	3.633E-01	-65.1
1	13	8.602E-26	7.105E-02	1.066E-02	-6.878E-01	-1.720E+00	7.293E-01	-43.7
2	13	-5.328E-26	-1.890E-01	-1.260E+00	-1.230E+00	5.328E-01	-2.066E+00	56.8
3	13	-2.910E-25	-4.493E-01	-2.995E+00	-1.474E+00	2.910E+00	-3.670E+00	65.4
4	13	-5.124E-25	-7.159E-01	-4.773E+00	-1.471E+00	5.124E+00	-5.250E+00	72.0
5	13	-6.814E-25	-9.466E-01	-6.311E+00	-1.281E+00	6.814E+00	-6.601E+00	77.2
6	13	-7.995E-25	-1.120E+00	-7.468E+00	-9.612E-01	7.995E+00	-7.610E+00	81.6
7	13	-8.700E-25	-1.225E+00	-8.169E+00	-5.507E-01	8.700E+00	-8.212E+00	85.5

8	13	-8.897E-25	-1.255E+00	-8.364E+00	-8.974E-02	8.897E+00	-8.365E+00	89.3
9	13	-8.583E-25	-1.205E+00	-8.037E+00	3.791E-01	8.583E+00	-8.057E+00	-86.8
10	13	-7.733E-25	-1.079E+00	-7.195E+00	8.145E-01	7.733E+00	-7.302E+00	-82.5
11	13	-6.338E-25	-8.825E-01	-5.883E+00	1.181E+00	6.338E+00	-6.148E+00	-77.4
12	13	-4.275E-25	-6.258E-01	-4.172E+00	1.445E+00	4.275E+00	-4.687E+00	-70.4
13	13	-1.308E-25	-3.336E-01	-2.224E+00	1.564E+00	1.308E+00	-3.107E+00	-60.6
14	13	5.014E-25	-6.956E-02	-4.637E-01	1.492E+00	-5.014E+00	-1.772E+00	-48.8
15	13	-1.402E-25	-2.171E+00	-3.257E-01	1.201E+00	2.803E+00	-2.763E+00	-26.2
16	13	-7.044E-04	-1.510E+00	3.555E-02	8.051E-01	0.	-1.853E+00	-23.1
17	13	-1.912E-03	-8.427E-01	1.145E-01	4.625E-01	0.	-1.030E+00	-22.0
18	13	-3.515E-03	-2.999E-01	9.229E-02	2.381E-01	0.	-4.122E-01	-25.3
19	13	-5.328E-03	1.098E-12	6.952E-01	8.603E-02	0.	7.057E-01	83.0
0	14	1.988E-04	2.531E-14	2.137E-01	-2.799E-01	-1.264E+00	4.065E-01	-55.4
1	14	-1.122E-25	-1.240E+00	-1.859E-01	-1.221E+00	1.122E+00	-2.042E+00	33.3
2	14	-6.009E-04	-7.986E-01	-8.412E-01	-2.217E+00	0.	-3.037E+00	45.3
3	14	-1.425E-03	-3.925E-01	-1.670E+00	-2.606E+00	0.	-3.714E+00	51.9
4	14	-2.296E-03	-1.297E-01	-2.511E+00	-2.530E+00	0.	-4.117E+00	57.6
5	14	-3.086E-03	5.710E-03	-3.242E+00	-2.142E+00	0.	-4.306E+00	63.6
6	14	-3.712E-03	8.279E-02	-3.804E+00	-1.558E+00	0.	-4.352E+00	70.6
7	14	-4.121E-03	1.381E-01	-4.152E+00	-8.393E-01	0.	-4.311E+00	79.3
8	14	-4.277E-03	1.657E-01	-4.243E+00	-4.472E-02	0.	-4.243E+00	89.4
9	14	-4.168E-03	1.723E-01	-4.069E+00	7.578E-01	0.	-4.201E+00	-80.2
10	14	-3.798E-03	1.533E-01	-3.645E+00	1.501E+00	0.	-4.166E+00	-70.8
11	14	-3.197E-03	1.145E-01	-3.024E+00	2.126E+00	0.	-4.097E+00	-63.2
12	14	-2.406E-03	9.697E-03	-2.276E+00	2.567E+00	0.	-3.943E+00	-57.0
13	14	-1.500E-03	-2.789E-01	-1.502E+00	2.689E+00	0.	-3.648E+00	-51.4
14	14	-6.108E-04	-9.693E-01	-8.745E-01	2.282E+00	0.	-3.204E+00	-44.4
15	14	-1.971E-25	-2.745E+00	-4.117E-01	1.556E+00	1.971E+00	-3.523E+00	-26.6
16	14	-2.797E-04	-1.932E+00	-9.946E-02	9.116E-01	0.	-2.308E+00	-22.4
17	14	-1.196E-03	-1.081E+00	-2.340E-02	4.490E-01	0.	-1.246E+00	-20.2
18	14	-2.608E-03	-4.036E-01	-1.464E-02	1.885E-01	0.	-4.799E-01	-22.1
19	14	-4.287E-03	5.059E-13	-3.081E-01	6.083E-02	0.	-3.197E-01	-79.2
0	15	4.455E-04	-1.715E-14	8.663E-02	-3.464E-01	-2.833E+00	3.924E-01	-48.6
1	15	-4.627E-25	-3.070E+00	-4.604E-01	-1.499E+00	4.627E+00	-3.752E+00	24.5
2	15	-1.441E-03	-1.587E+00	-4.975E-01	-2.690E+00	0.	-3.787E+00	39.3
3	15	-3.385E-03	-3.682E-01	-6.187E-01	-3.114E+00	0.	-3.610E+00	46.2
4	15	-5.419E-03	5.110E-01	-7.497E-01	-2.976E+00	0.	-3.161E+00	51.0
5	15	-7.247E-03	1.038E+00	-8.264E-01	-2.491E+00	0.	2.765E+00	-34.7
6	15	-8.690E-03	1.389E+00	-8.982E-01	-1.810E+00	0.	2.387E+00	-28.9
7	15	-9.626E-03	1.639E+00	-9.653E-01	-9.635E-01	0.	1.957E+00	-18.2
8	15	-9.971E-03	1.726E+00	-9.678E-01	-1.996E-02	0.	1.726E+00	-.4
9	15	-9.695E-03	1.682E+00	-9.226E-01	9.279E-01	0.	1.979E+00	17.7
10	15	-8.814E-03	1.476E+00	-8.229E-01	1.787E+00	0.	2.451E+00	28.6
11	15	-7.403E-03	1.163E+00	-7.409E-01	2.484E+00	0.	2.871E+00	34.5
12	15	-5.569E-03	6.517E-01	-6.905E-01	2.982E+00	0.	-3.076E+00	-51.3
13	15	-3.484E-03	-2.880E-01	-6.306E-01	3.124E+00	0.	-3.588E+00	-46.6
14	15	-1.464E-03	-1.768E+00	-5.993E-01	2.727E+00	0.	-3.973E+00	-39.0
15	15	-3.250E-25	-3.869E+00	-5.804E-01	1.837E+00	3.250E+00	-4.690E+00	-24.1
16	15	2.082E-04	-2.559E+00	-3.478E-01	9.428E-01	0.	-2.906E+00	-20.2
17	15	-4.155E-04	-1.404E+00	-2.383E-01	4.018E-01	0.	-1.529E+00	-17.3
18	15	-1.670E-03	-5.409E-01	-1.615E-01	1.302E-01	0.	-5.812E-01	-17.2
19	15	-3.268E-03	3.319E-13	-1.491E+00	3.410E-02	0.	-1.492E+00	-88.7
0	16	7.209E-04	3.164E-15	-5.606E-02	-3.534E-01	-4.585E+00	-3.826E-01	47.3
1	16	-8.301E-25	-5.076E+00	-7.615E-01	-1.530E+00	8.301E+00	-5.564E+00	17.7
2	16	-2.368E-03	-2.430E+00	-2.157E-01	-2.737E+00	0.	-4.275E+00	34.0
3	16	-5.531E-03	-3.227E-01	2.982E-01	-3.141E+00	0.	-3.168E+00	42.2
4	16	-8.817E-03	1.223E+00	7.756E-01	-2.925E+00	0.	3.933E+00	-42.8

5	16	-1.174E-02	2.059E+00	1.308E+00	-2.404E+00	0.	4.116E+00	-40.6
6	16	-1.404E-02	2.665E+00	1.672E+00	-1.783E+00	0.	4.020E+00	-37.2
7	16	-1.553E-02	3.169E+00	1.827E+00	-9.565E-01	0.	3.667E+00	-27.5
8	16	-1.607E-02	3.296E+00	1.919E+00	-9.139E-03	0.	3.296E+00	-.4
9	16	-1.561E-02	3.214E+00	1.847E+00	9.390E-01	0.	3.692E+00	27.0
10	16	-1.418E-02	2.752E+00	1.706E+00	1.767E+00	0.	4.072E+00	36.8
11	16	-1.191E-02	2.179E+00	1.341E+00	2.386E+00	0.	4.183E+00	40.0
12	16	-8.993E-03	1.352E+00	7.927E-01	2.903E+00	0.	3.989E+00	42.2
13	16	-5.663E-03	-2.377E-01	2.876E-01	3.122E+00	0.	3.158E+00	47.4
14	16	-2.427E-03	-2.474E+00	-2.461E-01	2.785E+00	0.	-4.359E+00	-34.1
15	16	-5.128E-25	-5.299E+00	-7.948E-01	1.852E+00	5.128E+00	-5.963E+00	-19.7
16	16	7.081E-04	-3.308E+00	-6.691E-01	8.683E-01	0.	-3.568E+00	-16.7
17	16	3.518E-04	-1.770E+00	-5.032E-01	3.251E-01	0.	-1.849E+00	-13.6
18	16	-7.851E-04	-6.929E-01	-3.306E-01	7.492E-02	0.	-7.077E-01	-11.2
19	16	-2.351E-03	1.991E-13	-2.710E+00	1.161E-02	0.	-2.710E+00	-89.8
0	17	9.778E-04	1.195E-13	-2.075E-01	-2.962E-01	-6.219E+00	-4.176E-01	54.7
1	17	-1.190E-24	-6.988E+00	-1.048E+00	-1.310E+00	1.190E+01	-7.264E+00	11.9
2	17	-3.245E-03	-3.217E+00	1.169E-01	-2.374E+00	0.	-4.450E+00	27.5
3	17	-7.563E-03	-2.181E-01	1.291E+00	-2.737E+00	0.	3.376E+00	-52.7
4	17	-1.202E-02	2.101E+00	2.328E+00	-2.407E+00	0.	4.624E+00	-46.4
5	17	-1.589E-02	2.956E+00	3.500E+00	-1.885E+00	0.	5.133E+00	-49.1
6	17	-1.896E-02	3.751E+00	4.280E+00	-1.524E+00	0.	5.562E+00	-49.9
7	17	-2.099E-02	4.693E+00	4.603E+00	-8.333E-01	0.	5.482E+00	-43.5
8	17	-2.170E-02	4.738E+00	4.843E+00	-4.902E-03	0.	4.844E+00	-87.3
9	17	-2.108E-02	4.735E+00	4.615E+00	8.225E-01	0.	5.500E+00	42.9
10	17	-1.911E-02	3.831E+00	4.303E+00	1.509E+00	0.	5.594E+00	49.4
11	17	-1.609E-02	3.065E+00	3.529E+00	1.864E+00	0.	5.175E+00	48.5
12	17	-1.222E-02	2.223E+00	2.362E+00	2.378E+00	0.	4.672E+00	45.8
13	17	-7.735E-03	-1.000E-01	1.331E+00	2.717E+00	0.	3.425E+00	52.4
14	17	-3.349E-03	-3.099E+00	1.652E-01	2.422E+00	0.	-4.387E+00	-28.0
15	17	-7.255E-25	-6.778E+00	-1.017E+00	1.564E+00	7.255E+00	-7.175E+00	-14.3
16	17	1.151E-03	-4.042E+00	-1.005E+00	6.743E-01	0.	-4.185E+00	-12.0
17	17	1.010E-03	-2.114E+00	-7.706E-01	2.255E-01	0.	-2.150E+00	-9.3
18	17	-5.177E-05	-8.328E-01	-4.931E-01	3.287E-02	0.	-8.360E-01	-5.5
19	17	-1.619E-03	8.438E-14	-3.782E+00	-1.901E-03	0.	-3.782E+00	90.0
0	18	1.166E-03	1.472E-13	-3.525E-01	-1.732E-01	-7.414E+00	-4.234E-01	67.7
1	18	-1.511E-24	-8.499E+00	-1.275E+00	-8.014E-01	1.511E+01	-8.587E+00	6.3
2	18	-3.923E-03	-3.855E+00	6.024E-01	-1.513E+00	0.	-4.320E+00	17.1
3	18	-9.155E-03	-9.807E-02	2.622E+00	-1.856E+00	0.	3.564E+00	-63.1
4	18	-1.455E-02	3.400E+00	4.328E+00	-1.411E+00	0.	5.349E+00	-54.1
5	18	-1.903E-02	3.519E+00	6.014E+00	-9.287E-01	0.	6.322E+00	-71.7
6	18	-2.265E-02	4.400E+00	7.174E+00	-1.047E+00	0.	7.525E+00	-71.5
7	18	-2.516E-02	6.328E+00	7.783E+00	-5.621E-01	0.	7.975E+00	-71.2
8	18	-2.596E-02	5.786E+00	8.215E+00	-2.455E-03	0.	8.215E+00	-89.9
9	18	-2.524E-02	6.367E+00	7.794E+00	5.562E-01	0.	7.985E+00	71.0
10	18	-2.280E-02	4.474E+00	7.198E+00	1.038E+00	0.	7.548E+00	71.3
11	18	-1.924E-02	3.620E+00	6.053E+00	9.146E-01	0.	6.358E+00	71.5
12	18	-1.478E-02	3.521E+00	4.387E+00	1.392E+00	0.	5.412E+00	53.6
13	18	-9.360E-03	5.356E-02	2.707E+00	1.845E+00	0.	3.653E+00	62.9
14	18	-4.062E-03	-3.618E+00	7.040E-01	1.542E+00	0.	-4.112E+00	-17.8
15	18	-9.458E-25	-8.019E+00	-1.203E+00	9.404E-01	9.458E+00	-8.147E+00	-7.7
16	18	1.461E-03	-4.601E+00	-1.284E+00	3.712E-01	0.	-4.642E+00	-6.3
17	18	1.458E-03	-2.361E+00	-9.803E-01	1.136E-01	0.	-2.371E+00	-4.7
18	18	4.362E-04	-9.318E-01	-6.141E-01	9.217E-03	0.	-9.321E-01	-1.7
19	18	-1.146E-03	1.310E-13	-4.522E+00	-4.751E-03	0.	-4.522E+00	89.9
0	19	1.237E-03	3.055E-13	-4.279E-01	-1.136E-13	-7.866E+00	-4.279E-01	90.0
1	19	-1.697E-24	-9.163E+00	-1.374E+00	-4.000E-13	1.697E+01	-9.163E+00	.0

2	19	-4.209E-03	-4.216E+00	1.093E+00	-5.818E-13	0.	-4.216E+00	.0
3	19	-9.872E-03	-2.036E-01	4.290E+00	-9.090E-13	0.	4.290E+00	-90.0
4	19	-1.582E-02	5.505E+00	8.454E+00	-9.454E-13	0.	8.454E+00	-90.0
5	19	-2.035E-02	3.435E+00	8.477E+00	-2.327E-12	0.	8.477E+00	-90.0
6	19	-2.417E-02	4.309E+00	9.850E+00	-2.691E-12	0.	9.850E+00	-90.0
7	19	-2.706E-02	8.417E+00	1.270E+01	-1.745E-12	0.	1.270E+01	-90.0
8	19	-2.777E-02	5.850E+00	1.183E+01	-1.600E-12	0.	1.183E+01	-90.0
9	19	-2.714E-02	8.455E+00	1.271E+01	1.454E-13	0.	1.271E+01	90.0
10	19	-2.433E-02	4.379E+00	9.876E+00	2.618E-12	0.	9.876E+00	90.0
11	19	-2.057E-02	3.532E+00	8.521E+00	2.763E-12	0.	8.521E+00	90.0
12	19	-1.605E-02	5.627E+00	8.524E+00	1.782E-12	0.	8.524E+00	90.0
13	19	-1.009E-02	-3.846E-02	4.391E+00	1.709E-12	0.	4.391E+00	90.0
14	19	-4.362E-03	-3.937E+00	1.213E+00	1.418E-12	0.	-3.937E+00	-.0
15	19	-1.095E-24	-8.593E+00	-1.289E+00	8.499E-13	1.095E+01	-8.593E+00	-.0
16	19	1.574E-03	-4.818E+00	-1.405E+00	2.452E-13	0.	-4.818E+00	-.0
17	19	1.619E-03	-2.452E+00	-1.064E+00	-1.670E-15	0.	-2.452E+00	.0
18	19	6.078E-04	-9.675E-01	-6.601E-01	-6.034E-14	0.	-9.675E-01	.0
19	19	-9.822E-04	5.218E-14	-4.787E+00	-2.998E-14	0.	-4.787E+00	90.0
0	20	1.166E-03	7.883E-14	-3.525E-01	1.732E-01	-7.414E+00	-4.234E-01	-67.7
1	20	-1.511E-24	-8.499E+00	-1.275E+00	8.014E-01	1.511E+01	-8.587E+00	-6.3
2	20	-3.923E-03	-3.855E+00	6.024E-01	1.513E+00	0.	-4.320E+00	-17.1
3	20	-9.155E-03	-9.807E-02	2.622E+00	1.856E+00	0.	3.564E+00	63.1
4	20	-1.455E-02	3.400E+00	4.328E+00	1.411E+00	0.	5.349E+00	54.1
5	20	-1.903E-02	3.519E+00	6.014E+00	9.287E-01	0.	6.322E+00	71.7
6	20	-2.265E-02	4.400E+00	7.174E+00	1.047E+00	0.	7.525E+00	71.5
7	20	-2.516E-02	6.328E+00	7.783E+00	5.621E-01	0.	7.975E+00	71.2
8	20	-2.596E-02	5.786E+00	8.215E+00	2.455E-03	0.	8.215E+00	89.9
9	20	-2.524E-02	6.367E+00	7.794E+00	-5.562E-01	0.	7.985E+00	-71.0
10	20	-2.280E-02	4.474E+00	7.198E+00	-1.038E+00	0.	7.548E+00	-71.3
11	20	-1.924E-02	3.620E+00	6.053E+00	-9.146E-01	0.	6.358E+00	-71.5
12	20	-1.478E-02	3.521E+00	4.387E+00	-1.392E+00	0.	5.412E+00	-53.6
13	20	-9.360E-03	5.356E-02	2.707E+00	-1.845E+00	0.	3.653E+00	-62.9
14	20	-4.062E-03	-3.618E+00	7.040E-01	-1.542E+00	0.	-4.112E+00	17.8
15	20	-9.458E-25	-8.019E+00	-1.203E+00	-9.404E-01	9.458E+00	-8.147E+00	7.7
16	20	1.461E-03	-4.601E+00	-1.284E+00	-3.712E-01	0.	-4.642E+00	6.3
17	20	1.458E-03	-2.361E+00	-9.803E-01	-1.136E-01	0.	-2.371E+00	4.7
18	20	4.362E-04	-9.318E-01	-6.141E-01	-9.217E-03	0.	-9.321E-01	1.7
19	20	-1.146E-03	1.614E-13	-4.522E+00	4.751E-03	0.	-4.522E+00	-89.9
0	21	9.778E-04	-1.039E-13	-2.075E-01	2.962E-01	-6.219E+00	-4.176E-01	-54.7
1	21	-1.190E-24	-6.988E+00	-1.048E+00	1.310E+00	1.190E+01	-7.264E+00	-11.9
2	21	-3.245E-03	-3.217E+00	1.169E-01	2.374E+00	0.	-4.450E+00	-27.5
3	21	-7.563E-03	-2.181E-01	1.291E+00	2.737E+00	0.	3.376E+00	52.7
4	21	-1.202E-02	2.101E+00	2.328E+00	2.407E+00	0.	4.624E+00	46.4
5	21	-1.589E-02	2.956E+00	3.500E+00	1.885E+00	0.	5.133E+00	49.1
6	21	-1.896E-02	3.751E+00	4.280E+00	1.524E+00	0.	5.562E+00	49.9
7	21	-2.099E-02	4.693E+00	4.603E+00	8.333E-01	0.	5.482E+00	43.5
8	21	-2.170E-02	4.738E+00	4.843E+00	4.902E-03	0.	4.844E+00	87.3
9	21	-2.108E-02	4.735E+00	4.615E+00	-8.225E-01	0.	5.500E+00	-42.9
10	21	-1.911E-02	3.831E+00	4.303E+00	-1.509E+00	0.	5.594E+00	-49.4
11	21	-1.609E-02	3.065E+00	3.529E+00	-1.864E+00	0.	5.175E+00	-48.5
12	21	-1.222E-02	2.223E+00	2.362E+00	-2.378E+00	0.	4.672E+00	-45.8
13	21	-7.735E-03	-1.000E-01	1.331E+00	-2.717E+00	0.	3.425E+00	-52.4
14	21	-3.349E-03	-3.099E+00	1.652E-01	-2.422E+00	0.	-4.387E+00	28.0
15	21	-7.255E-25	-6.778E+00	-1.017E+00	-1.564E+00	7.255E+00	-7.175E+00	14.3
16	21	1.151E-03	-4.042E+00	-1.005E+00	-6.743E-01	0.	-4.185E+00	12.0
17	21	1.010E-03	-2.114E+00	-7.706E-01	-2.255E-01	0.	-2.150E+00	9.3
18	21	-5.177E-05	-8.328E-01	-4.931E-01	-3.287E-02	0.	-8.360E-01	5.5
19	21	-1.619E-03	2.194E-13	-3.782E+00	1.901E-03	0.	-3.782E+00	-90.0

0	22	7.209E-04	-2.381E-14	-5.606E-02	3.534E-01	-4.585E+00	-3.826E-01	-47.3
1	22	-8.301E-25	-5.076E+00	-7.615E-01	1.530E+00	8.301E+00	-5.564E+00	-17.7
2	22	-2.368E-03	-2.430E+00	-2.157E-01	2.737E+00	0.	-4.275E+00	-34.0
3	22	-5.531E-03	-3.227E-01	2.982E-01	3.141E+00	0.	-3.168E+00	-42.2
4	22	-8.817E-03	1.223E+00	7.756E-01	2.925E+00	0.	3.933E+00	42.8
5	22	-1.174E-02	2.059E+00	1.308E+00	2.404E+00	0.	4.116E+00	40.6
6	22	-1.404E-02	2.665E+00	1.672E+00	1.783E+00	0.	4.020E+00	37.2
7	22	-1.553E-02	3.169E+00	1.827E+00	9.565E-01	0.	3.667E+00	27.5
8	22	-1.607E-02	3.296E+00	1.919E+00	9.139E-03	0.	3.296E+00	.4
9	22	-1.561E-02	3.214E+00	1.847E+00	-9.390E-01	0.	3.692E+00	-27.0
10	22	-1.418E-02	2.752E+00	1.706E+00	-1.767E+00	0.	4.072E+00	-36.8
11	22	-1.191E-02	2.179E+00	1.341E+00	-2.386E+00	0.	4.183E+00	-40.0
12	22	-8.993E-03	1.352E+00	7.927E-01	-2.903E+00	0.	3.989E+00	-42.2
13	22	-5.663E-03	-2.377E-01	2.876E-01	-3.122E+00	0.	3.158E+00	-47.4
14	22	-2.427E-03	-2.474E+00	-2.461E-01	-2.785E+00	0.	-4.359E+00	34.1
15	22	-5.128E-25	-5.299E+00	-7.948E-01	-1.852E+00	5.128E+00	-5.963E+00	19.7
16	22	7.081E-04	-3.308E+00	-6.691E-01	-8.683E-01	0.	-3.568E+00	16.7
17	22	3.518E-04	-1.770E+00	-5.032E-01	-3.251E-01	0.	-1.849E+00	13.6
18	22	-7.851E-04	-6.929E-01	-3.306E-01	-7.492E-02	0.	-7.077E-01	11.2
19	22	-2.351E-03	1.243E-13	-2.710E+00	-1.161E-02	0.	-2.710E+00	89.8
0	23	4.455E-04	3.331E-15	8.663E-02	3.464E-01	-2.833E+00	3.924E-01	48.6
1	23	-4.627E-25	-3.070E+00	-4.604E-01	1.499E+00	4.627E+00	-3.752E+00	-24.5
2	23	-1.441E-03	-1.587E+00	-4.975E-01	2.690E+00	0.	-3.787E+00	-39.3
3	23	-3.385E-03	-3.682E-01	-6.187E-01	3.114E+00	0.	-3.610E+00	-46.2
4	23	-5.419E-03	5.110E-01	-7.497E-01	2.976E+00	0.	-3.161E+00	-51.0
5	23	-7.247E-03	1.038E+00	-8.264E-01	2.491E+00	0.	2.765E+00	34.7
6	23	-8.690E-03	1.389E+00	-8.982E-01	1.810E+00	0.	2.387E+00	28.9
7	23	-9.626E-03	1.639E+00	-9.653E-01	9.635E-01	0.	1.957E+00	18.2
8	23	-9.971E-03	1.726E+00	-9.678E-01	1.996E-02	0.	1.726E+00	.4
9	23	-9.695E-03	1.682E+00	-9.226E-01	-9.279E-01	0.	1.979E+00	-17.7
10	23	-8.814E-03	1.476E+00	-8.229E-01	-1.787E+00	0.	2.451E+00	-28.6
11	23	-7.403E-03	1.163E+00	-7.409E-01	-2.484E+00	0.	2.871E+00	-34.5
12	23	-5.569E-03	6.517E-01	-6.905E-01	-2.982E+00	0.	-3.076E+00	51.3
13	23	-3.484E-03	-2.880E-01	-6.306E-01	-3.124E+00	0.	-3.588E+00	46.6
14	23	-1.464E-03	-1.768E+00	-5.993E-01	-2.727E+00	0.	-3.973E+00	39.0
15	23	-3.250E-25	-3.869E+00	-5.804E-01	-1.837E+00	3.250E+00	-4.690E+00	24.1
16	23	2.082E-04	-2.559E+00	-3.478E-01	-9.428E-01	0.	-2.906E+00	20.2
17	23	-4.155E-04	-1.404E+00	-2.383E-01	-4.018E-01	0.	-1.529E+00	17.3
18	23	-1.670E-03	-5.409E-01	-1.615E-01	-1.302E-01	0.	-5.812E-01	17.2
19	23	-3.268E-03	4.374E-13	-1.491E+00	-3.410E-02	0.	-1.492E+00	88.7
0	24	1.988E-04	2.531E-14	2.137E-01	2.799E-01	-1.264E+00	4.065E-01	55.4
1	24	-1.122E-25	-1.240E+00	-1.859E-01	1.221E+00	1.122E+00	-2.042E+00	-33.3
2	24	-6.009E-04	-7.986E-01	-8.412E-01	2.217E+00	0.	-3.037E+00	-45.3
3	24	-1.425E-03	-3.925E-01	-1.670E+00	2.606E+00	0.	-3.714E+00	-51.9
4	24	-2.296E-03	-1.297E-01	-2.511E+00	2.530E+00	0.	-4.117E+00	-57.6
5	24	-3.086E-03	5.710E-03	-3.242E+00	2.142E+00	0.	-4.306E+00	-63.6
6	24	-3.712E-03	8.279E-02	-3.804E+00	1.558E+00	0.	-4.352E+00	-70.6
7	24	-4.121E-03	1.381E-01	-4.152E+00	8.393E-01	0.	-4.311E+00	-79.3
8	24	-4.277E-03	1.657E-01	-4.243E+00	4.472E-02	0.	-4.243E+00	-89.4
9	24	-4.168E-03	1.723E-01	-4.069E+00	-7.578E-01	0.	-4.201E+00	80.2
10	24	-3.798E-03	1.533E-01	-3.645E+00	-1.501E+00	0.	-4.166E+00	70.8
11	24	-3.197E-03	1.145E-01	-3.024E+00	-2.126E+00	0.	-4.097E+00	63.2
12	24	-2.406E-03	9.697E-03	-2.276E+00	-2.567E+00	0.	-3.943E+00	57.0
13	24	-1.500E-03	-2.789E-01	-1.502E+00	-2.689E+00	0.	-3.648E+00	51.4
14	24	-6.108E-04	-9.693E-01	-8.745E-01	-2.282E+00	0.	-3.204E+00	44.4
15	24	-1.971E-25	-2.745E+00	-4.117E-01	-1.556E+00	1.971E+00	-3.523E+00	26.6
16	24	-2.797E-04	-1.932E+00	-9.946E-02	-9.116E-01	0.	-2.308E+00	22.4

17	24	-1.196E-03	-1.081E+00	-2.340E-02	-4.490E-01	0.	-1.246E+00	20.2
18	24	-2.608E-03	-4.036E-01	-1.464E-02	-1.885E-01	0.	-4.799E-01	22.1
19	24	-4.287E-03	4.025E-13	-3.081E-01	-6.083E-02	0.	-3.197E-01	79.2
0	25	2.305E-05	0.	2.850E-01	1.686E-01	-1.466E-01	3.633E-01	65.1
1	25	8.602E-26	7.105E-02	1.066E-02	6.878E-01	-1.720E+00	7.293E-01	43.7
2	25	-5.328E-26	-1.890E-01	-1.260E+00	1.230E+00	5.328E-01	-2.066E+00	-56.8
3	25	-2.910E-25	-4.493E-01	-2.995E+00	1.474E+00	2.910E+00	-3.670E+00	-65.4
4	25	-5.124E-25	-7.159E-01	-4.773E+00	1.471E+00	5.124E+00	-5.250E+00	-72.0
5	25	-6.814E-25	-9.466E-01	-6.311E+00	1.281E+00	6.814E+00	-6.601E+00	-77.2
6	25	-7.995E-25	-1.120E+00	-7.468E+00	9.612E-01	7.995E+00	-7.610E+00	-81.6
7	25	-8.700E-25	-1.225E+00	-8.169E+00	5.507E-01	8.700E+00	-8.212E+00	-85.5
8	25	-8.897E-25	-1.255E+00	-8.364E+00	8.974E-02	8.897E+00	-8.365E+00	-89.3
9	25	-8.583E-25	-1.205E+00	-8.037E+00	-3.791E-01	8.583E+00	-8.057E+00	86.8
10	25	-7.733E-25	-1.079E+00	-7.195E+00	-8.145E-01	7.733E+00	-7.302E+00	82.5
11	25	-6.338E-25	-8.825E-01	-5.883E+00	-1.181E+00	6.338E+00	-6.148E+00	77.4
12	25	-4.275E-25	-6.258E-01	-4.172E+00	-1.445E+00	4.275E+00	-4.687E+00	70.4
13	25	-1.308E-25	-3.336E-01	-2.224E+00	-1.564E+00	1.308E+00	-3.107E+00	60.6
14	25	5.014E-25	-6.956E-02	-4.637E-01	-1.492E+00	-5.014E+00	-1.772E+00	48.8
15	25	-1.402E-25	-2.171E+00	-3.257E-01	-1.201E+00	2.803E+00	-2.763E+00	26.2
16	25	-7.044E-04	-1.510E+00	3.555E-02	-8.051E-01	0.	-1.853E+00	23.1
17	25	-1.912E-03	-8.427E-01	1.145E-01	-4.625E-01	0.	-1.030E+00	22.0
18	25	-3.515E-03	-2.999E-01	9.229E-02	-2.381E-01	0.	-4.122E-01	25.3
19	25	-5.328E-03	6.289E-13	6.952E-01	-8.603E-02	0.	7.057E-01	-83.0
0	26	-5.812E-05	-3.997E-15	2.319E-01	5.350E-02	3.697E-01	2.436E-01	77.6
1	26	1.318E-25	4.131E-01	6.197E-02	1.434E-01	-1.318E+00	4.643E-01	19.6
2	26	1.921E-04	9.685E-02	-7.409E-01	2.218E-01	0.	-7.960E-01	-76.0
3	26	4.533E-04	-1.597E-01	-1.735E+00	3.068E-01	0.	-1.793E+00	-79.4
4	26	7.479E-04	-4.260E-01	-2.757E+00	3.619E-01	0.	-2.812E+00	-81.4
5	26	1.038E-03	-6.708E-01	-3.672E+00	3.696E-01	0.	-3.717E+00	-83.1
6	26	1.289E-03	-8.650E-01	-4.383E+00	3.264E-01	0.	-4.413E+00	-84.7
7	26	1.471E-03	-9.900E-01	-4.824E+00	2.408E-01	0.	-4.839E+00	-86.4
8	26	1.564E-03	-1.035E+00	-4.958E+00	1.291E-01	0.	-4.962E+00	-88.1
9	26	1.561E-03	-9.968E-01	-4.773E+00	1.018E-02	0.	-4.773E+00	-89.8
10	26	1.464E-03	-8.826E-01	-4.287E+00	-9.931E-02	0.	-4.290E+00	88.3
11	26	1.288E-03	-7.099E-01	-3.545E+00	-1.914E-01	0.	-3.558E+00	86.2
12	26	1.053E-03	-5.145E-01	-2.634E+00	-2.761E-01	0.	-2.670E+00	82.7
13	26	7.782E-04	-3.841E-01	-1.693E+00	-3.977E-01	0.	-1.805E+00	74.4
14	26	4.603E-04	-5.642E-01	-9.001E-01	-6.639E-01	0.	-1.417E+00	52.1
15	26	-1.167E-25	-1.793E+00	-2.690E-01	-8.075E-01	1.167E+00	-2.138E+00	23.2
16	26	-1.042E-03	-1.287E+00	1.093E-01	-6.553E-01	0.	-1.547E+00	21.6
17	26	-2.517E-03	-7.088E-01	1.863E-01	-4.469E-01	0.	-8.938E-01	22.5
18	26	-4.331E-03	-2.393E-01	1.563E-01	-2.716E-01	0.	-3.775E-01	27.0
19	26	-6.321E-03	3.913E-13	1.431E+00	-1.053E-01	0.	1.439E+00	-85.8
0	27	-6.234E-05	5.551E-16	1.359E-01	-2.697E-02	3.965E-01	1.411E-01	-79.2
1	27	2.956E-26	2.196E-01	3.294E-02	-1.790E-01	-2.956E-01	3.281E-01	-31.2
2	27	1.336E-04	1.652E-01	-3.353E-01	-3.308E-01	0.	-4.998E-01	63.6
3	27	3.387E-04	5.177E-02	-8.231E-01	-3.244E-01	0.	-9.303E-01	71.7
4	27	6.020E-04	-1.232E-01	-1.344E+00	-2.491E-01	0.	-1.393E+00	78.9
5	27	8.913E-04	-3.174E-01	-1.829E+00	-1.479E-01	0.	-1.844E+00	84.5
6	27	1.166E-03	-4.890E-01	-2.220E+00	-4.443E-02	0.	-2.221E+00	88.5
7	27	1.390E-03	-6.090E-01	-2.475E+00	5.120E-02	0.	-2.476E+00	-88.4
8	27	1.534E-03	-6.615E-01	-2.569E+00	1.371E-01	0.	-2.578E+00	-85.9
9	27	1.587E-03	-6.450E-01	-2.495E+00	2.137E-01	0.	-2.519E+00	-83.5
10	27	1.549E-03	-5.731E-01	-2.267E+00	2.780E-01	0.	-2.312E+00	-80.9
11	27	1.435E-03	-4.787E-01	-1.920E+00	3.169E-01	0.	-1.986E+00	-78.1
12	27	1.257E-03	-4.241E-01	-1.504E+00	2.999E-01	0.	-1.582E+00	-75.5
13	27	1.014E-03	-5.229E-01	-1.079E+00	1.775E-01	0.	-1.131E+00	-73.7

14	27	6.500E-04	-9.656E-01	-6.812E-01	-9.066E-02	0.	-9.921E-01	16.3
15	27	-1.535E-25	-1.940E+00	-2.910E-01	-3.841E-01	1.535E+00	-2.025E+00	12.5
16	27	-1.279E-03	-1.279E+00	7.842E-02	-4.934E-01	0.	-1.439E+00	18.0
17	27	-2.987E-03	-6.755E-01	1.831E-01	-4.098E-01	0.	-8.397E-01	21.8
18	27	-5.019E-03	-2.208E-01	1.756E-01	-2.850E-01	0.	-3.697E-01	27.6
19	27	-7.215E-03	8.999E-13	1.870E+00	-1.157E-01	0.	1.877E+00	-86.5
0	28	-2.145E-05	-1.277E-15	5.085E-02	-6.699E-02	1.364E-01	9.707E-02	-55.4
1	28	-8.248E-26	-2.032E-01	-3.048E-02	-3.186E-01	8.248E-01	-4.470E-01	37.4
2	28	-4.448E-05	1.002E-01	-8.040E-02	-5.633E-01	0.	5.804E-01	-40.4
3	28	-5.169E-05	1.942E-01	-2.096E-01	-6.020E-01	0.	-6.427E-01	54.3
4	28	1.598E-05	1.512E-01	-3.837E-01	-5.289E-01	0.	-7.089E-01	58.4
5	28	1.529E-04	3.914E-02	-5.690E-01	-3.950E-01	0.	-7.634E-01	63.8
6	28	3.312E-04	-8.629E-02	-7.352E-01	-2.309E-01	0.	-8.089E-01	72.3
7	28	5.174E-04	-1.869E-01	-8.585E-01	-5.487E-02	0.	-8.629E-01	85.4
8	28	6.844E-04	-2.430E-01	-9.240E-01	1.211E-01	0.	-9.449E-01	-80.2
9	28	8.167E-04	-2.542E-01	-9.277E-01	2.866E-01	0.	-1.033E+00	-69.8
10	28	9.108E-04	-2.409E-01	-8.762E-01	4.282E-01	0.	-1.092E+00	-63.3
11	28	9.686E-04	-2.473E-01	-7.859E-01	5.246E-01	0.	-1.106E+00	-58.6
12	28	9.834E-04	-3.477E-01	-6.778E-01	5.447E-01	0.	-1.082E+00	-53.4
13	28	9.166E-04	-6.519E-01	-5.677E-01	4.527E-01	0.	-1.064E+00	-42.3
14	28	6.618E-04	-1.295E+00	-4.578E-01	2.291E-01	0.	-1.353E+00	-14.3
15	28	-2.282E-25	-2.359E+00	-3.539E-01	-1.079E-01	2.282E+00	-2.365E+00	3.1
16	28	-1.427E-03	-1.425E+00	-1.340E-02	-3.471E-01	0.	-1.506E+00	13.1
17	28	-3.327E-03	-7.221E-01	1.282E-01	-3.552E-01	0.	-8.510E-01	19.9
18	28	-5.568E-03	-2.364E-01	1.602E-01	-2.759E-01	0.	-3.779E-01	27.1
19	28	-7.982E-03	8.441E-13	2.033E+00	-1.157E-01	0.	2.040E+00	-86.8
0	29	3.633E-05	1.256E-14	-8.729E-03	-7.535E-02	-2.310E-01	-7.984E-02	46.7
1	29	-1.831E-25	-6.716E-01	-1.007E-01	-3.335E-01	1.831E+00	-8.252E-01	24.7
2	29	-2.542E-04	-2.911E-02	6.469E-02	-5.850E-01	0.	6.047E-01	-47.3
3	29	-5.213E-04	2.787E-01	1.806E-01	-6.436E-01	0.	8.751E-01	-42.8
4	29	-7.049E-04	3.750E-01	2.449E-01	-5.859E-01	0.	8.995E-01	-41.8
5	29	-7.762E-04	3.529E-01	2.657E-01	-4.586E-01	0.	7.699E-01	-42.3
6	29	-7.436E-04	2.813E-01	2.544E-01	-2.911E-01	0.	5.592E-01	-43.7
7	29	-6.304E-04	2.060E-01	2.222E-01	-1.033E-01	0.	3.177E-01	-47.2
8	29	-4.598E-04	1.493E-01	1.772E-01	8.980E-02	0.	2.541E-01	49.4
9	29	-2.485E-04	1.105E-01	1.232E-01	2.741E-01	0.	3.911E-01	45.7
10	29	-6.659E-06	6.474E-02	5.964E-02	4.333E-01	0.	4.955E-01	44.8
11	29	2.537E-04	-3.855E-02	-1.637E-02	5.463E-01	0.	-5.738E-01	-44.4
12	29	5.021E-04	-2.771E-01	-1.066E-01	5.869E-01	0.	-7.849E-01	-40.9
13	29	6.638E-04	-7.529E-01	-2.082E-01	5.287E-01	0.	-1.075E+00	-31.4
14	29	5.860E-04	-1.578E+00	-3.142E-01	3.519E-01	0.	-1.670E+00	-14.6
15	29	-2.959E-25	-2.843E+00	-4.265E-01	3.741E-02	2.959E+00	-2.844E+00	-.9
16	29	-1.508E-03	-1.646E+00	-1.197E-01	-2.315E-01	0.	-1.681E+00	8.4
17	29	-3.557E-03	-8.173E-01	5.275E-02	-2.913E-01	0.	-9.059E-01	16.9
18	29	-5.986E-03	-2.742E-01	1.254E-01	-2.476E-01	0.	-3.926E-01	25.5
19	29	-8.610E-03	1.031E-12	1.979E+00	-1.062E-01	0.	1.985E+00	-86.9
0	30	9.120E-05	5.052E-15	-4.538E-02	-6.294E-02	-5.800E-01	-8.960E-02	54.9
1	30	-2.619E-25	-1.078E+00	-1.617E-01	-2.707E-01	2.619E+00	-1.152E+00	15.3
2	30	-4.410E-04	-1.681E-01	1.407E-01	-4.751E-01	0.	-5.133E-01	36.0
3	30	-9.448E-04	3.199E-01	4.146E-01	-5.333E-01	0.	9.026E-01	-47.5
4	30	-1.363E-03	5.372E-01	6.343E-01	-4.972E-01	0.	1.085E+00	-47.8
5	30	-1.635E-03	5.955E-01	7.900E-01	-4.011E-01	0.	1.105E+00	-51.8
6	30	-1.748E-03	5.741E-01	8.807E-01	-2.676E-01	0.	1.036E+00	-59.9
7	30	-1.715E-03	5.241E-01	9.089E-01	-1.128E-01	0.	9.395E-01	-74.8
8	30	-1.553E-03	4.698E-01	8.785E-01	5.002E-02	0.	8.846E-01	83.1
9	30	-1.278E-03	4.096E-01	7.934E-01	2.082E-01	0.	8.846E-01	66.3
10	30	-9.075E-04	3.158E-01	6.572E-01	3.477E-01	0.	8.738E-01	58.1

11	30	-4.647E-04	1.346E-01	4.754E-01	4.515E-01	0.	7.876E-01	55.3
12	30	-9.225E-07	-2.132E-01	2.571E-01	4.998E-01	0.	5.743E-01	57.6
13	30	3.793E-04	-8.265E-01	1.502E-02	4.706E-01	0.	-1.037E+00	-24.1
14	30	4.845E-04	-1.813E+00	-2.375E-01	3.424E-01	0.	-1.884E+00	-11.7
15	30	-3.460E-25	-3.276E+00	-4.914E-01	8.935E-02	3.460E+00	-3.279E+00	-1.8
16	30	-1.547E-03	-1.876E+00	-2.129E-01	-1.489E-01	0.	-1.890E+00	5.1
17	30	-3.707E-03	-9.302E-01	-2.041E-02	-2.267E-01	0.	-9.835E-01	13.2
18	30	-6.293E-03	-3.217E-01	8.431E-02	-2.069E-01	0.	-4.086E-01	22.8
19	30	-9.103E-03	6.819E-13	1.781E+00	-9.031E-02	0.	1.785E+00	-87.1
0	31	1.310E-04	-5.940E-15	-6.516E-02	-3.843E-02	-8.332E-01	-8.296E-02	65.1
1	31	-3.137E-25	-1.362E+00	-2.043E-01	-1.632E-01	3.137E+00	-1.384E+00	7.9
2	31	-5.728E-04	-2.784E-01	1.762E-01	-2.887E-01	0.	-4.186E-01	25.9
3	31	-1.247E-03	3.312E-01	5.405E-01	-3.323E-01	0.	7.842E-01	-53.7
4	31	-1.838E-03	6.333E-01	8.498E-01	-3.201E-01	0.	1.079E+00	-54.3
5	31	-2.261E-03	7.503E-01	1.084E+00	-2.696E-01	0.	1.234E+00	-60.9
6	31	-2.489E-03	7.679E-01	1.234E+00	-1.925E-01	0.	1.303E+00	-70.2
7	31	-2.523E-03	7.397E-01	1.298E+00	-9.801E-02	0.	1.315E+00	-80.3
8	31	-2.377E-03	6.909E-01	1.277E+00	5.699E-03	0.	1.277E+00	89.4
9	31	-2.065E-03	6.193E-01	1.174E+00	1.104E-01	0.	1.196E+00	79.2
10	31	-1.606E-03	4.957E-01	9.960E-01	2.072E-01	0.	1.071E+00	70.2
11	31	-1.032E-03	2.638E-01	7.514E-01	2.857E-01	0.	8.832E-01	65.2
12	31	-4.080E-04	-1.581E-01	4.559E-01	3.328E-01	0.	6.017E-01	66.3
13	31	1.410E-04	-8.709E-01	1.293E-01	3.305E-01	0.	-9.702E-01	-16.7
14	31	3.945E-04	-1.984E+00	-2.080E-01	2.557E-01	0.	-2.020E+00	-8.0
15	31	-3.778E-25	-3.603E+00	-5.405E-01	8.396E-02	3.778E+00	-3.606E+00	-1.6
16	31	-1.563E-03	-2.075E+00	-2.807E-01	-9.388E-02	0.	-2.080E+00	3.0
17	31	-3.801E-03	-1.038E+00	-7.879E-02	-1.675E-01	0.	-1.066E+00	9.6
18	31	-6.512E-03	-3.690E-01	4.587E-02	-1.620E-01	0.	-4.247E-01	19.0
19	31	-9.473E-03	8.832E-13	1.504E+00	-7.157E-02	0.	1.508E+00	-87.3
0	32	1.492E-04	1.210E-14	-7.230E-02	-8.148E-03	-9.489E-01	-7.321E-02	83.6
1	32	-3.356E-25	-1.489E+00	-2.233E-01	-3.419E-02	3.356E+00	-1.490E+00	1.5
2	32	-6.322E-04	-3.375E-01	1.874E-01	-6.503E-02	0.	-3.454E-01	7.0
3	32	-1.386E-03	3.217E-01	5.866E-01	-8.662E-02	0.	6.124E-01	-73.4
4	32	-2.062E-03	6.616E-01	9.305E-01	-9.926E-02	0.	9.631E-01	-71.8
5	32	-2.564E-03	8.086E-01	1.195E+00	-1.013E-01	0.	1.220E+00	-76.2
6	32	-2.858E-03	8.495E-01	1.369E+00	-9.160E-02	0.	1.384E+00	-80.3
7	32	-2.938E-03	8.375E-01	1.448E+00	-7.072E-02	0.	1.456E+00	-83.5
8	32	-2.812E-03	7.973E-01	1.432E+00	-4.065E-02	0.	1.435E+00	-86.4
9	32	-2.493E-03	7.262E-01	1.323E+00	-3.932E-03	0.	1.323E+00	-89.6
10	32	-1.999E-03	5.946E-01	1.127E+00	3.723E-02	0.	1.130E+00	86.0
11	32	-1.363E-03	3.445E-01	8.540E-01	8.085E-02	0.	8.665E-01	81.2
12	32	-6.558E-04	-1.103E-01	5.212E-01	1.226E-01	0.	5.442E-01	79.4
13	32	-1.105E-05	-8.794E-01	1.554E-01	1.499E-01	0.	-9.007E-01	-8.1
14	32	3.341E-04	-2.079E+00	-2.146E-01	1.367E-01	0.	-2.089E+00	-4.2
15	32	-3.925E-25	-3.808E+00	-5.712E-01	5.286E-02	3.925E+00	-3.809E+00	-.9
16	32	-1.569E-03	-2.223E+00	-3.202E-01	-5.800E-02	0.	-2.225E+00	1.7
17	32	-3.861E-03	-1.128E+00	-1.182E-01	-1.177E-01	0.	-1.141E+00	6.6
18	32	-6.663E-03	-4.101E-01	1.431E-02	-1.197E-01	0.	-4.415E-01	14.7
19	32	-9.741E-03	6.652E-13	1.201E+00	-5.344E-02	0.	1.204E+00	-87.5
0	33	1.434E-04	-1.665E-15	-6.782E-02	2.273E-02	-9.119E-01	-7.473E-02	-73.1
1	33	-3.266E-25	-1.446E+00	-2.169E-01	9.805E-02	3.266E+00	-1.454E+00	-4.5
2	33	-6.126E-04	-3.370E-01	1.797E-01	1.646E-01	0.	-3.850E-01	-16.3
3	33	-1.346E-03	2.942E-01	5.623E-01	1.653E-01	0.	6.411E-01	64.5
4	33	-2.010E-03	6.212E-01	8.893E-01	1.272E-01	0.	9.401E-01	68.2
5	33	-2.512E-03	7.673E-01	1.140E+00	7.182E-02	0.	1.153E+00	79.5
6	33	-2.815E-03	8.144E-01	1.305E+00	1.340E-02	0.	1.305E+00	88.4
7	33	-2.914E-03	8.122E-01	1.381E+00	-4.039E-02	0.	1.384E+00	-86.0

8	33	-2.812E-03	7.829E-01	1.368E+00	-8.596E-02	0.	1.381E+00	-81.8
9	33	-2.518E-03	7.238E-01	1.267E+00	-1.208E-01	0.	1.293E+00	-78.0
10	33	-2.047E-03	6.068E-01	1.078E+00	-1.406E-01	0.	1.117E+00	-74.6
11	33	-1.428E-03	3.743E-01	8.087E-01	-1.374E-01	0.	8.485E-01	-73.8
12	33	-7.252E-04	-6.537E-02	4.738E-01	-1.029E-01	0.	4.928E-01	-79.6
13	33	-6.775E-05	-8.389E-01	1.046E-01	-3.859E-02	0.	-8.405E-01	2.3
14	33	3.061E-04	-2.087E+00	-2.561E-01	2.419E-02	0.	-2.087E+00	-.8
15	33	-3.923E-25	-3.899E+00	-5.849E-01	2.505E-02	3.923E+00	-3.900E+00	-.4
16	33	-1.571E-03	-2.323E+00	-3.355E-01	-3.299E-02	0.	-2.324E+00	1.0
17	33	-3.897E-03	-1.198E+00	-1.415E-01	-7.951E-02	0.	-1.204E+00	4.3
18	33	-6.764E-03	-4.433E-01	-1.026E-02	-8.529E-02	0.	-4.595E-01	10.7
19	33	-9.927E-03	7.658E-13	9.046E-01	-3.836E-02	0.	9.063E-01	-87.6

0	34	1.151E-04	-8.799E-15	-4.938E-02	4.872E-02	-7.318E-01	-7.931E-02	-58.4
1	34	-2.861E-25	-1.238E+00	-1.857E-01	2.149E-01	2.861E+00	-1.280E+00	-11.1
2	34	-5.166E-04	-2.826E-01	1.475E-01	3.686E-01	0.	-4.943E-01	-29.9
3	34	-1.134E-03	2.447E-01	4.570E-01	3.853E-01	0.	7.505E-01	52.7
4	34	-1.694E-03	5.111E-01	7.127E-01	3.219E-01	0.	9.492E-01	53.7
5	34	-2.119E-03	6.281E-01	9.038E-01	2.193E-01	0.	1.025E+00	61.1
6	34	-2.380E-03	6.665E-01	1.028E+00	1.028E-01	0.	1.055E+00	75.2
7	34	-2.472E-03	6.678E-01	1.087E+00	-1.402E-02	0.	1.087E+00	-88.1
8	34	-2.396E-03	6.502E-01	1.079E+00	-1.244E-01	0.	1.112E+00	-74.9
9	34	-2.158E-03	6.118E-01	1.002E+00	-2.232E-01	0.	1.103E+00	-65.6
10	34	-1.767E-03	5.288E-01	8.530E-01	-3.016E-01	0.	1.033E+00	-59.1
11	34	-1.243E-03	3.496E-01	6.277E-01	-3.427E-01	0.	8.585E-01	-56.0
12	34	-6.341E-04	-1.904E-02	3.303E-01	-3.205E-01	0.	5.206E-01	-59.3
13	34	-4.798E-05	-7.287E-01	-1.278E-02	-2.126E-01	0.	-7.871E-01	15.4
14	34	2.969E-04	-1.985E+00	-3.385E-01	-4.688E-02	0.	-1.986E+00	1.6
15	34	-3.821E-25	-3.919E+00	-5.879E-01	2.864E-02	3.821E+00	-3.920E+00	-.5
16	34	-1.568E-03	-2.395E+00	-3.397E-01	-1.407E-02	0.	-2.395E+00	.4
17	34	-3.915E-03	-1.253E+00	-1.587E-01	-5.417E-02	0.	-1.256E+00	2.8
18	34	-6.828E-03	-4.694E-01	-3.139E-02	-6.051E-02	0.	-4.776E-01	7.7
19	34	-1.005E-02	9.000E-13	6.323E-01	-2.720E-02	0.	6.334E-01	-87.5

0	35	7.036E-05	-1.002E-14	-1.340E-02	6.285E-02	-4.475E-01	-6.991E-02	-48.0
1	35	-2.142E-25	-8.853E-01	-1.328E-01	2.915E-01	2.142E+00	-9.850E-01	-18.9
2	35	-3.576E-04	-1.945E-01	7.042E-02	5.058E-01	0.	-5.849E-01	-37.7
3	35	-7.832E-04	1.630E-01	2.354E-01	5.273E-01	0.	7.278E-01	47.0
4	35	-1.166E-03	3.317E-01	3.563E-01	4.431E-01	0.	7.874E-01	45.8
5	35	-1.457E-03	3.997E-01	4.393E-01	3.094E-01	0.	7.296E-01	46.8
6	35	-1.637E-03	4.191E-01	4.919E-01	1.579E-01	0.	6.175E-01	51.5
7	35	-1.703E-03	4.189E-01	5.188E-01	3.999E-03	0.	5.190E-01	87.7
8	35	-1.655E-03	4.119E-01	5.209E-01	-1.456E-01	0.	6.218E-01	-55.3
9	35	-1.497E-03	3.973E-01	4.941E-01	-2.865E-01	0.	7.363E-01	-49.8
10	35	-1.231E-03	3.592E-01	4.290E-01	-4.101E-01	0.	8.057E-01	-47.4
11	35	-8.672E-04	2.605E-01	3.094E-01	-4.956E-01	0.	7.812E-01	-46.4
12	35	-4.325E-04	2.216E-02	1.157E-01	-5.008E-01	0.	5.719E-01	-47.7
13	35	3.822E-06	-5.235E-01	-1.589E-01	-3.614E-01	0.	-7.460E-01	31.6
14	35	2.743E-04	-1.709E+00	-4.548E-01	-5.040E-02	0.	-1.711E+00	2.3
15	35	-3.786E-25	-3.961E+00	-5.941E-01	8.668E-02	3.786E+00	-3.963E+00	-1.5
16	35	-1.559E-03	-2.469E+00	-3.620E-01	-3.646E-03	0.	-2.469E+00	.1
17	35	-3.920E-03	-1.297E+00	-1.866E-01	-3.999E-02	0.	-1.299E+00	2.1
18	35	-6.865E-03	-4.886E-01	-5.426E-02	-4.274E-02	0.	-4.928E-01	5.6
19	35	-1.013E-02	1.370E-12	3.946E-01	-1.879E-02	0.	3.955E-01	-87.3

0	36	2.120E-05	-3.830E-15	3.464E-02	5.790E-02	-1.348E-01	7.776E-02	53.3
1	36	-1.048E-25	-4.448E-01	-6.672E-02	2.911E-01	1.048E+00	-6.028E-01	-28.5
2	36	-1.655E-04	-1.080E-01	-9.630E-02	5.130E-01	0.	-6.152E-01	-44.7
3	36	-3.620E-04	3.772E-02	-1.725E-01	5.298E-01	0.	-6.075E-01	-50.6
4	36	-5.375E-04	9.030E-02	-2.621E-01	4.415E-01	0.	-5.613E-01	-55.9

5	36	-6.699E-04	1.012E-01	-3.389E-01	3.085E-01	0.	-4.977E-01	-62.7
6	36	-7.519E-04	9.742E-02	-3.880E-01	1.608E-01	0.	-4.364E-01	-73.2
7	36	-7.822E-04	9.307E-02	-4.032E-01	1.162E-02	0.	-4.034E-01	-88.7
8	36	-7.615E-04	9.402E-02	-3.835E-01	-1.351E-01	0.	-4.191E-01	75.2
9	36	-6.906E-04	1.001E-01	-3.324E-01	-2.779E-01	0.	-4.683E-01	63.9
10	36	-5.699E-04	1.049E-01	-2.582E-01	-4.123E-01	0.	-5.271E-01	56.9
11	36	-4.016E-04	9.272E-02	-1.790E-01	-5.229E-01	0.	-5.834E-01	52.3
12	36	-1.935E-04	2.337E-02	-1.335E-01	-5.705E-01	0.	-6.309E-01	48.9
13	36	2.896E-05	-2.275E-01	-1.972E-01	-4.629E-01	0.	-6.755E-01	44.1
14	36	1.858E-04	-1.101E+00	-4.581E-01	2.503E-03	0.	-1.101E+00	-.2
15	36	-3.780E-25	-4.197E+00	-6.295E-01	1.796E-01	3.780E+00	-4.206E+00	-2.9
16	36	-1.547E-03	-2.558E+00	-4.559E-01	-1.212E-02	0.	-2.558E+00	.3
17	36	-3.921E-03	-1.327E+00	-2.372E-01	-2.465E-02	0.	-1.328E+00	1.3
18	36	-6.890E-03	-5.001E-01	-7.801E-02	-2.437E-02	0.	-5.015E-01	3.3
19	36	-1.018E-02	9.056E-13	2.046E-01	-1.076E-02	0.	2.052E-01	-87.0
0	37	-1.646E-05	-1.776E-15	5.036E-02	2.709E-02	1.047E-01	6.217E-02	66.5
1	37	-3.943E-28	-5.831E-02	-5.810E-02	1.610E-01	7.886E-03	-2.192E-01	-45.0
2	37	-1.041E-25	-6.649E-02	-4.432E-01	2.957E-01	1.041E+00	-6.055E-01	-61.2
3	37	-2.129E-25	-1.336E-01	-8.907E-01	3.107E-01	2.129E+00	-1.002E+00	-70.3
4	37	-2.877E-25	-1.912E-01	-1.274E+00	2.617E-01	2.877E+00	-1.334E+00	-77.1
5	37	-3.381E-25	-2.335E-01	-1.557E+00	1.843E-01	3.381E+00	-1.582E+00	-82.2
6	37	-3.674E-25	-2.593E-01	-1.729E+00	9.713E-02	3.674E+00	-1.735E+00	-86.2
7	37	-3.780E-25	-2.688E-01	-1.792E+00	8.461E-03	3.780E+00	-1.792E+00	-89.7
8	37	-3.712E-25	-2.623E-01	-1.749E+00	-7.925E-02	3.712E+00	-1.753E+00	87.0
9	37	-3.472E-25	-2.401E-01	-1.601E+00	-1.649E-01	3.472E+00	-1.620E+00	83.2
10	37	-3.050E-25	-2.016E-01	-1.344E+00	-2.445E-01	3.050E+00	-1.394E+00	78.4
11	37	-2.409E-25	-1.454E-01	-9.693E-01	-3.055E-01	2.409E+00	-1.070E+00	71.7
12	37	-1.410E-25	-6.917E-02	-4.611E-01	-3.229E-01	1.410E+00	-6.429E-01	60.6
13	37	4.372E-26	2.480E-02	1.653E-01	-2.664E-01	-4.372E-01	3.706E-01	-52.4
14	37	9.342E-25	9.348E-02	6.232E-01	-1.388E-01	-9.342E+00	6.574E-01	-76.2
15	37	-6.330E-25	-4.907E+00	-1.388E+00	2.739E-02	1.266E+01	-4.907E+00	-.4
16	37	-1.559E-03	-2.579E+00	-6.987E-01	9.047E-02	0.	-2.583E+00	-2.7
17	37	-3.940E-03	-1.334E+00	-2.660E-01	3.505E-02	0.	-1.335E+00	-1.9
18	37	-6.916E-03	-5.074E-01	-7.823E-02	-1.900E-03	0.	-5.074E-01	.3
19	37	-1.022E-02	1.361E-12	7.733E-02	-4.787E-03	0.	7.762E-02	-86.5
0	38	-3.741E-05	-3.777E-15	1.838E-14	1.751E-03	4.803E-01	1.751E-03	45.0
1	38	-1.638E-05	5.137E-02	6.883E-15	2.728E-02	1.061E-01	6.316E-02	23.4
2	38	2.170E-05	4.009E-02	-4.163E-15	5.946E-02	-1.406E-01	8.279E-02	35.7
3	38	7.308E-05	-1.344E-03	-1.110E-14	6.817E-02	-4.736E-01	-6.884E-02	-44.7
4	38	1.240E-04	-3.048E-02	-2.676E-14	6.080E-02	-8.036E-01	-7.792E-02	-38.0
5	38	1.648E-04	-4.430E-02	-3.769E-14	4.415E-02	-1.068E+00	-7.154E-02	-31.7
6	38	1.910E-04	-4.898E-02	-4.452E-14	2.366E-02	-1.237E+00	-5.854E-02	-22.0
7	38	2.008E-04	-4.973E-02	-4.624E-14	2.104E-03	-1.301E+00	-4.982E-02	-2.4
8	38	1.942E-04	-4.868E-02	-4.599E-14	-1.938E-02	-1.258E+00	-5.545E-02	19.3
9	38	1.714E-04	-4.405E-02	-3.864E-14	-3.977E-02	-1.110E+00	-6.749E-02	30.5
10	38	1.340E-04	-2.845E-02	-1.571E-14	-5.610E-02	-8.680E-01	-7.210E-02	37.9
11	38	8.710E-05	1.105E-02	-1.413E-14	-6.063E-02	-5.644E-01	6.640E-02	-42.4
12	38	4.390E-05	7.220E-02	-4.330E-15	-4.125E-02	-2.845E-01	9.092E-02	-24.4
13	38	2.467E-05	3.307E-02	-1.360E-15	-5.800E-03	-1.599E-01	3.406E-02	-9.7
14	38	1.642E-05	-6.763E-01	-2.665E-15	-9.706E-02	-1.064E-01	-6.899E-01	8.0
15	38	-2.163E-04	-3.694E+00	1.776E-14	-5.542E-02	1.401E+00	-3.695E+00	.9
16	38	-1.675E-03	-2.577E+00	1.972E-13	7.519E-02	0.	-2.579E+00	-1.7
17	38	-3.989E-03	-1.393E+00	1.457E-13	2.412E-02	0.	-1.393E+00	-1.0
18	38	-6.944E-03	-5.362E-01	3.793E-13	-1.109E-02	0.	-5.364E-01	1.2
19	38	-1.026E-02	8.078E-13	2.555E-12	-5.142E-03	0.	5.142E-03	-45.0

STATICS CHECK.   SUMMATION OF REACTIONS =   3.950E+02

TIME FOR THIS PROBLEM =   0 MINUTES   39.095 SECONDS

ELAPSED TM TIME =   0 MINUTES   52.199 SECONDS

PROGRAM SLAB 30 FINAL REPORT DECK - PANAK REVISION DATE 20 NOV 69
CHG CE 909099 CODED AND RUN 1 DEC 69 HUA FT-KIP UNITS
HOUSTON SHIP CHANNEL STRUCTURE TWO-WAY LIGHT-WEIGHT DECK

PROB
202 LOAD PATTERN H2-7 FIRST INTERIOR PANELS

TABLE 1. CONTROL DATA

MULTIPLE LOAD OPTION (IF BLANK OR ZERO, PROB IS INDEPENDENT -- -1
IF +1, PARENT FOR NEXT PROB -- IF -1, AN OFFSPRING PROB)

	TABLE NUMBER 2	3	4	5
NUM CARDS INPUT THIS PROBLEM	-0	4	21	-0

TABLE 2. CONSTANTS

NUM INCREMENTS IN X DIRECTION	19
NUM INCREMENTS IN Y DIRECTION	38
INCR LENGTH IN X DIRECTION	2.000E+00
INCR LENGTH IN Y DIRECTION	2.000E+00
POISSONS RATIO	1.500E-01
SLAB THICKNESS (IF BLANK OR ZERO, MAX PRINCIPAL MOMENT IS COMPUTED -- IF SPECIFIED, MAX PRINCIPAL STRESS)	-0.

TABLE 3. SPECIFIED AREAS FOR SELECTED MOMENT OUTPUT

FROM		THRU		PRINT (1=YES) X MOMENTS	Y MOMENTS
7	5	9	20	-0	1
0	9	19	9	1	-0
0	17	19	17	1	-0
0	13	19	13	1	1

TABLE 4. LOAD DATA -- REPLACES LOAD IN PREVIOUS PROBLEM 201
ALL STIFFNESS TERMS ARE RETAINED

FROM		THRU		Q
0	0	16	38	-4.025E-01
17	0	17	38	-3.608E-01
18	0	18	38	-3.188E-01
19	0	19	38	-2.131E-01
19	0	19	38	-2.588E-01
4	9	4	9	-1.040E+01
7	9	7	9	-1.040E+01
9	9	9	9	-1.040E+01
12	9	12	9	-1.040E+01
4	10	4	10	-1.040E+01

7	10	7	10	-1.040E+01
9	10	9	10	-1.040E+01
12	10	12	10	-1.040E+01
4	16	4	16	-1.040E+01
7	16	7	16	-1.040E+01
9	16	9	16	-1.040E+01
12	16	12	16	-1.040E+01
4	17	4	17	-1.040E+01
7	17	7	17	-1.040E+01
9	17	9	17	-1.040E+01
12	17	12	17	-1.040E+01

PROGRAM SLAB 30 FINAL REPORT DECK - PANAK REVISION DATE 20 NOV 69
CHG CE 909099 CODED AND RUN 1 DEC 69 HUA FT-KIP UNITS
HOUSTON SHIP CHANNEL STRUCTURE TWO-WAY LIGHT-WEIGHT DECK

PROB (CONTD)
202 LOAD PATTERN H2-7 FIRST INTERIOR PANELS

TABLE 6. SELECTED MOMENT OUTPUT -- USING STIFFNESS DATA FROM PREVIOUS PROB 201
X MOMENT ACTS IN THE X DIRECTION (ABOUT Y AXIS)

Y MOMENTS ONLY, BETWEEN (7, 5) AND (9, 20)

X	Y	Y MOMENT
7	5	1.847E+00
8	5	1.898E+00
9	5	1.814E+00
7	6	2.969E+00
8	6	3.065E+00
9	6	2.939E+00
7	7	4.200E+00
8	7	4.374E+00
9	7	4.175E+00
7	8	5.700E+00
8	8	5.998E+00
9	8	5.681E+00
7	9	8.110E+00
8	9	7.805E+00
9	9	8.096E+00
7	10	6.069E+00
8	10	5.703E+00
9	10	6.063E+00
7	11	-6.937E-01
8	11	-5.854E-01
9	11	-6.846E-01
7	12	-7.384E+00
8	12	-7.551E+00
9	12	-7.351E+00
7	13	-1.529E+01
8	13	-1.572E+01
9	13	-1.523E+01
7	14	-7.385E+00
8	14	-7.553E+00
9	14	-7.354E+00
7	15	-6.963E-01
8	15	-5.900E-01
9	15	-6.908E-01
7	16	6.063E+00
8	16	5.695E+00
9	16	6.052E+00
7	17	8.098E+00
8	17	7.789E+00
9	17	8.077E+00
7	18	5.680E+00
8	18	5.972E+00

9	18	5.651E+00
7	19	4.164E+00
8	19	4.332E+00
9	19	4.130E+00
7	20	2.909E+00
8	20	3.000E+00
9	20	2.872E+00

X MOMENTS ONLY, BETWEEN (0, 9) AND (19, 9)

X	Y	X MOMENT
0	9	-7.616E-14
1	9	-5.792E+00
2	9	-2.494E+00
3	9	1.737E-01
4	9	3.818E+00
5	9	2.119E+00
6	9	2.483E+00
7	9	5.183E+00
8	9	3.504E+00
9	9	5.167E+00
10	9	2.446E+00
11	9	2.050E+00
12	9	3.700E+00
13	9	-1.307E-02
14	9	-2.758E+00
15	9	-6.099E+00
16	9	-3.308E+00
17	9	-1.628E+00
18	9	-6.099E-01
19	9	2.641E-13

X MOMENTS ONLY, BETWEEN (0, 17) AND (19, 17)

X	Y	X MOMENT
0	17	1.741E-13
1	17	-5.729E+00
2	17	-2.457E+00
3	17	1.864E-01
4	17	3.810E+00
5	17	2.094E+00
6	17	2.447E+00
7	17	5.142E+00
8	17	3.462E+00
9	17	5.127E+00
10	17	2.409E+00
11	17	2.017E+00
12	17	3.669E+00
13	17	-4.271E-02
14	17	-2.787E+00
15	17	-6.126E+00
16	17	-3.332E+00
17	17	-1.646E+00
18	17	-6.192E-01

19	17	1.747E-13

BOTH X AND Y MOMENTS, BETWEEN (0, 13) AND (19, 13)

X	Y	X MOMENT	Y MOMENT
0	13	-8.882E-16	4.998E-01
1	13	2.524E-01	3.787E-02
2	13	-3.684E-01	-2.456E+00
3	13	-8.786E-01	-5.857E+00
4	13	-1.387E+00	-9.247E+00
5	13	-1.767E+00	-1.178E+01
6	13	-2.070E+00	-1.380E+01
7	13	-2.294E+00	-1.529E+01
8	13	-2.357E+00	-1.572E+01
9	13	-2.285E+00	-1.523E+01
10	13	-2.051E+00	-1.368E+01
11	13	-1.738E+00	-1.159E+01
12	13	-1.346E+00	-8.976E+00
13	13	-8.270E-01	-5.513E+00
14	13	-3.150E-01	-2.100E+00
15	13	-7.864E-01	-1.180E-01
16	13	-1.169E+00	3.372E-01
17	13	-7.778E-01	2.800E-01
18	13	-2.883E-01	1.447E-01
19	13	6.498E-13	4.979E-01

PROGRAM SLAB 30 FINAL REPORT DECK - PANAK REVISION DATE 20 NOV 69
CHG CE 909099 CODED AND RUN 1 DEC 69 HUA FT-KIP UNITS
HOUSTON SHIP CHANNEL STRUCTURE TWO-WAY LIGHT-WEIGHT DECK

PROB (CONTD)
202 LOAD PATTERN H2-7 FIRST INTERIOR PANELS

TABLE 7. RESULTS--USING STIFFNESS DATA FROM PREVIOUS PROBLEM 201
X MOMENT AND X TWISTING MOMENT ACT IN THE X DIRECTION (ABOUT Y AXIS), Y TWISTING MOMENT = -X TWISTING MOMENT, COUNTERCLOCKWISE BETA ANGLES ARE POSITIVE FROM X AXIS TO THE DIRECTION OF LARGEST PRINCIPAL MOMENT

X	Y	DEFL	X MOMENT	Y MOMENT	X TWISTING MOMENT	SUPPORT REACTION	LARGEST PRINCIPAL MOMENT	BETA X TO LARGEST
0	0	-3.730E-05	9.458E-15	2.072E-15	-2.564E-02	4.789E-01	2.564E-02	-45.0
1	0	3.252E-06	1.535E-01	2.220E-16	-8.754E-02	-2.107E-02	1.932E-01	-24.4
2	0	9.475E-05	1.150E-01	-5.773E-15	-1.468E-01	-6.140E-01	2.151E-01	-34.3
3	0	2.244E-04	3.444E-02	-1.443E-14	-1.798E-01	-1.454E+00	1.978E-01	-42.3
4	0	3.655E-04	-3.603E-02	-1.177E-14	-1.789E-01	-2.368E+00	-1.979E-01	42.1
5	0	4.946E-04	-8.517E-02	-4.396E-14	-1.519E-01	-3.205E+00	-2.004E-01	37.2
6	0	5.954E-04	-1.157E-01	-2.787E-14	-1.077E-01	-3.858E+00	-1.801E-01	30.9
7	0	6.579E-04	-1.321E-01	-4.119E-14	-5.346E-02	-4.263E+00	-1.511E-01	19.5
8	0	6.765E-04	-1.373E-01	-3.053E-14	5.481E-03	-4.384E+00	-1.375E-01	-2.3
9	0	6.496E-04	-1.307E-01	-4.341E-14	6.419E-02	-4.209E+00	-1.570E-01	-22.2
10	0	5.792E-04	-1.083E-01	-5.040E-14	1.168E-01	-3.754E+00	-1.829E-01	-32.6
11	0	4.730E-04	-6.242E-02	-2.276E-14	1.546E-01	-3.065E+00	-1.889E-01	-39.3
12	0	3.460E-04	2.787E-03	-2.233E-14	1.668E-01	-2.242E+00	1.682E-01	44.8
13	0	2.199E-04	4.112E-03	-1.390E-14	1.573E-01	-1.425E+00	1.594E-01	44.6
14	0	9.525E-05	-4.214E-01	-7.105E-15	2.180E-01	-6.172E-01	-5.139E-01	-23.0
15	0	-1.693E-04	-2.261E+00	3.553E-15	2.173E-01	1.097E+00	-2.282E+00	-5.4
16	0	-1.184E-03	-1.576E+00	3.642E-14	1.337E-01	0.	-1.587E+00	-4.8
17	0	-2.722E-03	-8.645E-01	1.457E-13	1.077E-01	0.	-8.777E-01	-7.0
18	0	-4.659E-03	-3.210E-01	1.661E-13	8.168E-02	0.	-3.406E-01	-13.5
19	0	-6.809E-03	1.370E-13	2.455E-12	3.196E-02	0.	3.196E-02	45.0
0	1	4.453E-06	2.331E-15	1.588E-01	-8.922E-02	-2.832E-02	1.988E-01	-65.8
1	1	4.786E-26	1.523E-02	1.208E-02	-3.779E-01	-9.573E-01	3.916E-01	-44.9
2	1	-1.048E-25	-1.162E-01	-7.746E-01	-6.757E-01	1.048E+00	-1.197E+00	58.0
3	1	-3.059E-25	-2.710E-01	-1.807E+00	-7.967E-01	3.059E+00	-2.145E+00	67.0
4	1	-4.925E-25	-4.282E-01	-2.855E+00	-7.720E-01	4.925E+00	-3.080E+00	73.8
5	1	-6.475E-25	-5.661E-01	-3.774E+00	-6.458E-01	6.475E+00	-3.899E+00	79.0
6	1	-7.621E-25	-6.714E-01	-4.476E+00	-4.546E-01	7.621E+00	-4.530E+00	83.3
7	1	-8.312E-25	-7.360E-01	-4.907E+00	-2.253E-01	8.312E+00	-4.919E+00	86.9
8	1	-8.520E-25	-7.555E-01	-5.037E+00	2.193E-02	8.520E+00	-5.037E+00	-89.7
9	1	-8.232E-25	-7.283E-01	-4.855E+00	2.696E-01	8.232E+00	-4.873E+00	-86.3
10	1	-7.455E-25	-6.551E-01	-4.368E+00	4.990E-01	7.455E+00	-4.434E+00	-82.5
11	1	-6.198E-25	-5.393E-01	-3.595E+00	6.863E-01	6.198E+00	-3.742E+00	-77.9
12	1	-4.431E-25	-3.864E-01	-2.576E+00	7.993E-01	4.431E+00	-2.837E+00	-71.9
13	1	-1.948E-25	-2.091E-01	-1.394E+00	8.039E-01	1.948E+00	-1.800E+00	-63.2
14	1	4.750E-25	-5.078E-02	-3.385E-01	6.952E-01	-4.750E+00	-9.046E-01	-50.8
15	1	-3.508E-25	-2.911E+00	-9.468E-01	5.184E-01	7.016E+00	-3.039E+00	-13.9
16	1	-9.189E-04	-1.628E+00	-3.633E-01	3.506E-01	0.	-1.718E+00	-14.5
17	1	-2.360E-03	-8.632E-01	-8.579E-02	2.253E-01	0.	-9.237E-01	-15.0
18	1	-4.193E-03	-3.109E-01	-5.351E-03	1.387E-01	0.	-3.645E-01	-21.1
19	1	-6.232E-03	1.174E-13	8.849E-02	5.408E-02	0.	1.141E-01	64.6

0	2	9.890E-05	2.509E-14	1.306E-01	-1.537E-01	-6.290E-01	2.323E-01	-56.5
1	2	-1.008E-25	-7.618E-01	-1.143E-01	-6.915E-01	1.008E+00	-1.202E+00	32.5
2	2	-3.460E-04	-4.259E-01	-4.597E-01	-1.257E+00	0.	-1.700E+00	45.4
3	2	-8.105E-04	-1.891E-01	-9.275E-01	-1.461E+00	0.	-2.065E+00	52.1
4	2	-1.292E-03	-5.201E-02	-1.425E+00	-1.404E+00	0.	-2.301E+00	58.0
5	2	-1.719E-03	1.603E-02	-1.878E+00	-1.170E+00	0.	-2.436E+00	64.5
6	2	-2.048E-03	4.541E-02	-2.235E+00	-8.232E-01	0.	-2.501E+00	72.1
7	2	-2.250E-03	5.720E-02	-2.460E+00	-4.096E-01	0.	-2.525E+00	81.0
8	2	-2.311E-03	6.194E-02	-2.533E+00	3.596E-02	0.	-2.533E+00	-89.2
9	2	-2.225E-03	6.270E-02	-2.446E+00	4.822E-01	0.	-2.535E+00	-79.5
10	2	-1.996E-03	5.524E-02	-2.210E+00	8.969E-01	0.	-2.522E+00	-70.8
11	2	-1.639E-03	2.619E-02	-1.853E+00	1.242E+00	0.	-2.470E+00	-63.6
12	2	-1.182E-03	-5.738E-02	-1.424E+00	1.461E+00	0.	-2.353E+00	-57.5
13	2	-6.721E-04	-2.793E-01	-1.007E+00	1.463E+00	0.	-2.150E+00	-52.0
14	2	-2.051E-04	-8.951E-01	-7.058E-01	1.090E+00	0.	-1.895E+00	-42.5
15	2	-1.767E-25	-2.769E+00	-4.153E-01	7.044E-01	1.767E+00	-2.964E+00	-15.5
16	2	-6.932E-04	-1.811E+00	-1.994E-01	4.855E-01	0.	-1.946E+00	-15.5
17	2	-1.978E-03	-9.608E-01	-7.478E-02	2.568E-01	0.	-1.030E+00	-15.0
18	2	-3.699E-03	-3.452E-01	-1.818E-02	1.226E-01	0.	-3.861E-01	-18.4
19	2	-5.649E-03	-1.286E-13	-3.037E-02	4.221E-02	0.	-6.004E-02	-54.9
0	3	2.367E-04	3.636E-14	5.978E-02	-1.957E-01	-1.505E+00	2.279E-01	-49.3
1	3	-3.022E-25	-1.809E+00	-2.713E-01	-8.477E-01	3.022E+00	-2.184E+00	23.9
2	3	-8.234E-04	-8.605E-01	-2.616E-01	-1.518E+00	0.	-2.108E+00	39.4
3	3	-1.919E-03	-1.634E-01	-3.252E-01	-1.756E+00	0.	-2.002E+00	46.3
4	3	-3.054E-03	3.142E-01	-4.228E-01	-1.686E+00	0.	-1.780E+00	51.2
5	3	-4.062E-03	6.193E-01	-5.245E-01	-1.407E+00	0.	1.566E+00	-33.9
6	3	-4.839E-03	8.040E-01	-6.137E-01	-9.936E-01	0.	1.316E+00	-27.2
7	3	-5.319E-03	9.050E-01	-6.774E-01	-4.987E-01	0.	1.049E+00	-16.1
8	3	-5.465E-03	9.375E-01	-7.041E-01	3.567E-02	0.	9.382E-01	1.2
9	3	-5.264E-03	9.057E-01	-6.924E-01	5.687E-01	0.	1.087E+00	17.7
10	3	-4.729E-03	8.007E-01	-6.501E-01	1.058E+00	0.	1.358E+00	27.8
11	3	-3.895E-03	5.983E-01	-5.960E-01	1.456E+00	0.	1.575E+00	33.9
12	3	-2.833E-03	2.384E-01	-5.509E-01	1.701E+00	0.	-1.903E+00	-51.5
13	3	-1.664E-03	-3.926E-01	-5.306E-01	1.707E+00	0.	-2.170E+00	-46.2
14	3	-5.999E-04	-1.479E+00	-5.272E-01	1.403E+00	0.	-2.484E+00	-35.6
15	3	-2.836E-25	-3.216E+00	-4.824E-01	9.260E-01	2.836E+00	-3.500E+00	-17.1
16	3	-4.434E-04	-2.074E+00	-2.407E-01	5.168E-01	0.	-2.210E+00	-14.7
17	3	-1.563E-03	-1.105E+00	-1.234E-01	2.460E-01	0.	-1.163E+00	-13.3
18	3	-3.184E-03	-4.059E-01	-5.708E-02	9.716E-02	0.	-4.311E-01	-14.6
19	3	-5.069E-03	7.029E-13	-3.288E-01	2.926E-02	0.	-3.314E-01	-85.0
0	4	3.943E-04	8.074E-14	-6.315E-03	-2.071E-01	-2.508E+00	-2.103E-01	45.4
1	4	-4.998E-25	-2.930E+00	-4.395E-01	-8.776E-01	4.998E+00	-3.208E+00	17.6
2	4	-1.345E-03	-1.344E+00	-1.532E-01	-1.557E+00	0.	-2.416E+00	34.5
3	4	-3.128E-03	-1.660E-01	9.592E-02	-1.794E+00	0.	-1.834E+00	42.9
4	4	-4.971E-03	6.621E-01	3.116E-01	-1.713E+00	0.	2.208E+00	-42.1
5	4	-6.610E-03	1.203E+00	4.941E-01	-1.425E+00	0.	2.317E+00	-38.0
6	4	-7.875E-03	1.543E+00	6.231E-01	-1.011E+00	0.	2.194E+00	-32.8
7	4	-8.658E-03	1.737E+00	6.897E-01	-5.138E-01	0.	1.947E+00	-22.2
8	4	-8.899E-03	1.798E+00	7.024E-01	2.605E-02	0.	1.798E+00	1.4
9	4	-8.578E-03	1.730E+00	6.594E-01	5.628E-01	0.	1.971E+00	23.2
10	4	-7.716E-03	1.520E+00	5.589E-01	1.049E+00	0.	2.194E+00	32.7
11	4	-6.378E-03	1.144E+00	3.900E-01	1.442E+00	0.	2.258E+00	37.7
12	4	-4.679E-03	5.264E-01	1.628E-01	1.696E+00	0.	2.050E+00	41.9
13	4	-2.813E-03	-4.598E-01	-9.027E-02	1.738E+00	0.	-2.023E+00	-42.0
14	4	-1.096E-03	-1.924E+00	-3.429E-01	1.510E+00	0.	-2.838E+00	-31.2
15	4	-3.737E-25	-3.903E+00	-5.855E-01	1.018E+00	3.737E+00	-4.191E+00	-15.8
16	4	-1.703E-04	-2.432E+00	-3.718E-01	5.192E-01	0.	-2.556E+00	-13.4

17	4	-1.129E-03	-1.287E+00	-2.268E-01	2.214E-01	0.	-1.331E+00	-11.3
18	4	-2.665E-03	-4.824E-01	-1.213E-01	7.122E-02	0.	-4.959E-01	-10.8
19	4	-4.511E-03	6.596E-13	-7.473E-01	1.772E-02	0.	-7.477E-01	-88.6
0	5	5.499E-04	-1.288E-14	-6.379E-02	-1.918E-01	-3.497E+00	-2.263E-01	49.7
1	5	-6.849E-25	-4.008E+00	-6.012E-01	-8.105E-01	6.849E+00	-4.191E+00	12.7
2	5	-1.850E-03	-1.809E+00	-8.103E-02	-1.432E+00	0.	-2.617E+00	29.4
3	5	-4.297E-03	-1.625E-01	4.314E-01	-1.634E+00	0.	1.795E+00	-50.2
4	5	-6.819E-03	1.000E+00	9.133E-01	-1.533E+00	0.	2.490E+00	-44.2
5	5	-9.054E-03	1.739E+00	1.352E+00	-1.260E+00	0.	2.820E+00	-40.6
6	5	-1.078E-02	2.213E+00	1.673E+00	-9.033E-01	0.	2.886E+00	-36.7
7	5	-1.185E-02	2.505E+00	1.847E+00	-4.683E-01	0.	2.748E+00	-27.5
8	5	-1.219E-02	2.590E+00	1.898E+00	1.301E-02	0.	2.590E+00	1.1
9	5	-1.176E-02	2.488E+00	1.814E+00	4.910E-01	0.	2.747E+00	27.8
10	5	-1.059E-02	2.171E+00	1.607E+00	9.156E-01	0.	2.847E+00	36.4
11	5	-8.789E-03	1.650E+00	1.254E+00	1.255E+00	0.	2.723E+00	40.5
12	5	-6.497E-03	8.308E-01	7.909E-01	1.505E+00	0.	2.316E+00	44.6
13	5	-3.969E-03	-4.624E-01	3.003E-01	1.595E+00	0.	-1.721E+00	-38.3
14	5	-1.610E-03	-2.288E+00	-1.980E-01	1.434E+00	0.	-3.017E+00	-27.0
15	5	-4.664E-25	-4.653E+00	-6.980E-01	9.732E-01	4.664E+00	-4.880E+00	-13.1
16	5	1.005E-04	-2.828E+00	-5.322E-01	4.725E-01	0.	-2.921E+00	-11.2
17	5	-7.110E-04	-1.480E+00	-3.546E-01	1.878E-01	0.	-1.510E+00	-9.2
18	5	-2.180E-03	-5.628E-01	-1.973E-01	5.241E-02	0.	-5.701E-01	-8.0
19	5	-4.004E-03	3.229E-13	-1.195E+00	1.090E-02	0.	-1.195E+00	-89.5
0	6	6.842E-04	8.971E-14	-1.235E-01	-1.513E-01	-4.352E+00	-2.252E-01	56.1
1	6	-8.530E-25	-4.957E+00	-7.436E-01	-6.545E-01	8.530E+00	-5.056E+00	8.6
2	6	-2.292E-03	-2.196E+00	1.039E-02	-1.160E+00	0.	-2.694E+00	23.2
3	6	-5.314E-03	-1.155E-01	7.754E-01	-1.301E+00	0.	1.705E+00	-54.5
4	6	-8.413E-03	1.356E+00	1.501E+00	-1.159E+00	0.	2.590E+00	-46.8
5	6	-1.114E-02	2.196E+00	2.206E+00	-9.174E-01	0.	3.119E+00	-45.2
6	6	-1.324E-02	2.762E+00	2.712E+00	-6.868E-01	0.	3.425E+00	-44.0
7	6	-1.456E-02	3.175E+00	2.969E+00	-3.716E-01	0.	3.457E+00	-37.3
8	6	-1.498E-02	3.271E+00	3.065E+00	5.637E-04	0.	3.271E+00	.2
9	6	-1.446E-02	3.152E+00	2.939E+00	3.706E-01	0.	3.431E+00	37.0
10	6	-1.305E-02	2.708E+00	2.655E+00	6.798E-01	0.	3.362E+00	43.9
11	6	-1.087E-02	2.092E+00	2.129E+00	9.014E-01	0.	3.012E+00	45.6
12	6	-8.094E-03	1.178E+00	1.414E+00	1.136E+00	0.	2.438E+00	48.0
13	6	-5.003E-03	-3.921E-01	6.947E-01	1.285E+00	0.	1.547E+00	56.5
14	6	-2.076E-03	-2.572E+00	-5.317E-02	1.190E+00	0.	-3.045E+00	-21.7
15	6	-5.595E-25	-5.365E+00	-8.047E-01	7.995E-01	5.595E+00	-5.501E+00	-9.7
16	6	3.355E-04	-3.191E+00	-6.919E-01	3.697E-01	0.	-3.245E+00	-8.2
17	6	-3.538E-04	-1.648E+00	-4.807E-01	1.470E-01	0.	-1.667E+00	-7.1
18	6	-1.769E-03	-6.310E-01	-2.689E-01	4.563E-02	0.	-6.367E-01	-7.1
19	6	-3.579E-03	3.774E-13	-1.566E+00	1.121E-02	0.	-1.566E+00	-89.6
0	7	7.776E-04	-2.002E-13	-1.952E-01	-8.225E-02	-4.945E+00	-2.253E-01	69.9
1	7	-9.987E-25	-5.685E+00	-8.527E-01	-3.915E-01	9.987E+00	-5.716E+00	4.6
2	7	-2.622E-03	-2.458E+00	1.826E-01	-7.196E-01	0.	-2.642E+00	14.3
3	7	-6.068E-03	7.839E-04	1.235E+00	-7.951E-01	0.	1.624E+00	-63.9
4	7	-9.576E-03	1.802E+00	2.190E+00	-5.767E-01	0.	2.605E+00	-54.3
5	7	-1.260E-02	2.517E+00	3.206E+00	-3.715E-01	0.	3.368E+00	-66.4
6	7	-1.494E-02	3.107E+00	3.897E+00	-3.772E-01	0.	4.048E+00	-68.2
7	7	-1.644E-02	3.748E+00	4.200E+00	-2.301E-01	0.	4.296E+00	-67.2
8	7	-1.692E-02	3.783E+00	4.374E+00	-9.673E-03	0.	4.374E+00	-89.1
9	7	-1.635E-02	3.723E+00	4.175E+00	2.105E-01	0.	4.258E+00	68.5
10	7	-1.475E-02	3.050E+00	3.852E+00	3.576E-01	0.	3.988E+00	69.1
11	7	-1.234E-02	2.413E+00	3.148E+00	3.535E-01	0.	3.290E+00	68.1
12	7	-9.280E-03	1.632E+00	2.130E+00	5.654E-01	0.	2.499E+00	56.9
13	7	-5.786E-03	-2.441E-01	1.186E+00	8.009E-01	0.	1.545E+00	65.9

14	7	-2.431E-03	-2.759E+00	1.491E-01	7.603E-01	0.	-2.946E+00	-13.8
15	7	-6.580E-25	-5.955E+00	-8.932E-01	4.908E-01	6.580E+00	-6.002E+00	-5.5
16	7	4.997E-04	-3.449E+00	-8.286E-01	2.150E-01	0.	-3.467E+00	-4.7
17	7	-1.042E-04	-1.752E+00	-5.807E-01	1.046E-01	0.	-1.761E+00	-5.1
18	7	-1.475E-03	-6.699E-01	-3.196E-01	5.448E-02	0.	-6.781E-01	-8.6
19	7	-3.260E-03	4.500E-13	-1.759E+00	1.999E-02	0.	-1.759E+00	-89.3
0	8	8.062E-04	-2.220E-14	-2.699E-01	1.960E-02	-5.127E+00	-2.713E-01	-85.9
1	8	-1.107E-24	-6.048E+00	-9.072E-01	1.959E-02	1.107E+01	-6.048E+00	-.2
2	8	-2.768E-03	-2.568E+00	4.895E-01	-3.272E-02	0.	-2.568E+00	.6
3	8	-6.413E-03	1.562E-01	1.948E+00	-7.995E-02	0.	1.952E+00	-87.5
4	8	-1.010E-02	2.516E+00	3.173E+00	2.376E-01	0.	3.250E+00	72.1
5	8	-1.312E-02	2.570E+00	4.462E+00	4.040E-01	0.	4.545E+00	78.4
6	8	-1.550E-02	3.091E+00	5.316E+00	1.058E-02	0.	5.316E+00	89.7
7	8	-1.712E-02	4.323E+00	5.700E+00	-2.953E-02	0.	5.701E+00	-88.8
8	8	-1.759E-02	3.986E+00	5.998E+00	-1.766E-02	0.	5.998E+00	-89.5
9	8	-1.703E-02	4.301E+00	5.681E+00	-4.135E-03	0.	5.681E+00	-89.8
10	8	-1.533E-02	3.040E+00	5.280E+00	-3.866E-02	0.	5.281E+00	-89.0
11	8	-1.289E-02	2.478E+00	4.416E+00	-4.211E-01	0.	4.503E+00	-78.3
12	8	-9.841E-03	2.367E+00	3.125E+00	-2.368E-01	0.	3.193E+00	-74.0
13	8	-6.163E-03	-5.878E-02	1.908E+00	1.040E-01	0.	1.914E+00	87.0
14	8	-2.600E-03	-2.833E+00	4.616E-01	7.771E-02	0.	-2.834E+00	-1.4
15	8	-7.588E-25	-6.287E+00	-9.430E-01	2.583E-02	7.588E+00	-6.287E+00	-.3
16	8	5.606E-04	-3.517E+00	-9.060E-01	2.502E-02	0.	-3.517E+00	-.5
17	8	-9.076E-07	-1.753E+00	-6.220E-01	7.007E-02	0.	-1.757E+00	-3.5
18	8	-1.327E-03	-6.647E-01	-3.314E-01	7.968E-02	0.	-6.827E-01	-12.8
19	8	-3.063E-03	1.090E-13	-1.698E+00	3.656E-02	0.	-1.699E+00	-88.8
0	9	7.452E-04	-7.616E-14	-2.958E-01	1.456E-01	-4.739E+00	-3.554E-01	-67.7
1	9	-1.124E-24	-5.792E+00	-8.688E-01	5.977E-01	1.124E+01	-5.864E+00	-6.8
2	9	-2.624E-03	-2.494E+00	8.450E-01	1.018E+00	0.	-2.780E+00	-15.7
3	9	-6.118E-03	1.737E-01	2.934E+00	1.110E+00	0.	3.325E+00	70.6
4	9	-9.701E-03	3.818E+00	5.346E+00	1.250E+00	0.	6.047E+00	60.7
5	9	-1.228E-02	2.119E+00	5.729E+00	1.172E+00	0.	6.076E+00	73.5
6	9	-1.445E-02	2.483E+00	6.623E+00	6.401E-01	0.	6.720E+00	81.4
7	9	-1.612E-02	5.183E+00	8.110E+00	3.131E-01	0.	8.143E+00	84.0
8	9	-1.647E-02	3.504E+00	7.805E+00	-2.372E-02	0.	7.805E+00	-89.7
9	9	-1.605E-02	5.167E+00	8.096E+00	-3.577E-01	0.	8.139E+00	-83.1
10	9	-1.431E-02	2.446E+00	6.595E+00	-6.755E-01	0.	6.702E+00	-81.0
11	9	-1.210E-02	2.050E+00	5.690E+00	-1.190E+00	0.	6.044E+00	-73.4
12	9	-9.482E-03	3.700E+00	5.299E+00	-1.241E+00	0.	5.976E+00	-61.4
13	9	-5.905E-03	-1.307E-02	2.886E+00	-1.072E+00	0.	3.239E+00	-71.8
14	9	-2.475E-03	-2.758E+00	8.015E-01	-9.668E-01	0.	-3.004E+00	14.3
15	9	-8.148E-25	-6.099E+00	-9.149E-01	-5.922E-01	8.148E+00	-6.166E+00	6.4
16	9	4.959E-04	-3.308E+00	-8.592E-01	-1.651E-01	0.	-3.319E+00	3.8
17	9	-6.309E-05	-1.628E+00	-5.623E-01	5.158E-02	0.	-1.630E+00	-2.8
18	9	-1.333E-03	-6.099E-01	-2.865E-01	1.140E-01	0.	-6.460E-01	-17.6
19	9	-2.981E-03	2.641E-13	-1.361E+00	5.618E-02	0.	-1.364E+00	-87.6
0	10	5.860E-04	-3.630E-14	-1.855E-01	2.547E-01	-3.727E+00	-3.639E-01	-55.0
1	10	-8.933E-25	-4.592E+00	-6.888E-01	1.167E+00	8.933E+00	-4.914E+00	-15.4
2	10	-2.076E-03	-2.039E+00	6.114E-01	2.132E+00	0.	-3.224E+00	-29.1
3	10	-4.859E-03	1.143E-01	2.235E+00	2.484E+00	0.	3.876E+00	56.6
4	10	-7.715E-03	3.394E+00	4.194E+00	2.173E+00	0.	6.004E+00	50.2
5	10	-9.654E-03	1.446E+00	4.180E+00	1.676E+00	0.	4.975E+00	64.6
6	10	-1.132E-02	1.643E+00	4.769E+00	1.377E+00	0.	5.289E+00	69.3
7	10	-1.268E-02	4.241E+00	6.069E+00	7.108E-01	0.	6.313E+00	71.1
8	10	-1.293E-02	2.530E+00	5.703E+00	-2.733E-02	0.	5.704E+00	-89.5
9	10	-1.263E-02	4.233E+00	6.063E+00	-7.627E-01	0.	6.339E+00	-70.1
10	10	-1.123E-02	1.624E+00	4.755E+00	-1.420E+00	0.	5.303E+00	-68.9

11	10	-9.518E-03	1.408E+00	4.154E+00	-1.700E+00	0.	4.965E+00	-64.5
12	10	-7.549E-03	3.316E+00	4.151E+00	-2.167E+00	0.	5.941E+00	-50.5
13	10	-4.687E-03	-3.708E-02	2.174E+00	-2.441E+00	0.	3.748E+00	-57.2
14	10	-1.946E-03	-2.317E+00	5.397E-01	-2.068E+00	0.	-3.402E+00	27.7
15	10	-6.684E-25	-5.040E+00	-7.560E-01	-1.171E+00	6.684E+00	-5.339E+00	14.3
16	10	3.108E-04	-2.784E+00	-6.165E-01	-3.002E-01	0.	-2.825E+00	7.7
17	10	-2.718E-04	-1.391E+00	-3.719E-01	4.606E-02	0.	-1.393E+00	-2.6
18	10	-1.469E-03	-5.152E-01	-1.792E-01	1.386E-01	0.	-5.650E-01	-19.8
19	10	-2.993E-03	1.761E-13	-8.073E-01	6.917E-02	0.	-8.132E-01	-85.1
0	11	3.652E-04	-2.726E-14	6.496E-02	2.837E-01	-2.323E+00	3.181E-01	48.3
1	11	-4.328E-25	-2.644E+00	-3.965E-01	1.371E+00	4.328E+00	-3.293E+00	-25.3
2	11	-1.223E-03	-1.302E+00	-2.918E-01	2.554E+00	0.	-3.401E+00	-39.4
3	11	-2.863E-03	-5.127E-02	-2.828E-01	2.965E+00	0.	-3.134E+00	-46.1
4	11	-4.506E-03	1.256E+00	-4.646E-01	2.504E+00	0.	3.043E+00	35.5
5	11	-5.710E-03	6.005E-01	-4.076E-01	1.871E+00	0.	2.034E+00	37.5
6	11	-6.693E-03	6.406E-01	-4.971E-01	1.603E+00	0.	1.773E+00	35.2
7	11	-7.440E-03	1.571E+00	-6.937E-01	8.494E-01	0.	1.854E+00	18.4
8	11	-7.630E-03	1.142E+00	-5.854E-01	-2.644E-02	0.	1.142E+00	-.9
9	11	-7.413E-03	1.572E+00	-6.846E-01	-9.007E-01	0.	1.887E+00	-19.3
10	11	-6.640E-03	6.404E-01	-4.832E-01	-1.649E+00	0.	1.820E+00	-35.6
11	11	-5.630E-03	5.934E-01	-3.982E-01	-1.903E+00	0.	2.064E+00	-37.7
12	11	-4.404E-03	1.226E+00	-4.753E-01	-2.512E+00	0.	3.027E+00	-35.6
13	11	-2.747E-03	-1.476E-01	-3.322E-01	-2.931E+00	0.	-3.173E+00	45.9
14	11	-1.123E-03	-1.570E+00	-3.848E-01	-2.475E+00	0.	-3.522E+00	38.3
15	11	-3.211E-25	-3.276E+00	-4.915E-01	-1.355E+00	3.211E+00	-3.827E+00	22.1
16	11	5.961E-05	-2.066E+00	-2.179E-01	-3.247E-01	0.	-2.122E+00	9.7
17	11	-5.557E-04	-1.105E+00	-8.971E-02	3.898E-02	0.	-1.106E+00	-2.2
18	11	-1.674E-03	-4.068E-01	-3.433E-02	1.294E-01	0.	-4.473E-01	-17.4
19	11	-3.060E-03	1.831E-13	-1.823E-01	6.451E-02	0.	-2.029E-01	-72.4
0	12	1.660E-04	2.465E-14	3.466E-01	1.927E-01	-1.056E+00	4.325E-01	66.0
1	12	5.473E-26	-7.272E-01	-1.091E-01	9.866E-01	-5.473E-01	-1.452E+00	-36.3
2	12	-4.020E-04	-6.714E-01	-1.363E+00	1.875E+00	0.	-2.924E+00	-50.2
3	12	-9.589E-04	-4.330E-01	-2.914E+00	2.151E+00	0.	-4.156E+00	-60.0
4	12	-1.514E-03	-2.546E-01	-4.490E+00	1.865E+00	0.	-5.194E+00	-69.3
5	12	-1.931E-03	-5.953E-01	-5.657E+00	1.433E+00	0.	-6.034E+00	-75.2
6	12	-2.264E-03	-7.332E-01	-6.637E+00	1.133E+00	0.	-6.847E+00	-79.5
7	12	-2.509E-03	-5.797E-01	-7.384E+00	6.137E-01	0.	-7.439E+00	-84.9
8	12	-2.579E-03	-6.849E-01	-7.551E+00	-1.758E-02	0.	-7.551E+00	89.9
9	12	-2.501E-03	-5.734E-01	-7.351E+00	-6.488E-01	0.	-7.413E+00	84.6
10	12	-2.247E-03	-7.208E-01	-6.575E+00	-1.168E+00	0.	-6.799E+00	79.1
11	12	-1.905E-03	-5.781E-01	-5.573E+00	-1.465E+00	0.	-5.971E+00	74.8
12	12	-1.477E-03	-2.393E-01	-4.404E+00	-1.889E+00	0.	-5.133E+00	68.9
13	12	-9.094E-04	-4.505E-01	-2.864E+00	-2.149E+00	0.	-4.122E+00	59.7
14	12	-3.488E-04	-8.494E-01	-1.408E+00	-1.799E+00	0.	-2.949E+00	49.4
15	12	4.355E-26	-1.571E+00	-2.357E-01	-9.414E-01	-4.355E-01	-2.058E+00	27.3
16	12	-1.610E-04	-1.430E+00	1.666E-01	-2.189E-01	0.	-1.459E+00	7.7
17	12	-8.047E-04	-8.685E-01	1.706E-01	1.730E-02	0.	-8.688E-01	-1.0
18	12	-1.860E-03	-3.206E-01	9.318E-02	7.426E-02	0.	-3.335E-01	-9.9
19	12	-3.139E-03	4.374E-13	3.121E-01	3.728E-02	0.	3.165E-01	83.3
0	13	8.190E-05	-8.882E-16	4.998E-01	1.573E-03	-5.209E-01	4.998E-01	89.8
1	13	2.034E-25	2.524E-01	3.787E-02	6.334E-03	-4.068E+00	2.526E-01	1.7
2	13	-1.092E-25	-3.684E-01	-2.456E+00	1.150E-02	1.092E+00	-2.456E+00	-89.7
3	13	-6.314E-25	-8.786E-01	-5.857E+00	1.428E-02	6.314E+00	-5.857E+00	-89.8
4	13	-1.150E-24	-1.387E+00	-9.247E+00	1.479E-02	1.150E+01	-9.247E+00	-89.9
5	13	-1.360E-24	-1.767E+00	-1.178E+01	1.340E-02	1.360E+01	-1.178E+01	-89.9
6	13	-1.571E-24	-2.070E+00	-1.380E+01	1.056E-02	1.571E+01	-1.380E+01	-89.9
7	13	-1.820E-24	-2.294E+00	-1.529E+01	6.785E-03	1.820E+01	-1.529E+01	-90.0

8	13	-1.841E-24	-2.357E+00	-1.572E+01	2.540E-03	1.841E+01	-1.572E+01	-90.0
9	13	-1.815E-24	-2.285E+00	-1.523E+01	-1.798E-03	1.815E+01	-1.523E+01	90.0
10	13	-1.559E-24	-2.051E+00	-1.368E+01	-5.980E-03	1.559E+01	-1.368E+01	90.0
11	13	-1.338E-24	-1.738E+00	-1.159E+01	-9.885E-03	1.338E+01	-1.159E+01	89.9
12	13	-1.112E-24	-1.346E+00	-8.976E+00	-1.350E-02	1.112E+01	-8.976E+00	89.9
13	13	-5.605E-25	-8.270E-01	-5.513E+00	-1.685E-02	5.605E+00	-5.513E+00	89.8
14	13	1.429E-25	-3.150E-01	-2.100E+00	-1.991E-02	-1.429E+00	-2.100E+00	89.4
15	13	1.212E-25	-7.864E-01	-1.180E-01	-2.257E-02	-2.424E+00	-7.871E-01	1.9
16	13	-2.551E-04	-1.169E+00	3.372E-01	-2.310E-02	0.	-1.169E+00	.9
17	13	-9.150E-04	-7.778E-01	2.800E-01	-1.980E-02	0.	-7.782E-01	1.1
18	13	-1.953E-03	-2.883E-01	1.447E-01	-1.467E-02	0.	-2.888E-01	1.9
19	13	-3.197E-03	6.498E-13	4.979E-01	-6.062E-03	0.	4.980E-01	-89.3
0	14	1.636E-04	5.218E-14	3.465E-01	-1.895E-01	-1.041E+00	4.300E-01	-66.2
1	14	5.671E-26	-7.122E-01	-1.068E-01	-9.737E-01	-5.671E-01	-1.429E+00	36.4
2	14	-3.947E-04	-6.619E-01	-1.361E+00	-1.852E+00	0.	-2.896E+00	50.3
3	14	-9.413E-04	-4.291E-01	-2.912E+00	-2.122E+00	0.	-4.129E+00	60.2
4	14	-1.485E-03	-2.557E-01	-4.489E+00	-1.835E+00	0.	-5.173E+00	69.5
5	14	-1.891E-03	-6.004E-01	-5.656E+00	-1.406E+00	0.	-6.020E+00	75.5
6	14	-2.214E-03	-7.411E-01	-6.637E+00	-1.112E+00	0.	-6.840E+00	79.7
7	14	-2.453E-03	-5.893E-01	-7.385E+00	-6.005E-01	0.	-7.438E+00	85.0
8	14	-2.519E-03	-6.953E-01	-7.553E+00	2.231E-02	0.	-7.553E+00	-89.8
9	14	-2.441E-03	-5.837E-01	-7.354E+00	6.449E-01	0.	-7.415E+00	-84.6
10	14	-2.190E-03	-7.306E-01	-6.578E+00	1.156E+00	0.	-6.798E+00	-79.2
11	14	-1.854E-03	-5.872E-01	-5.577E+00	1.445E+00	0.	-5.965E+00	-75.0
12	14	-1.435E-03	-2.478E-01	-4.408E+00	1.862E+00	0.	-5.119E+00	-69.1
13	14	-8.790E-04	-4.583E-01	-2.866E+00	2.116E+00	0.	-4.097E+00	-59.8
14	14	-3.325E-04	-8.564E-01	-1.409E+00	1.760E+00	0.	-2.914E+00	-49.5
15	14	4.368E-26	-1.577E+00	-2.366E-01	8.965E-01	-4.368E-01	-2.026E+00	-26.6
16	14	-1.791E-04	-1.434E+00	1.661E-01	1.727E-01	0.	-1.453E+00	-6.1
17	14	-8.426E-04	-8.720E-01	1.702E-01	-5.705E-02	0.	-8.751E-01	3.1
18	14	-1.920E-03	-3.223E-01	9.258E-02	-1.038E-01	0.	-3.469E-01	13.3
19	14	-3.221E-03	3.354E-13	3.030E-01	-4.951E-02	0.	3.109E-01	-81.0
0	15	3.604E-04	1.604E-14	6.464E-02	-2.804E-01	-2.292E+00	3.146E-01	-48.3
1	15	-4.288E-25	-2.613E+00	-3.920E-01	-1.358E+00	4.288E+00	-3.257E+00	25.4
2	15	-1.208E-03	-1.283E+00	-2.879E-01	-2.530E+00	0.	-3.364E+00	39.4
3	15	-2.828E-03	-4.374E-02	-2.796E-01	-2.936E+00	0.	-3.100E+00	46.2
4	15	-4.448E-03	1.253E+00	-4.622E-01	-2.474E+00	0.	3.014E+00	-35.4
5	15	-5.629E-03	5.900E-01	-4.066E-01	-1.844E+00	0.	2.002E+00	-37.4
6	15	-6.594E-03	6.244E-01	-4.978E-01	-1.583E+00	0.	1.743E+00	-35.2
7	15	-7.327E-03	1.551E+00	-6.963E-01	-8.372E-01	0.	1.829E+00	-18.3
8	15	-7.511E-03	1.121E+00	-5.900E-01	3.006E-02	0.	1.121E+00	1.0
9	15	-7.293E-03	1.551E+00	-6.908E-01	8.958E-01	0.	1.865E+00	19.3
10	15	-6.526E-03	6.210E-01	-4.905E-01	1.636E+00	0.	1.793E+00	35.6
11	15	-5.529E-03	5.754E-01	-4.058E-01	1.884E+00	0.	2.031E+00	37.7
12	15	-4.320E-03	1.209E+00	-4.823E-01	2.486E+00	0.	2.989E+00	35.6
13	15	-2.687E-03	-1.631E-01	-3.377E-01	2.899E+00	0.	-3.151E+00	-45.9
14	15	-1.090E-03	-1.584E+00	-3.884E-01	2.436E+00	0.	-3.494E+00	-38.1
15	15	-3.208E-25	-3.288E+00	-4.932E-01	1.311E+00	3.208E+00	-3.807E+00	-21.6
16	15	2.341E-05	-2.077E+00	-2.187E-01	2.786E-01	0.	-2.118E+00	-8.3
17	15	-6.315E-04	-1.112E+00	-9.056E-02	-7.917E-02	0.	-1.118E+00	4.4
18	15	-1.793E-03	-4.106E-01	-3.545E-02	-1.596E-01	0.	-4.693E-01	20.2
19	15	-3.224E-03	3.871E-13	-1.996E-01	-7.707E-02	0.	-2.259E-01	71.2
0	16	5.785E-04	1.477E-14	-1.860E-01	-2.513E-01	-3.680E+00	-3.609E-01	55.2
1	16	-8.870E-25	-4.546E+00	-6.819E-01	-1.153E+00	8.870E+00	-4.864E+00	15.4
2	16	-2.053E-03	-2.011E+00	6.171E-01	-2.107E+00	0.	-3.180E+00	29.0
3	16	-4.805E-03	1.250E-01	2.239E+00	-2.454E+00	0.	3.854E+00	-56.7
4	16	-7.626E-03	3.390E+00	4.196E+00	-2.143E+00	0.	5.974E+00	-50.3

5	16	-9.531E-03	1.429E+00	4.180E+00	-1.650E+00	0.	4.952E+00	-64.9
6	16	-1.117E-02	1.617E+00	4.767E+00	-1.358E+00	0.	5.272E+00	-69.6
7	16	-1.251E-02	4.211E+00	6.063E+00	-7.004E-01	0.	6.298E+00	-71.5
8	16	-1.275E-02	2.499E+00	5.695E+00	2.903E-02	0.	5.695E+00	89.5
9	16	-1.245E-02	4.203E+00	6.052E+00	7.562E-01	0.	6.322E+00	70.4
10	16	-1.106E-02	1.596E+00	4.742E+00	1.406E+00	0.	5.279E+00	69.1
11	16	-9.367E-03	1.381E+00	4.140E+00	1.680E+00	0.	4.934E+00	64.7
12	16	-7.426E-03	3.292E+00	4.139E+00	2.142E+00	0.	5.899E+00	50.6
13	16	-4.598E-03	-5.993E-02	2.164E+00	2.410E+00	0.	3.706E+00	57.4
14	16	-1.898E-03	-2.338E+00	5.336E-01	2.032E+00	0.	-3.390E+00	-27.4
15	16	-6.680E-25	-5.059E+00	-7.588E-01	1.129E+00	6.680E+00	-5.337E+00	-13.8
16	16	2.567E-04	-2.801E+00	-6.176E-01	2.544E-01	0.	-2.830E+00	-6.6
17	16	-3.854E-04	-1.403E+00	-3.729E-01	-8.695E-02	0.	-1.411E+00	4.8
18	16	-1.648E-03	-5.214E-01	-1.807E-01	-1.699E-01	0.	-5.916E-01	22.5
19	16	-3.241E-03	3.578E-13	-8.306E-01	-8.229E-02	0.	-8.387E-01	84.4
0	17	7.350E-04	1.741E-13	-2.962E-01	-1.420E-01	-4.675E+00	-3.532E-01	68.1
1	17	-1.115E-24	-5.729E+00	-8.593E-01	-5.829E-01	1.115E+01	-5.798E+00	6.7
2	17	-2.593E-03	-2.457E+00	8.522E-01	-9.917E-01	0.	-2.731E+00	15.5
3	17	-6.045E-03	1.864E-01	2.939E+00	-1.080E+00	0.	3.312E+00	-70.9
4	17	-9.580E-03	3.810E+00	5.347E+00	-1.220E+00	0.	6.020E+00	-61.1
5	17	-1.212E-02	2.094E+00	5.726E+00	-1.148E+00	0.	6.059E+00	-73.9
6	17	-1.425E-02	2.447E+00	6.616E+00	-6.235E-01	0.	6.707E+00	-81.7
7	17	-1.589E-02	5.142E+00	8.098E+00	-3.054E-01	0.	8.129E+00	-84.2
8	17	-1.623E-02	3.462E+00	7.789E+00	2.258E-02	0.	7.789E+00	89.7
9	17	-1.581E-02	5.127E+00	8.077E+00	3.488E-01	0.	8.117E+00	83.3
10	17	-1.409E-02	2.409E+00	6.574E+00	6.605E-01	0.	6.677E+00	81.2
11	17	-1.190E-02	2.017E+00	5.668E+00	1.171E+00	0.	6.012E+00	73.7
12	17	-9.322E-03	3.669E+00	5.280E+00	1.218E+00	0.	5.935E+00	61.7
13	17	-5.788E-03	-4.271E-02	2.871E+00	1.045E+00	0.	3.207E+00	72.2
14	17	-2.412E-03	-2.787E+00	7.920E-01	9.339E-01	0.	-3.016E+00	-13.8
15	17	-8.143E-25	-6.126E+00	-9.189E-01	5.520E-01	8.143E+00	-6.184E+00	-6.0
16	17	4.246E-04	-3.332E+00	-8.603E-01	1.200E-01	0.	-3.338E+00	-2.8
17	17	-2.140E-04	-1.646E+00	-5.633E-01	-9.335E-02	0.	-1.654E+00	4.9
18	17	-1.572E-03	-6.192E-01	-2.881E-01	-1.469E-01	0.	-6.750E-01	20.8
19	17	-3.314E-03	1.747E-13	-1.387E+00	-7.009E-02	0.	-1.391E+00	87.1
0	18	7.932E-04	-4.596E-14	-2.700E-01	-1.585E-02	-5.045E+00	-2.709E-01	86.7
1	18	-1.096E-24	-5.966E+00	-8.949E-01	-4.160E-03	1.096E+01	-5.966E+00	.0
2	18	-2.729E-03	-2.521E+00	4.974E-01	5.967E-02	0.	-2.522E+00	-1.1
3	18	-6.319E-03	1.698E-01	1.951E+00	1.106E-01	0.	1.958E+00	86.5
4	18	-9.950E-03	2.502E+00	3.171E+00	-2.093E-01	0.	3.231E+00	-74.0
5	18	-1.291E-02	2.536E+00	4.454E+00	-3.822E-01	0.	4.527E+00	-79.1
6	18	-1.525E-02	3.044E+00	5.301E+00	2.624E-03	0.	5.301E+00	89.9
7	18	-1.684E-02	4.270E+00	5.680E+00	3.336E-02	0.	5.680E+00	88.6
8	18	-1.730E-02	3.932E+00	5.972E+00	1.277E-02	0.	5.972E+00	89.6
9	18	-1.675E-02	4.251E+00	5.651E+00	-7.807E-03	0.	5.651E+00	-89.7
10	18	-1.507E-02	2.997E+00	5.248E+00	2.199E-02	0.	5.248E+00	89.4
11	18	-1.265E-02	2.440E+00	4.384E+00	4.020E-01	0.	4.463E+00	78.8
12	18	-9.648E-03	2.332E+00	3.096E+00	2.166E-01	0.	3.153E+00	75.2
13	18	-6.024E-03	-9.400E-02	1.885E+00	-1.259E-01	0.	1.893E+00	-86.4
14	18	-2.525E-03	-2.870E+00	4.473E-01	-1.044E-01	0.	-2.874E+00	1.8
15	18	-7.582E-25	-6.325E+00	-9.487E-01	-6.157E-02	7.582E+00	-6.325E+00	.7
16	18	4.727E-04	-3.553E+00	-9.071E-01	-6.864E-02	0.	-3.554E+00	1.5
17	18	-1.884E-04	-1.779E+00	-6.227E-01	-1.128E-01	0.	-1.790E+00	5.5
18	18	-1.626E-03	-6.781E-01	-3.328E-01	-1.144E-01	0.	-7.126E-01	16.8
19	18	-3.483E-03	2.864E-13	-1.721E+00	-5.148E-02	0.	-1.722E+00	88.3
0	19	7.617E-04	1.009E-13	-1.947E-01	8.593E-02	-4.845E+00	-2.272E-01	-69.3
1	19	-9.839E-25	-5.583E+00	-8.375E-01	4.069E-01	9.839E+00	-5.618E+00	-4.9

2	19	-2.573E-03	-2.404E+00	1.902E-01	7.461E-01	0.	-2.603E+00	-15.0
3	19	-5.954E-03	1.311E-02	1.234E+00	8.239E-01	0.	1.649E+00	63.3
4	19	-9.391E-03	1.781E+00	2.180E+00	6.018E-01	0.	2.614E+00	54.2
5	19	-1.235E-02	2.472E+00	3.186E+00	3.891E-01	0.	3.357E+00	66.3
6	19	-1.464E-02	3.047E+00	3.868E+00	3.856E-01	0.	4.021E+00	68.4
7	19	-1.611E-02	3.681E+00	4.164E+00	2.290E-01	0.	4.255E+00	68.2
8	19	-1.657E-02	3.719E+00	4.332E+00	3.271E-04	0.	4.332E+00	90.0
9	19	-1.602E-02	3.665E+00	4.130E+00	-2.259E-01	0.	4.222E+00	-67.9
10	19	-1.445E-02	3.001E+00	3.804E+00	-3.759E-01	0.	3.953E+00	-68.5
11	19	-1.207E-02	2.373E+00	3.101E+00	-3.715E-01	0.	3.257E+00	-67.2
12	19	-9.064E-03	1.597E+00	2.088E+00	-5.809E-01	0.	2.473E+00	-56.5
13	19	-5.629E-03	-2.826E-01	1.153E+00	-8.145E-01	0.	1.521E+00	-65.7
14	19	-2.346E-03	-2.806E+00	1.281E-01	-7.771E-01	0.	-2.999E+00	14.0
15	19	-6.575E-25	-6.008E+00	-9.012E-01	-5.193E-01	6.575E+00	-6.060E+00	5.7
16	19	3.967E-04	-3.500E+00	-8.297E-01	-2.562E-01	0.	-3.524E+00	5.4
17	19	-3.267E-04	-1.789E+00	-5.809E-01	-1.481E-01	0.	-1.607E+00	6.9
18	19	-1.834E-03	-6.887E-01	-3.204E-01	-9.133E-02	0.	-7.101E-01	13.2
19	19	-3.769E-03	2.334E-13	-1.770E+00	-3.604E-02	0.	-1.770E+00	88.8
0	20	6.657E-04	4.374E-14	-1.216E-01	1.545E-01	-4.234E+00	-2.268E-01	-55.7
1	20	-8.345E-25	-4.837E+00	-7.255E-01	6.684E-01	8.345E+00	-4.943E+00	-9.0
2	20	-2.235E-03	-2.137E+00	1.533E-02	1.184E+00	0.	-2.661E+00	-23.9
3	20	-5.180E-03	-1.071E-01	7.655E-01	1.325E+00	0.	1.724E+00	54.1
4	20	-8.198E-03	1.325E+00	1.476E+00	1.178E+00	0.	2.581E+00	46.8
5	20	-1.085E-02	2.137E+00	2.167E+00	9.281E-01	0.	3.080E+00	45.5
6	20	-1.290E-02	2.688E+00	2.661E+00	6.887E-01	0.	3.363E+00	44.5
7	20	-1.419E-02	3.094E+00	2.909E+00	3.649E-01	0.	3.378E+00	37.9
8	20	-1.460E-02	3.195E+00	3.000E+00	-1.429E-02	0.	3.196E+00	-4.2
9	20	-1.410E-02	3.086E+00	2.872E+00	-3.889E-01	0.	3.382E+00	-37.3
10	20	-1.272E-02	2.657E+00	2.589E+00	-6.990E-01	0.	3.323E+00	-43.6
11	20	-1.058E-02	2.054E+00	2.065E+00	-9.174E-01	0.	2.977E+00	-45.2
12	20	-7.865E-03	1.147E+00	1.357E+00	-1.145E+00	0.	2.402E+00	-47.6
13	20	-4.838E-03	-4.295E-01	6.483E-01	-1.287E+00	0.	1.505E+00	-56.4
14	20	-1.985E-03	-2.628E+00	-8.304E-02	-1.192E+00	0.	-3.099E+00	21.6
15	20	-5.597E-25	-5.441E+00	-8.162E-01	-8.170E-01	5.597E+00	-5.581E+00	9.7
16	20	2.196E-04	-3.262E+00	-6.938E-01	-4.073E-01	0.	-3.325E+00	8.8
17	20	-6.089E-04	-1.699E+00	-4.807E-01	-1.910E-01	0.	-1.729E+00	8.7
18	20	-2.187E-03	-6.567E-01	-2.685E-01	-8.437E-02	0.	-6.743E-01	11.7
19	20	-4.176E-03	6.708E-13	-1.550E+00	-2.833E-02	0.	-1.551E+00	89.0
0	21	5.293E-04	1.121E-14	-5.947E-02	1.936E-01	-3.366E+00	-2.256E-01	-49.4
1	21	-6.624E-25	-3.871E+00	-5.806E-01	6.198E-01	6.624E+00	-4.064E+00	-13.2
2	21	-1.785E-03	-1.748E+00	-8.262E-02	1.447E+00	0.	-2.585E+00	-30.0
3	21	-4.146E-03	-1.613E-01	4.049E-01	1.647E+00	0.	1.792E+00	49.9
4	21	-6.581E-03	9.566E-01	8.625E-01	1.540E+00	0.	2.450E+00	44.1
5	21	-8.741E-03	1.665E+00	1.280E+00	1.261E+00	0.	2.748E+00	40.7
6	21	-1.041E-02	2.124E+00	1.586E+00	8.969E-01	0.	2.791E+00	36.7
7	21	-1.146E-02	2.411E+00	1.752E+00	4.562E-01	0.	2.644E+00	27.1
8	21	-1.179E-02	2.503E+00	1.800E+00	-2.935E-02	0.	2.504E+00	-2.4
9	21	-1.138E-02	2.416E+00	1.719E+00	-5.095E-01	0.	2.685E+00	-27.8
10	21	-1.026E-02	2.119E+00	1.518E+00	-9.333E-01	0.	2.799E+00	-36.1
11	21	-8.505E-03	1.618E+00	1.173E+00	-1.267E+00	0.	2.682E+00	-40.0
12	21	-6.274E-03	8.100E-01	7.191E-01	-1.506E+00	0.	2.271E+00	-44.1
13	21	-3.810E-03	-4.911E-01	2.405E-01	-1.582E+00	0.	-1.749E+00	38.5
14	21	-1.521E-03	-2.351E+00	-2.388E-01	-1.415E+00	0.	-3.061E+00	26.6
15	21	-4.688E-25	-4.766E+00	-7.148E-01	-9.750E-01	4.688E+00	-4.988E+00	12.9
16	21	-2.544E-05	-2.926E+00	-5.362E-01	-5.050E-01	0.	-3.028E+00	11.5
17	21	-9.951E-04	-1.548E+00	-3.546E-01	-2.312E-01	0.	-1.591E+00	10.6
18	21	-2.653E-03	-5.965E-01	-1.951E-01	-9.206E-02	0.	-6.166E-01	12.3
19	21	-4.690E-03	3.745E-13	-1.130E+00	-2.866E-02	0.	-1.131E+00	88.5

0	22	3.731E-04	-6.577E-14	1.527E-03	2.064E-01	-2.373E+00	2.071E-01	45.1
1	22	-4.730E-25	-2.782E+00	-4.173E-01	8.769E-01	4.730E+00	-3.072E+00	-18.3
2	22	-1.276E-03	-1.287E+00	-1.681E-01	1.555E+00	0.	-2.380E+00	-35.1
3	22	-2.970E-03	-1.756E-01	4.016E-02	1.786E+00	0.	-1.857E+00	-43.3
4	22	-4.725E-03	6.050E-01	2.180E-01	1.700E+00	0.	2.123E+00	41.8
5	22	-6.290E-03	1.115E+00	3.706E-01	1.410E+00	0.	2.201E+00	37.6
6	22	-7.503E-03	1.440E+00	4.801E-01	9.949E-01	0.	2.065E+00	32.1
7	22	-8.262E-03	1.632E+00	5.392E-01	4.983E-01	0.	1.825E+00	21.2
8	22	-8.507E-03	1.701E+00	5.560E-01	-4.007E-02	0.	1.703E+00	-2.0
9	22	-8.214E-03	1.652E+00	5.264E-01	-5.749E-01	0.	1.894E+00	-22.8
10	22	-7.400E-03	1.468E+00	4.449E-01	-1.059E+00	0.	2.132E+00	-32.1
11	22	-6.120E-03	1.121E+00	2.960E-01	-1.445E+00	0.	2.211E+00	-37.0
12	22	-4.484E-03	5.238E-01	8.539E-02	-1.686E+00	0.	2.005E+00	-41.3
13	22	-2.677E-03	-4.679E-01	-1.552E-01	-1.709E+00	0.	-2.028E+00	42.4
14	22	-1.019E-03	-1.988E+00	-3.931E-01	-1.465E+00	0.	-2.858E+00	30.7
15	22	-3.826E-25	-4.073E+00	-6.109E-01	-9.992E-01	3.826E+00	-4.341E+00	15.0
16	22	-3.028E-04	-2.565E+00	-3.795E-01	-5.451E-01	0.	-2.693E+00	13.3
17	22	-1.438E-03	-1.374E+00	-2.264E-01	-2.623E-01	0.	-1.431E+00	12.3
18	22	-3.190E-03	-5.248E-01	-1.157E-01	-1.097E-01	0.	-5.523E-01	14.1
19	22	-5.280E-03	2.264E-13	-6.009E-01	-3.515E-02	0.	-6.029E-01	86.7
0	23	2.175E-04	-1.543E-14	7.192E-02	1.907E-01	-1.383E+00	2.300E-01	50.3
1	23	-2.717E-25	-1.667E+00	-2.500E-01	8.276E-01	2.717E+00	-2.048E+00	-24.7
2	23	-7.581E-04	-8.169E-01	-3.010E-01	1.482E+00	0.	-2.063E+00	-40.1
3	23	-1.772E-03	-1.865E-01	-4.297E-01	1.712E+00	0.	-2.024E+00	-47.0
4	23	-2.827E-03	2.450E-01	-5.851E-01	1.642E+00	0.	-1.863E+00	-52.1
5	23	-3.771E-03	5.215E-01	-7.298E-01	1.369E+00	0.	-1.609E+00	-57.3
6	23	-4.506E-03	6.930E-01	-8.432E-01	9.664E-01	0.	-1.310E+00	-64.2
7	23	-4.969E-03	7.935E-01	-9.110E-01	4.843E-01	0.	-1.039E+00	-75.2
8	23	-5.124E-03	8.362E-01	-9.225E-01	-3.755E-02	0.	-9.233E-01	88.8
9	23	-4.954E-03	8.243E-01	-8.789E-01	-5.604E-01	0.	-1.047E+00	73.3
10	23	-4.468E-03	7.487E-01	-7.929E-01	-1.043E+00	0.	-1.319E+00	63.2
11	23	-3.694E-03	5.830E-01	-6.915E-01	-1.436E+00	0.	-1.626E+00	57.0
12	23	-2.691E-03	2.579E-01	-6.070E-01	-1.675E+00	0.	-1.904E+00	52.2
13	23	-1.573E-03	-3.653E-01	-5.675E-01	-1.665E+00	0.	-2.134E+00	46.7
14	23	-5.481E-04	-1.523E+00	-5.672E-01	-1.335E+00	0.	-2.463E+00	35.2
15	23	-3.103E-25	-3.472E+00	-5.208E-01	-8.847E-01	3.103E+00	-3.717E+00	15.5
16	23	-5.784E-04	-2.246E+00	-2.491E-01	-5.329E-01	0.	-2.379E+00	14.0
17	23	-1.890E-03	-1.212E+00	-1.181E-01	-2.812E-01	0.	-1.280E+00	13.6
18	23	-3.751E-03	-4.560E-01	-4.417E-02	-1.313E-01	0.	-4.943E-01	16.3
19	23	-5.912E-03	6.317E-13	-5.405E-02	-4.489E-02	0.	-7.942E-02	60.5
0	24	8.571E-05	6.439E-15	1.482E-01	1.424E-01	-5.451E-01	2.346E-01	58.7
1	24	-6.903E-26	-6.597E-01	-9.896E-02	6.370E-01	6.903E-01	-1.075E+00	-33.1
2	24	-2.997E-04	-4.074E-01	-5.392E-01	1.161E+00	0.	-1.636E+00	-46.6
3	24	-7.078E-04	-2.255E-01	-1.109E+00	1.355E+00	0.	-2.093E+00	-54.0
4	24	-1.136E-03	-1.272E-01	-1.695E+00	1.309E+00	0.	-2.437E+00	-60.5
5	24	-1.521E-03	-8.208E-02	-2.209E+00	1.100E+00	0.	-2.676E+00	-67.0
6	24	-1.824E-03	-6.198E-02	-2.596E+00	7.846E-01	0.	-2.819E+00	-74.1
7	24	-2.018E-03	-4.886E-02	-2.819E+00	4.043E-01	0.	-2.877E+00	-81.9
8	24	-2.088E-03	-3.439E-02	-2.859E+00	-9.739E-03	0.	-2.859E+00	89.8
9	24	-2.027E-03	-1.578E-02	-2.713E+00	-4.294E-01	0.	-2.780E+00	81.2
10	24	-1.837E-03	4.243E-03	-2.394E+00	-8.259E-01	0.	-2.650E+00	72.7
11	24	-1.525E-03	1.376E-02	-1.934E+00	-1.164E+00	0.	-2.478E+00	65.0
12	24	-1.113E-03	-2.377E-02	-1.403E+00	-1.389E+00	0.	-2.264E+00	58.2
13	24	-6.393E-04	-2.125E-01	-9.196E-01	-1.404E+00	0.	-2.014E+00	52.1
14	24	-1.900E-04	-8.771E-01	-6.380E-01	-1.030E+00	0.	-1.795E+00	41.7
15	24	-3.038E-25	-3.128E+00	-4.692E-01	-6.545E-01	3.038E+00	-3.281E+00	13.1
16	24	-8.248E-04	-2.024E+00	-1.778E-01	-4.831E-01	0.	-2.142E+00	13.8

17	24	-2.312E-03	-1.085E+00	-4.882E-02	-2.854E-01	0.	-1.158E+00	14.4
18	24	-4.296E-03	-4.000E-01	9.047E-03	-1.500E-01	0.	-4.491E-01	18.1
19	24	-6.548E-03	7.770E-13	4.340E-01	-5.444E-02	0.	4.407E-01	-83.0
0	25	3.129E-06	6.661E-16	1.944E-01	6.589E-02	-1.990E-02	2.147E-01	72.9
1	25	5.273E-26	9.645E-03	1.447E-03	2.667E-01	-1.055E+00	2.723E-01	44.6
2	25	-6.584E-26	-1.354E-01	-9.029E-01	4.809E-01	6.584E-01	-1.134E+00	-64.3
3	25	-2.432E-25	-3.151E-01	-2.101E+00	5.877E-01	2.432E+00	-2.277E+00	-73.3
4	25	-3.924E-25	-4.935E-01	-3.290E+00	5.988E-01	3.924E+00	-3.413E+00	-78.4
5	25	-5.033E-25	-6.445E-01	-4.297E+00	5.320E-01	5.033E+00	-4.373E+00	-81.9
6	25	-5.772E-25	-7.546E-01	-5.030E+00	4.066E-01	5.772E+00	-5.069E+00	-84.6
7	25	-6.174E-25	-8.171E-01	-5.447E+00	2.411E-01	6.174E+00	-5.460E+00	-87.0
8	25	-6.253E-25	-8.288E-01	-5.525E+00	5.325E-02	6.253E+00	-5.526E+00	-89.4
9	25	-6.002E-25	-7.880E-01	-5.254E+00	-1.396E-01	6.002E+00	-5.258E+00	88.2
10	25	-5.389E-25	-6.947E-01	-4.632E+00	-3.210E-01	5.389E+00	-4.657E+00	85.4
11	25	-4.333E-25	-5.505E-01	-3.670E+00	-4.752E-01	4.333E+00	-3.741E+00	81.5
12	25	-2.675E-25	-3.613E-01	-2.408E+00	-5.873E-01	2.675E+00	-2.565E+00	75.1
13	25	-8.694E-27	-1.456E-01	-9.706E-01	-6.432E-01	8.694E-02	-1.322E+00	61.3
14	25	7.307E-25	3.863E-02	2.575E-01	-6.312E-01	-7.307E+00	7.887E-01	-49.9
15	25	-2.787E-25	-3.174E+00	-4.761E-01	-5.474E-01	5.574E+00	-3.281E+00	11.0
16	25	-1.030E-03	-1.904E+00	-1.731E-01	-4.138E-01	0.	-1.998E+00	12.8
17	25	-2.683E-03	-1.000E+00	-1.712E-02	-2.701E-01	0.	-1.070E+00	14.4
18	25	-4.795E-03	-3.617E-01	4.292E-02	-1.594E-01	0.	-4.170E-01	19.1
19	25	-7.153E-03	1.437E-12	8.148E-01	-6.096E-02	0.	8.194E-01	-85.7
0	26	-1.492E-05	1.887E-15	1.467E-01	-1.026E-02	9.488E-02	1.475E-01	-86.0
1	26	1.921E-26	-2.497E-02	-3.745E-03	-1.015E-01	-1.921E-01	-1.164E-01	42.0
2	26	6.820E-06	-3.296E-02	-4.749E-01	-1.968E-01	0.	-5.498E-01	69.2
3	26	2.634E-05	-9.444E-02	-1.078E+00	-1.809E-01	0.	-1.110E+00	79.9
4	26	6.819E-05	-2.035E-01	-1.703E+00	-1.170E-01	0.	-1.712E+00	85.6
5	26	1.272E-04	-3.214E-01	-2.258E+00	-4.349E-02	0.	-2.259E+00	88.7
6	26	1.920E-04	-4.198E-01	-2.681E+00	2.107E-02	0.	-2.682E+00	-89.5
7	26	2.510E-04	-4.823E-01	-2.931E+00	7.225E-02	0.	-2.934E+00	-88.3
8	26	2.959E-04	-5.011E-01	-2.987E+00	1.134E-01	0.	-2.992E+00	-87.4
9	26	3.231E-04	-4.748E-01	-2.843E+00	1.505E-01	0.	-2.852E+00	-86.4
10	26	3.342E-04	-4.080E-01	-2.512E+00	1.873E-01	0.	-2.528E+00	-85.0
11	26	3.350E-04	-3.153E-01	-2.029E+00	2.186E-01	0.	-2.056E+00	-82.8
12	26	3.321E-04	-2.344E-01	-1.467E+00	2.194E-01	0.	-1.505E+00	-80.2
13	26	3.244E-04	-2.727E-01	-9.496E-01	1.217E-01	0.	-9.708E-01	-80.1
14	26	2.735E-04	-7.660E-01	-6.338E-01	-2.275E-01	0.	-9.368E-01	36.9
15	26	-2.823E-25	-2.847E+00	-4.270E-01	-4.311E-01	2.823E+00	-2.921E+00	9.8
16	26	-1.197E-03	-1.818E+00	-1.177E-01	-3.317E-01	0.	-1.881E+00	10.7
17	26	-2.992E-03	-9.602E-01	1.551E-02	-2.440E-01	0.	-1.018E+00	13.3
18	26	-5.230E-03	-3.439E-01	6.585E-02	-1.615E-01	0.	-3.999E-01	19.1
19	26	-7.704E-03	5.422E-13	1.066E+00	-6.447E-02	0.	1.070E+00	-86.6
0	27	1.574E-05	2.442E-15	7.161E-02	-5.798E-02	-1.001E-01	1.039E-01	-60.8
1	27	-9.245E-26	-3.902E-01	-5.853E-02	-2.878E-01	9.245E-01	-5.565E-01	30.0
2	27	-1.423E-04	-7.463E-02	-1.799E-01	-5.141E-01	0.	-6.441E-01	47.9
3	27	-3.004E-04	6.270E-02	-3.864E-01	-5.451E-01	0.	-7.514E-01	56.2
4	27	-4.185E-04	7.908E-02	-6.301E-01	-4.698E-01	0.	-8.641E-01	63.5
5	27	-4.790E-04	3.420E-02	-8.676E-01	-3.398E-01	0.	-9.813E-01	71.5
6	27	-4.849E-04	-2.673E-02	-1.062E+00	-1.862E-01	0.	-1.095E+00	80.1
7	27	-4.468E-04	-7.545E-02	-1.189E+00	-2.587E-02	0.	-1.189E+00	88.7
8	27	-3.746E-04	-9.822E-02	-1.231E+00	1.328E-01	0.	-1.247E+00	-83.4
9	27	-2.737E-04	-9.423E-02	-1.190E+00	2.838E-01	0.	-1.259E+00	-76.3
10	27	-1.448E-04	-7.661E-02	-1.077E+00	4.171E-01	0.	-1.228E+00	-70.1
11	27	1.226E-05	-7.866E-02	-9.200E-01	5.115E-01	0.	-1.162E+00	-64.7
12	27	1.890E-04	-1.700E-01	-7.620E-01	5.260E-01	0.	-1.070E+00	-59.7
13	27	3.473E-04	-4.904E-01	-6.443E-01	3.997E-01	0.	-9.744E-01	-50.4

14	27	3.749E-04	-1.297E+00	-5.650E-01	9.414E-02	0.	-1.309E+00	-7.2
15	27	-2.641E-25	-2.892E+00	-4.337E-01	-1.714E-01	2.641E+00	-2.903E+00	4.0
16	27	-1.313E-03	-1.830E+00	-1.244E-01	-2.427E-01	0.	-1.864E+00	7.9
17	27	-3.227E-03	-9.627E-01	1.321E-02	-2.163E-01	0.	-1.008E+00	12.0
18	27	-5.586E-03	-3.444E-01	6.924E-02	-1.590E-01	0.	-3.984E-01	18.8
19	27	-8.181E-03	8.804E-13	1.177E+00	-6.556E-02	0.	1.181E+00	-86.8
0	28	7.016E-05	1.377E-14	8.575E-03	-7.487E-02	-4.462E-01	7.928E-02	-46.6
1	28	-1.975E-25	-8.547E-01	-1.282E-01	-3.373E-01	1.975E+00	-9.871E-01	21.4
2	28	-3.474E-04	-1.931E-01	-7.742E-03	-5.931E-01	0.	-7.007E-01	40.6
3	28	-7.586E-04	1.635E-01	5.714E-02	-6.469E-01	0.	7.594E-01	-42.7
4	28	-1.118E-03	3.219E-01	7.427E-02	-5.798E-01	0.	7.909E-01	-39.0
5	28	-1.375E-03	3.652E-01	5.833E-02	-4.420E-01	0.	6.796E-01	-35.4
6	28	-1.513E-03	3.536E-01	2.517E-02	-2.664E-01	0.	5.023E-01	-29.2
7	28	-1.535E-03	3.257E-01	-1.197E-02	-7.382E-02	0.	3.411E-01	-11.8
8	28	-1.449E-03	2.998E-01	-4.527E-02	1.212E-01	0.	3.381E-01	17.5
9	28	-1.261E-03	2.754E-01	-7.404E-02	3.060E-01	0.	4.530E-01	30.1
10	28	-9.773E-04	2.316E-01	-1.049E-01	4.638E-01	0.	5.568E-01	35.0
11	28	-6.119E-04	1.219E-01	-1.499E-01	5.698E-01	0.	-5.998E-01	-51.7
12	28	-1.985E-04	-1.359E-01	-2.204E-01	5.893E-01	0.	-7.689E-01	-47.1
13	28	1.807E-04	-6.700E-01	-3.150E-01	4.879E-01	0.	-1.012E+00	-35.0
14	28	3.532E-04	-1.645E+00	-4.075E-01	2.648E-01	0.	-1.700E+00	-11.6
15	28	-3.050E-25	-3.162E+00	-4.743E-01	2.408E-04	3.050E+00	-3.162E+00	-.0
16	28	-1.379E-03	-1.931E+00	-1.815E-01	-1.629E-01	0.	-1.947E+00	5.3
17	28	-3.390E-03	-1.002E+00	-2.349E-02	-1.843E-01	0.	-1.036E+00	10.3
18	28	-5.861E-03	-3.597E-01	5.342E-02	-1.493E-01	0.	-4.080E-01	17.9
19	28	-8.577E-03	1.126E-12	1.161E+00	-6.314E-02	0.	1.165E+00	-86.9
0	29	1.274E-04	-4.732E-14	-3.353E-02	-6.882E-02	-8.104E-01	-8.759E-02	51.8
1	29	-2.837E-25	-1.289E+00	-1.933E-01	-2.981E-01	2.837E+00	-1.365E+00	14.3
2	29	-5.455E-04	-3.334E-01	8.408E-02	-5.219E-01	0.	-6.868E-01	34.1
3	29	-1.206E-03	2.203E-01	3.276E-01	-5.789E-01	0.	8.553E-01	-47.6
4	29	-1.809E-03	5.099E-01	5.188E-01	-5.291E-01	0.	1.043E+00	-45.2
5	29	-2.270E-03	6.373E-01	6.522E-01	-4.133E-01	0.	1.058E+00	-45.5
6	29	-2.551E-03	6.750E-01	7.294E-01	-2.593E-01	0.	9.629E-01	-48.0
7	29	-2.644E-03	6.688E-01	7.539E-01	-8.625E-02	0.	8.075E-01	-58.1
8	29	-2.553E-03	6.404E-01	7.294E-01	9.100E-02	0.	7.862E-01	58.0
9	29	-2.286E-03	5.882E-01	6.572E-01	2.586E-01	0.	8.836E-01	48.8
10	29	-1.856E-03	4.862E-01	5.376E-01	4.002E-01	0.	9.129E-01	46.8
11	29	-1.292E-03	2.818E-01	3.714E-01	4.951E-01	0.	8.237E-01	47.6
12	29	-6.524E-04	-1.079E-01	1.651E-01	5.193E-01	0.	5.655E-01	52.4
13	29	-5.707E-05	-7.933E-01	-6.556E-02	4.541E-01	0.	-1.011E+00	-25.6
14	29	2.783E-04	-1.894E+00	-2.975E-01	2.998E-01	0.	-1.948E+00	-10.3
15	29	-3.490E-25	-3.486E+00	-5.229E-01	7.428E-02	3.490E+00	-3.488E+00	-1.4
16	29	-1.409E-03	-2.075E+00	-2.531E-01	-1.035E-01	0.	-2.081E+00	3.2
17	29	-3.494E-03	-1.065E+00	-7.505E-02	-1.494E-01	0.	-1.087E+00	8.4
18	29	-6.065E-03	-3.845E-01	2.676E-02	-1.313E-01	0.	-4.229E-01	16.3
19	29	-8.894E-03	1.020E-12	1.050E+00	-5.661E-02	0.	1.053E+00	-86.9
0	30	1.736E-04	1.948E-14	-5.806E-02	-4.841E-02	-1.104E+00	-8.548E-02	60.5
1	30	-3.452E-25	-1.620E+00	-2.430E-01	-2.061E-01	3.452E+00	-1.650E+00	8.3
2	30	-6.991E-04	-4.543E-01	1.292E-01	-3.612E-01	0.	-6.269E-01	25.5
3	30	-1.555E-03	2.469E-01	4.819E-01	-4.058E-01	0.	7.869E-01	-53.1
4	30	-2.354E-03	6.372E-01	7.809E-01	-3.769E-01	0.	1.093E+00	-50.4
5	30	-2.980E-03	8.309E-01	1.008E+00	-3.005E-01	0.	1.233E+00	-53.2
6	30	-3.380E-03	9.085E-01	1.155E+00	-1.952E-01	0.	1.262E+00	-61.1
7	30	-3.536E-03	9.209E-01	1.219E+00	-7.433E-02	0.	1.237E+00	-76.8
8	30	-3.447E-03	8.917E-01	1.202E+00	5.118E-02	0.	1.210E+00	80.9
9	30	-3.122E-03	8.184E-01	1.105E+00	1.708E-01	0.	1.185E+00	65.0
10	30	-2.581E-03	6.728E-01	9.342E-01	2.730E-01	0.	1.106E+00	57.8

11	30	-1.862E-03	3.999E-01	6.971E-01	3.439E-01	0.	9.231E-01	56.7
12	30	-1.046E-03	-8.102E-02	4.089E-01	3.688E-01	0.	6.067E-01	61.8
13	30	-2.771E-04	-8.697E-01	9.027E-02	3.360E-01	0.	-9.756E-01	-17.5
14	30	1.988E-04	-2.069E+00	-2.377E-01	2.403E-01	0.	-2.100E+00	-7.4
15	30	-3.816E-25	-3.764E+00	-5.646E-01	7.788E-02	3.816E+00	-3.766E+00	-1.4
16	30	-1.420E-03	-2.216E+00	-3.148E-01	-6.672E-02	0.	-2.219E+00	2.0
17	30	-3.560E-03	-1.132E+00	-1.234E-01	-1.150E-01	0.	-1.145E+00	6.4
18	30	-6.212E-03	-4.123E-01	-1.471E-03	-1.072E-01	0.	-4.386E-01	13.8
19	30	-9.140E-03	8.161E-13	8.850E-01	-4.684E-02	0.	8.875E-01	-87.0
0	31	2.004E-04	-1.876E-14	-6.996E-02	-2.022E-02	-1.275E+00	-7.539E-02	75.0
1	31	-3.790E-25	-1.809E+00	-2.713E-01	-8.583E-02	3.790E+00	-1.813E+00	3.2
2	31	-7.872E-04	-5.288E-01	1.487E-01	-1.517E-01	0.	-5.612E-01	12.1
3	31	-1.757E-03	2.544E-01	5.570E-01	-1.741E-01	0.	6.364E-01	-65.5
4	31	-2.671E-03	7.022E-01	9.112E-01	-1.669E-01	0.	1.004E+00	-61.0
5	31	-3.396E-03	9.351E-01	1.186E+00	-1.394E-01	0.	1.248E+00	-66.0
6	31	-3.871E-03	1.038E+00	1.369E+00	-9.799E-02	0.	1.396E+00	-74.7
7	31	-4.069E-03	1.063E+00	1.455E+00	-4.762E-02	0.	1.461E+00	-83.2
8	31	-3.987E-03	1.035E+00	1.442E+00	7.120E-03	0.	1.442E+00	89.0
9	31	-3.632E-03	9.521E-01	1.334E+00	6.163E-02	0.	1.344E+00	81.1
10	31	-3.029E-03	7.836E-01	1.137E+00	1.110E-01	0.	1.169E+00	73.9
11	31	-2.222E-03	4.741E-01	8.629E-01	1.498E-01	0.	9.139E-01	71.2
12	31	-1.300E-03	-5.673E-02	5.304E-01	1.713E-01	0.	5.767E-01	74.9
13	31	-4.239E-04	-9.063E-01	1.633E-01	1.672E-01	0.	-9.318E-01	-8.7
14	31	1.435E-04	-2.174E+00	-2.156E-01	1.272E-01	0.	-2.183E+00	-3.7
15	31	-4.001E-25	-3.950E+00	-5.925E-01	4.053E-02	4.001E+00	-3.951E+00	-.7
16	31	-1.425E-03	-2.325E+00	-3.549E-01	-4.801E-02	0.	-2.326E+00	1.4
17	31	-3.604E-03	-1.189E+00	-1.581E-01	-8.438E-02	0.	-1.196E+00	4.6
18	31	-6.320E-03	-4.372E-01	-2.480E-02	-8.112E-02	0.	-4.526E-01	10.7
19	31	-9.324E-03	1.168E-12	7.041E-01	-3.568E-02	0.	7.059E-01	-87.1
0	32	2.041E-04	1.710E-14	-7.208E-02	1.098E-02	-1.298E+00	-7.371E-02	-81.5
1	32	-3.839E-25	-1.836E+00	-2.754E-01	4.565E-02	3.839E+00	-1.837E+00	-1.7
2	32	-7.996E-04	-5.427E-01	1.533E-01	7.722E-02	0.	-5.512E-01	-6.3
3	32	-1.787E-03	2.492E-01	5.715E-01	8.080E-02	0.	5.907E-01	76.7
4	32	-2.720E-03	7.045E-01	9.352E-01	6.563E-02	0.	9.526E-01	75.2
5	32	-3.466E-03	9.449E-01	1.219E+00	4.059E-02	0.	1.224E+00	81.7
6	32	-3.959E-03	1.055E+00	1.408E+00	1.240E-02	0.	1.409E+00	88.0
7	32	-4.172E-03	1.086E+00	1.498E+00	-1.471E-02	0.	1.499E+00	-88.0
8	32	-4.099E-03	1.063E+00	1.487E+00	-3.825E-02	0.	1.491E+00	-84.9
9	32	-3.747E-03	9.818E-01	1.378E+00	-5.621E-02	0.	1.386E+00	-82.1
10	32	-3.139E-03	8.138E-01	1.175E+00	-6.597E-02	0.	1.187E+00	-80.0
11	32	-2.318E-03	5.025E-01	8.914E-01	-6.403E-02	0.	9.017E-01	-80.9
12	32	-1.375E-03	-3.522E-02	5.451E-01	-4.812E-02	0.	5.491E-01	-85.3
13	32	-4.713E-04	-9.028E-01	1.639E-01	-2.236E-02	0.	-9.033E-01	1.2
14	32	1.249E-04	-2.206E+00	-2.241E-01	-2.907E-03	0.	-2.206E+00	.1
15	32	-4.045E-25	-4.029E+00	-6.044E-01	-1.066E-02	4.045E+00	-4.029E+00	.2
16	32	-1.432E-03	-2.389E+00	-3.702E-01	-3.974E-02	0.	-2.390E+00	1.1
17	32	-3.639E-03	-1.230E+00	-1.754E-01	-5.943E-02	0.	-1.234E+00	3.2
18	32	-6.400E-03	-4.562E-01	-4.044E-02	-5.733E-02	0.	-4.639E-01	7.7
19	32	-9.461E-03	9.671E-13	5.339E-01	-2.524E-02	0.	5.351E-01	-87.3
0	33	1.838E-04	-3.469E-14	-6.424E-02	4.099E-02	-1.169E+00	-8.420E-02	-64.0
1	33	-3.593E-25	-1.696E+00	-2.545E-01	1.738E-01	3.593E+00	-1.717E+00	-6.8
2	33	-7.341E-04	-4.941E-01	1.441E-01	3.004E-01	0.	-6.132E-01	-21.6
3	33	-1.639E-03	2.310E-01	5.272E-01	3.276E-01	0.	7.386E-01	57.2
4	33	-2.494E-03	6.430E-01	8.553E-01	2.894E-01	0.	1.057E+00	55.1
5	33	-3.178E-03	8.590E-01	1.108E+00	2.130E-01	0.	1.230E+00	60.1
6	33	-3.632E-03	9.583E-01	1.275E+00	1.180E-01	0.	1.315E+00	71.7
7	33	-3.832E-03	9.888E-01	1.355E+00	1.682E-02	0.	1.355E+00	87.4

8	33	-3.771E-03	9.719E-01	1.344E+00	-8.200E-02	0.	1.362E+00	-78.1
9	33	-3.454E-03	9.050E-01	1.245E+00	-1.710E-01	0.	1.316E+00	-67.4
10	33	-2.899E-03	7.608E-01	1.059E+00	-2.407E-01	0.	1.193E+00	-60.9
11	33	-2.144E-03	4.837E-01	7.929E-01	-2.780E-01	0.	9.564E-01	-59.5
12	33	-1.268E-03	-1.386E-02	4.619E-01	-2.684E-01	0.	5.826E-01	-65.8
13	33	-4.194E-04	-8.510E-01	9.601E-02	-2.069E-01	0.	-8.942E-01	11.8
14	33	1.417E-04	-2.158E+00	-2.649E-01	-1.166E-01	0.	-2.165E+00	3.5
15	33	-3.960E-25	-4.011E+00	-6.017E-01	-4.969E-02	3.960E+00	-4.012E+00	.8
16	33	-1.443E-03	-2.414E+00	-3.643E-01	-3.440E-02	0.	-2.415E+00	1.0
17	33	-3.669E-03	-1.256E+00	-1.784E-01	-4.144E-02	0.	-1.257E+00	2.2
18	33	-6.461E-03	-4.690E-01	-4.923E-02	-3.921E-02	0.	-4.726E-01	5.3
19	33	-9.561E-03	1.219E-12	3.865E-01	-1.714E-02	0.	3.872E-01	-87.5
0	34	1.422E-04	-9.714E-16	-4.331E-02	6.486E-02	-9.045E-01	-9.004E-02	-54.2
1	34	-3.050E-25	-1.399E+00	-2.099E-01	2.818E-01	3.050E+00	-1.463E+00	-12.7
2	34	-5.962E-04	-3.928E-01	1.121E-01	4.897E-01	0.	-6.913E-01	-31.4
3	34	-1.328E-03	1.937E-01	4.072E-01	5.323E-01	0.	8.433E-01	50.7
4	34	-2.016E-03	5.163E-01	6.492E-01	4.709E-01	0.	1.058E+00	49.0
5	34	-2.566E-03	6.805E-01	8.288E-01	3.506E-01	0.	1.113E+00	51.0
6	34	-2.930E-03	7.541E-01	9.451E-01	2.012E-01	0.	1.072E+00	57.7
7	34	-3.091E-03	7.772E-01	9.989E-01	4.084E-02	0.	1.006E+00	79.9
8	34	-3.045E-03	7.678E-01	9.906E-01	-1.188E-01	0.	1.042E+00	-66.6
9	34	-2.792E-03	7.239E-01	9.185E-01	-2.675E-01	0.	1.106E+00	-55.0
10	34	-2.345E-03	6.226E-01	7.785E-01	-3.916E-01	0.	1.100E+00	-50.6
11	34	-1.730E-03	4.142E-01	5.672E-01	-4.693E-01	0.	9.662E-01	-49.6
12	34	-1.006E-03	9.970E-03	2.878E-01	-4.700E-01	0.	6.390E-01	-53.2
13	34	-2.933E-04	-7.335E-01	-3.586E-02	-3.669E-01	0.	-8.910E-01	23.2
14	34	1.781E-04	-2.009E+00	-3.461E-01	-1.813E-01	0.	-2.028E+00	6.2
15	34	-3.786E-25	-3.935E+00	-5.903E-01	-5.026E-02	3.786E+00	-3.936E+00	.9
16	34	-1.455E-03	-2.419E+00	-3.495E-01	-2.781E-02	0.	-2.420E+00	.8
17	34	-3.695E-03	-1.271E+00	-1.771E-01	-3.129E-02	0.	-1.272E+00	1.6
18	34	-6.509E-03	-4.772E-01	-5.546E-02	-2.797E-02	0.	-4.790E-01	3.8
19	34	-9.635E-03	1.023E-12	2.628E-01	-1.191E-02	0.	2.634E-01	-87.4
0	35	8.625E-05	1.832E-15	-5.296E-03	7.589E-02	-5.485E-01	-7.859E-02	-46.0
1	35	-2.214E-25	-9.718E-01	-1.458E-01	3.456E-01	2.214E+00	-1.097E+00	-20.0
2	35	-4.015E-04	-2.623E-01	3.477E-02	6.053E-01	0.	-7.370E-01	-38.1
3	35	-8.918E-04	1.255E-01	1.724E-01	6.505E-01	0.	7.998E-01	46.0
4	35	-1.349E-03	3.246E-01	2.659E-01	5.702E-01	0.	8.662E-01	43.5
5	35	-1.712E-03	4.182E-01	3.245E-01	4.229E-01	0.	7.968E-01	41.8
6	35	-1.952E-03	4.566E-01	3.579E-01	2.439E-01	0.	6.560E-01	39.3
7	35	-2.058E-03	4.680E-01	3.727E-01	5.286E-02	0.	4.915E-01	24.0
8	35	-2.028E-03	4.651E-01	3.710E-01	-1.389E-01	0.	5.647E-01	-35.6
9	35	-1.862E-03	4.472E-01	3.494E-01	-3.225E-01	0.	7.245E-01	-40.7
10	35	-1.564E-03	3.992E-01	2.986E-01	-4.846E-01	0.	8.361E-01	-42.0
11	35	-1.149E-03	2.851E-01	2.021E-01	-6.004E-01	0.	8.454E-01	-43.0
12	35	-6.498E-04	2.925E-02	3.884E-02	-6.247E-01	0.	6.588E-01	-45.2
13	35	-1.426E-04	-5.277E-01	-2.005E-01	-4.916E-01	0.	-8.822E-01	35.8
14	35	1.995E-04	-1.701E+00	-4.630E-01	-1.711E-01	0.	-1.725E+00	7.7
15	35	-3.676E-25	-3.892E+00	-5.837E-01	9.970E-03	3.676E+00	-3.892E+00	-.2
16	35	-1.462E-03	-2.436E+00	-3.543E-01	-2.289E-02	0.	-2.436E+00	.6
17	35	-3.715E-03	-1.282E+00	-1.884E-01	-2.772E-02	0.	-1.283E+00	1.5
18	35	-6.545E-03	-4.818E-01	-6.507E-02	-2.099E-02	0.	-4.828E-01	2.9
19	35	-9.690E-03	1.280E-12	1.601E-01	-8.355E-03	0.	1.605E-01	-87.0
0	36	2.853E-05	-5.274E-15	4.426E-02	6.707E-02	-1.814E-01	9.276E-02	54.1
1	36	-1.038E-25	-4.738E-01	-7.107E-02	3.290E-01	1.038E+00	-6.582E-01	-29.3
2	36	-1.822E-04	-1.398E-01	-1.326E-01	5.841E-01	0.	-7.203E-01	-44.8
3	36	-4.043E-04	1.348E-02	-2.488E-01	6.206E-01	0.	-7.520E-01	-51.0
4	36	-6.094E-04	7.424E-02	-3.810E-01	5.371E-01	0.	-7.367E-01	-56.5

5	36	-7.710E-04	9.145E-02	-4.977E-01	3.948E-01	0.	-6.957E-01	-63.4
6	36	-8.775E-04	9.191E-02	-5.795E-01	2.269E-01	0.	-6.490E-01	-73.0
7	36	-9.245E-04	8.980E-02	-6.166E-01	4.977E-02	0.	-6.201E-01	-86.0
8	36	-9.111E-04	9.130E-02	-6.056E-01	-1.288E-01	0.	-6.287E-01	79.9
9	36	-8.373E-04	9.642E-02	-5.490E-01	-3.036E-01	0.	-6.694E-01	68.4
10	36	-7.041E-04	9.893E-02	-4.554E-01	-4.665E-01	0.	-7.209E-01	60.4
11	36	-5.154E-04	8.322E-02	-3.447E-01	-5.989E-01	0.	-7.668E-01	54.8
12	36	-2.819E-04	1.046E-02	-2.576E-01	-6.594E-01	0.	-7.965E-01	50.7
13	36	-3.213E-05	-2.386E-01	-2.718E-01	-5.563E-01	0.	-8.117E-01	45.9
14	36	1.520E-04	-1.084E+00	-4.775E-01	-9.339E-02	0.	-1.098E+00	8.6
15	36	-3.587E-25	-4.049E+00	-6.074E-01	1.130E-01	3.587E+00	-4.053E+00	-1.9
16	36	-1.466E-03	-2.480E+00	-4.317E-01	-3.085E-02	0.	-2.480E+00	.9
17	36	-3.733E-03	-1.287E+00	-2.255E-01	-1.961E-02	0.	-1.288E+00	1.1
18	36	-6.577E-03	-4.821E-01	-7.845E-02	-1.112E-02	0.	-4.824E-01	1.6
19	36	-9.735E-03	8.776E-13	8.056E-02	-4.175E-03	0.	8.078E-02	-87.0
0	37	-1.451E-05	-2.387E-15	6.066E-02	3.294E-02	9.228E-02	7.511E-02	66.3
1	37	4.045E-27	-5.145E-02	-5.154E-02	1.813E-01	-8.090E-02	-2.328E-01	-45.0
2	37	-1.035E-25	-7.105E-02	-4.737E-01	3.316E-01	1.035E+00	-6.603E-01	-60.6
3	37	-2.208E-25	-1.465E-01	-9.766E-01	3.575E-01	2.208E+00	-1.109E+00	-69.6
4	37	-3.062E-25	-2.138E-01	-1.425E+00	3.117E-01	3.062E+00	-1.501E+00	-76.4
5	37	-3.669E-25	-2.656E-01	-1.771E+00	2.299E-01	3.669E+00	-1.805E+00	-81.5
6	37	-4.047E-25	-2.993E-01	-1.996E+00	1.323E-01	4.047E+00	-2.006E+00	-85.6
7	37	-4.210E-25	-3.142E-01	-2.095E+00	2.895E-02	4.210E+00	-2.095E+00	-89.1
8	37	-4.166E-25	-3.100E-01	-2.067E+00	-7.554E-02	4.166E+00	-2.070E+00	87.5
9	37	-3.916E-25	-2.868E-01	-1.912E+00	-1.781E-01	3.916E+00	-1.931E+00	83.8
10	37	-3.452E-25	-2.443E-01	-1.628E+00	-2.726E-01	3.452E+00	-1.680E+00	79.2
11	37	-2.743E-25	-1.816E-01	-1.211E+00	-3.452E-01	2.743E+00	-1.316E+00	73.1
12	37	-1.665E-25	-9.754E-02	-6.503E-01	-3.697E-01	1.665E+00	-8.355E-01	63.4
13	37	2.376E-26	4.318E-03	2.879E-02	-3.155E-01	-2.376E-01	3.323E-01	-46.1
14	37	8.875E-25	8.099E-02	5.399E-01	-1.844E-01	-8.875E+00	6.048E-01	-70.6
15	37	-6.015E-25	-4.686E+00	-1.330E+00	-9.224E-03	1.203E+01	-4.686E+00	.2
16	37	-1.489E-03	-2.472E+00	-6.603E-01	7.076E-02	0.	-2.474E+00	-2.2
17	37	-3.765E-03	-1.277E+00	-2.487E-01	3.372E-02	0.	-1.278E+00	-1.9
18	37	-6.613E-03	-4.816E-01	-7.377E-02	5.237E-03	0.	-4.816E-01	-.7
19	37	-9.774E-03	1.490E-12	3.198E-02	-7.820E-04	0.	3.200E-02	-88.6
0	38	-3.741E-05	-3.843E-15	1.902E-14	3.988E-03	4.804E-01	3.988E-03	45.0
1	38	-1.454E-05	6.102E-02	9.770E-15	3.294E-02	9.425E-02	7.541E-02	23.6
2	38	2.857E-05	4.746E-02	-6.689E-15	6.776E-02	-1.852E-01	9.552E-02	35.3
3	38	8.744E-05	2.470E-03	-1.190E-14	7.893E-02	-5.666E-01	8.018E-02	44.6
4	38	1.471E-04	-3.074E-02	-3.464E-14	7.234E-02	-9.534E-01	-8.933E-02	-39.0
5	38	1.966E-04	-4.828E-02	-5.160E-14	5.474E-02	-1.274E+00	-8.397E-02	-33.1
6	38	2.301E-04	-5.581E-02	-2.887E-14	3.187E-02	-1.491E+00	-7.027E-02	-24.4
7	38	2.450E-04	-5.833E-02	-5.296E-14	6.925E-03	-1.588E+00	-5.914E-02	-6.7
8	38	2.406E-04	-5.790E-02	-4.546E-14	-1.846E-02	-1.559E+00	-6.329E-02	16.3
9	38	2.170E-04	-5.287E-02	-2.592E-14	-4.281E-02	-1.406E+00	-7.675E-02	29.2
10	38	1.758E-04	-3.615E-02	-2.406E-14	-6.274E-02	-1.139E+00	-8.337E-02	37.0
11	38	1.226E-04	4.553E-03	-1.664E-14	-7.035E-02	-7.945E-01	7.267E-02	-44.1
12	38	7.094E-05	6.688E-02	-9.326E-15	-5.362E-02	-4.597E-01	9.663E-02	-29.0
13	38	4.147E-05	3.362E-02	-5.163E-15	-1.975E-02	-2.687E-01	4.275E-02	-24.8
14	38	2.316E-05	-6.412E-01	-4.885E-15	-1.054E-01	-1.501E-01	-6.581E-01	9.1
15	38	-2.080E-04	-3.524E+00	2.132E-14	-6.385E-02	1.348E+00	-3.525E+00	1.0
16	38	-1.608E-03	-2.457E+00	1.972E-13	6.514E-02	0.	-2.459E+00	-1.5
17	38	-3.824E-03	-1.323E+00	2.780E-13	2.243E-02	0.	-1.324E+00	-1.0
18	38	-6.650E-03	-5.038E-01	1.958E-13	-7.912E-03	0.	-5.039E-01	.9
19	38	-9.811E-03	9.755E-13	2.581E-12	-3.370E-03	0.	3.370E-03	-45.0

STATICS CHECK.   SUMMATION OF REACTIONS =   4.782E+02

TIME FOR THIS PROBLEM =   0 MINUTES   23.364 SECONDS

ELAPSED TM TIME =   1 MINUTES   15.563 SECONDS

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PROB
203 LOAD PATTERN M1-10 FIRST INTERIOR PANELS

TABLE 1. CONTROL DATA

MULTIPLE LOAD OPTION (IF BLANK OR ZERO, PROB IS INDEPENDENT -- -0
IF +1, PARENT FOR NEXT PROB -- IF -1, AN OFFSPRING PROB)

	TABLE NUMBER 2	3	4	5
NUM CARDS INPUT THIS PROBLEM	1	2	30	0

TABLE 2. CONSTANTS

NUM INCREMENTS IN X DIRECTION	14
NUM INCREMENTS IN Y DIRECTION	33
INCR LENGTH IN X DIRECTION	2.000E+00
INCR LENGTH IN Y DIRECTION	2.000E+00
POISSONS RATIO	1.500E-01
SLAB THICKNESS (IF BLANK OR ZERO, MAX PRINCIPAL MOMENT IS COMPUTED -- IF SPECIFIED, MAX PRINCIPAL STRESS)	-0.

TABLE 3. SPECIFIED AREAS FOR SELECTED MOMENT OUTPUT

FROM		THRU		PRINT (1=YES) X MOMENTS	Y MOMENTS
6	15	8	30	-0	1
4	23	11	23	1	-0

TABLE 4. STIFFNESS AND LOAD DATA

FROM		THRU		DX	DY	Q	S	C
0	0	14	30	1.233E+04	1.233E+04	-0.	-0.	-0.
0	31	14	31	8.883E+03	8.883E+03	-0.	-0.	-0.
0	32	14	32	6.138E+03	6.138E+03	-0.	-0.	-0.
0	33	14	33	4.028E+03	4.028E+03	-0.	-0.	-0.
0	33	14	33	5.453E+04	-0.	-0.	-0.	-0.
1	1	14	30	-0.	-0.	-0.	-0.	1.048E+04
1	31	14	31	-0.	-0.	-0.	-0.	9.017E+03
1	32	14	32	-0.	-0.	-0.	-0.	6.383E+03
1	33	14	33	-0.	-0.	-0.	-0.	4.320E+03
1	29	13	29	-0.	-0.	-0.	1.000E+25	-0.
1	15	13	15	-0.	-0.	-0.	1.000E+25	-0.
1	1	13	1	-0.	-0.	-0.	1.000E+25	-0.
13	1	13	29	-0.	-0.	-0.	1.000E+25	-0.

1	1	1	29	-0.	-0.	-0.	1.000E+25	-0.
0	0	14	0	-0.	-0.	-0.	6.360E+03	-0.
14	0	14	29	-0.	-0.	-0.	6.480E+03	-0.
0	0	0	29	-0.	-0.	-0.	6.480E+03	-0.
0	0	14	30	-0.	-0.	-4.025E-01	-0.	-0.
0	31	14	31	-0.	-0.	-3.608E-01	-0.	-0.
0	32	14	32	-0.	-0.	-3.188E-01	-0.	-0.
0	33	14	33	-0.	-0.	-2.131E-01	-0.	-0.
0	33	14	33	-0.	-0.	-2.588E-01	-0.	-0.
6	18	6	18	-0.	-0.	-1.560E+01	-0.	-0.
8	18	8	18	-0.	-0.	-1.560E+01	-0.	-0.
6	21	6	21	-0.	-0.	-1.560E+01	-0.	-0.
8	21	8	21	-0.	-0.	-1.560E+01	-0.	-0.
6	23	6	23	-0.	-0.	-1.560E+01	-0.	-0.
8	23	8	23	-0.	-0.	-1.560E+01	-0.	-0.
6	26	6	26	-0.	-0.	-1.560E+01	-0.	-0.
8	26	8	26	-0.	-0.	-1.560E+01	-0.	-0.

TABLE 5. AXIAL THRUST DATA

FROM	THRU	PX	PY
NONE			

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PROB (CONTD)
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TABLE 6. SELECTED MOMENT OUTPUT
X MOMENT ACTS IN THE X DIRECTION (ABOUT Y AXIS)

Y MOMENTS ONLY, BETWEEN (6, 15) AND (8, 30)

X	Y	Y MOMENT
6	15	-1.045E+01
7	15	-1.103E+01
8	15	-1.045E+01
6	16	-4.795E+00
7	16	-4.975E+00
8	16	-4.795E+00
6	17	-1.293E-01
7	17	4.625E-02
8	17	-1.293E-01
6	18	5.502E+00
7	18	4.888E+00
8	18	5.502E+00
6	19	4.339E+00
7	19	4.807E+00
8	19	4.339E+00
6	20	5.433E+00
7	20	5.966E+00
8	20	5.433E+00
6	21	9.132E+00
7	21	8.767E+00
8	21	9.132E+00
6	22	7.209E+00
7	22	7.923E+00
8	22	7.209E+00
6	23	9.192E+00
7	23	8.831E+00
8	23	9.192E+00
6	24	5.571E+00
7	24	6.111E+00
8	24	5.571E+00
6	25	4.589E+00
7	25	5.070E+00
8	25	4.589E+00
6	26	5.923E+00
7	26	5.328E+00
8	26	5.923E+00
6	27	5.429E-01
7	27	7.455E-01
8	27	5.429E-01
6	28	-3.762E+00
7	28	-3.903E+00

8	28	-3.762E+00
6	29	-8.914E+00
7	29	-9.430E+00
8	29	-8.914E+00
6	30	-4.931E+00
7	30	-5.203E+00
8	30	-4.931E+00

X MOMENTS ONLY, BETWEEN (4, 23) AND (11, 23)

X	Y	X MOMENT
4	23	2.645E+00
5	23	6.919E+00
6	23	1.258E+01
7	23	1.125E+01
8	23	1.258E+01
9	23	6.919E+00
10	23	2.645E+00
11	23	-1.478E+00

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TABLE 7. RESULTS
X MOMENT AND X TWISTING MOMENT ACT IN THE X DIRECTION (ABOUT Y AXIS),
Y TWISTING MOMENT = -X TWISTING MOMENT, COUNTERCLOCKWISE BETA ANGLES
ARE POSITIVE FROM X AXIS TO THE DIRECTION OF LARGEST PRINCIPAL MOMENT

X	Y	DEFL	X MOMENT	Y MOMENT	X TWISTING MOMENT	SUPPORT REACTION	LARGEST PRINCIPAL MOMENT	BETA X TO LARGEST
0	0	-3.740E-05	4.061E-15	9.358E-16	-4.742E-03	4.802E-01	4.742E-03	-45.0
1	0	-1.379E-05	6.471E-02	1.166E-15	-3.503E-02	8.770E-02	8.004E-02	-23.6
2	0	3.130E-05	4.941E-02	-2.415E-15	-7.083E-02	-1.990E-01	9.972E-02	-35.4
3	0	9.278E-05	1.479E-03	-3.476E-15	-8.224E-02	-5.901E-01	8.298E-02	-44.7
4	0	1.548E-04	-3.481E-02	-1.071E-14	-7.454E-02	-9.842E-01	-9.395E-02	38.4
5	0	2.052E-04	-5.486E-02	-1.044E-14	-5.460E-02	-1.305E+00	-8.854E-02	31.7
6	0	2.374E-04	-6.388E-02	-1.849E-14	-2.850E-02	-1.510E+00	-7.475E-02	20.9
7	0	2.484E-04	-6.637E-02	-1.554E-14	-6.590E-14	-1.580E+00	-6.637E-02	.0
8	0	2.374E-04	-6.388E-02	-1.821E-14	2.850E-02	-1.510E+00	-7.475E-02	-20.9
9	0	2.052E-04	-5.486E-02	-5.607E-15	5.460E-02	-1.305E+00	-8.854E-02	-31.7
10	0	1.548E-04	-3.481E-02	-7.216E-15	7.454E-02	-9.842E-01	-9.395E-02	-38.4
11	0	9.278E-05	1.479E-03	-3.677E-15	8.224E-02	-5.901E-01	8.298E-02	44.7
12	0	3.130E-05	4.941E-02	-1.582E-15	7.083E-02	-1.990E-01	9.972E-02	35.4
13	0	-1.379E-05	6.471E-02	4.996E-16	3.503E-02	8.770E-02	8.004E-02	23.6
14	0	-3.740E-05	-8.104E-16	3.309E-15	4.742E-03	4.802E-01	4.742E-03	45.0
0	1	-1.399E-05	1.610E-15	6.342E-02	-3.466E-02	9.062E-02	7.869E-02	-66.2
1	1	5.604E-27	-4.949E-02	-4.897E-02	-1.881E-01	-1.121E-01	-2.373E-01	45.0
2	1	-1.037E-25	-7.245E-02	-4.830E-01	-3.434E-01	1.037E+00	-6.778E-01	60.4
3	1	-2.240E-25	-1.502E-01	-1.002E+00	-3.701E-01	2.240E+00	-1.140E+00	69.5
4	1	-3.123E-25	-2.195E-01	-1.463E+00	-3.198E-01	3.123E+00	-1.541E+00	76.4
5	1	-3.744E-25	-2.721E-01	-1.814E+00	-2.286E-01	3.744E+00	-1.847E+00	81.7
6	1	-4.112E-25	-3.045E-01	-2.030E+00	-1.180E-01	4.112E+00	-2.038E+00	86.1
7	1	-4.234E-25	-3.154E-01	-2.103E+00	-2.954E-13	4.234E+00	-2.103E+00	90.0
8	1	-4.112E-25	-3.045E-01	-2.030E+00	1.180E-01	4.112E+00	-2.038E+00	-86.1
9	1	-3.744E-25	-2.721E-01	-1.814E+00	2.286E-01	3.744E+00	-1.847E+00	-81.7
10	1	-3.123E-25	-2.195E-01	-1.463E+00	3.198E-01	3.123E+00	-1.541E+00	-76.4
11	1	-2.240E-25	-1.502E-01	-1.002E+00	3.701E-01	2.240E+00	-1.140E+00	-69.5
12	1	-1.037E-25	-7.245E-02	-4.830E-01	3.434E-01	1.037E+00	-6.778E-01	-60.4
13	1	5.604E-27	-4.949E-02	-4.897E-02	1.881E-01	-1.121E-01	-2.373E-01	-45.0
14	1	-1.399E-05	-5.551E-17	6.342E-02	3.466E-02	9.062E-02	7.869E-02	66.2
0	2	3.048E-05	-5.829E-15	4.701E-02	-6.953E-02	-1.975E-01	9.691E-02	-54.3
1	2	-1.042E-25	-4.855E-01	-7.283E-02	-3.412E-01	1.042E+00	-6.779E-01	29.4
2	2	-1.880E-04	-1.474E-01	-1.437E-01	-6.066E-01	0.	-7.521E-01	44.9
3	2	-4.177E-04	1.342E-02	-2.710E-01	-6.444E-01	0.	-7.886E-01	51.2
4	2	-6.295E-04	8.190E-02	-4.126E-01	-5.527E-01	0.	-7.708E-01	57.0
5	2	-7.936E-04	1.059E-01	-5.345E-01	-3.940E-01	0.	-7.220E-01	64.6
6	2	-8.959E-04	1.117E-01	-6.151E-01	-2.032E-01	0.	-6.681E-01	75.4
7	2	-9.306E-04	1.123E-01	-6.431E-01	-4.999E-13	0.	-6.431E-01	90.0
8	2	-8.959E-04	1.117E-01	-6.151E-01	2.032E-01	0.	-6.681E-01	-75.4

9	2	-7.936E-04	1.059E-01	-5.345E-01	3.940E-01	0.	-7.220E-01	-64.6
10	2	-6.295E-04	8.190E-02	-4.126E-01	5.527E-01	0.	-7.708E-01	-57.0
11	2	-4.177E-04	1.342E-02	-2.710E-01	6.444E-01	0.	-7.886E-01	-51.2
12	2	-1.880E-04	-1.474E-01	-1.437E-01	6.066E-01	0.	-7.521E-01	-44.9
13	2	-1.042E-25	-4.855E-01	-7.283E-02	3.412E-01	1.042E+00	-6.779E-01	-29.4
14	2	3.048E-05	4.163E-16	4.701E-02	6.953E-02	-1.975E-01	9.691E-02	54.3
0	3	9.054E-05	-2.274E-15	-2.137E-03	-7.964E-02	-5.867E-01	-8.072E-02	45.4
1	3	-2.250E-25	-1.004E+00	-1.506E-01	-3.634E-01	2.250E+00	-1.138E+00	20.2
2	3	-4.163E-04	-2.782E-01	2.223E-02	-6.374E-01	0.	-7.829E-01	38.4
3	3	-9.260E-04	1.302E-01	1.504E-01	-6.846E-01	0.	8.250E-01	-45.4
4	3	-1.400E-03	3.491E-01	2.345E-01	-5.946E-01	0.	8.892E-01	-42.2
5	3	-1.770E-03	4.589E-01	2.842E-01	-4.278E-01	0.	8.082E-01	-39.2
6	3	-2.002E-03	5.077E-01	3.096E-01	-2.219E-01	0.	6.517E-01	-33.0
7	3	-2.080E-03	5.213E-01	3.173E-01	-5.272E-13	0.	5.213E-01	-.0
8	3	-2.002E-03	5.077E-01	3.096E-01	2.219E-01	0.	6.517E-01	33.0
9	3	-1.770E-03	4.589E-01	2.842E-01	4.278E-01	0.	8.082E-01	39.2
10	3	-1.400E-03	3.491E-01	2.345E-01	5.946E-01	0.	8.892E-01	42.2
11	3	-9.260E-04	1.302E-01	1.504E-01	6.846E-01	0.	8.250E-01	45.4
12	3	-4.163E-04	-2.782E-01	2.223E-02	6.374E-01	0.	-7.829E-01	-38.4
13	3	-2.250E-25	-1.004E+00	-1.506E-01	3.634E-01	2.250E+00	-1.138E+00	-20.2
14	3	9.054E-05	2.005E-14	-2.137E-03	7.964E-02	-5.867E-01	-8.072E-02	-45.4
0	4	1.499E-04	-4.580E-15	-4.003E-02	-7.003E-02	-9.713E-01	-9.285E-02	53.0
1	4	-3.131E-25	-1.460E+00	-2.189E-01	-3.054E-01	3.131E+00	-1.531E+00	13.1
2	4	-6.234E-04	-4.194E-01	9.811E-02	-5.317E-01	0.	-7.520E-01	32.0
3	4	-1.391E-03	2.034E-01	3.861E-01	-5.775E-01	0.	8.795E-01	-49.5
4	4	-2.110E-03	5.590E-01	6.193E-01	-5.068E-01	0.	1.097E+00	-46.7
5	4	-2.675E-03	7.493E-01	7.877E-01	-3.673E-01	0.	1.136E+00	-46.5
6	4	-3.030E-03	8.395E-01	8.887E-01	-1.913E-01	0.	1.057E+00	-48.7
7	4	-3.150E-03	8.656E-01	9.222E-01	-4.727E-13	0.	9.222E-01	-90.0
8	4	-3.030E-03	8.395E-01	8.887E-01	1.913E-01	0.	1.057E+00	48.7
9	4	-2.675E-03	7.493E-01	7.877E-01	3.673E-01	0.	1.136E+00	46.5
10	4	-2.110E-03	5.590E-01	6.193E-01	5.068E-01	0.	1.097E+00	46.7
11	4	-1.391E-03	2.034E-01	3.861E-01	5.775E-01	0.	8.795E-01	49.5
12	4	-6.234E-04	-4.194E-01	9.811E-02	5.317E-01	0.	-7.520E-01	-32.0
13	4	-3.131E-25	-1.460E+00	-2.189E-01	3.054E-01	3.131E+00	-1.531E+00	-13.1
14	4	1.499E-04	-9.076E-15	-4.003E-02	7.003E-02	-9.713E-01	-9.285E-02	-53.0
0	5	1.960E-04	1.116E-14	-6.176E-02	-4.745E-02	-1.270E+00	-8.749E-02	61.5
1	5	-3.733E-25	-1.791E+00	-2.687E-01	-2.025E-01	3.733E+00	-1.818E+00	7.4
2	5	-7.771E-04	-5.337E-01	1.304E-01	-3.510E-01	0.	-6.848E-01	23.3
3	5	-1.738E-03	2.454E-01	5.123E-01	-3.830E-01	0.	7.844E-01	-54.6
4	5	-2.643E-03	7.038E-01	8.366E-01	-3.371E-01	0.	1.114E+00	-50.6
5	5	-3.355E-03	9.557E-01	1.080E+00	-2.446E-01	0.	1.270E+00	-52.1
6	5	-3.805E-03	1.078E+00	1.230E+00	-1.274E-01	0.	1.302E+00	-60.4
7	5	-3.958E-03	1.114E+00	1.280E+00	-1.818E-13	0.	1.280E+00	-90.0
8	5	-3.805E-03	1.078E+00	1.230E+00	1.274E-01	0.	1.302E+00	60.4
9	5	-3.355E-03	9.557E-01	1.080E+00	2.446E-01	0.	1.270E+00	52.1
10	5	-2.643E-03	7.038E-01	8.366E-01	3.371E-01	0.	1.114E+00	50.6
11	5	-1.738E-03	2.454E-01	5.123E-01	3.830E-01	0.	7.844E-01	54.6
12	5	-7.771E-04	-5.337E-01	1.304E-01	3.510E-01	0.	-6.848E-01	-23.3
13	5	-3.733E-25	-1.791E+00	-2.687E-01	2.025E-01	3.733E+00	-1.818E+00	-7.4
14	5	1.960E-04	1.110E-15	-6.176E-02	4.745E-02	-1.270E+00	-8.749E-02	-61.5
0	6	2.215E-04	-2.814E-14	-7.195E-02	-1.807E-02	-1.436E+00	-7.624E-02	76.7
1	6	-4.054E-25	-1.971E+00	-2.956E-01	-7.692E-02	4.054E+00	-1.974E+00	2.6
2	6	-8.609E-04	-5.962E-01	1.440E-01	-1.318E-01	0.	-6.189E-01	9.8
3	6	-1.927E-03	2.682E-01	5.731E-01	-1.407E-01	0.	6.281E-01	-68.7
4	6	-2.932E-03	7.822E-01	9.448E-01	-1.205E-01	0.	1.009E+00	-62.0

5	6	-3.725E-03	1.067E+00	1.228E+00	-8.515E-02	0.	1.265E+00	-66.7
6	6	-4.225E-03	1.205E+00	1.405E+00	-4.349E-02	0.	1.414E+00	-78.2
7	6	-4.395E-03	1.245E+00	1.464E+00	9.090E-14	0.	1.464E+00	90.0
8	6	-4.225E-03	1.205E+00	1.405E+00	4.349E-02	0.	1.414E+00	78.2
9	6	-3.725E-03	1.067E+00	1.228E+00	8.515E-02	0.	1.265E+00	66.7
10	6	-2.932E-03	7.822E-01	9.448E-01	1.205E-01	0.	1.009E+00	62.0
11	6	-1.927E-03	2.682E-01	5.731E-01	1.407E-01	0.	6.281E-01	68.7
12	6	-8.609E-04	-5.962E-01	1.440E-01	1.318E-01	0.	-6.189E-01	-9.8
13	6	-4.054E-25	-1.971E+00	-2.956E-01	7.692E-02	4.054E+00	-1.974E+00	-2.6
14	6	2.215E-04	-4.552E-15	-7.195E-02	1.807E-02	-1.436E+00	-7.624E-02	-76.7
0	7	2.232E-04	5.906E-14	-7.452E-02	1.401E-02	-1.447E+00	-7.707E-02	-79.7
1	7	-4.091E-25	-1.985E+00	-2.978E-01	5.772E-02	4.091E+00	-1.987E+00	-2.0
2	7	-8.673E-04	-5.937E-01	1.504E-01	1.033E-01	0.	-6.077E-01	-7.8
3	7	-1.939E-03	2.794E-01	5.904E-01	1.222E-01	0.	6.327E-01	70.9
4	7	-2.947E-03	7.949E-01	9.738E-01	1.171E-01	0.	1.032E+00	63.7
5	7	-3.741E-03	1.076E+00	1.268E+00	9.135E-02	0.	1.304E+00	68.2
6	7	-4.240E-03	1.210E+00	1.452E+00	4.996E-02	0.	1.462E+00	78.8
7	7	-4.409E-03	1.249E+00	1.514E+00	1.454E-13	0.	1.514E+00	90.0
8	7	-4.240E-03	1.210E+00	1.452E+00	-4.996E-02	0.	1.462E+00	-78.8
9	7	-3.741E-03	1.076E+00	1.268E+00	-9.135E-02	0.	1.304E+00	-68.2
10	7	-2.947E-03	7.949E-01	9.738E-01	-1.171E-01	0.	1.032E+00	-63.7
11	7	-1.939E-03	2.794E-01	5.904E-01	-1.222E-01	0.	6.327E-01	-70.9
12	7	-8.673E-04	-5.937E-01	1.504E-01	-1.033E-01	0.	-6.077E-01	7.8
13	7	-4.091E-25	-1.985E+00	-2.978E-01	-5.772E-02	4.091E+00	-1.987E+00	2.0
14	7	2.232E-04	2.243E-14	-7.452E-02	-1.401E-02	-1.447E+00	-7.707E-02	79.7
0	8	2.002E-04	-4.563E-14	-7.053E-02	4.578E-02	-1.297E+00	-9.305E-02	-63.8
1	8	-3.844E-25	-1.831E+00	-2.746E-01	1.914E-01	3.844E+00	-1.854E+00	-6.9
2	8	-7.941E-04	-5.223E-01	1.519E-01	3.368E-01	0.	-6.617E-01	-22.5
3	8	-1.769E-03	2.817E-01	5.680E-01	3.836E-01	0.	8.343E-01	55.2
4	8	-2.679E-03	7.421E-01	9.289E-01	3.540E-01	0.	1.202E+00	52.4
5	8	-3.389E-03	9.824E-01	1.205E+00	2.679E-01	0.	1.384E+00	56.3
6	8	-3.833E-03	1.091E+00	1.378E+00	1.437E-01	0.	1.437E+00	67.5
7	8	-3.983E-03	1.121E+00	1.437E+00	3.272E-13	0.	1.437E+00	90.0
8	8	-3.833E-03	1.091E+00	1.378E+00	-1.437E-01	0.	1.437E+00	-67.5
9	8	-3.389E-03	9.824E-01	1.205E+00	-2.679E-01	0.	1.384E+00	-56.3
10	8	-2.679E-03	7.421E-01	9.289E-01	-3.540E-01	0.	1.202E+00	-52.4
11	8	-1.769E-03	2.817E-01	5.680E-01	-3.836E-01	0.	8.343E-01	-55.2
12	8	-7.941E-04	-5.223E-01	1.519E-01	-3.368E-01	0.	-6.617E-01	22.5
13	8	-3.844E-25	-1.831E+00	-2.746E-01	-1.914E-01	3.844E+00	-1.854E+00	6.9
14	8	2.002E-04	1.682E-14	-7.053E-02	-4.578E-02	-1.297E+00	-9.305E-02	63.8
0	9	1.537E-04	-5.218E-15	-5.812E-02	7.410E-02	-9.963E-01	-1.086E-01	-55.7
1	9	-3.310E-25	-1.513E+00	-2.269E-01	3.129E-01	3.310E+00	-1.585E+00	-13.0
2	9	-6.446E-04	-3.875E-01	1.420E-01	5.494E-01	0.	-7.326E-01	-32.1
3	9	-1.425E-03	2.725E-01	4.930E-01	6.195E-01	0.	1.012E+00	50.0
4	9	-2.139E-03	6.239E-01	7.916E-01	5.669E-01	0.	1.281E+00	49.2
5	9	-2.686E-03	7.862E-01	1.017E+00	4.265E-01	0.	1.344E+00	52.6
6	9	-3.022E-03	8.472E-01	1.158E+00	2.279E-01	0.	1.278E+00	62.1
7	9	-3.135E-03	8.613E-01	1.205E+00	5.454E-13	0.	1.205E+00	90.0
8	9	-3.022E-03	8.472E-01	1.158E+00	-2.279E-01	0.	1.278E+00	-62.1
9	9	-2.686E-03	7.862E-01	1.017E+00	-4.265E-01	0.	1.344E+00	-52.6
10	9	-2.139E-03	6.239E-01	7.916E-01	-5.669E-01	0.	1.281E+00	-49.2
11	9	-1.425E-03	2.725E-01	4.930E-01	-6.195E-01	0.	1.012E+00	-50.0
12	9	-6.446E-04	-3.875E-01	1.420E-01	-5.494E-01	0.	-7.326E-01	32.1
13	9	-3.310E-25	-1.513E+00	-2.269E-01	-3.129E-01	3.310E+00	-1.585E+00	13.0
14	9	1.537E-04	-6.051E-15	-5.812E-02	-7.410E-02	-9.963E-01	-1.086E-01	55.7
0	10	8.801E-05	-1.393E-14	-3.258E-02	9.436E-02	-5.703E-01	-1.120E-01	-49.9

1	10	-2.492E-25	-1.050E+00	-1.575E-01	4.055E-01	2.492E+00	-1.207E+00	-21.1
2	10	-4.286E-04	-2.049E-01	1.046E-01	7.124E-01	0.	-7.792E-01	-38.9
3	10	-9.305E-04	2.447E-01	3.347E-01	7.965E-01	0.	1.087E+00	46.6
4	10	-1.368E-03	4.407E-01	5.180E-01	7.248E-01	0.	1.205E+00	46.5
5	10	-1.685E-03	4.930E-01	6.507E-01	5.436E-01	0.	1.121E+00	49.1
6	10	-1.870E-03	4.867E-01	7.311E-01	2.902E-01	0.	9.238E-01	56.4
7	10	-1.931E-03	4.781E-01	7.581E-01	5.999E-13	0.	7.581E-01	90.0
8	10	-1.870E-03	4.867E-01	7.311E-01	-2.902E-01	0.	9.238E-01	-56.4
9	10	-1.685E-03	4.930E-01	6.507E-01	-5.436E-01	0.	1.121E+00	-49.1
10	10	-1.368E-03	4.407E-01	5.180E-01	-7.248E-01	0.	1.205E+00	-46.5
11	10	-9.305E-04	2.447E-01	3.347E-01	-7.965E-01	0.	1.087E+00	-46.6
12	10	-4.286E-04	-2.049E-01	1.046E-01	-7.124E-01	0.	-7.792E-01	38.9
13	10	-2.492E-25	-1.050E+00	-1.575E-01	-4.055E-01	2.492E+00	-1.207E+00	21.1
14	10	8.801E-05	7.216E-16	-3.258E-02	-9.436E-02	-5.703E-01	-1.120E-01	49.9
0	11	1.147E-05	-6.606E-15	1.340E-02	9.932E-02	-7.432E-02	1.062E-01	46.9
1	11	-1.413E-25	-4.817E-01	-7.226E-02	4.420E-01	1.413E+00	-7.641E-01	-32.6
2	11	-1.677E-04	-3.174E-03	1.287E-02	7.803E-01	0.	7.852E-01	45.3
3	11	-3.372E-04	1.881E-01	4.271E-02	8.639E-01	0.	9.823E-01	42.6
4	11	-4.463E-04	1.973E-01	3.619E-02	7.818E-01	0.	9.026E-01	42.1
5	11	-4.918E-04	1.160E-01	1.544E-02	5.854E-01	0.	6.533E-01	42.5
6	11	-4.995E-04	2.697E-02	-3.226E-03	3.124E-01	0.	3.247E-01	43.6
7	11	-4.982E-04	-9.798E-03	-1.056E-02	5.363E-13	0.	-1.056E-02	-90.0
8	11	-4.995E-04	2.697E-02	-3.226E-03	-3.124E-01	0.	3.247E-01	-43.6
9	11	-4.918E-04	1.160E-01	1.544E-02	-5.854E-01	0.	6.533E-01	-42.5
10	11	-4.463E-04	1.973E-01	3.619E-02	-7.818E-01	0.	9.026E-01	-42.1
11	11	-3.372E-04	1.881E-01	4.271E-02	-8.639E-01	0.	9.823E-01	-42.6
12	11	-1.677E-04	-3.174E-03	1.287E-02	-7.803E-01	0.	7.852E-01	-45.3
13	11	-1.413E-25	-4.817E-01	-7.226E-02	-4.420E-01	1.413E+00	-7.641E-01	32.6
14	11	1.147E-05	-6.412E-15	1.340E-02	-9.932E-02	-7.432E-02	1.062E-01	-46.9
0	12	-6.063E-05	8.826E-15	8.758E-02	7.830E-02	3.929E-01	1.335E-01	59.6
1	12	-1.366E-26	1.139E-01	1.708E-02	3.798E-01	1.366E-01	4.483E-01	41.4
2	12	9.757E-05	1.722E-01	-1.729E-01	6.818E-01	0.	-7.037E-01	-52.1
3	12	2.609E-04	9.181E-02	-4.539E-01	7.442E-01	0.	-9.737E-01	-55.1
4	12	4.773E-04	-9.350E-02	-7.565E-01	6.685E-01	0.	-1.171E+00	-58.2
5	12	7.004E-04	-3.178E-01	-1.020E+00	4.996E-01	0.	-1.280E+00	-62.6
6	12	8.687E-04	-4.984E-01	-1.198E+00	2.665E-01	0.	-1.288E+00	-71.4
7	12	9.313E-04	-5.664E-01	-1.262E+00	4.227E-13	0.	-1.262E+00	-90.0
8	12	8.687E-04	-4.984E-01	-1.198E+00	-2.665E-01	0.	-1.288E+00	71.4
9	12	7.004E-04	-3.178E-01	-1.020E+00	-4.996E-01	0.	-1.280E+00	62.6
10	12	4.773E-04	-9.350E-02	-7.565E-01	-6.685E-01	0.	-1.171E+00	58.2
11	12	2.609E-04	9.181E-02	-4.539E-01	-7.442E-01	0.	-9.737E-01	55.1
12	12	9.757E-05	1.722E-01	-1.729E-01	-6.818E-01	0.	-7.037E-01	52.1
13	12	-1.366E-26	1.139E-01	1.708E-02	-3.798E-01	1.366E-01	4.483E-01	-41.4
14	12	-6.063E-05	-5.218E-15	8.758E-02	-7.830E-02	3.929E-01	1.335E-01	-59.6
0	13	-1.037E-04	1.110E-14	1.906E-01	1.839E-02	6.717E-01	1.923E-01	84.5
1	13	1.192E-25	5.957E-01	8.936E-02	1.590E-01	-1.192E+00	6.415E-01	16.1
2	13	2.969E-04	2.562E-01	-5.002E-01	3.127E-01	0.	-6.128E-01	-70.2
3	13	7.038E-04	-5.342E-02	-1.238E+00	3.236E-01	0.	-1.321E+00	-75.7
4	13	1.155E-03	-4.057E-01	-1.991E+00	2.772E-01	0.	-2.038E+00	-80.4
5	13	1.570E-03	-7.602E-01	-2.639E+00	2.004E-01	0.	-2.660E+00	-84.0
6	13	1.864E-03	-1.029E+00	-3.079E+00	1.045E-01	0.	-3.085E+00	-87.1
7	13	1.970E-03	-1.125E+00	-3.236E+00	1.273E-13	0.	-3.236E+00	-90.0
8	13	1.864E-03	-1.029E+00	-3.079E+00	-1.045E-01	0.	-3.085E+00	87.1
9	13	1.570E-03	-7.602E-01	-2.639E+00	-2.004E-01	0.	-2.660E+00	84.0
10	13	1.155E-03	-4.057E-01	-1.991E+00	-2.772E-01	0.	-2.038E+00	80.4
11	13	7.038E-04	-5.342E-02	-1.238E+00	-3.236E-01	0.	-1.321E+00	75.7
12	13	2.969E-04	2.562E-01	-5.002E-01	-3.127E-01	0.	-6.128E-01	70.2

13	13	1.192E-25	5.957E-01	8.936E-02	-1.590E-01	-1.192E+00	6.415E-01	-16.1
14	13	-1.037E-04	-2.665E-15	1.906E-01	-1.839E-02	6.717E-01	1.923E-01	-84.5
0	14	-8.345E-05	1.399E-14	2.985E-01	-8.889E-02	5.408E-01	3.230E-01	-74.6
1	14	2.241E-25	7.215E-01	1.082E-01	-2.859E-01	-2.241E+00	8.341E-01	-21.5
2	14	3.175E-04	1.623E-01	-9.944E-01	-4.610E-01	0.	-1.156E+00	70.7
3	14	7.384E-04	-2.586E-01	-2.368E+00	-5.617E-01	0.	-2.508E+00	76.0
4	14	1.191E-03	-7.011E-01	-3.806E+00	-5.672E-01	0.	-3.906E+00	80.0
5	14	1.601E-03	-1.131E+00	-5.088E+00	-4.647E-01	0.	-5.142E+00	83.4
6	14	1.889E-03	-1.454E+00	-5.983E+00	-2.623E-01	0.	-5.998E+00	86.7
7	14	1.991E-03	-1.564E+00	-6.299E+00	-4.727E-13	0.	-6.299E+00	90.0
8	14	1.889E-03	-1.454E+00	-5.983E+00	2.623E-01	0.	-5.998E+00	-86.7
9	14	1.601E-03	-1.131E+00	-5.088E+00	4.647E-01	0.	-5.142E+00	-83.4
10	14	1.191E-03	-7.011E-01	-3.806E+00	5.672E-01	0.	-3.906E+00	-80.0
11	14	7.384E-04	-2.586E-01	-2.368E+00	5.617E-01	0.	-2.508E+00	-76.0
12	14	3.175E-04	1.623E-01	-9.944E-01	4.610E-01	0.	-1.156E+00	-70.7
13	14	2.241E-25	7.215E-01	1.082E-01	2.859E-01	-2.241E+00	8.341E-01	21.5
14	14	-8.345E-05	-2.665E-15	2.985E-01	8.889E-02	5.408E-01	3.230E-01	74.6
0	15	3.583E-05	2.620E-14	3.422E-01	-2.317E-01	-2.321E-01	4.591E-01	-63.2
1	15	1.107E-25	1.104E-01	1.656E-02	-9.700E-01	-2.215E+00	1.035E+00	-43.6
2	15	-2.165E-26	-2.283E-01	-1.522E+00	-1.769E+00	2.165E-01	-2.759E+00	55.0
3	15	-3.096E-25	-5.659E-01	-3.773E+00	-2.160E+00	3.096E+00	-4.860E+00	63.3
4	15	-6.444E-25	-9.454E-01	-6.302E+00	-2.175E+00	6.444E+00	-7.074E+00	70.5
5	15	-9.847E-25	-1.304E+00	-8.692E+00	-1.795E+00	9.847E+00	-9.105E+00	77.0
6	15	-1.273E-24	-1.568E+00	-1.045E+01	-1.008E+00	1.273E+01	-1.057E+01	83.6
7	15	-1.331E-24	-1.654E+00	-1.103E+01	-1.673E-12	1.331E+01	-1.103E+01	90.0
8	15	-1.273E-24	-1.568E+00	-1.045E+01	1.008E+00	1.273E+01	-1.057E+01	-83.6
9	15	-9.847E-25	-1.304E+00	-8.692E+00	1.795E+00	9.847E+00	-9.105E+00	-77.0
10	15	-6.444E-25	-9.454E-01	-6.302E+00	2.175E+00	6.444E+00	-7.074E+00	-70.5
11	15	-3.096E-25	-5.659E-01	-3.773E+00	2.160E+00	3.096E+00	-4.860E+00	-63.3
12	15	-2.165E-26	-2.283E-01	-1.522E+00	1.769E+00	2.165E-01	-2.759E+00	-55.0
13	15	1.107E-25	1.104E-01	1.656E-02	9.700E-01	-2.215E+00	1.035E+00	43.6
14	15	3.583E-05	-3.553E-15	3.422E-01	2.317E-01	-2.321E-01	4.591E-01	63.2
0	16	2.687E-04	1.976E-14	2.361E-01	-3.608E-01	-1.741E+00	4.977E-01	-54.1
1	16	-1.465E-25	-1.673E+00	-2.509E-01	-1.598E+00	1.465E+00	-2.711E+00	33.0
2	16	-8.113E-04	-1.174E+00	-9.980E-01	-2.977E+00	0.	-4.064E+00	44.2
3	16	-1.962E-03	-6.642E-01	-1.969E+00	-3.648E+00	0.	-5.022E+00	50.1
4	16	-3.236E-03	-1.852E-01	-3.018E+00	-3.699E+00	0.	-5.562E+00	55.5
5	16	-4.421E-03	3.800E-01	-4.013E+00	-3.102E+00	0.	-5.617E+00	62.7
6	16	-5.280E-03	9.978E-01	-4.795E+00	-1.733E+00	0.	-5.274E+00	74.6
7	16	-5.569E-03	9.954E-01	-4.975E+00	-2.945E-12	0.	-4.975E+00	90.0
8	16	-5.280E-03	9.978E-01	-4.795E+00	1.733E+00	0.	-5.274E+00	-74.6
9	16	-4.421E-03	3.800E-01	-4.013E+00	3.102E+00	0.	-5.617E+00	-62.7
10	16	-3.236E-03	-1.852E-01	-3.018E+00	3.699E+00	0.	-5.562E+00	-55.5
11	16	-1.962E-03	-6.642E-01	-1.969E+00	3.648E+00	0.	-5.022E+00	-50.1
12	16	-8.113E-04	-1.174E+00	-9.980E-01	2.977E+00	0.	-4.064E+00	-44.2
13	16	-1.465E-25	-1.673E+00	-2.509E-01	1.598E+00	1.465E+00	-2.711E+00	-33.0
14	16	2.687E-04	-3.153E-14	2.361E-01	3.608E-01	-1.741E+00	4.977E-01	54.1
0	17	5.799E-04	-1.393E-14	6.954E-02	-4.280E-01	-3.758E+00	4.642E-01	-47.3
1	17	-6.027E-25	-4.055E+00	-6.082E-01	-1.874E+00	6.027E+00	-4.877E+00	23.7
2	17	-1.895E-03	-2.347E+00	-4.944E-01	-3.444E+00	0.	-4.988E+00	37.5
3	17	-4.545E-03	-8.724E-01	-4.103E-01	-4.169E+00	0.	-4.817E+00	43.4
4	17	-7.464E-03	5.317E-01	-2.927E-01	-4.218E+00	0.	4.358E+00	-42.2
5	17	-1.019E-02	2.147E+00	-1.457E-01	-3.608E+00	0.	4.787E+00	-36.2
6	17	-1.220E-02	4.110E+00	-1.293E-01	-1.976E+00	0.	4.888E+00	-21.5
7	17	-1.284E-02	3.849E+00	4.625E-02	-2.691E-12	0.	3.849E+00	-.0
8	17	-1.220E-02	4.110E+00	-1.293E-01	1.976E+00	0.	4.888E+00	21.5

9	17	-1.019E-02	2.147E+00	-1.457E-01	3.608E+00	0.	4.787E+00	36.2
10	17	-7.464E-03	5.317E-01	-2.927E-01	4.218E+00	0.	4.358E+00	42.2
11	17	-4.545E-03	-8.724E-01	-4.103E-01	4.169E+00	0.	-4.817E+00	-43.4
12	17	-1.895E-03	-2.347E+00	-4.944E-01	3.444E+00	0.	-4.988E+00	-37.5
13	17	-6.027E-25	-4.055E+00	-6.082E-01	1.874E+00	6.027E+00	-4.877E+00	-23.7
14	17	5.799E-04	-8.604E-15	6.954E-02	4.280E-01	-3.758E+00	4.642E-01	47.3
0	18	9.142E-04	1.704E-14	-8.129E-02	-4.244E-01	-5.924E+00	-4.670E-01	47.7
1	18	-1.041E-24	-6.512E+00	-9.768E-01	-1.824E+00	1.041E+01	-7.059E+00	16.7
2	18	-3.027E-03	-3.543E+00	-1.697E-01	-3.308E+00	0.	-5.570E+00	31.5
3	18	-7.221E-03	-1.098E+00	7.404E-01	-3.939E+00	0.	-4.223E+00	38.4
4	18	-1.182E-02	1.155E+00	1.822E+00	-3.860E+00	0.	5.363E+00	-47.5
5	18	-1.612E-02	3.667E+00	3.289E+00	-3.108E+00	0.	6.592E+00	-43.3
6	18	-1.937E-02	7.860E+00	5.502E+00	-1.726E+00	0.	8.772E+00	-27.8
7	18	-2.028E-02	6.246E+00	4.888E+00	-2.036E-12	0.	6.246E+00	-.0
8	18	-1.937E-02	7.860E+00	5.502E+00	1.726E+00	0.	8.772E+00	27.8
9	18	-1.612E-02	3.667E+00	3.289E+00	3.108E+00	0.	6.592E+00	43.3
10	18	-1.182E-02	1.155E+00	1.822E+00	3.860E+00	0.	5.363E+00	47.5
11	18	-7.221E-03	-1.098E+00	7.404E-01	3.939E+00	0.	-4.223E+00	-38.4
12	18	-3.027E-03	-3.543E+00	-1.697E-01	3.308E+00	0.	-5.570E+00	-31.5
13	18	-1.041E-24	-6.512E+00	-9.768E-01	1.824E+00	1.041E+01	-7.059E+00	-16.7
14	18	9.142E-04	-1.433E-13	-8.129E-02	4.244E-01	-5.924E+00	-4.670E-01	-47.7
0	19	1.221E-03	1.346E-13	-1.881E-01	-3.646E-01	-7.915E+00	-4.705E-01	52.2
1	19	-1.405E-24	-8.682E+00	-1.302E+00	-1.546E+00	1.405E+01	-8.992E+00	11.4
2	19	-4.038E-03	-4.586E+00	-3.993E-02	-2.783E+00	0.	-5.906E+00	25.4
3	19	-9.596E-03	-1.206E+00	1.332E+00	-3.282E+00	0.	3.582E+00	-55.6
4	19	-1.562E-02	1.934E+00	2.675E+00	-3.139E+00	0.	5.465E+00	-48.4
5	19	-2.114E-02	5.238E+00	3.781E+00	-2.384E+00	0.	7.002E+00	-36.5
6	19	-2.510E-02	8.637E+00	4.339E+00	-1.350E+00	0.	9.026E+00	-16.1
7	19	-2.642E-02	8.646E+00	4.807E+00	-2.254E-12	0.	8.646E+00	-.0
8	19	-2.510E-02	8.637E+00	4.339E+00	1.350E+00	0.	9.026E+00	16.1
9	19	-2.114E-02	5.238E+00	3.781E+00	2.384E+00	0.	7.002E+00	36.5
10	19	-1.562E-02	1.934E+00	2.675E+00	3.139E+00	0.	5.465E+00	48.4
11	19	-9.596E-03	-1.206E+00	1.332E+00	3.282E+00	0.	3.582E+00	55.6
12	19	-4.038E-03	-4.586E+00	-3.993E-02	2.783E+00	0.	-5.906E+00	-25.4
13	19	-1.405E-24	-8.682E+00	-1.302E+00	1.546E+00	1.405E+01	-8.992E+00	-11.4
14	19	1.221E-03	-1.305E-13	-1.881E-01	3.646E-01	-7.915E+00	-4.705E-01	-52.2
0	20	1.466E-03	-3.442E-14	-2.581E-01	-2.665E-01	-9.502E+00	-4.252E-01	57.9
1	20	-1.684E-24	-1.038E+01	-1.557E+00	-1.125E+00	1.684E+01	-1.052E+01	7.2
2	20	-4.834E-03	-5.423E+00	2.508E-02	-2.030E+00	0.	-6.096E+00	18.3
3	20	-1.147E-02	-1.333E+00	1.750E+00	-2.424E+00	0.	3.081E+00	-61.2
4	20	-1.863E-02	2.436E+00	3.414E+00	-2.414E+00	0.	5.388E+00	-50.7
5	20	-2.516E-02	6.319E+00	4.754E+00	-2.054E+00	0.	7.734E+00	-34.6
6	20	-2.983E-02	1.017E+01	5.433E+00	-1.105E+00	0.	1.042E+01	-12.5
7	20	-3.139E-02	1.030E+01	5.966E+00	-1.745E-12	0.	1.030E+01	-.0
8	20	-2.983E-02	1.017E+01	5.433E+00	1.105E+00	0.	1.042E+01	12.5
9	20	-2.516E-02	6.319E+00	4.754E+00	2.054E+00	0.	7.734E+00	34.6
10	20	-1.863E-02	2.436E+00	3.414E+00	2.414E+00	0.	5.388E+00	50.7
11	20	-1.147E-02	-1.333E+00	1.750E+00	2.424E+00	0.	3.081E+00	61.2
12	20	-4.834E-03	-5.423E+00	2.508E-02	2.030E+00	0.	-6.096E+00	-18.3
13	20	-1.684E-24	-1.038E+01	-1.557E+00	1.125E+00	1.684E+01	-1.052E+01	-7.2
14	20	1.466E-03	4.707E-14	-2.581E-01	2.665E-01	-9.502E+00	-4.252E-01	-57.9
0	21	1.626E-03	-1.092E-13	-3.004E-01	-1.442E-01	-1.053E+01	-3.584E-01	68.1
1	21	-1.868E-24	-1.149E+01	-1.723E+00	-6.087E-01	1.868E+01	-1.152E+01	3.6
2	21	-5.352E-03	-5.987E+00	8.231E-02	-1.100E+00	0.	-6.180E+00	10.0
3	21	-1.270E-02	-1.483E+00	2.106E+00	-1.321E+00	0.	2.540E+00	-71.8
4	21	-2.064E-02	2.608E+00	4.233E+00	-1.328E+00	0.	4.978E+00	-60.7

5	21	-2.792E-02	6.860E+00	6.495E+00	-1.125E+00	0.	7.817E+00	-40.4
6	21	-3.325E-02	1.251E+01	9.132E+00	-6.176E-01	0.	1.262E+01	-10.1
7	21	-3.489E-02	1.117E+01	8.767E+00	-1.309E-12	0.	1.117E+01	-.0
8	21	-3.325E-02	1.251E+01	9.132E+00	6.176E-01	0.	1.262E+01	10.1
9	21	-2.792E-02	6.860E+00	6.495E+00	1.125E+00	0.	7.817E+00	40.4
10	21	-2.064E-02	2.608E+00	4.233E+00	1.328E+00	0.	4.978E+00	60.7
11	21	-1.270E-02	-1.483E+00	2.106E+00	1.321E+00	0.	2.540E+00	71.8
12	21	-5.352E-03	-5.987E+00	8.231E-02	1.100E+00	0.	-6.180E+00	-10.0
13	21	-1.868E-24	-1.149E+01	-1.723E+00	6.087E-01	1.868E+01	-1.152E+01	-3.6
14	21	1.626E-03	-5.551E-14	-3.004E-01	1.442E-01	-1.053E+01	-3.584E-01	-68.1
0	22	1.685E-03	-5.180E-13	-3.149E-01	-9.607E-03	-1.092E+01	-3.152E-01	88.3
1	22	-1.934E-24	-1.190E+01	-1.784E+00	-3.979E-02	1.934E+01	-1.190E+01	.2
2	22	-5.545E-03	-6.190E+00	9.280E-02	-6.924E-02	0.	-6.191E+00	.6
3	22	-1.315E-02	-1.509E+00	2.186E+00	-7.765E-02	0.	2.188E+00	-88.8
4	22	-2.136E-02	2.778E+00	4.297E+00	-7.037E-02	0.	4.300E+00	-87.4
5	22	-2.887E-02	7.254E+00	6.149E+00	-5.235E-02	0.	7.256E+00	-2.7
6	22	-3.427E-02	1.205E+01	7.209E+00	-2.774E-02	0.	1.205E+01	-.3
7	22	-3.604E-02	1.182E+01	7.923E+00	-1.018E-12	0.	1.182E+01	-.0
8	22	-3.427E-02	1.205E+01	7.209E+00	2.774E-02	0.	1.205E+01	.3
9	22	-2.887E-02	7.254E+00	6.149E+00	5.235E-02	0.	7.256E+00	2.7
10	22	-2.136E-02	2.778E+00	4.297E+00	7.037E-02	0.	4.300E+00	87.4
11	22	-1.315E-02	-1.509E+00	2.186E+00	7.765E-02	0.	2.188E+00	88.8
12	22	-5.545E-03	-6.190E+00	9.280E-02	6.924E-02	0.	-6.191E+00	-.6
13	22	-1.934E-24	-1.190E+01	-1.784E+00	3.979E-02	1.934E+01	-1.190E+01	-.2
14	22	1.685E-03	-4.929E-14	-3.149E-01	9.607E-03	-1.092E+01	-3.152E-01	-88.3
0	23	1.640E-03	-1.947E-13	-3.028E-01	1.255E-01	-1.063E+01	-3.481E-01	-70.2
1	23	-1.884E-24	-1.158E+01	-1.738E+00	5.310E-01	1.884E+01	-1.161E+01	-3.1
2	23	-5.398E-03	-6.027E+00	8.272E-02	9.651E-01	0.	-6.176E+00	-8.8
3	23	-1.280E-02	-1.478E+00	2.124E+00	1.171E+00	0.	2.471E+00	73.5
4	23	-2.080E-02	2.645E+00	4.269E+00	1.193E+00	0.	4.900E+00	62.1
5	23	-2.813E-02	6.919E+00	6.545E+00	1.025E+00	0.	7.773E+00	39.8
6	23	-3.350E-02	1.258E+01	9.192E+00	5.645E-01	0.	1.267E+01	9.2
7	23	-3.514E-02	1.125E+01	8.831E+00	-4.363E-13	0.	1.125E+01	-.0
8	23	-3.350E-02	1.258E+01	9.192E+00	-5.645E-01	0.	1.267E+01	-9.2
9	23	-2.813E-02	6.919E+00	6.545E+00	-1.025E+00	0.	7.773E+00	-39.8
10	23	-2.080E-02	2.645E+00	4.269E+00	-1.193E+00	0.	4.900E+00	-62.1
11	23	-1.280E-02	-1.478E+00	2.124E+00	-1.171E+00	0.	2.471E+00	-73.5
12	23	-5.398E-03	-6.027E+00	8.272E-02	-9.651E-01	0.	-6.176E+00	8.8
13	23	-1.884E-24	-1.158E+01	-1.738E+00	-5.310E-01	1.884E+01	-1.161E+01	3.1
14	23	1.640E-03	8.993E-14	-3.028E-01	-1.255E-01	-1.063E+01	-3.481E-01	70.2
0	24	1.495E-03	-1.574E-13	-2.646E-01	2.497E-01	-9.686E+00	-4.149E-01	-59.0
1	24	-1.716E-24	-1.057E+01	-1.586E+00	1.055E+00	1.716E+01	-1.069E+01	-6.6
2	24	-4.924E-03	-5.498E+00	3.041E-02	1.908E+00	0.	-6.093E+00	-17.3
3	24	-1.167E-02	-1.321E+00	1.795E+00	2.291E+00	0.	3.007E+00	62.1
4	24	-1.895E-02	2.511E+00	3.498E+00	2.296E+00	0.	5.353E+00	51.1
5	24	-2.557E-02	6.435E+00	4.870E+00	1.967E+00	0.	7.770E+00	34.2
6	24	-3.030E-02	1.031E+01	5.571E+00	1.059E+00	0.	1.054E+01	12.0
7	24	-3.188E-02	1.045E+01	6.111E+00	1.018E-12	0.	1.045E+01	.0
8	24	-3.030E-02	1.031E+01	5.571E+00	-1.059E+00	0.	1.054E+01	-12.0
9	24	-2.557E-02	6.435E+00	4.870E+00	-1.967E+00	0.	7.770E+00	-34.2
10	24	-1.895E-02	2.511E+00	3.498E+00	-2.296E+00	0.	5.353E+00	-51.1
11	24	-1.167E-02	-1.321E+00	1.795E+00	-2.291E+00	0.	3.007E+00	-62.1
12	24	-4.924E-03	-5.498E+00	3.041E-02	-1.908E+00	0.	-6.093E+00	17.3
13	24	-1.716E-24	-1.057E+01	-1.586E+00	-1.055E+00	1.716E+01	-1.069E+01	6.6
14	24	1.495E-03	-6.306E-14	-2.646E-01	-2.497E-01	-9.686E+00	-4.149E-01	59.0
0	25	1.262E-03	-1.821E-14	-2.040E-01	3.523E-01	-8.175E+00	-4.687E-01	-53.1

1	25	-1.453E-24	-8.955E+00	-1.343E+00	1.491E+00	1.453E+01	-9.236E+00	-10.7
2	25	-4.166E-03	-4.687E+00	-1.970E-02	2.689E+00	0.	-5.914E+00	-24.5
3	25	-9.887E-03	-1.179E+00	1.423E+00	3.184E+00	0.	3.561E+00	56.1
4	25	-1.607E-02	2.048E+00	2.834E+00	3.056E+00	0.	5.522E+00	48.7
5	25	-2.172E-02	5.408E+00	3.996E+00	2.324E+00	0.	7.131E+00	36.5
6	25	-2.576E-02	8.839E+00	4.589E+00	1.319E+00	0.	9.215E+00	15.9
7	25	-2.711E-02	8.859E+00	5.070E+00	2.618E-12	0.	8.859E+00	.0
8	25	-2.576E-02	8.839E+00	4.589E+00	-1.319E+00	0.	9.215E+00	-15.9
9	25	-2.172E-02	5.408E+00	3.996E+00	-2.324E+00	0.	7.131E+00	-36.5
10	25	-1.607E-02	2.048E+00	2.834E+00	-3.056E+00	0.	5.522E+00	-48.7
11	25	-9.887E-03	-1.179E+00	1.423E+00	-3.184E+00	0.	3.561E+00	-56.1
12	25	-4.166E-03	-4.687E+00	-1.970E-02	-2.689E+00	0.	-5.914E+00	24.5
13	25	-1.453E-24	-8.955E+00	-1.343E+00	-1.491E+00	1.453E+01	-9.236E+00	10.7
14	25	1.262E-03	7.261E-14	-2.040E-01	-3.523E-01	-8.175E+00	-4.687E-01	53.1
0	26	9.605E-04	-2.409E-14	-1.205E-01	4.234E-01	-6.224E+00	-4.879E-01	-49.0
1	26	-1.104E-24	-6.848E+00	-1.027E+00	1.804E+00	1.104E+01	-7.361E+00	-15.9
2	26	-3.182E-03	-3.649E+00	-1.170E-01	3.269E+00	0.	-5.599E+00	-30.8
3	26	-7.569E-03	-1.048E+00	9.100E-01	3.905E+00	0.	-4.095E+00	-38.0
4	26	-1.235E-02	1.306E+00	2.102E+00	3.836E+00	0.	5.560E+00	48.0
5	26	-1.680E-02	3.882E+00	3.655E+00	3.093E+00	0.	6.863E+00	43.9
6	26	-2.015E-02	8.113E+00	5.923E+00	1.718E+00	0.	9.055E+00	28.7
7	26	-2.109E-02	6.510E+00	5.328E+00	3.345E-12	0.	6.510E+00	.0
8	26	-2.015E-02	8.113E+00	5.923E+00	-1.718E+00	0.	9.055E+00	-28.7
9	26	-1.680E-02	3.882E+00	3.655E+00	-3.093E+00	0.	6.863E+00	-43.9
10	26	-1.235E-02	1.306E+00	2.102E+00	-3.836E+00	0.	5.560E+00	-48.0
11	26	-7.569E-03	-1.048E+00	9.100E-01	-3.905E+00	0.	-4.095E+00	38.0
12	26	-3.182E-03	-3.649E+00	-1.170E-01	-3.269E+00	0.	-5.599E+00	30.8
13	26	-1.104E-24	-6.848E+00	-1.027E+00	-1.804E+00	1.104E+01	-7.361E+00	15.9
14	26	9.605E-04	-1.332E-14	-1.205E-01	-4.234E-01	-6.224E+00	-4.879E-01	49.0
0	27	6.196E-04	-3.691E-14	-2.549E-02	4.547E-01	-4.015E+00	-4.676E-01	-45.8
1	27	-6.745E-25	-4.423E+00	-6.635E-01	1.926E+00	6.745E+00	-5.235E+00	-22.8
2	27	-2.055E-03	-2.430E+00	-3.784E-01	3.503E+00	0.	-5.054E+00	-36.8
3	27	-4.897E-03	-7.912E-01	-1.088E-01	4.244E+00	0.	-4.707E+00	-42.7
4	27	-7.996E-03	7.123E-01	1.734E-01	4.289E+00	0.	4.740E+00	43.2
5	27	-1.087E-02	2.392E+00	4.470E-01	3.662E+00	0.	5.208E+00	37.6
6	27	-1.297E-02	4.393E+00	5.429E-01	2.004E+00	0.	5.247E+00	23.1
7	27	-1.364E-02	4.144E+00	7.455E-01	3.709E-12	0.	4.144E+00	.0
8	27	-1.297E-02	4.393E+00	5.429E-01	-2.004E+00	0.	5.247E+00	-23.1
9	27	-1.087E-02	2.392E+00	4.470E-01	-3.662E+00	0.	5.208E+00	-37.6
10	27	-7.996E-03	7.123E-01	1.734E-01	-4.289E+00	0.	4.740E+00	-43.2
11	27	-4.897E-03	-7.912E-01	-1.088E-01	-4.244E+00	0.	-4.707E+00	42.7
12	27	-2.055E-03	-2.430E+00	-3.784E-01	-3.503E+00	0.	-5.054E+00	36.8
13	27	-6.745E-25	-4.423E+00	-6.635E-01	-1.926E+00	6.745E+00	-5.235E+00	22.8
14	27	6.196E-04	9.631E-15	-2.549E-02	-4.547E-01	-4.015E+00	-4.676E-01	45.8
0	28	2.702E-04	-1.324E-14	3.123E-02	4.518E-01	-1.751E+00	4.677E-01	46.0
1	28	-2.484E-25	-2.040E+00	-3.059E-01	1.797E+00	2.484E+00	-3.168E+00	-32.1
2	28	-9.318E-04	-1.191E+00	-7.539E-01	3.208E+00	0.	-4.187E+00	-43.1
3	28	-2.221E-03	-5.499E-01	-1.452E+00	3.892E+00	0.	-4.919E+00	-48.3
4	28	-3.621E-03	6.277E-03	-2.272E+00	3.911E+00	0.	-5.207E+00	-53.1
5	28	-4.905E-03	6.264E-01	-3.092E+00	3.257E+00	0.	-4.983E+00	-59.9
6	28	-5.828E-03	1.279E+00	-3.762E+00	1.814E+00	0.	-4.347E+00	-72.1
7	28	-6.139E-03	1.288E+00	-3.903E+00	3.418E-12	0.	-3.903E+00	-90.0
8	28	-5.828E-03	1.279E+00	-3.762E+00	-1.814E+00	0.	-4.347E+00	72.1
9	28	-4.905E-03	6.264E-01	-3.092E+00	-3.257E+00	0.	-4.983E+00	59.9
10	28	-3.621E-03	6.277E-03	-2.272E+00	-3.911E+00	0.	-5.207E+00	53.1
11	28	-2.221E-03	-5.499E-01	-1.452E+00	-3.892E+00	0.	-4.919E+00	48.3
12	28	-9.318E-04	-1.191E+00	-7.539E-01	-3.208E+00	0.	-4.187E+00	43.1

13	28	-2.484E-25	-2.040E+00	-3.059E-01	-1.797E+00	2.484E+00	-3.168E+00	32.1
14	28	2.702E-04	-8.687E-15	3.123E-02	-4.518E-01	-1.751E+00	4.677E-01	-46.0
0	29	-6.886E-05	-8.271E-15	2.859E-02	4.834E-01	4.462E-01	4.979E-01	45.8
1	29	1.344E-25	-1.789E-01	1.905E-01	1.458E+00	-2.689E+00	1.476E+00	48.6
2	29	1.142E-25	-1.415E-01	-9.435E-01	2.242E+00	-1.142E+00	-2.820E+00	-50.1
3	29	-2.329E-25	-4.380E-01	-2.920E+00	2.624E+00	2.329E+00	-4.582E+00	-57.7
4	29	-5.570E-25	-7.757E-01	-5.171E+00	2.582E+00	5.570E+00	-6.364E+00	-65.2
5	29	-8.794E-25	-1.098E+00	-7.317E+00	2.096E+00	8.794E+00	-7.957E+00	-73.0
6	29	-1.154E-24	-1.337E+00	-8.914E+00	1.167E+00	1.154E+01	-9.089E+00	-81.4
7	29	-1.207E-24	-1.414E+00	-9.430E+00	2.254E-12	1.207E+01	-9.430E+00	-90.0
8	29	-1.154E-24	-1.337E+00	-8.914E+00	-1.167E+00	1.154E+01	-9.089E+00	81.4
9	29	-8.794E-25	-1.098E+00	-7.317E+00	-2.096E+00	8.794E+00	-7.957E+00	73.0
10	29	-5.570E-25	-7.757E-01	-5.171E+00	-2.582E+00	5.570E+00	-6.364E+00	65.2
11	29	-2.329E-25	-4.380E-01	-2.920E+00	-2.624E+00	2.329E+00	-4.582E+00	57.7
12	29	1.142E-25	-1.415E-01	-9.435E-01	-2.242E+00	-1.142E+00	-2.820E+00	50.1
13	29	1.344E-25	-1.789E-01	1.905E-01	-1.458E+00	-2.689E+00	1.476E+00	-48.6
14	29	-6.886E-05	-1.332E-15	2.859E-02	-4.834E-01	4.462E-01	4.979E-01	-45.8
0	30	-3.984E-04	-4.624E-14	-7.969E-02	4.339E-01	0.	-4.756E-01	-47.6
1	30	7.213E-05	2.038E-01	-3.105E-01	9.807E-01	0.	-1.067E+00	-52.3
2	30	6.258E-04	1.402E-01	-9.659E-01	1.145E+00	0.	-1.685E+00	-57.9
3	30	1.274E-03	-2.295E-01	-1.954E+00	1.201E+00	0.	-2.570E+00	-62.8
4	30	1.943E-03	-7.088E-01	-3.097E+00	1.114E+00	0.	-3.536E+00	-68.5
5	30	2.532E-03	-1.178E+00	-4.166E+00	8.639E-01	0.	-4.398E+00	-75.0
6	30	2.936E-03	-1.527E+00	-4.931E+00	4.725E-01	0.	-4.995E+00	-82.2
7	30	3.080E-03	-1.645E+00	-5.203E+00	9.301E-13	0.	-5.203E+00	-90.0
8	30	2.936E-03	-1.527E+00	-4.931E+00	-4.725E-01	0.	-4.995E+00	82.2
9	30	2.532E-03	-1.178E+00	-4.166E+00	-8.639E-01	0.	-4.398E+00	75.0
10	30	1.943E-03	-7.088E-01	-3.097E+00	-1.114E+00	0.	-3.536E+00	68.5
11	30	1.274E-03	-2.295E-01	-1.954E+00	-1.201E+00	0.	-2.570E+00	62.8
12	30	6.258E-04	1.402E-01	-9.659E-01	-1.145E+00	0.	-1.685E+00	57.9
13	30	7.213E-05	2.038E-01	-3.105E-01	-9.807E-01	0.	-1.067E+00	52.3
14	30	-3.984E-04	1.926E-14	-7.969E-02	-4.339E-01	0.	-4.756E-01	47.6
0	31	-7.544E-04	1.216E-13	-1.094E-01	2.639E-01	0.	-3.242E-01	-50.9
1	31	3.108E-05	1.942E-01	-2.599E-01	5.200E-01	0.	-6.003E-01	-56.8
2	31	9.240E-04	1.162E-01	-5.865E-01	4.873E-01	0.	-8.360E-01	-62.9
3	31	1.911E-03	-1.666E-01	-1.059E+00	4.252E-01	0.	-1.229E+00	-68.2
4	31	2.894E-03	-5.406E-01	-1.601E+00	3.425E-01	0.	-1.702E+00	-73.6
5	31	3.739E-03	-9.061E-01	-2.103E+00	2.402E-01	0.	-2.150E+00	-79.1
6	31	4.312E-03	-1.173E+00	-2.458E+00	1.240E-01	0.	-2.469E+00	-84.5
7	31	4.515E-03	-1.267E+00	-2.585E+00	2.137E-13	0.	-2.585E+00	-90.0
8	31	4.312E-03	-1.173E+00	-2.458E+00	-1.240E-01	0.	-2.469E+00	84.5
9	31	3.739E-03	-9.061E-01	-2.103E+00	-2.402E-01	0.	-2.150E+00	79.1
10	31	2.894E-03	-5.406E-01	-1.601E+00	-3.425E-01	0.	-1.702E+00	73.6
11	31	1.911E-03	-1.666E-01	-1.059E+00	-4.252E-01	0.	-1.229E+00	68.2
12	31	9.240E-04	1.162E-01	-5.865E-01	-4.873E-01	0.	-8.360E-01	62.9
13	31	3.108E-05	1.942E-01	-2.599E-01	-5.200E-01	0.	-6.003E-01	56.8
14	31	-7.544E-04	1.388E-14	-1.094E-01	-2.639E-01	0.	-3.242E-01	50.9
0	32	-1.161E-03	1.059E-13	-1.532E-02	1.419E-01	0.	-1.498E-01	-46.5
1	32	-1.431E-04	9.408E-02	-6.690E-02	2.443E-01	0.	2.708E-01	35.9
2	32	9.440E-04	3.140E-02	-1.942E-01	1.606E-01	0.	-2.777E-01	-62.5
3	32	2.071E-03	-1.384E-01	-3.854E-01	7.551E-02	0.	-4.066E-01	-74.3
4	32	3.145E-03	-3.581E-01	-6.063E-01	1.376E-02	0.	-6.071E-01	-86.8
5	32	4.041E-03	-5.706E-01	-8.113E-01	-1.614E-02	0.	-8.124E-01	86.2
6	32	4.637E-03	-7.239E-01	-9.558E-01	-1.668E-02	0.	-9.570E-01	85.9
7	32	4.847E-03	-7.792E-01	-1.008E+00	-4.642E-14	0.	-1.008E+00	90.0
8	32	4.637E-03	-7.239E-01	-9.558E-01	1.668E-02	0.	-9.570E-01	-85.9

9	32	4.041E-03	-5.706E-01	-8.113E-01	1.614E-02	0.	-8.124E-01	-86.2
10	32	3.145E-03	-3.581E-01	-6.063E-01	-1.376E-02	0.	-6.071E-01	86.8
11	32	2.071E-03	-1.384E-01	-3.854E-01	-7.551E-02	0.	-4.066E-01	74.3
12	32	9.440E-04	3.140E-02	-1.942E-01	-1.606E-01	0.	-2.777E-01	62.5
13	32	-1.431E-04	9.408E-02	-6.690E-02	-2.443E-01	0.	2.708E-01	-35.9
14	32	-1.161E-03	-4.952E-14	-1.532E-02	-1.419E-01	0.	-1.498E-01	46.5
0	33	-1.577E-03	7.595E-13	1.613E-13	5.111E-02	0.	5.111E-02	45.0
1	33	-3.713E-04	-4.961E-02	1.991E-14	8.300E-02	0.	-1.114E-01	-36.7
2	33	8.314E-04	-6.615E-01	-8.316E-14	4.165E-02	0.	-6.641E-01	-3.6
3	33	1.989E-03	-1.736E+00	-1.474E-13	1.931E-03	0.	-1.736E+00	-.1
4	33	3.028E-03	-3.038E+00	-2.571E-13	-2.344E-02	0.	-3.038E+00	.4
5	33	3.858E-03	-4.269E+00	-2.445E-13	-3.011E-02	0.	-4.269E+00	.4
6	33	4.397E-03	-5.145E+00	-2.727E-13	-1.996E-02	0.	-5.145E+00	.2
7	33	4.584E-03	-5.462E+00	-2.487E-13	-2.623E-14	0.	-5.462E+00	.0
8	33	4.397E-03	-5.145E+00	-2.558E-13	1.996E-02	0.	-5.145E+00	-.2
9	33	3.858E-03	-4.269E+00	-1.881E-13	3.011E-02	0.	-4.269E+00	-.4
10	33	3.028E-03	-3.038E+00	-1.754E-13	2.344E-02	0.	-3.038E+00	-.4
11	33	1.989E-03	-1.736E+00	-1.221E-15	-1.931E-03	0.	-1.736E+00	.1
12	33	8.314E-04	-6.615E-01	5.496E-15	-4.165E-02	0.	-6.641E-01	3.6
13	33	-3.713E-04	-4.961E-02	5.593E-15	-8.300E-02	0.	-1.114E-01	36.7
14	33	-1.577E-03	-4.042E-13	9.782E-15	-5.111E-02	0.	-5.111E-02	45.0

STATICS CHECK.   SUMMATION OF REACTIONS =   3.292E+02

TIME FOR THIS PROBLEM -   0 MINUTES   21.054 SECONDS

ELAPSED TM TIME =   1 MINUTES   36.617 SECONDS

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PROGRAM  SLAB 30  FINAL REPORT DECK  - PANAK     REVISION DATE 20 NOV 69
CHG CE 909099       CODED AND RUN  1 DEC 69  HUA        FT-KIP UNITS
HOUSTON SHIP CHANNEL STRUCTURE     TWO-WAY LIGHT-WEIGHT DECK


                          ELAPSED  TM TIME =     1 MINUTES   36.629 SECONDS


RETURN THIS PAGE AND THE FOLLOWING PAGE TO THE TIME RECORD FILE -- HM
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26 JAN 70   UNIVERSITY OF TEXAS 6600   UT 1
16.25.07. BLE8309. PANAK,,177,075000,200.CE909099,MATLOCK.
16.25.07. BLE8309.

16.25.07. BLE8309. RUN(S)
16.25.40. BLE8309.   CTIME 009.988 SEC.  RUN LEVEL 53V
16.25.40. BLE8309. MAP.
16.25.40. BLE8309. LGO.
16.25.43. BLE8309.  LOADER UNUSED STORAGE 007160.
16.29.49. BLE8309.  END - SLAB30
16.29.49. BLE8309. CP  048.028 SEC.
16.29.49. BLE8309. PP  062.437 SEC.
16.29.49. BLE8309. TM  096.657 SEC.    141 (OCTAL)
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