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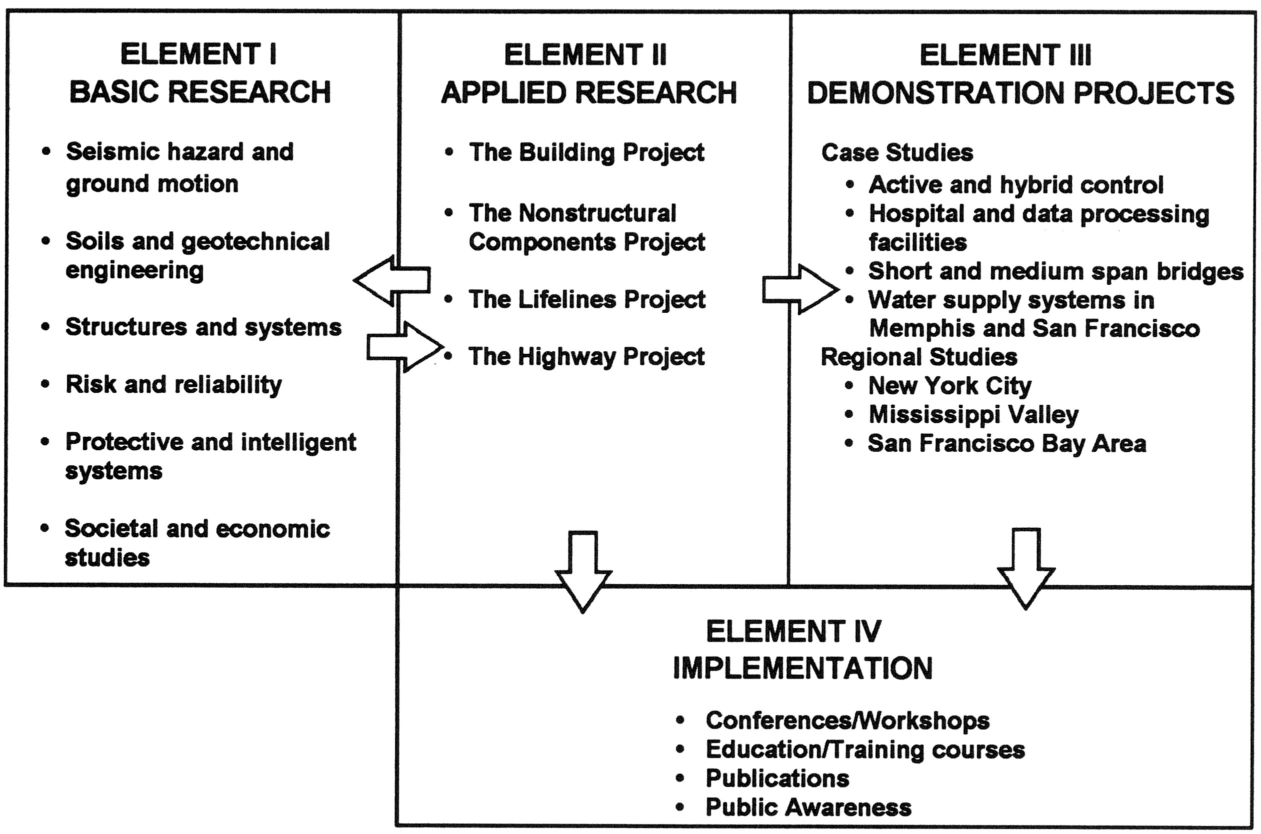
1 Assistant Professor, Department of Civil Engineering, University of Missouri at Columbia; formerly Research Assistant Professor, Department of Civil Engineering, State University of New York at Buffalo
2 Graduate Research Assistant, Department of Civil Engineering, State University of New York at Buffalo
3 Professor, Department of Civil Engineering, State University of New York at Buffalo
4 Associate Professor, Department of Civil Engineering, State University of New York at Buffalo

NATIONAL CENTER FOR EARTHQUAKE ENGINEERING RESEARCH
State University of New York at Buffalo
Red Jacket Quadrangle, Buffalo, NY 14261

PREFACE

The National Center for Earthquake Engineering Research (NCEER) was established to expand and disseminate knowledge about earthquakes, improve earthquake-resistant design, and implement seismic hazard mitigation procedures to minimize loss of lives and property. The emphasis is on structures in the eastern and central United States and lifelines throughout the country that are found in zones of low, moderate, and high seismicity.

NCEER's research and implementation plan in years six through ten (1991-1996) comprises four interlocked elements, as shown in the figure below. Element I, Basic Research, is carried out to support projects in the Applied Research area. Element II, Applied Research, is the major focus of work for years six through ten. Element III, Demonstration Projects, have been planned to support Applied Research projects, and will be either case studies or regional studies. Element IV, Implementation, will result from activity in the four Applied Research projects, and from Demonstration Projects.



Research in the **Building Project** focuses on the evaluation and retrofit of buildings in regions of moderate seismicity. Emphasis is on lightly reinforced concrete buildings, steel semi-rigid frames, and masonry walls or infills. The research involves small- and medium-scale shake table tests and full-scale component tests at several institutions. In a parallel effort, analytical models and computer programs are being developed to aid in the prediction of the response of these buildings to various types of ground motion.

Two of the short-term products of the **Building Project** will be a monograph on the evaluation of lightly reinforced concrete buildings and a state-of-the-art report on unreinforced masonry.

The **protective and intelligent systems program** constitutes one of the important areas of research in the **Building Project**. Current tasks include the following:

1. Evaluate the performance of full-scale active bracing and active mass dampers already in place in terms of performance, power requirements, maintenance, reliability and cost.
2. Compare passive and active control strategies in terms of structural type, degree of effectiveness, cost and long-term reliability.
3. Perform fundamental studies of hybrid control.
4. Develop and test hybrid control systems.

The new computer program documented in this report, 3D-BASIS-TABS, is an enhanced version of 3D-BASIS, a special purpose program developed by NCEER for nonlinear dynamic analysis of base-isolated structures. One disadvantage associated with the original version is that the superstructure forces can not be computed directly. The superstructure member forces are computed in 3D-BASIS-TABS by back substitution, after the nonlinear time history analysis is completed, and peak member forces are output to facilitate the design of members. The verification of this enhanced version is presented in this report using two case studies. A comprehensive user's manual with input/output files is also presented.

ABSTRACT

The new computer program 3D-BASIS-TABS is a special purpose program developed for nonlinear dynamic analysis of three dimensional base isolated structures. The program can analyze base isolated structures with an elastic superstructure and inelastic/nonlinear isolation system. 3D-BASIS-TABS has three options for modeling the elastic superstructure: (i) option 1 - three dimensional shear building representation, in which case the stiffness matrix of the superstructure is constructed internally by the program followed by the dynamic analysis; and (ii) option 2 - full three dimensional representation, in which case the dynamic characteristics of the superstructure are obtained from a structural analysis routine followed by a dynamic condensation and dynamic step-by-step analysis with a final full recovery of maximum internal forces in structural elements; and (iii) option 3 - three dimensional building representation via stiffness matrix suplied by user, hence the superstructure is modeled at a global level by using either the story stiffnesses or the dynamic characteristics. The isolation system is modeled by representing the force displacement relationship of each individual isolator explicitly. The aforementioned approach yields global response results accurately as well as the history of elements response.

A previous version of this program, 3D-BASIS [Nagarajaiah, Reinhorn, and Constantinou, 1991b] had the disadvantage that superstructure forces could not be computed directly. Hence, the design of beam and column members should have been based on pseudostatic analysis using global response results. This report describes the development and verification of the new computer program 3D-BASIS-TABS, an enhanced version of 3D-BASIS, which includes linear beam, column, shear wall and bracing elements to model the elastic three dimensional superstructure and inelastic/nonlinear elements to model the isolation system. The superstructure member forces are computed in 3D-BASIS-TABS by back substitution, after the nonlinear time history analysis is completed, and peak member forces are output to facilitate the design of members.

The verification of the program 3D-BASIS-TABS is presented in two case studies, i.e., three-story and eight-story buildings with various isolators. These case studies serve also as examples of use of this computer program. A comprehensive user's manual with input/output files is presented.

TABLE OF CONTENTS

TABLE OF CONTENTS (cont.)

LIST OF FIGURES

LIST OF FIGURES (cont.)

FIGURE TITLE **PAGE**

LIST OF TABLES

SECTION 1

INTRODUCTION

A comprehensive research effort for testing, analysis and design of base isolated structures with different isolation systems has been underway at the State University of New York at Buffalo. The objective of this research effort was: (i) to develop analysis capability and analytical models, calibrated using experimental results, and (ii) to use the analytical tool in-turn in experimental research and practical design applications. The result of this continued research effort was a comprehensive computational tool and computer program 3D-BASIS (Nagarajaiah, Reinhorn, Constantinou 1991a, 1991b; Tsopelas, Nagarajaiah, Constantinou, Reinhorn 1991).

Computer program 3D-BASIS has been specifically developed for analysis of base isolated structures (Fig. 1.1) with elastic superstructure and inelastic/nonlinear sliding and/or elastomeric isolation systems. The novelty of the analytical model and solution algorithm in 3D-BASIS was its capability to capture the highly nonlinear behavior of sliding isolation systems in plane motion. Biaxial and uniaxial models in 3D-BASIS can represent both elastomeric isolation bearings, sliding isolation bearings, various hysteretic devices, and viscous damping devices. The solution algorithm in 3D-BASIS, consisting of the pseudoforce method with iteration, is accurate and efficient.

Computer program 3D-BASIS-M (Tsopelas, Nagarajaiah, Constantinou, Reinhorn 1991), an enhanced version of 3D-BASIS, has been developed for analyzing multiple building base isolated structures (Fig. 1.2). The analysis of multiple buildings on a combined isolation system arises in long buildings which may consist of several buildings separated by narrow thermal expansion joints. The torsional characteristics of the combined isolation system

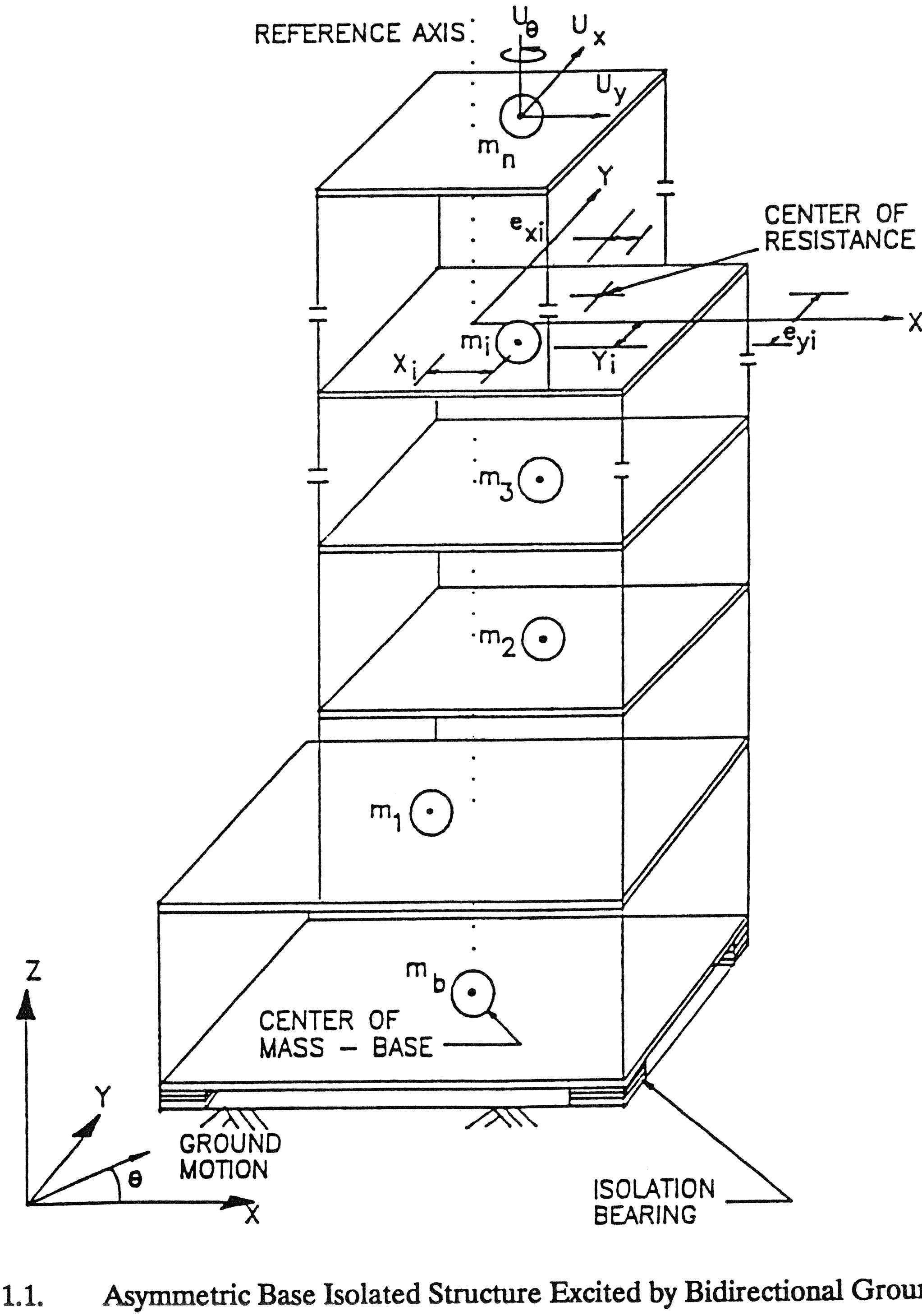


FIG. 1.1. Asymmetric Base Isolated Structure Excited by Bidirectional Ground Motion

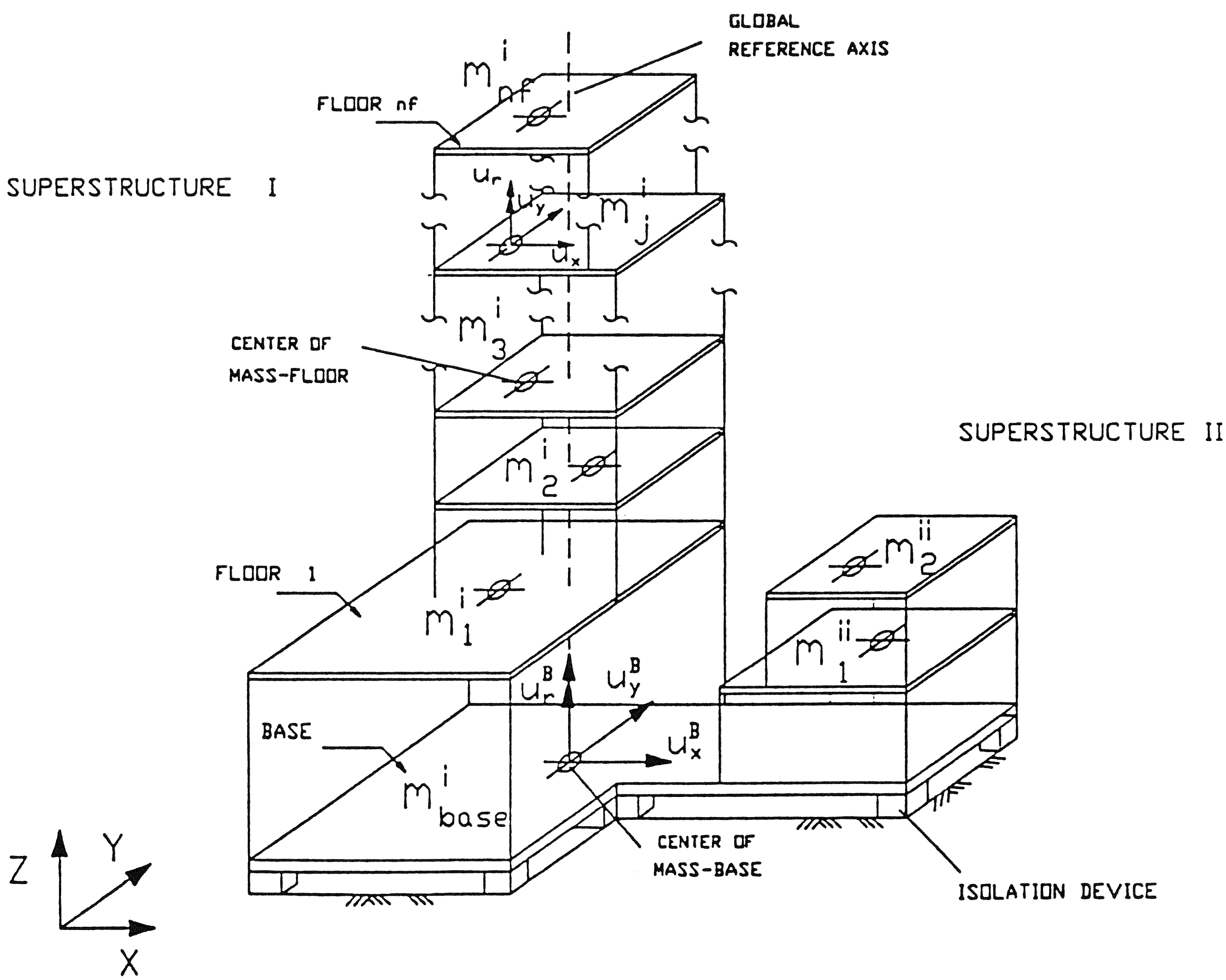


FIG. 1.2. Multiple Building Base Isolated Structure

and single basemat with multiple superstructure configuration can be significantly different than that of individual buildings on separate isolation systems. In such cases, 3D-BASIS-M can be used.

3D-BASIS has two options for modeling the elastic superstructure: (i) option 1 - three dimensional shear building representation, in which case the stiffness matrix of the superstructure is constructed internally by the program and the dynamic analysis is performed; and (ii) option 2 - full three dimensional representation, in which case the dynamic characteristics of the superstructure are obtained from other computer programs, such as ETABS (developed by Wilson et al. 1975 (i.e., the superstructure is modeled separately by ETABS to determine the frequencies and mode shapes) and imported into 3D-BASIS where the dynamic analysis is performed. Hence the superstructure is modeled at a global level by using either the story stiffnesses or the dynamic characteristics (i.e., beams, columns, etc. are not modeled explicitly in 3D-BASIS). However, the isolation system is modeled by representing the force displacement relationship of each individual isolator explicitly. The aforementioned approach yields global response results accurately and this approach is attractive because of its merit of simplicity. However the disadvantage of this approach is that the time history of superstructure member forces cannot be computed. Hence the design of beam and column members should be based on pseudostatic analysis using global response results.

This report describes the development and verification of a new computer program 3D-BASIS-TABS, an enhanced version of 3D-BASIS, which includes linear beam, column, shear wall and bracing elements to model the elastic three dimensional superstructure and inelastic/nonlinear elements to model the isolation system. The superstructure member forces are computed in 3D-BASIS-TABS by back substitution, after the nonlinear time history analysis is completed, and peak member forces are output to facilitate the design of members.

Verification of the program 3D-BASIS-TABS is presented. A case study analyzing an eight story base isolated structure is presented. A comprehensive user's manual with input/output files is presented.

The input format for the superstructure in 3D-BASIS-TABS has been retained in the same format as in ETABS [Wilson et al., 1975] to facilitate usage (since many engineers and researchers are familiar with the superstructure input requirements for ETABS). It is to be noted that some of the aforementioned beam, column, shear wall and bracing elements are adopted from the same computer program, ETABS. The substructure condensation, global assembly, and backsubstitution procedures used in ETABS are also adopted.

SECTION 2

OVERVIEW OF 3D-BASIS AND ETABS

In this section, the features of computer programs 3D-BASIS and ETABS are reviewed. The limitations of 3D-BASIS are pointed out and the advantages of enhancing the program 3D-BASIS are elucidated.

3D-BASIS was designed and developed according to the advantages of the modeling approach proposed by Wilson et al. (1975) for the 3D-superstructure in ETABS, i.e., frame substructures interconnected by rigid floor diaphragms, with three degrees-of-freedom per floor at the center of mass. The process of modeling the elastic superstructure in 3D-BASIS was simplified by using eigenvalues and eigenvectors obtained using programs such as ETABS. The tremendous computational advantages that can be gained by this modeling approach, adopted in 3D-BASIS for modeling the linear superstructure, coupled with: (i) modal reduction; and (ii) pseudoforce solution procedure with equilibrium iterations, makes the algorithm in 3D-BASIS highly efficient. The only disadvantage of using eigenvalues and eigenvectors for modeling the superstructure in 3D-BASIS is that superstructure member forces cannot be computed. Hence, the design of beam and column members should be based on pseudo-static analysis performed using the computed global time history response at the center of mass of the floors.

The program 3D-BASIS-TABS described in this report is designed to overcome this limitation. Linear elastic elements available in ETABS are adopted in 3D-BASIS-TABS to model the three dimensional superstructure. The condensation, global assembly and back substitution procedures from ETABS are also adopted. The time history of member forces are computed by back substitution, after the nonlinear time history analysis is completed, and peak member forces are output to facilitate the design of members.

2.1 COMPUTER PROGRAM 3D-BASIS

Computer program 3D-BASIS (Nagarajaiah et al. 1990,1991) is a special purpose program for nonlinear dynamic analysis of three dimensional base isolated structures. A typical multistory base isolated building that can be analyzed by 3D-BASIS, along with the relevant degrees of freedom, is shown in Fig. 1.1. The superstructure is modeled with three degrees of freedom attached to the center of mass of each floor. The base and floors are assumed to be rigid diaphragms. The 3D-superstructure is modeled as an elastic frame-shear wall structure and nonlinear behavior is restricted to the base. The isolation system is modeled with spatial distribution and explicit nonlinear force-displacement characteristics of individual isolation devices. Library of isolation elements includes linear spring element, linear viscous damper element, sliding bearing elements, elastomeric bearing element and steel damper element. The hysteretic model used to model the isolators is a differential equation model which can represent the nonlinear biaxial characteristics of the isolators. The time domain solution algorithm developed, consisting of the pseudoforce method with iteration, is suitable for the solution of stiff differential equations that arise in sliding systems due to stick-slip behavior.

2.2 SALIENT FEATURES OF 3D-BASIS

Salient features of 3D-BASIS which make it specially suitable for analysis of base isolated structures with different isolation systems are:

(1) Capability to analyze isolation systems that are a combination of elastomeric and sliding isolation systems;

(2) Unified model capable of representing the biaxial behavior of either elastomeric or sliding bearings and other isolation devices;

(3) Capability to capture the highly nonlinear behavior of sliding isolation systems in plane motion;

(4) Pseudo-force solution algorithm for accurate and efficient solution of stiff differential equations that arise in sliding systems due to stick-slip behavior;

(5) Solution algorithm with the accuracy of predictor-corrector methods and efficiency suitable for analyzing large base isolated structures;

(6) Capability to model multistory base isolated buildings and capture the lateral-torsional behavior under bidirectional earthquake motion;

(7) Simplicity of input requirements and execution on both main and microcomputers.

With the aforementioned capabilities, 3D-BASIS has become increasingly popular amongst both researchers and practicing engineers leading to several applications: (i) preliminary studies in preparation for shake table tests at SUNY-Buffalo and UC-Berkeley; (ii) evaluation of the important effects of nonlinear biaxial interaction between orthogonal lateral forces in isolation bearings, on the response of base isolated structures, by Nagarajaiah et al. (1990) and by Mokha et al. (1993); (iii) simulation of shake table test results using measured properties of the structure and the isolation system (Nagarajaiah et al. 1992); (iv) study of lateral torsional response of base isolated structures (Nagarajaiah et al. 1993a;1993b); (v) evaluation of SEAOC code provisions for base isolated structures (Constantinou et al 1993; Theodossiou et al. 1991; Winters et al. 1993); (vi) analysis of new base isolated buildings and existing buildings to be retrofitted using base isolation (Amin et al. 1993a; 1993b; Asher et al. 1993; Button et al. 1993; Cho et al. 1993; Nagarajaiah et al. 1993; Palfalvi et al. 1993); and (vi) post-earthquake evaluation studies of existing base isolated buildings in seismically active areas such as the region of San-Andreas fault (Clark et al. 1993, Mitsusaka et al. 1993).

2.3 SUPERSTRUCTURE MODELING IN 3D-BASIS

The 3D superstructure is modeled as an elastic frame-shear wall structure and nonlinear behavior is restricted to the base. Coupled lateral-torsional response is accounted for by maintaining three degrees of freedom per floor, i.e., two translational and one rotational degree of freedom attached to the center of mass. The base and the floors are assumed to be rigid diaphragms.

Two options exist for modeling the superstructure:

(1) Three dimensional shear building representation in which the stiffness matrix of the superstructure is internally constructed by the program. It is assumed that the centers of mass of all the floors lie on a common vertical axis, floors and beams are rigid and walls and columns are inextensible.

(2) Full three dimensional representation in which the dynamic characteristics of the superstructure, such as frequencies and mode shapes supplied by user. [determined by computer programs such as ETABS (Wilson et al. 1975) and imported to program 3D-BASIS]. In this way, the axial deformation of columns; bending and shear deformation of column and beam members; and arbitrary location of the center of mass are implicitly accounted for. However, the model for dynamic analysis still maintains three degrees of freedom per floor because the other joint degrees of freedom are condensed out.

In both options, the data needed for dynamic analysis are the mass and the moment of inertia of each floor, frequencies, mode shapes and associated damping ratios for a given number of modes. A minimum of three modes of vibration of the superstructure need to be considered.

2.4 ISOLATION SYSTEM MODELING IN 3D-BASIS

The isolation system is modeled with spatial distribution and explicit nonlinear force-displacement characteristics of individual isolation devices. The isolation devices are considered rigid in the vertical direction and individual devices are assumed to have negligible resistance to torsion.

The following elements are available for modeling the behavior of an isolation system:

1. Linear elastic element (spring).
2. Linear viscous element (damper).
3. Hysteretic element for elastomeric bearings and steel dampers.
4. Hysteretic element for sliding bearings.

2.4.1 Linear Elastic Element

The linear elastic element can be used to approximately simulate the behavior of elastomeric bearings along with the viscous element. All linear elastic devices of the isolation system specified are combined internally by the program, in global elements having the combined properties of all the elastic devices, and total translational stiffnesses, K_x and K_y, and the rotational stiffness, K_r, with respect to the center of mass of the base.

2.4.2 Linear Viscous Element

The linear viscous element can be used to simulate the viscous properties of the isolation devices. All linear viscous devices specified are combined, internally in the program, in global viscous elements having the combined properties, and total translational damping coefficients C_x and C_y and rotational damping coefficient C_r with respect to the center of mass of the base.

2.4.3 Model for Biaxial Isolation Elements

At a bearing undergoing plane motion with displacement components U_x and U_y and velocity components $\dot{U}_x$ and $\dot{U}_y$ in the X and Y directions, lateral forces develop and these forces exhibit biaxial interaction. In addition, a torsional moment develops at the bearing. The contribution of this torsional moment to the total torque exerted to the structure supported by several bearings is insignificant.

The direction of the resulting force at the bearing opposes the direction of the motion given by:

$$\theta = \tan^{-1}\left(\frac{\dot{U}_y}{\dot{U}_x}\right) \qquad (2.1)$$

The model presented herein accounts for the direction and magnitude of the resulting hysteretic force.

The model for biaxial interaction is based on the following set of equations proposed by Park, Wen and Ang (1986):

$$\begin{Bmatrix} \dot{Z}_x \\ \dot{Z}_y \end{Bmatrix} = \frac{A}{Y}\begin{Bmatrix} \dot{U}_x \\ \dot{U}_y \end{Bmatrix} - \frac{1}{Y}\begin{pmatrix} Z_x^2(\gamma Sign(\dot{U}_x Z_x)+\beta) & Z_x Z_y(\gamma Sign(\dot{U}_y Z_y)+\beta) \\ Z_x Z_y(\gamma Sign(\dot{U}_x Z_x)+\beta) & Z_y^2(\gamma Sign(\dot{U}_y Z_y)+\beta) \end{pmatrix}\begin{Bmatrix} \dot{U}_x \\ \dot{U}_y \end{Bmatrix} \qquad (2.2)$$

in which, Z_x and Z_y are hysteretic dimensionless quantities, Y is the yield displacement, A, γ and β are dimensionless quantities that control the shape of the hysteresis loop. The values of $A = 1$, $\gamma = 0.9$ and $\beta = 0.1$ are used in this report. When yielding commences, Eq. 2.2 has the following solution provided that $A/(\beta + \gamma) = 1$ (Constantinou et al. 1990):

$$Z_x = \cos\theta, \quad Z_y = \sin\theta \qquad (2.3)$$

Z_x and Z_y are bounded by values ± 1 and account for the direction and biaxial interaction of hysteretic forces. The interaction curve given by Eq. 2.2 is circular.

2.4.3.1 Biaxial Element for Sliding Bearings

For a sliding bearing, the mobilized forces are described by the equations (Constantinou et al. 1990):

$$F_x = \mu_s W Z_x, \quad F_y = \mu_s W Z_y \tag{2.4}$$

in which, W is the vertical load carried by the bearing and μ_s is the coefficient of sliding friction which depends on the value of bearing pressure, angle θ and the instantaneous velocity of sliding $\dot{U}$:

$$\dot{U} = (\dot{U}_x^2 + \dot{U}_y^2)^{1/2} \tag{2.5}$$

Z_x and Z_y which are bounded by the values ± 1, account for the conditions of separation and reattachment (instead of a signum function) and also account for the direction and biaxial interaction of frictional forces.

The coefficient of sliding friction is modeled by the following equation (Constantinou et al. 1990):

$$\mu_s = f_{max} - \Delta f \cdot \exp(-a|\dot{U}|) \tag{2.6}$$

in which, f_{max} is the maximum value of the coefficient of friction and Δf is the difference between the maximum and minimum (at $\dot{U} \sim 0$) values of the coefficient of friction. f_{max}, Δf and a are functions of bearing pressure and angle θ (Constantinou et al. 1990). To account for the effects of axial load, the parameters are adjusted based on experimental results (Mokha et al. 1993). The dependency on the angle θ is negligible and hence neglected.

2.4.3.2 Biaxial Model for Elastomeric Bearings and Steel Dampers

For an elastomeric bearing, the mobilized forces are described by the equations:

$$F_x = \alpha \frac{F^y}{Y} U_x + (1-\alpha) F^y Z_x, \quad F_y = \alpha \frac{F^y}{Y} U_y + (1-\alpha) F^y Z_y \tag{2.7}$$

in which, α is the postyielding to preyielding stiffness ratio, F^y is the yield force and Y is the yield displacement. Z_x and Z_y account for the direction and biaxial interaction of hysteretic forces.

2.4.4 Model for Uniaxial Isolation Elements

The biaxial interaction can be neglected when the off-diagonal elements of the matrix in Eq. 2.2 are replaced by zeros. This results in a uniaxial model with two either frictional or bilinear independent elements in the two orthogonal directions. Eq. 2.2 collapses to the uniaxial model governed by the following equation (Wen, 1976):

$$\dot{Z} Y = A\dot{U} - |Z|^{\eta}(\gamma Sgn(\dot{U} Z) + \beta)\dot{U} \tag{2.8}$$

where $\eta = 2$ in the biaxial case and this parameter controls the transition from elastic range to the post yielding range. The value of this parameter can be increased to achieve near-bilinear behavior rather than smooth bilinear behavior. When the ratio $A/(\beta + \gamma) = 1$ the model reduces (Constantinou et al. 1990) to a model of viscoplasticity.

The interaction curve in the uniaxial case is effectively square. In the case of uniaxial sliding element the velocity used for calculation of the coefficient of friction from Eq. 2.6 is either $\dot{U}_x$ or $\dot{U}_y$.

2.4.5. Validity of the Biaxial Elements

The validity of the biaxial elements was verified by comparison with the experimental results of: (i) tests on Teflon-steel sliding bearings under simultaneous compression and high velocity bidirectional motion (Mokha et al. 1993) shown in Fig. 2.1; and (ii) tests on steel rod dampers under bidirectional motion (Yasaka et al. 1988) shown in Fig. 2.2. The simulated and experimental results from Nagarajaiah et al. (1993a;1991b) shown in Fig. 2.1 and 2.2 indicate good agreement.

From the comparison with experimental biaxial force-displacement loops, the accuracy of the hysteretic model in 3D-BASIS is evident. Further verification of the hysteretic model in 3D-BASIS by comparison with test results can be found in Nagarajaiah et al. (1991;1990).

2.4.6 Global System Assembly and Pseudoforce Solution Algorithm in 3D-BASIS

The global system assembly, of the 3D-superstructure and the isolation system, has been described in Nagarajaiah et al. (1991). The incremental nonlinear force vector in the equations of motion is brought on to the right hand side and treated as a pseudoforce vector. The two step solution algorithm that was developed by Nagarajaiah et al. (1991) is as follows:

1. The solution of equations of motion using unconditionally stable Newmark's constant-average-acceleration method;
2. The solution of differential equations governing the behavior of the nonlinear isolation elements using unconditionally stable semi-implicit Runge-Kutta method suitable for solution of stiff differential equations.

2.4.7 Validity of the Analytical Model and Solution Algorithm in 3D-BASIS

The validity of the analytical model and solution algorithm used in 3D-BASIS was demonstrated further, by Nagarajaiah et al. (1993a), by comparison with experimental results from bidirectional shake table tests on a sliding isolated model by Hisano et al. (1988).

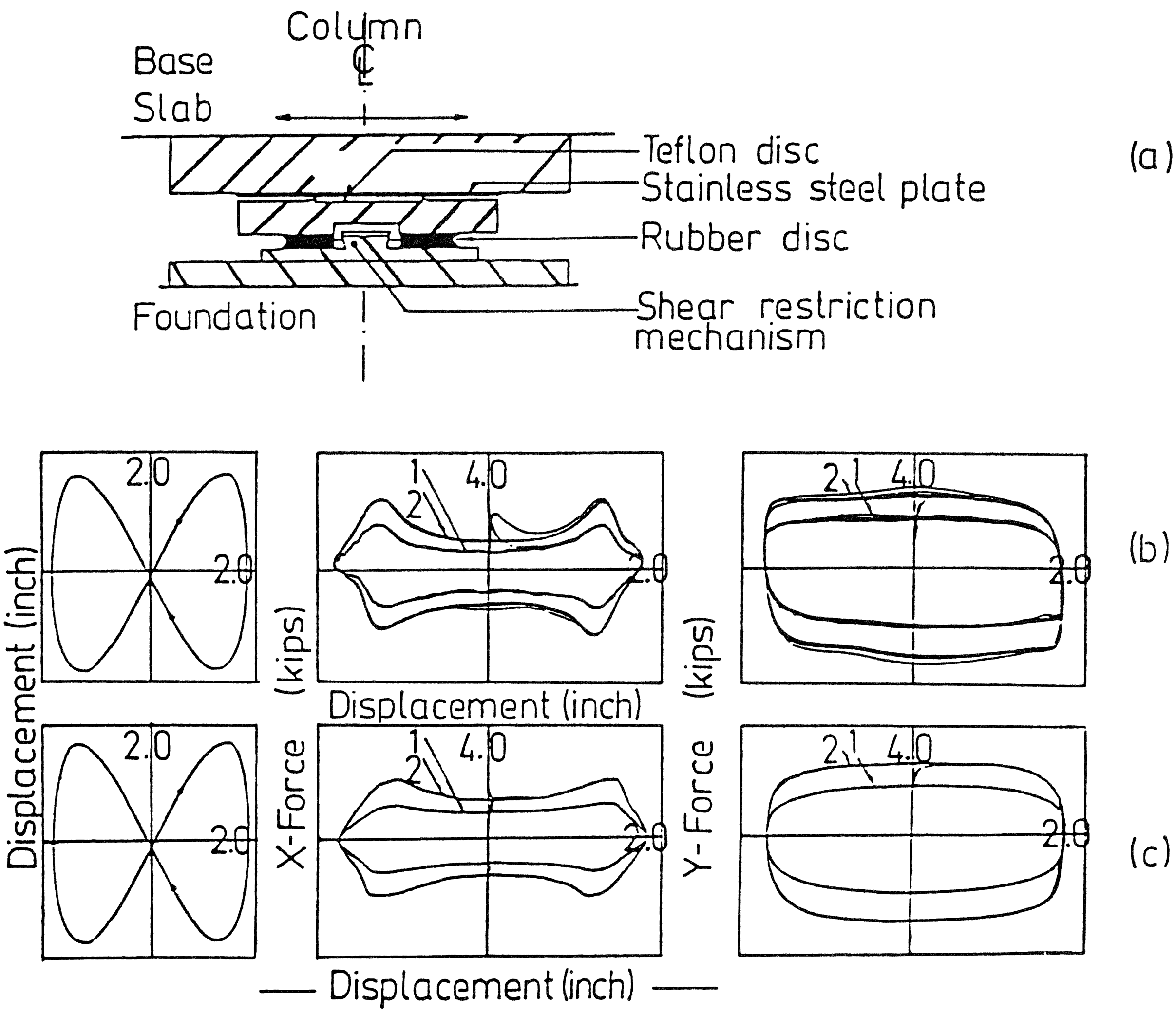


FIG. 2.1. Validity of the Biaxial Sliding Element in 3D-BASIS: (a) Section of Teflon Disc Sliding Bearing; (b) Measured Biaxial Force - Displacement Response of Sliding Bearing; (c) Simulated Biaxial Force - Displacement Response of Sliding Bearing

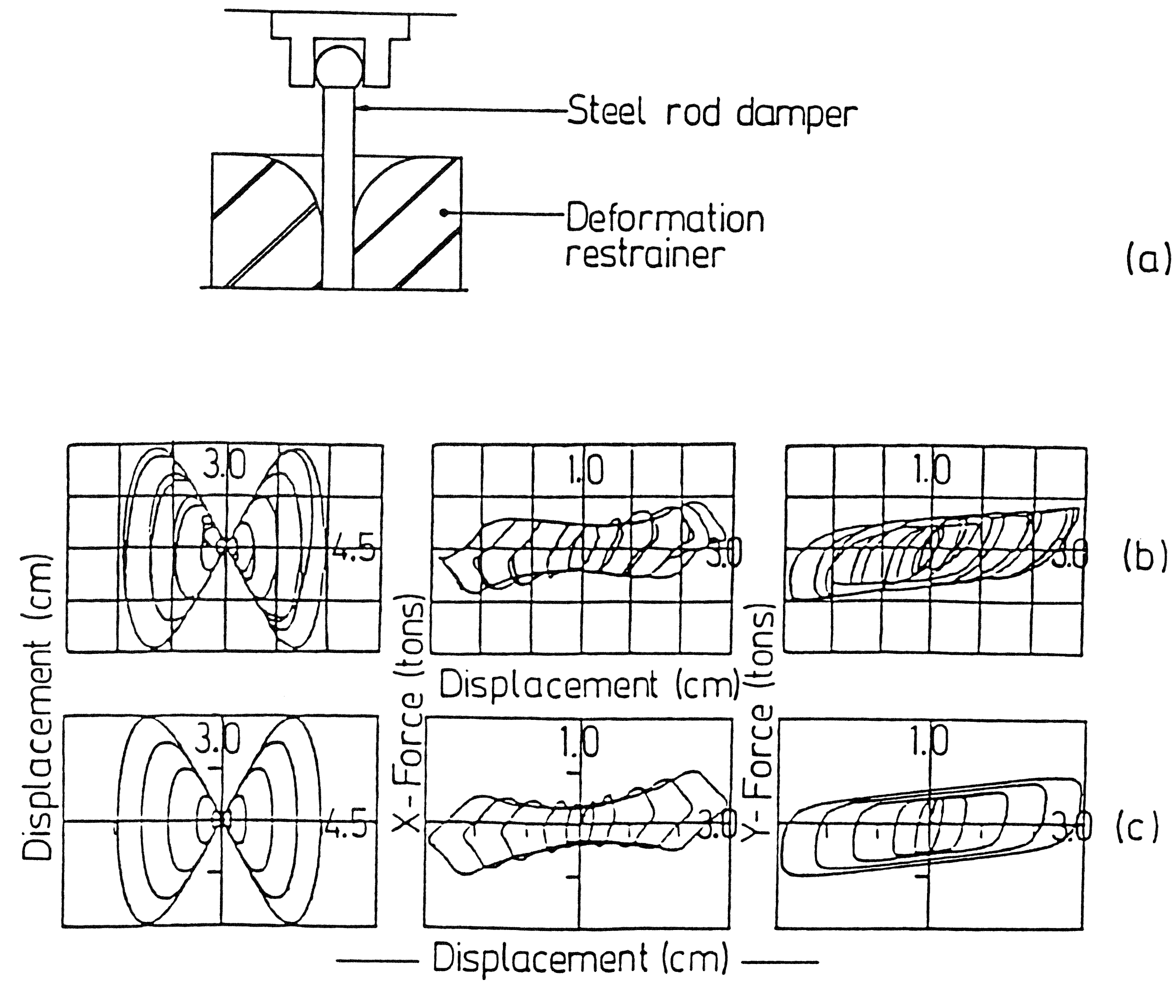


FIG. 2.2. Validity of the Biaxial Element for Steel Dampers in 3D-BASIS: (a) Section of Steel Damper; (b) Measured Biaxial Force - Displacement Response of Steel Damper; (c) Simulated Biaxial Force - Displacement Response of Steel Damper

The tested model was a 1/8 scale steel structure, 120 in (3048 mm) long and 90 in (2286 mm) wide, on a sliding isolation system consisting of 9 sliding bearings with 4 rubber springs. The model weighed 10.1 tons (101 kN), with 8.05 tons (80.5 kN) of superstructure weight and 2.05 tons (20.5 kN) of base weight. The radius of gyration was $r = 0.29\,L$. The model had symmetric stiffness and mass properties. For the scaled superstructure, the uncoupled lateral period was 0.11 sec (corresponding to 0.3 sec in prototype) and the uncoupled torsional period was 0.07 sec (0.2 sec in prototype). The damping ratio measured in the superstructure was 1%. For the isolation system, the uncoupled lateral period was 0.35 sec (1.0 sec in prototype) and the uncoupled torsional period was 0.208 sec (0.588 sec in prototype). The diameter of the sliding bearings were between 2.75 in (69.85 mm) and 1.4 in (35.56 mm). The maximum bearing pressure during tests was 900 psi (6.21 MPa). The coefficient of friction was measured to vary between 0.10 and 0.15. The model structure was excited by time scaled accelerations of 1940 El Centro NS and EW components. The peak table acceleration in both the directions was scaled up by a factor of 1.5. Fig. 2.3 shows the measured and simulated frame acceleration and the base displacement in the NS direction, and the displacement orbit of the center of mass of the base. The historical accelerogram of 1940 El Centro motion scaled appropriately was used as the excitation for the analytical simulation, as the achieved shake table acceleration time history was not available. Despite this, a comparison between the measured and simulated results show good agreement, including major features of the displacement orbit.

From the above comparison with shake table test results, the accuracy of the analytical model and solution algorithm in 3D-BASIS is evident. Further verification of 3D-BASIS by comparison with unidirectional shake table test results and results from general purpose finite element computer programs such as ANSR (Mondkar et al. 1975) and DRAIN-2D (Kannan et al. 1975) has been presented by the authors (Nagarajaiah et al. 1991b).

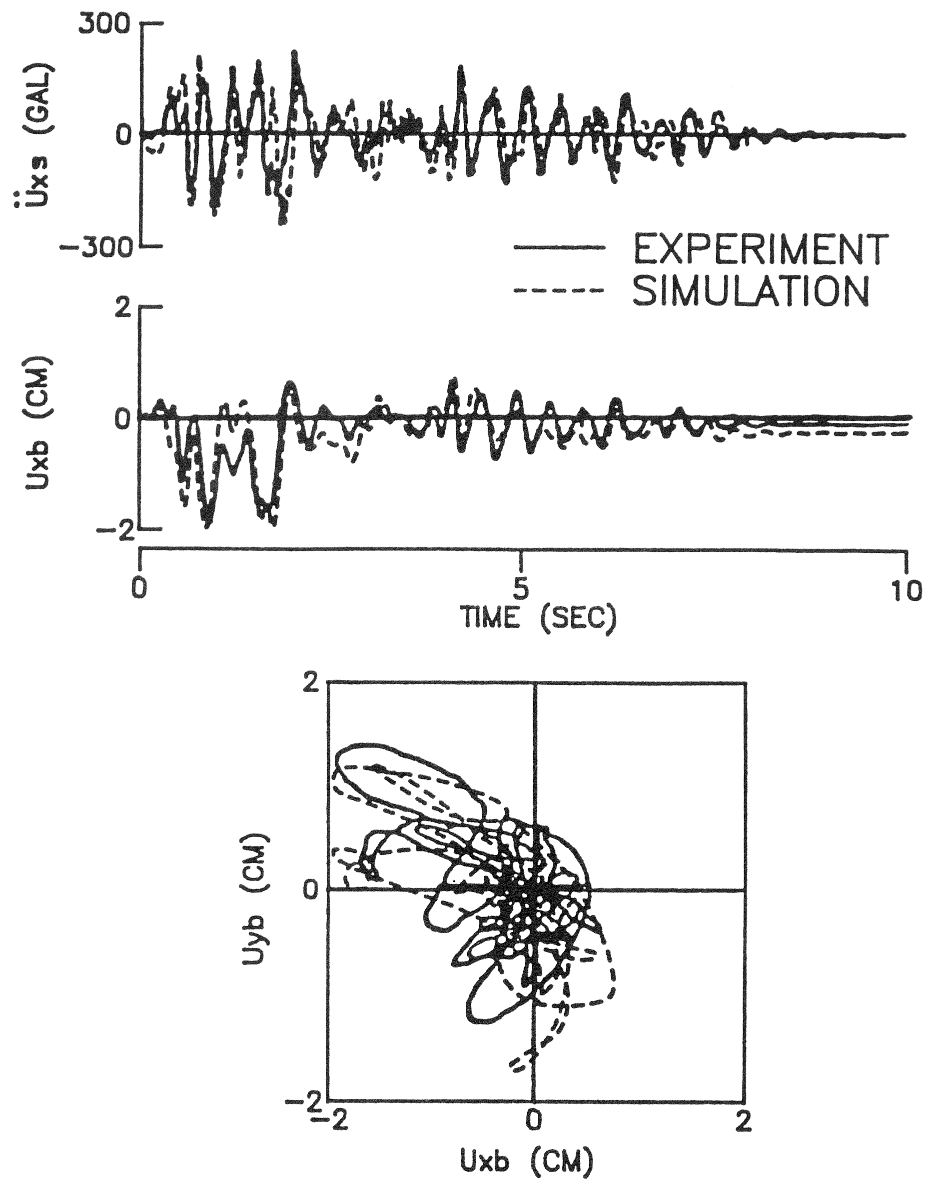


FIG. 2.3. Comparison of Simulated (3D-BASIS) and Measured Results of Bidirectional Shake Table Tests of a Sliding Isolated Structure with El Centro Excitation. $\ddot{U}_{xs}$ - Superstructure Acceleration Response in X Dir.; U_{xb} - Base Displacement Response in X Dir.; U_{yb} - Base Displacement Response in Y Dir.

2.5 3D-BASIS APPLICATIONS

3D-BASIS is a useful tool for experimental studies, for response prediction and for postprocessing data. Among these applications was an analytical study of a shake table test performed on a six-story-steel-structure at SUNY-Buffalo with a sliding isolation system (Nagarajaiah et al. 1992). Applications at UC Berkeley include preliminary studies for a shake table test of a 1/2.5 scale reinforced concrete three-story-structure with three types of isolation systems (Aiken et al. 1993). 3D-BASIS has been also used to evaluate the important effects of nonlinear biaxial interaction, between orthgonal lateral forces in isolation bearings, on the response of base isolated structures, by Nagarajaiah et al. (1990), and by Mokha et al. (1993).

In a more recent application, 3D-BASIS has been used in the study of lateral-torsional response of base isolated structures. The important system parameters which influence the lateral-torsional of response of: (i) sliding isolated structures (Nagarajaiah et al. 1993a) and (ii) elastomeric isolated structures (Nagarajaiah et al. 1993b) were studied. It was shown that although small in magnitude significant torsional effects could occur in the total response depending on the system parameters.

3D-BASIS has been recently used in evaluation of SEAOC code provisions for base isolated structures (Constantinou et al. 1993; Theodossiou et al. 1991;Winters et al. 1993). These studies, conducted at SUNY-Buffalo, involved structures ranging from one to eight stories with different isolation systems and involved statistical evaluation. The structures were excited by historical strong ground motions and spectrum compatible simulated motions.

Another application is a post-earthquake evaluation study and performance evaluation of Foothill Communities Law and Justice Center, San Bernardino, California, and some other Japanese buildings under actual earthquakes (Clark et al 1993; Mitsusaka et al 1993).

Some recent use of 3D-BASIS was in retrofit projects such as: (i) the Court of Appeals Building in San Francisco, by consulting firm Skidmore, Owings and Merrill and Associates (Amin et al. 1993a; 1993b); (ii) State of California Justice Building, San Francisco, and Hayward City Hall, Hayward, by Charles Kircher and Associates and (iii) Los Angeles County emergency operations center, by the consulting firm Daniel, Mann, Johnson & Mendenhall and Associates (Cho et al. 1993). In a recent application 3D-BASIS was used in the design verification of a new base isolated structure, the Martin Luther King Hospital in Los Angeles, by Office of Statewide Health Planning and Development, California.

Microcomputer PC-DOS/WINDOWS versions of 3D-BASIS and 3D-BASIS-M have also been developed and made available through the National Center for Earthquake Engineering and the National Information Service in Earthquake Engineering. This has greatly facilitated the usage of 3D-BASIS in design offices which have in-house microcomputers. The versatility of 3D-BASIS stems from the fact that it can analyze base isolated structures like sliding structures with great accuracy and yet complete the analysis in reasonable CPU time on a microcomputer. Furthermore, simplicity of input requirements and fast execution on microcomputers make the program attractive to the designers of base isolated structures.

2.6 COMPUTER PROGRAM ETABS

Computer program ETABS (Wilson et al. 1975) is a special purpose program for linear structural analysis of frame and shear wall structures subjected to both static and earthquake loadings. This program and its new PC based versions are widely used for several decades.

2.7 SALIENT FEATURES OF ETABS

Salient modeling and analysis features of ETABS are as follows (Wilson et al. 1975):

(1) Nonsymmetric, nonrectangular multistory buildings which have frames and shear walls located arbitrarily in plan can be modeled;

(2) The structure is idealized as a system of frame and shear wall substructures interconnected by floor diaphragms which are rigid in their own plane;

(3) Only three degrees of freedom, i.e., two translational and one rotational degree of freedom attached to the center of mass, are retained in the analysis after condensation of other frame-shear wall degrees of freedom;

(4) Beam, column, shear wall and diagonal bracing elements can be included;

(5) Axial deformation in columns and bending and shearing deformations in columns and beams can be included;

(6) Finite column and beam widths or "rigid zone" can be specified;

(7) Nonprismatic beams can be modeled;

(8) Vertical static loads can be combined with seismic loads;

(9) Time history or response spectrum analysis can be performed and peak member forces can be output.

Because of the aforementioned capabilities, ETABS is one of the most widely used programs by practicing engineers for analysis and seismic design of structures.

2.8 SUPERSTRUCTURE MODELING IN ETABS

The 3D superstructure is modeled as an elastic frame-shear wall structure. Coupled lateral-torsional response is accounted for by maintaining three degrees of freedom per floor, i.e., two translational and one rotational degree of freedom attached to the center of mass.

The complete structure composed of several frame and shear wall substructures is modeled with the assumption that these substructures are interconnected by floor diaphragms which are rigid in their own plane. Each joint in the structure is modeled with six degrees of freedom. Within each frame, three degrees of freedom (the two translations and one rotation in the floor plane) are transformed, using the assumption of rigid floor diaphragm, to the frame degrees of freedom at that floor level. The remaining three joint degrees of freedom are eliminated by static condensation before each frame substructure stiffness is added to the total structural stiffness. The total structural stiffness matrix corresponds to three degrees of freedom per floor at the center of mass.

The inherent assumptions in this approach, such as: (1) compatibility being not enforced with regard to displacements at joints which are common to more than one frame substructure; (2) approximate inclusion of the out-of-plane bending stiffness of the rigid floors while specifying beam properties; and (3) axial deformation of beams is not permitted because of rigid floor assumption, which has been described in detail by Wilson et al. (1975).

2.9 ELEMENTS FOR MODELING INDIVIDUAL MEMBERS

Beam, column, shear wall-panel and diagonal bracing elements in ETABS are linear elastic elements. Column elements are available for modelling prismatic column members only; however, beam elements are available and can either model prismatic or nonprismatic beam members; beam members must be symmetric about their vertical midplane. Axial deformation in columns and bending and shearing deformations in columns and beams can

Finite column and beam widths or "rigid zone" are explicitly accounted for. The panel element available for modelling infill panels and discontinuous shear walls has two modelling options: (i) a "flexural" model which carries both bending and shear; and (ii) a "pure shear" model which is restricted to carrying only shear. The diagonal bracing element available is a truss element and can be placed in any arbitrary story of the frame. A complete description of the element stiffness matrices and modeling options can be found in Wilson et al. (1975).

2.10 FRAME SUBSTRUCTURE

The stiffness matrix of the frame substructure, planar or rectangular with arbitrary plan, is assembled first, following which, the global stiffness matrix of the whole structure is constructed by direct stiffness approach using individual frame substructure stiffness matrices. The frame reference axis and the reference lines, formed by column lines and floor levels, are used for describing connectivity. A complete description of the lateral frame stiffness matrix assembly and static condensation can be found in Wilson et al. (1975). Vertical loading is applied to the individual frames by means of sets of fixed end forces associated with each beam.

2.11 GLOBAL STIFFNESS MATRIX AND SOLUTION ALGORITHM

The global displacement coordinate system consists of two translations and one rotation in the floor plane attached to the center of mass; hence, the mass matrix is diagonal. The position of the center of mass at each story level may vary from story to story. The center of mass of each floor is defined with reference to global structure axes. The global stiffness matrix is assembled by transforming the frame substructure stiffness matrices to the global coordinate system. Gaussian elimination is used for solution in static load cases and step-by-step modal solution procedure is used for earthquake response. A complete description of the global stiffness matrix assembly and solution procedure can be found in Wilson et al. (1975).

2.12 CONCLUDING REMARKS

It is evident from the overview of 3D-BASIS and ETABS that the two programs have special features which can be integrated to develop a more comprehensive program for analysis of base isolated structures. The intent of 3D-BASIS-TABS is to integrate structural capabilities of ETABS with the nonlinear analysis of base isolations from 3D-BASIS. The subsequent sections describe these new developments.

SECTION 3

3D-BASIS-TABS

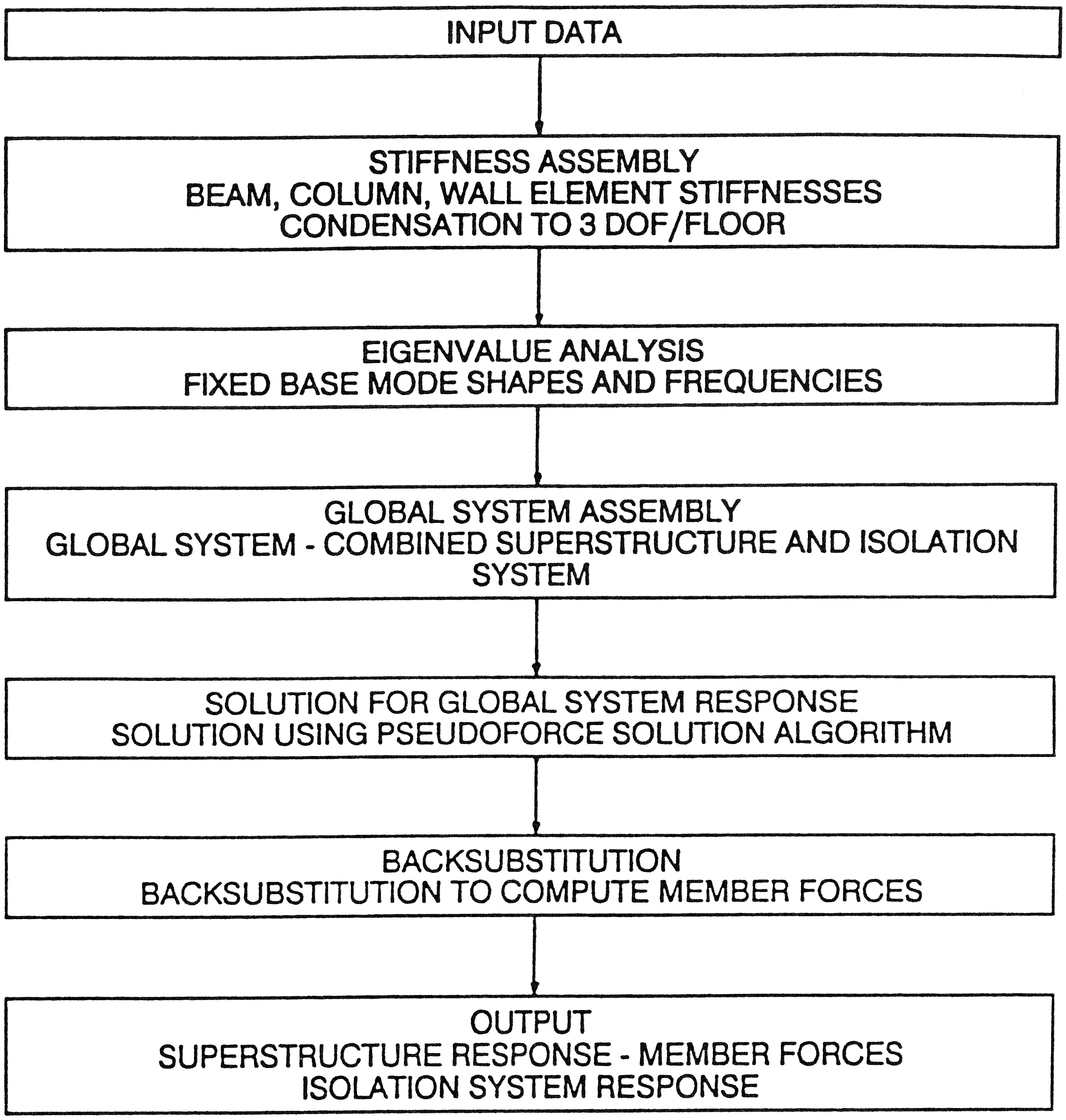
The structural model and the solution algorithm in 3D-BASIS-TABS are described in this section. The major steps in the solution algorithm are presented in the Flowchart 3.1. The detailed description of each step is described in the following sections.

3.1 INPUT DATA

The input format has been retained in the same format as in ETABS to facilitate usage (since many engineers and researchers are familiar with the superstructure input requirements for ETABS). The data in the form of beam, column, shear wall, and bracing member properties, connectivity, etc., need to be input. In addition the isolation system data in the form of isolator properties, connectivity, etc., need to be input. The data needed for the dynamic analysis also has to be input. The user's manual in APPENDIX A specifies the data input requirements.

3.2 SUPERSTRUCTURE STIFFNESS ASSEMBLY

3D-BASIS-TABS is designed to include three options for modeling the superstructure. Option 1 for 3D-shear building in which story shear stiffnesses are to be input. Option 2 for full 3D-building in which member properties for beam, column, etc., are to be input for detailed member by member representation of the superstructure. Option 3 for full 3D-building in which eigenvalues/eigenvectors (computed using ETABS) are to be input. Option 1 and Option 3 are cases which have been described in detail by the authors (Nagarajaiah et al., 1991) in 3D-BASIS. If Option 1 or 3 is used, member forces are not output, as no data for representing members is available.



FLOW CHART OF MAJOR STEPS IN 3D-BASIS-TABS

In Option 2, assembly of the stiffness matrix of the frame substructure described in Section 2.8 from ETABS is adopted. Each joint in the structure is modeled with six degrees of freedom. Within each frame joint three degrees of freedom (the two translations and one rotation in the floor plane) are transformed, using the rigid floor diaphragm, to the frame degrees of freedom at that floor level. The remaining three frame joint degrees of freedom are eliminated by static condensation before each frame substructure stiffness is added to the total structural stiffness. The global degrees of freedom retained after condensation are three degrees of freedom per floor. The global stiffness matrix of the superstructure in the fixed base condition is used for eigenvalue analysis.

3.3 EIGENVALUE ANALYSIS

An eigenvalue analysis is undertaken to determine the eigenvalues and eigenvectors, i.e., frequencies and mode shapes in the fixed base condition using the global stiffness matrix. The frequencies and mode shapes are used in the global system assembly. The frequencies and mode shapes obtained correspond to the condensed three degrees of freedom per floor model.

3.4 ISOLATION SYSTEM MODELING

The isolation system is modeled with spatial distribution and explicit nonlinear force-displacement characteristics of individual isolation devices. The isolation elements in 3D-BASIS described in Section 2.4, such as: (i) linear elastic element; (ii) linear viscous element; (iii) hysteretic element for elastomeric bearings and steel dampers; and (iv) hysteretic element for sliding bearings, can be specified.

3.5 GLOBAL SYSTEM ASSEMBLY

The formulation for global system assembly of the combined superstructure and the isolation system has been presented in detail by Nagarajaiah et al. (1991): hence, it is presented only briefly herein.

A typical base isolated multistory building and the displacement coordinates that will be used in the formulation are shown in Fig. 3.1 (U_i, U_b, U_g may be in X or Y direction). The superstructure is modeled as an elastic frame shear wall structure with three degrees of freedom per floor. The three degrees of freedom are attached to the center of mass of each floor and base. The floors and the base are assumed to be infinitely rigid inplane. The isolation system may consist of elastomeric and/or sliding isolation bearings, and other isolation series.

The equations of motion for the elastic superstructure are expressed in the following form:

$$\mathbf{M}_{nxn}\ddot{\mathbf{u}}_{nx1} + \mathbf{C}_{nxn}\dot{\mathbf{u}}_{nx1} + \mathbf{K}_{nxn}\mathbf{u}_{nx1} = -\mathbf{M}_{nxn}\mathbf{R}_{nx3}\{\ddot{\mathbf{u}}_g + \ddot{\mathbf{u}}_b\}_{3x1} \qquad (3.1)$$

in which, n is three times the number of floors, $\mathbf{M}$ is the diagonal superstructure mass matrix, $\mathbf{C}$ is the superstructure damping matrix, $\mathbf{K}$ is the superstructure stiffness matrix and $\mathbf{R}$ is the matrix of earthquake influence coefficients i.e. the matrix of displacements and rotation at the center of mass of the floors resulting from a unit translation in the X and Y directions and unit rotation at the center of mass of the base with respect to global structure reference axis. Furthermore, $\ddot{\mathbf{u}}$, $\dot{\mathbf{u}}$ and $\mathbf{u}$ represent the floor acceleration, velocity and displacement vectors relative to the base, $\ddot{\mathbf{u}}_b$ is the vector of base acceleration relative to the ground and $\ddot{\mathbf{u}}_g$ is the vector of ground acceleration.

The equations of motion for the base are as follows:

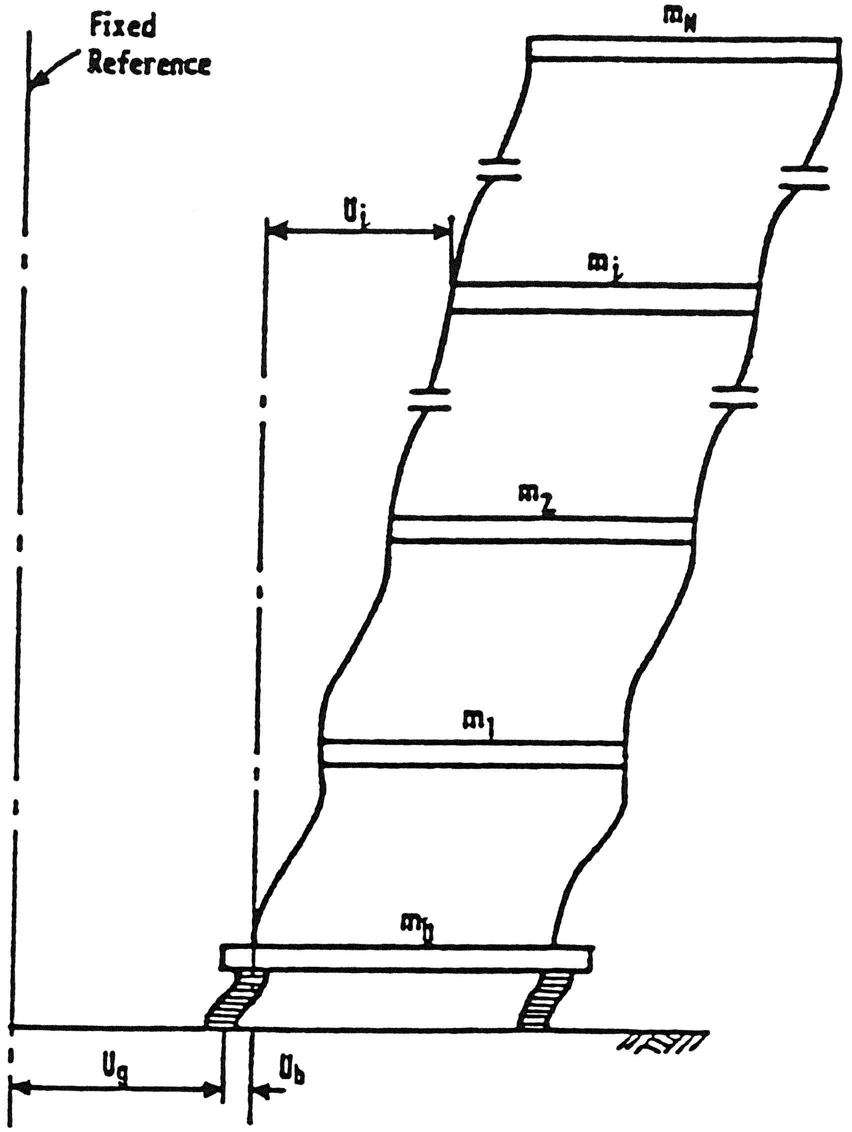


FIG. 3.1. Displacement Coordinates of the base isolated structure

$$R^T_{3xn} M_{nxn} \{\{\ddot{u}\} + R\{\ddot{u}_b + \ddot{u}_g\}\}_{nx1} + M_{b3x3}\{\ddot{u}_b + \ddot{u}_g\}_{3x1} + C_{b3x3}\{\dot{u}_b\}_{3x1} + K_{b3x3}\{u_b\}_{3x1} + \{f\}_{3x1} = 0 \tag{3.2}$$

in which, M_b is the diagonal mass matrix of the rigid base, C_b is the resultant damping matrix of viscous isolation elements, K_b is the resultant stiffness matrix of elastic isolation elements and $\mathbf{f}$ is the vector containing the forces mobilized in the nonlinear elements of the isolation system. Employing modal reduction:

$$u_n = \Phi_{nxm} u^*_{mx1} \tag{3.3}$$

in which, Φ is the modal matrix normalized with respect to the mass matrix and u^* is the modal displacement vector relative to the base and m is the number of eigenvectors retained in the analysis, and combining Eqs. 3.1 to 3.3 the following equation is derived:

$$\begin{pmatrix} [I] & [\Phi^T M R] \\ [R^T M \Phi] & [R^T M R + M_b] \end{pmatrix}_{(m+3)x(m+3)} \begin{Bmatrix} \ddot{u}^* \\ \ddot{u}_b \end{Bmatrix}_{(m+3)x1} + \begin{pmatrix} [2\xi_i \omega_i] & 0 \\ 0 & [C_b] \end{pmatrix}_{(m+3)x(m+3)} \begin{Bmatrix} \dot{u}^* \\ \dot{u}_b \end{Bmatrix}_{(m+3)x1}$$

$$+ \begin{pmatrix} [\omega_i^2] & 0 \\ 0 & [K_b] \end{pmatrix}_{(m+3)x(m+3)} \begin{Bmatrix} u^* \\ u_b \end{Bmatrix}_{(m+3)x1} + \begin{Bmatrix} 0 \\ f \end{Bmatrix}_{(m+3)x1} = - \begin{bmatrix} \Phi^T M R \\ R^T M R + M_b \end{bmatrix}_{(m+3)x3} \ddot{u}_{g3x1} \tag{3.4}$$

in which, ξ_i = the modal damping ratio and ω_i = the natural frequency, of the fixed base structure in the mode i. In Eq. 3.4 matrices $[2\xi_i\omega_i]$ and $[\omega_i^2]$ are diagonal.

Eq. 3.4 can be written as follows:

$$\tilde{M}\ddot{u}_t + \tilde{C}\dot{u}_t + \tilde{K}\bar{u}_t + f_t = \tilde{P}_t \tag{3.5}$$

At time $t + \Delta t$

$$\tilde{M}\ddot{u}_{t+\Delta t} + \tilde{C}\dot{u}_{t+\Delta t} + \tilde{K}\bar{u}_{t+\Delta t} + f_{t+\Delta t} = \tilde{P}_{t+\Delta t} \tag{3.6}$$

Written in incremental form

$$\tilde{M}\Delta\ddot{u}_{t+\Delta t} + \tilde{C}\Delta\dot{u}_{t+\Delta t} + \tilde{K}\Delta u_{t+\Delta t} + \Delta f_{t+\Delta t} = \tilde{P}_{t+\Delta t} - \tilde{M}\ddot{u}_t - \tilde{C}\dot{u}_t - \tilde{K}u_t - f_t \qquad (3.7)$$

In which, $\tilde{M}$, $\tilde{C}$, $\tilde{K}$ and $\tilde{P}$ represent the reduced mass, damping, stiffness and load matrices (see Eq. 3.4). Furthermore, the state of motion of modal superstructure and base is represented by vectors $\ddot{u}_t$, $\dot{u}_t$ and u_t (see Eq. 3.4).

3.6 LOADING CONDITIONS

Vertical static loading conditions for representing dead loads, and earthquake loading conditions for representing seismic excitation, can be specified. The vertical loading conditions can include up to three independent vertical load distributions (I, II, III) and these distributions are combined to form load cases for the complete building. For earthquake loading conditions, bidirectional lateral ground motions can be specified.

3.7 SOLUTION FOR GLOBAL SYSTEM RESPONSE

The incremental nonlinear force vector $\Delta f_{t+\Delta t}$ in Eq. 3.7 is unknown. This vector is brought on to the right hand side of Eq. 3.7 and treated as a pseudo-force vector. The two step solution algorithm developed is as follows:

(i) The solution of equations of motion using unconditionally stable Newmark's constant-average-acceleration method (Newmark 1959); (ii) The solution of the differential equations governing the behavior of the nonlinear isolation elements using unconditionally stable semi-implicit Runge-Kutta method (Rosenbrock 1964) suitable for solution of stiff differential equations.

Furthermore, an iterative procedure consisting of corrective pseudo-forces is employed within each time step until equilibrium is achieved. Detailed explanation of the solution algorithm can be found in Nagarajaiah et al. (1991a;1991b).

3.8 BACKSUBSTITUTION

The time history of member forces are computed by backsubstitution, after the non-linear time history analysis is completed, and the peak member forces are output to facilitate the design of members. The backsubstitution procedure described in section 2.11 (from ETABS) is adopted.

3.9 OUTPUT DATA

The output data consists of three sets: (i) input data for the structure and isolation system; (ii) dynamic characteristics of the structure; (iii) peak response results in the form of maximum response quantities; (iv) time history of response. The dynamic characteristics of the structure output are frequencies and mode shapes. The peak response results of member response and isolator response is output. The time history of isolator response, and other response quantities of interest are also output. A full range of options for output are available, the details of which can be found in the user's manual in APPENDIX A.

SECTION 4

VERIFICATION OF 3D-BASIS-TABS

A sliding isolated structure and a structure supported on a combined sliding-elastomeric isolation system are considered as case study since the novelty of 3D-BASIS-TABS (as well as 3D-BASIS) is that it can capture the highly nonlinear behavior of sliding isolation systems in plane motion accurately. The verification of 3D-BASIS-TABS was performed in two stages by dynamic analysis of a three story reinforced concrete building with a sliding isolation system.

The first stage verification was accomplished by comparing global results (results at the center of mass) of the program 3D-BASIS-TABS, modeling the superstructure explicitly element-by-element, with the results of the program 3D-BASIS (Nagarajaiah et al. 1991b) using the dynamic characteristics of the superstructure i.e., frequencies and mode shapes. The first stage verified the global results.

The second stage was accomplished by comparing the dynamic analysis results of the program 3D-BASIS-TABS, in the form of peak member forces at a chosen instant of time during the time history, with the results of a pseudo-static analysis using commercially available finite element program STAAD, which can analyze 3D - linear structures. The pseudo-static analysis using STAAD consisted of the application of lateral forces or inertial forces at the center of mass of the three floors at the same instant of time as chosen in 3D-BASIS-TABS time history analysis. The lateral forces or inertial forces were extracted from the dynamic analysis using 3D-BASIS-TABS. The second stage verified the member force computations in the program 3D-BASIS-TABS.

4.1 THREE STORY REINFORCED CONCRETE BASE ISOLATED BUILDING

A three story reinforced concrete building designed based on code provisions is considered. The building is square in plan and consists of three bays in each direction as shown in Fig. 4.1. The dimensions of the various members shown in Fig. 4.1 are: (i) beams 300 x 400 mm; (ii) interior columns 300 x 400 mm; (iii) exterior columns 300 x 300 mm; (iv) R/C bracing members 300 x 300 mm; and (v) shear wall or panel of 100 mm thickness. The floor slab is 150 mm thick. The floor masses are: (i) translational mass of 108317 kg (119.4 ton) and (ii) mass moment of inertia 2985.6kN-m. The modulus of elasticity of the concrete is assumed to be E_c = 29862560kN/m^2. The damping ratio in the superstructure is assumed to be 5% of critical.

The building is base isolated using a sliding isolation system as shown in Fig. 4.2. The sliding isolation system consists of 16 sliding bearings placed concentrically under each column and 4 recentering springs placed at the four corners of the building as shown in Fig. 4.3. Design of the isolation system is based on appropriate code provisions. The sliding isolation bearings are made of unfilled Teflon and polished stainless steel plates. The sliding bearings have a coefficient of friction $f_{max} = 0.10$ and $f_{min} = 0.07$. The recentering helical springs are designed to provide an isolation period T_b = 3 sec. The sliding bearings and helical springs are shown in Fig. 4.2 in greater detail (see the enlarged detail in Fig. 4.2).

3D-BASIS-TABS is used to analyze the base isolated building excited by El Centro NS earthquake. The input file and the output file for the three story base isolated building is given in Appendix B and C. The details about bay numbers and I.D. numbers of column lines are shown in Fig. 4.4 and should be read in conjunction with the input file in Appendix B.

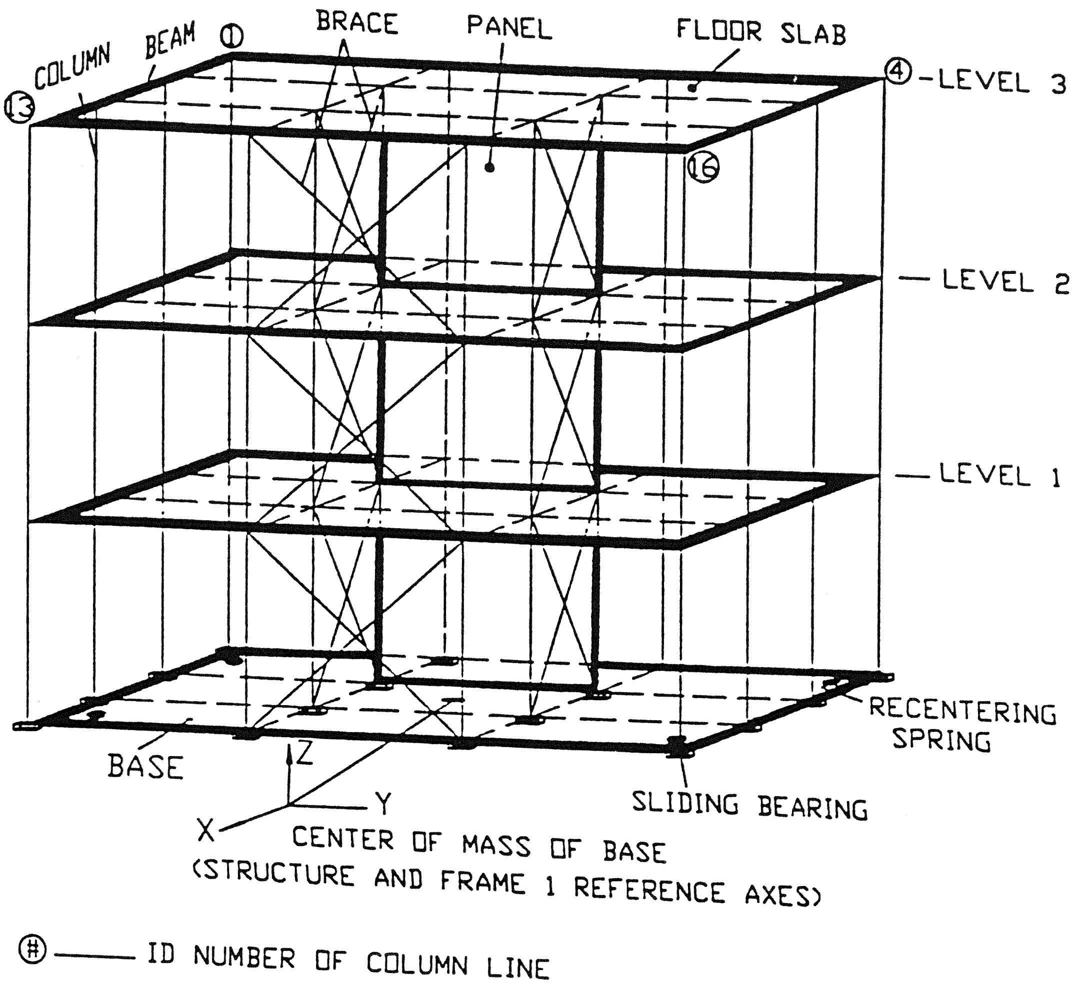


FIG. 4.1. Superstructure Member Configuration and Isolation System Configuration of the Three Story Reinforced Concrete Sliding Isolated Building. Note the Location of the Structure Axis at the Center of Mass of the Base and the Location of the Column Lines 1, 4, 13 and 16 (Refer to the Input File given in Appendix B)

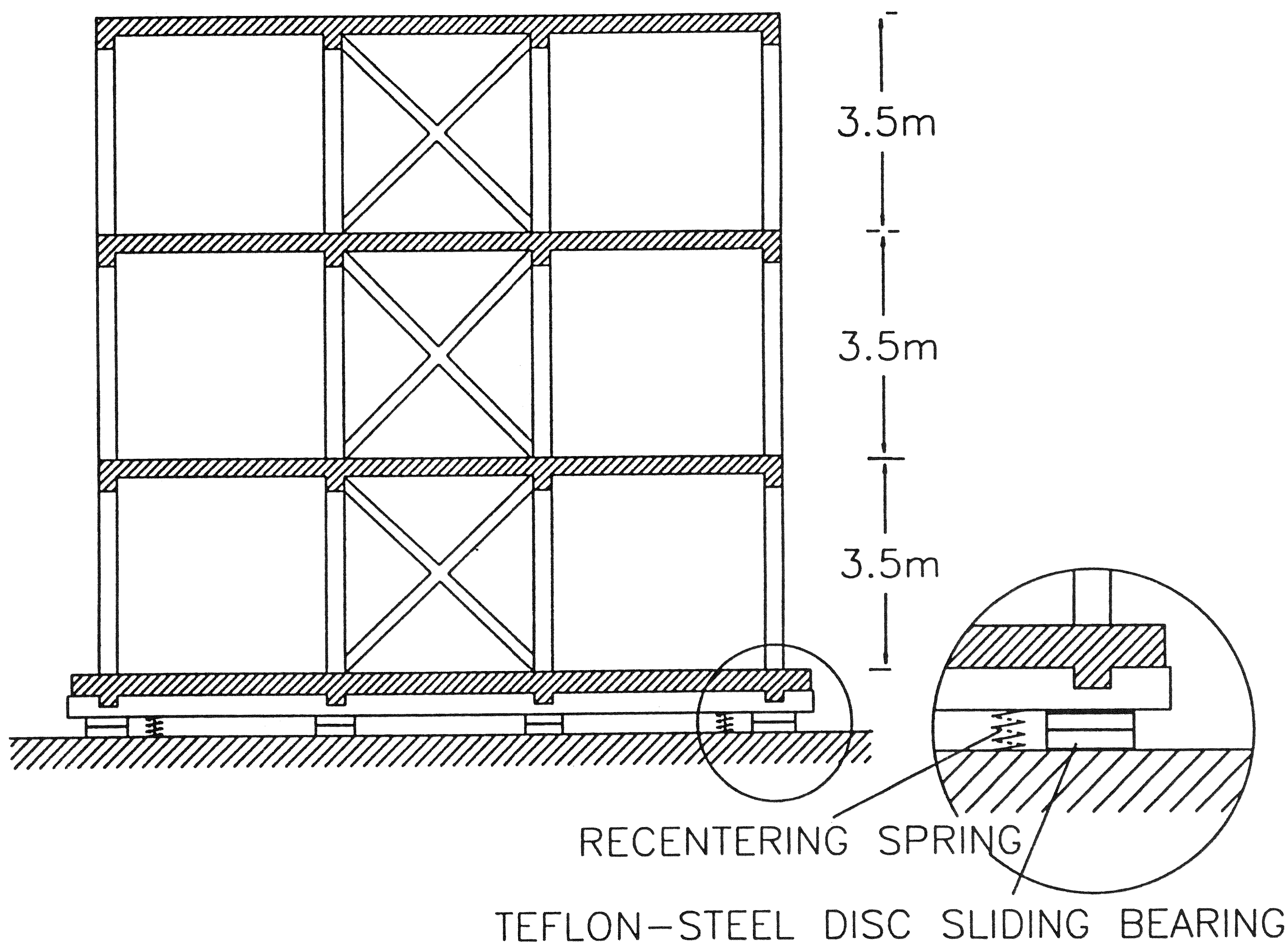


FIG. 4.2. Cross Section of the Three Story Reinforced Concrete Sliding Isolated Building (Left Extreme Column Line is 16 and Right Extreme Column Line is 13). Note the Details of the Sliding Bearing and Recentering Spring Shown in the Inset and Plan Location Shown in FIG. 4.3.

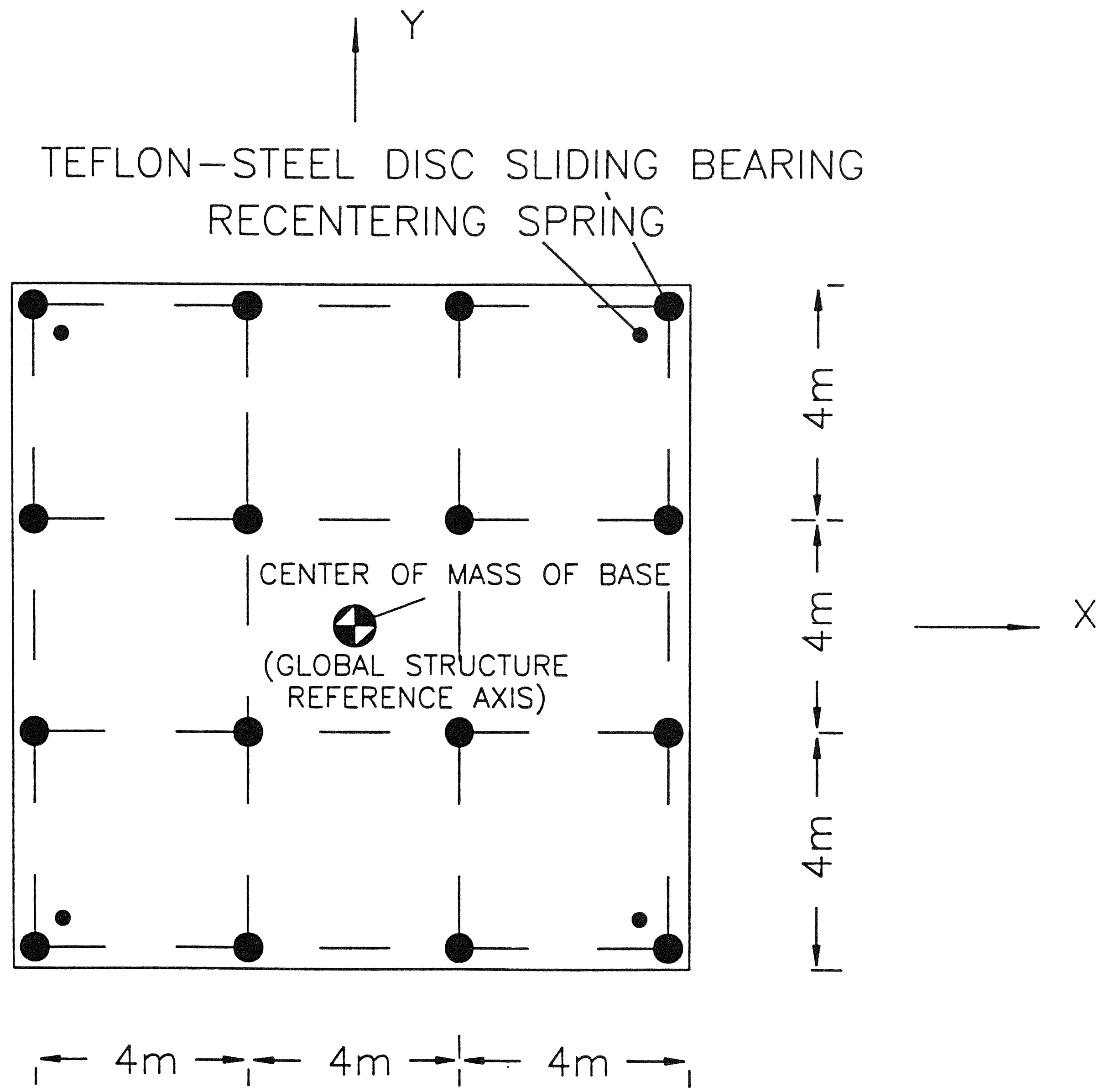


FIG. 4.3. Plan of the Sliding Isolation System with Teflon - Steel Disc Sliding Bearings and Recentering Springs

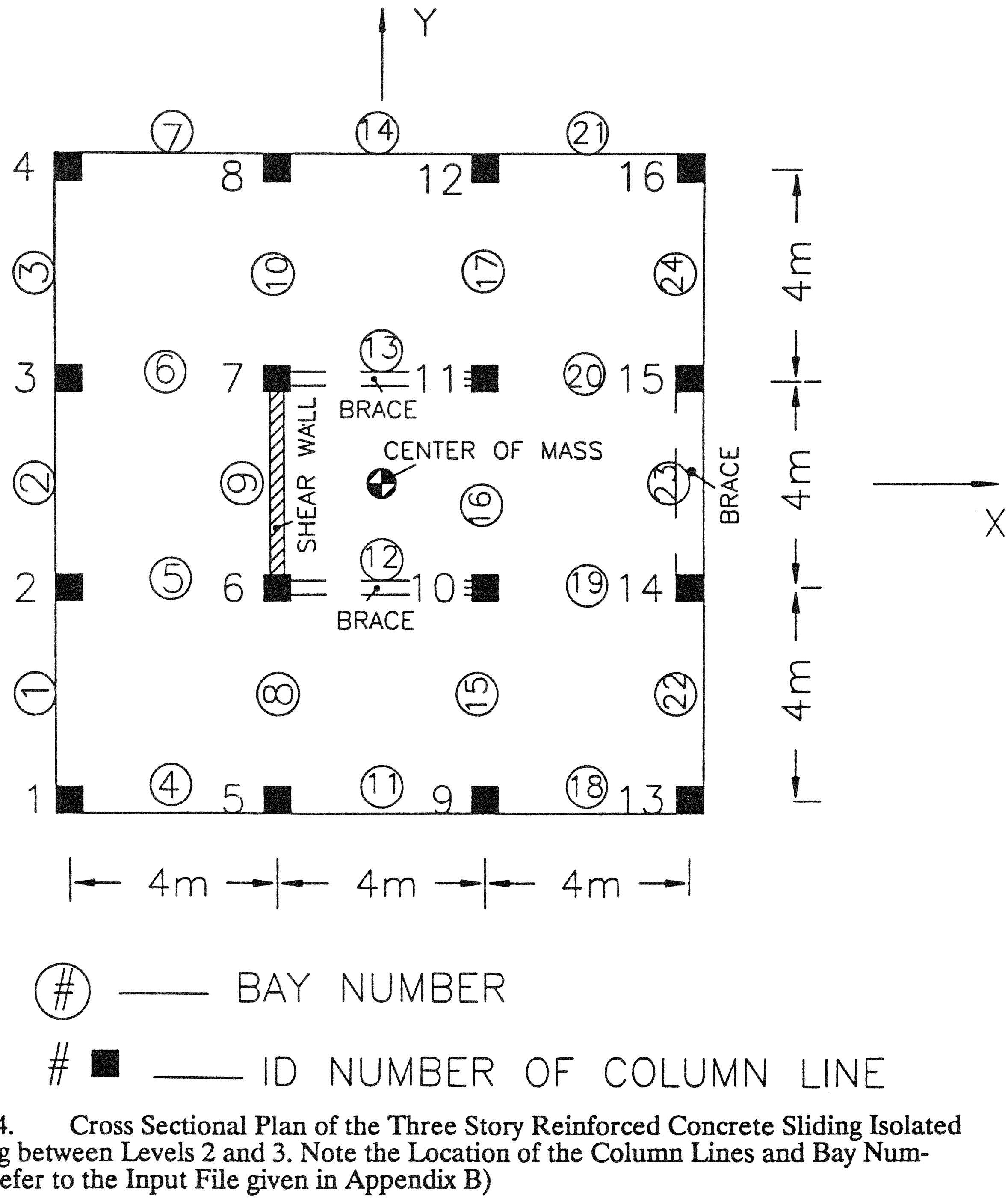


FIG. 4.4. Cross Sectional Plan of the Three Story Reinforced Concrete Sliding Isolated Building between Levels 2 and 3. Note the Location of the Column Lines and Bay Numbers (Refer to the Input File given in Appendix B)

4.1.1 Verification of Global Results

In order to verify the global response computed by 3D-BASIS-TABS i.e., at the center of mass of the floors, the same building was analyzed using 3D-BASIS (Nagarajaiah et al. 1991) with eigenvalues and eigenvectors of the three story building as the input for superstructure dynamic characteristics. A comparison of the results showed identical results in both cases, indicating the global response computed by 3D-BASIS-TABS to be accurate.

4.1.2 Verification of Member Force Computations

The local response results, in the form of peak member forces at a chosen instant of time ($t = 3.05\,\mathrm{sec}$) during the time history analysis of 20 secs under El Centro ground motion, were verified by comparing the results of 3D-BASIS-TABS with the results of a pseudo-static analysis using commercially available finite element program STAAD. The pseudo-static analysis using STAAD consisted of application of lateral forces or inertial forces at the center of mass of the three floors at the same instant of time as chosen in 3D-BASIS-TABS time history analysis. The lateral forces or inertial forces were extracted from the dynamic analysis using 3D-BASIS-TABS. A comparison between the member forces computed in 3D-BASIS-TABS and STAAD is shown in Table 4-1 and 4-2. Table 4-1 shows the column moments and forces. Table 4-2 shows the beam moments. It is evident from this comparison of results, obtained using 3D-BASIS-TABS and STAAD, that the member force computations in 3D-BASIS-TABS are accurate.

4.1.3 Time History Response

The time history of base displacement, roof displacement, and force displacement response of bearing no. 1, are shown in Fig. 4.5. Identical time history response was obtained by using 3D-BASIS-TABS and 3D-BASIS.

Table 4-1 Comparison of Column Forces

Floor	Member ID	3D-BASIS-TABS					STADDIII				
		MOM-X (kN-m)	MOM-Y (kN-m)	SH-X (kN)	SH-Y (kN)	AXIAL (kN)	MOM-X (kN-m)	MOM-Y (kN-m)	SH-X (kN)	SH-Y (kN)	AXIAL (kN)
	COL.#1(TOP)	9.75	0.06	7.43	0.03	23.43	7.73	0.06	7.42	0.03	23.41
1st	COL.#1(BOT.)	13.29	0.03	7.43	0.03	23.43	13.28	0.03	7.42	0.03	23.41
	COL.#1(TOP)	9.63	0.11	6.19	0.07	14.33	9.62	0.10	6.18	0.06	14.30
2nd	COL.#1(BOT.)	9.61	0.10	6.19	0.07	14.33	9.61	0.09	6.18	0.06	14.30
	COL.#1(TOP)	10.26	0.21	6.15	0.12	5.06	10.24	0.20	6.14	0.11	5.03
3rd	COL.#1(BOT.)	8.82	0.16	6.15	0.12	5.06	8.81	0.15	6.14	0.11	5.03

Table 4-2 Comparison of Beam Moments

Floor	Member ID	3D-BASIS-TABS		STADDIII	
		I-MOM (kN-m)	J-MOM (kN-m)	I-MOM (kN-m)	J-MOM (kN-m)
1st	BEAM AT BAY #4	18.95	15.69	18.94	15.68
2nd	BEAM AT BAY #4	18.50	15.58	18.48	15.56
3rd	BEAM AT BAY #4	10.29	8.26	10.28	8.25

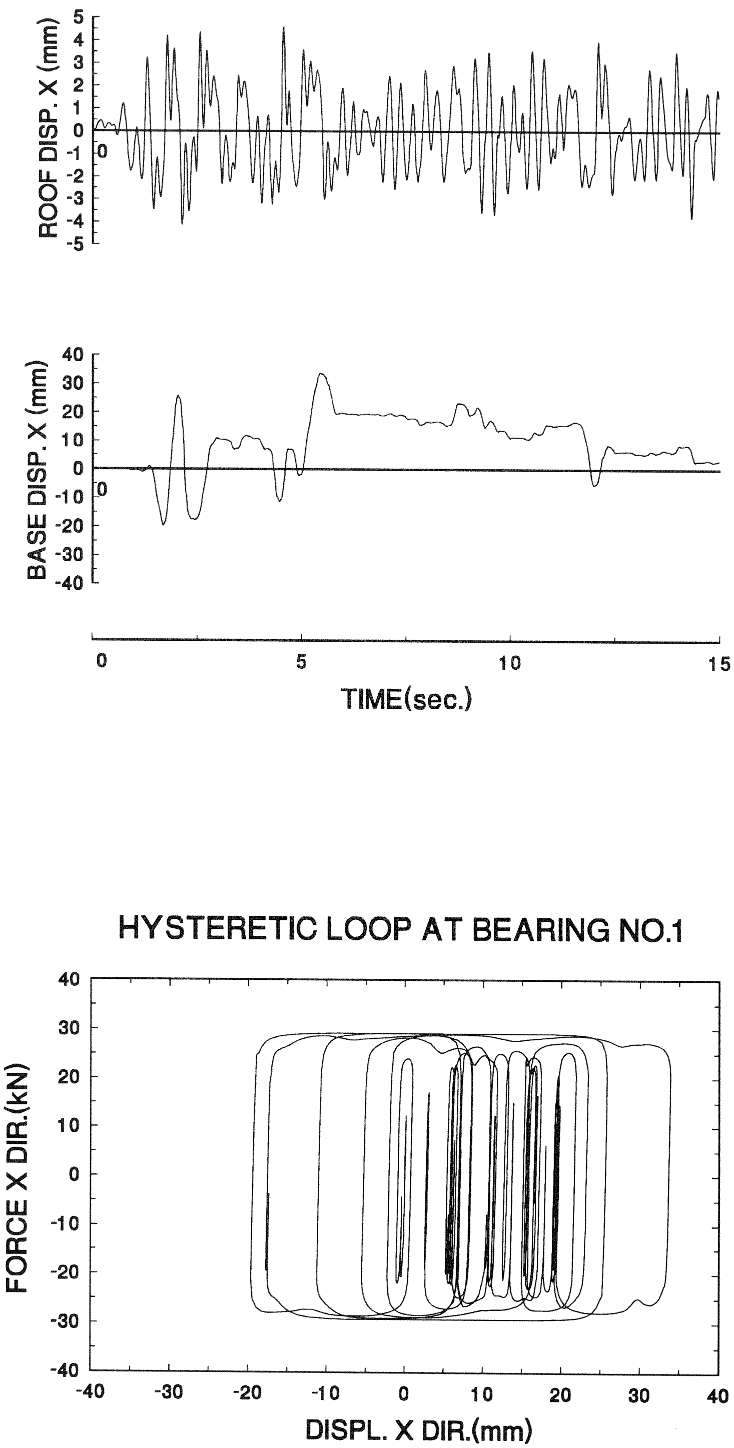


FIG. 4.5. Response of Three Story Reinforced Concrete Structure to El Centro NS Earthquake: (a) X Dir. Roof Displacement; (b) X Dir. Base Displacement; and (c) X Dir. Force - Displacement Loop at Sliding Bearing No. 1 Located on Column Line 1

4.2 CASE STUDY - EIGHT-STORY REINFORCED CONCRETE BASE ISOLATED BUILDING

An eight-story reinforced concrete base isolated structure shown in Fig 4.6 is considered. The structure consists of three bays in the transverse direction and eight bays in the longitudinal direction, as shown in Figure 4.7. The typical floor height is 147 inches.

A complete description of member properties, such as beam and column properties; is given in Table 4-3 and Table 4-4. The slab thickness is 102 mm in all floors and roof. The modulus of elasticity of the concrete is assumed to be 22183098 kN/m^2 (3150k/in^2). The damping ratio in the superstructure is assumed to be 5% critical.

The isolation system consists of 28 sliding bearings and eight recentering springs, as shown in Fig. 4.8. The sliding bearings are made of unfilled Teflon and polished stainless steel plates. The sliding bearings have a coefficient of friction $f_{max} = 0.08$. and $f_{min} = 0.04$. The recentering helical springs are designed to provide an isolation period $T_b = 3\text{sec}$.

3D-BASIS-TABS is used to analyze the base isolated structure. The structure is excited by bidirectional El Centro earthquake, since bidirectional/biaxial interaction is of importance (Nagarajaiah et.al. 1990; Mokha et al., 1993).

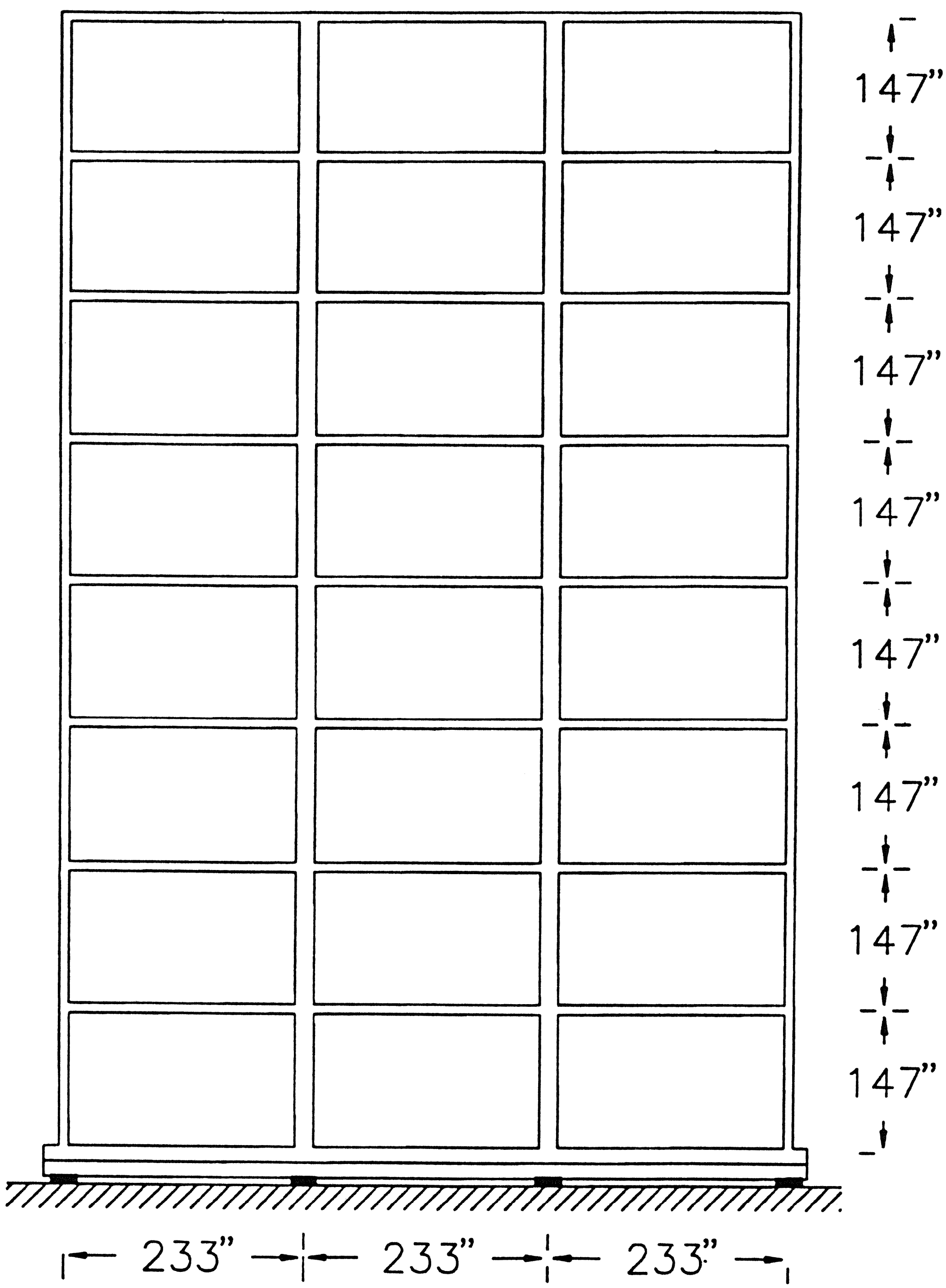


FIG. 4.6. Eight Story Reinforced Concrete Base Isolated Building on Combined Sliding and Elastomeric Isolation System

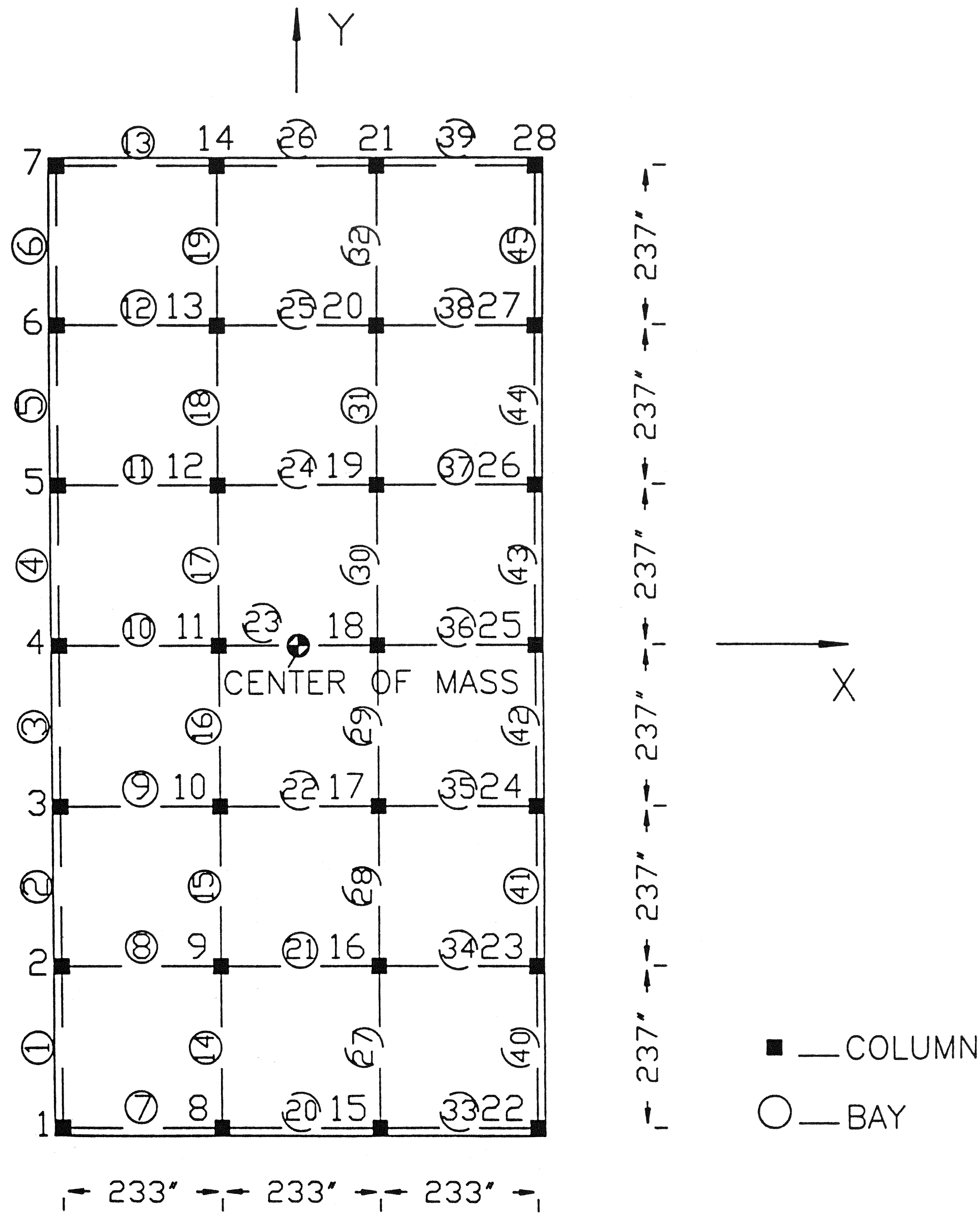


FIG. 4.7. Cross Sectional Plan of the Eight Story Reinforced Concrete Base Isolated Building between Levels 7 and 8. Note the Location of the Column Lines and Bay Numbers (Refer to the Input File given in Appendix D)

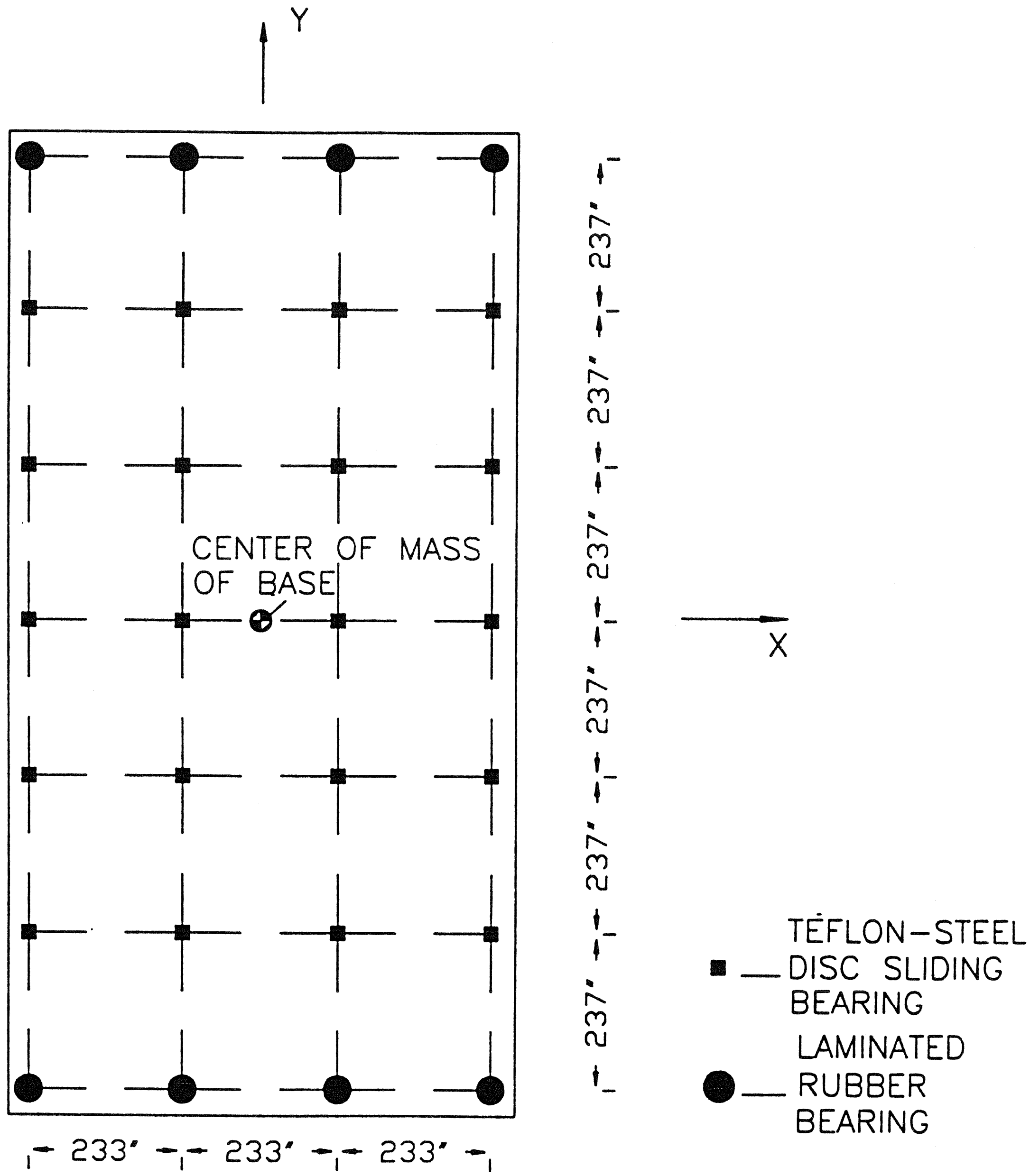


FIG. 4.8. Plan of the Isolation System with Laminated Rubber Bearings and Teflon - Steel Disc Sliding Bearings

Table 4-3 - Column Schedule

COL. ID	1st fl.	2nd fl.	3rd fl.	4th fl.	5th fl.	6th fl.	7th fl.	8th fl.
1	3*	3	3	3	3	3	3	3
2	7	7	7	7	7	7	7	7
3	7	7	7	7	7	7	7	7
4	2	7	7	7	7	7	7	7
5	5	3	3	2	2	2	1	1
6	5	3	3	2	2	2	1	1
7	3	3	3	3	3	3	3	3
8	7	7	7	7	7	7	7	7
9	5	5	3	3	2	2	1	1
10	6	6	4	4	2	2	1	1
11	6	6	4	4	2	2	1	1
12	6	6	4	4	2	2	1	1
13	6	6	4	4	2	2	1	1
14	7	7	7	7	7	7	7	7
15	7	7	7	7	7	2	7	7
16	6	6	4	4	2	2	1	1
17	6	6	4	4	2	2	1	1
18	6	6	4	4	2	2	1	1
19	6	6	4	4	2	2	1	1
20	6	6	4	4	2	2	1	1
21	7	7	7	7	7	7	7	7
22	3	3	3	3	3	3	3	3
23	2	7	7	7	7	7	7	7
24	2	7	7	7	7	7	7	7
25	2	7	7	7	7	7	7	7
26	2	7	7	7	7	7	7	7
27	2	7	7	7	7	7	7	7
28	3	3	3	3	3	3	3	3

*Column types:

TYPE	1	2	3	4	5	6	7
bxh (inxin)	18x18	24x24	26x26	24x28	28x28	24x32	18x24

Table 4-4 - Beam Schedule

Bay #	1st fl.	2nd fl.	3rd fl.	4th fl.	5th fl.	6th fl.	7th fl.	8th fl.
1	13*	13	9	9	6	6	3	11
2	13	13	9	9	6	6	3	11
3	13	13	9	9	6	6	3	11
4	12	12	12	12	6	6	6	2
5	12	12	12	12	6	6	6	2
6	12	12	12	12	6	6	6	2
7	11	11	11	11	5	5	3	2
8	12	12	12	12	6	6	6	2
9	11	11	11	11	5	5	3	2
10	12	12	12	12	6	6	6	2
11	12	12	12	12	6	6	6	11
12	12	12	9	9	6	6	6	11
13	12	12	9	9	6	6	6	11
14	12	12	9	9	6	6	6	11
15	10	10	2	2	4	4	2	11
16	10	10	2	2	4	4	2	1
17	10	10	2	2	4	4	2	1
18	9	9	6	6	3	3	2	1
19	9	9	6	6	3	3	2	
20	9	9	6	6	3	3	2	
21	8	8	5	5	3	3	2	
22	9	9	6	6	3	3	2	
23	9	9	6	6	3	3	2	
24	12	12	9	6	6	6	6	
25	12	12	9	6	6	6	6	
26	12	12	9	6	6	6	6	
27	12	12	9	6	6	6	6	
28	12	12	9	6	6	6	6	

*Beam types:

TYPE	1	2	3	4	5	6	7	8	9	10	11	12	13
bxh (inxin)	12x 22	16x 24	18x 24	14x 22	20x 22	20x 24	16x 22	22x 22	22x 24	18x 22	24x 22	24x 24	26x 26

4.2.1 Response to Bidirectional El Centro Earthquake

Figure 4.9 shows the envelope of axial forces, shear forces, and moments in Column 1. The results presented in Fig. 4.9, such as member forces, illustrate the capability of 3D-BASIS-TABS to provide useful information for the design of members.

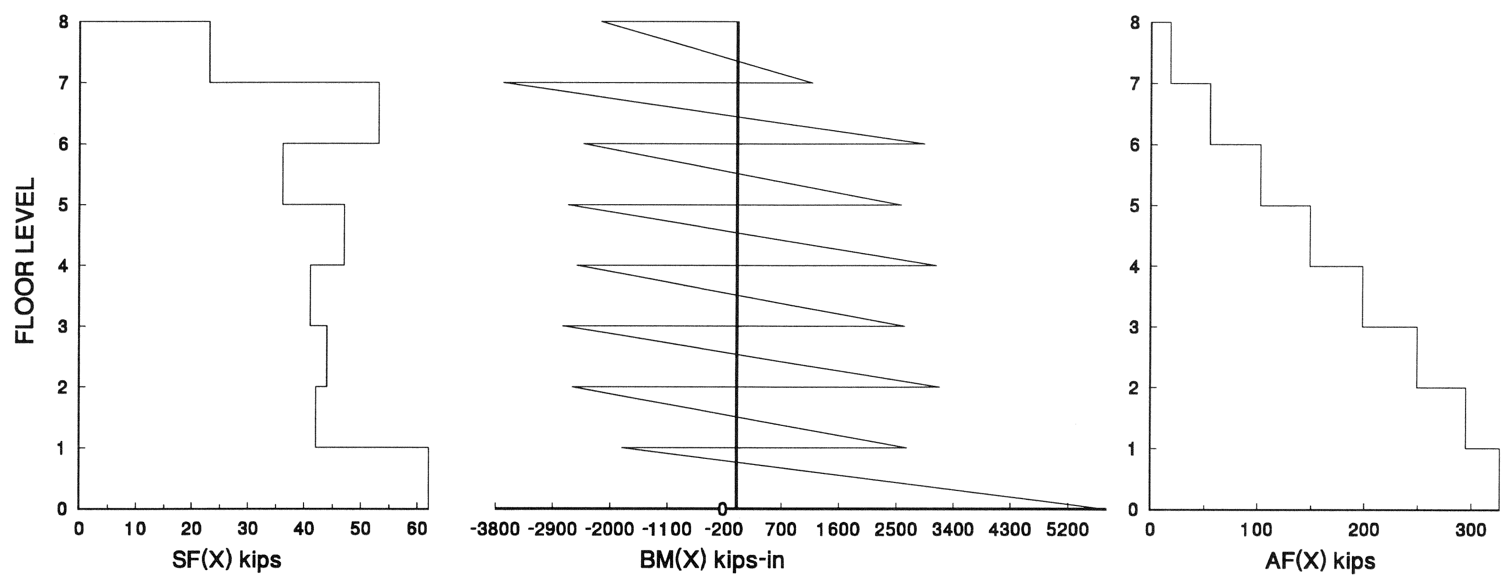


FIG. 4.9. Envelope of Shear Force, Bending Moment and Axial Force in the Column on Column Line 1

SECTION 5

CONCLUDING REMARKS

3D-BASIS was designed to emphasize the advantages of the modeling approach proposed by Wilson et al. (1975) for the 3D-superstructure in ETABS. The developments described in this report have led to the incorporation of the modeling approach for the 3D-superstructure of ETABS into 3D-BASIS, resulting in the enhanced version 3D-BASIS-TABS. New features, such as multidirectional excitation capabilities, have been incorporated into 3D-BASIS-TABS. The program 3D-BASIS-TABS has been verified by comparison with other program and previous versions.

Microcomputer PC - DOS/WINDOWS version of 3D-BASIS-TABS has also been developed. The PC version of 3D-BASIS-TABS can be used with desktop microcomputers running MS-DOS or WINDOWS environments. The versatility of 3D-BASIS-TABS (as well as 3D-BASIS) stems from the fact that it can analyze base isolated structures like sliding isolated structures with great accuracy and yet complete the analysis in reasonable CPU time on a microcomputer. 3D-BASIS-TABS has been designed keeping in view the concerns and feedback from practicing engineers and it is envisaged that further improvements can be made.

Finally, 3D-BASIS-TABS will be enhanced in the near future to incorporate nonlinear dampers, failsafe devices, displacement restraints and hybrid control which has been developed by several researchers (Reinhorn, et al. 1987; 1993; Feng, et al. 1993; Nagarajaiah, et al. 1993c, 1993d; Riley, et al. 1993; Soong, et al 1993; Subramaniam, et al. 1993; Yang, et al. 1992). Hybrid control involves augmentation of the passive isolation system with a active hydraulic devices.

SECTION 6
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APPENDIX A

3D-BASIS-TABS PROGRAM USER'S GUIDE

APPENDIX A
3D-BASIS-TABS PROGRAM USER'S GUIDE

A.1 INPUT FORMAT

The input will be specified in a main file BASTABS.DAT accompanied by wave motion data files WAVEX.DAT, WAVEY.DAT.

Dynamic arrays are used. Double precision is used in the program for accuracy. Common block size has been set to 100,000 and should be changed if the need arises.

A free format is used to read all input data. Hence, conventional delimiters (commas, blanks) may be used to separate data items. Standard FORTRAN variable format is used to distinguish integers and floating point numbers. Input data must therefore, conform to the specified variable type. All values are to be specified in the input file unless mentioned otherwise. No blank cards are to be specified in the input file.

Note: Provision is made for a line of text between each set of data items. Refer to the sample data files accompanying this manual. No blank lines are to be specified in the input file.

A.2 PROBLEM TITLE

TITLE TITLE upto 80 characters.

A.3 UNITS

UNITS UNITS upto 80 characters.

A.4 CONTROL PARAMETERS

A.4.1 General Control Information

USER_TEXT Reference information: upto 80 characters of text.

ISEV,NST,NFQ,NP,LOR

(1) ISEV = 1 for option 1 - Data for 3D-shear building story shear stiffnesses to be specified in the input file.

(1) ISEV = 2 for option 2 - Data for full 3D-building member properties for beams, columns etc. to be specified in the input file.

(1)* ISEV = 3 for option 3 - Data for 3D-building Eigenvalues/Eigenvectors to be specified in the input file.

NST = Number of stories in the complete building excluding the base (If NST<1 then NST set = 1).

(2) NFQ = Number of eigenvectors/eigenvalues to be retained in the analysis (If NFQ<3 then NFQ set = 3).

(3) NP = Total number of isolators such as bearings, dampers etc. (if NP<4 then NP set = 4)

LOR = Length of earthquake record (number of data points) [Records in different directions must have same length as specified here.]

*Notes: 1. For explanation of the option 1, option 2 and option 3 refer to section 3.2. If option 2 or 3 is used then member forces are not output.

2. Number of eigenvectors/eigenvalues to be retained in the analysis should be in groups of three - the minimum being one set of three modes.

3. Number of bearings refers to the total number of bearings which could be a combination of linear elastic elements, viscous elements, lead-rubber bearings, steel dampers, sliding bearings.

A.4.2 Superstructure Control Information (for ISEV=2 only; skip this to A4.3 if ISEV=1 or 3)

USER_TXT Reference information; upto 80 characters of text.

NDF,NTF,NLD,NAT

(1)* NDF = Number of frames with different properties or different vertical loading

(1) NTF = Total number of frame or shear wall elements in the structure

(2) NLD = Total number of load conditions

(3) NAT = Analysis type code:

EQ.1; Static load analysis + mode shapes and frequencies
+ Lateral earthquake response and peak response
printout only

EQ.2; Static load analysis + mode shapes and frequencies
+ Lateral earthquake response and time history printout

*Notes: 1. Input data for frames with identical properties and vertical loading are given only once - see also section A.5.1.2.10 on Frame Location.

2. Load conditions are defined as combinations of the four load cases - see section A.9 on Load Case Definition.

3. Allowable story degrees of freedom are restricted to three degrees of freedom per floor.

A.4.3 Integration Control Parameters

USER_TXT Reference information; upto 80 characters of text.
TSI,TOL,FMNORM,MAXMI,KVSTEP

(1)* TSI = Time step of integration.
(If TSI > TSR then TSI set = TSR;
refer to A.4.5 for details about TSR)

(2) TOL = Tolerance (error) for the nonlinear force vector computation.

(3) FMNORM = Reference moment at the center of mass of the base used for computing convergence.

(4) MAXMI = Maximum number of iterations within a time step.

KVSTEP = Index for time step variation.

KVSTEP = 1 for constant time step.
KVSTEP = 2 for variable time step.

*Note: 1. The time step of integration cannot exceed the time step of earthquake record given in A.4.5.

2. Tolerance for force computation may be 0.001.

3. The reference moment at the center of mass of the base can be calculated approximately by multiplying the base shear by one half the maximum dimension at the base (may require some iterations).

4. If MAXMI is exceeded the program is terminated with an error message.

A.4.4 Newmark's Method Control Parameters

USER_TXT	Reference information; upto 80 characters of text.
GAM,BET	GAM = Parameter which produces numerical damping within a time step.
(1)	(Default value = 0.5)
	BET = Parameter which controls the variation of acceleration within a time step.
(1)	(Default value = 0.25)

1. Default values are assigned only when both GAM and BET are zero.

A.4.5 Earthquake Control Parameters

USER_TXT	Reference information; upto 80 characters of text.
INDGACC,TSR,XTH,ULF	

(1)a* INDGACC = 1 for a single lateral earthquake record at an angle of incidence XTH.

(1)b INDGACC = 2 for two independent lateral earthquake records along the X and Y axes.

(2) TSR = Time step of the earthquake record(s).

XTH = Angle of incidence of the earthquake with respect to the X axis in anticlockwise direction (for INDGACC = 1).

(3) ULF = Load factor.

*Notes: 1. Three options are available for the earthquake record input:

a) INDGACC = 1 refers to a single earthquake record input at any angle of incidence XTH with respect to the X axis. Input only one earthquake record (read through a single file WAVEX.DAT). Refer to A.7.1 for wave input information.

b) INDGACC = 2 refers to two independent earthquake records input in the X and Y directions, eg. El Centro N-S along the X direction and El Centro E-W along the Y direction. Input two independent earthquake records in the X and Y directions (read through two files WAVEX.DAT and WAVEY.DAT). Refer to A.7.1 and A.7.2 for wave input information.

2. The time step of earthquake record and the length of earthquake record has to be the same in X, Y and Z directions for INDGACC = 2 and 3.

3. Load factor is applied to the earthquake records in X, Y and Z directions.

A.5 SUPERSTRUCTURE DATA

Go to A.5.1 for option 2 of A.4.1 - Full three dimensional representation of the superstructure.

Go to A.5.2 for option 1 - three dimensional shear building representation of the superstructure.

Go to A.5.3 for option 3 of A.4.1 - Eigenvalues/Eigenvectors for three dimensional representation of the superstructure.

A.5.1 THREE DIMENSIONAL BUILDING (for ISEV = 2)

USR_TXT   Reference information; upto 80 characters of text

Note: The sections A.5.1.1 to A.5.1.3 to follow are based on the input requirements of ETABS.

A.5.1.1 Story Data

Repeat the following block of data according to the number of stories (NST).*

USR_TXT   Reference information; upto 80 characters of text.

(SD(N,I) I=2,6), N=1,NST)

SD(N,2) = Story height [distance from the floor (or roof)level to the floor (or base) level below].

SD(N,3) = Translational mass.

SD(N,4) = Rotational mass moment of inertia about a vertical axis through the center of mass.

SD(N,5) = X-distance to the center of mass measured from the STRUCTURE REFERENCE AXIS.

SD(N,6) = Y-distance to the center of mass measured from the STRUCTURE REFERENCE AXIS.

*Note: Input one set per story from the top story to the bottom story of the superstructure.
(1) The Global STRUCTURE REFERENCE AXIS has to be a vertical axis at the center of mass of the base.

A.5.1.2 Frame Data

Repeat the following block of data according to number of different frames (NDF).

USR_TXT Frame data information; up to 80 characters

A.5.1.2.1 Frame Control Parameters

USR_TXT Reference information; upto 80 characters of text.

M,NS,NC,NB,NCP,NBP,NFEF,NPAN,NTRU

(1)* M = Frame identification number.

(2) NS = Number of story levels above the base.

(3) NC = Number of vertical column lines in the frame.

NB = Number of bays in the frame.

(4) NCP = Number of sets of different column properties.

(5) NBP = Number of sets of different beam properties.

(6) NFEF = Number of sets of different fixed end moments and shears to be applied as vertical loads to beams

(7) NPAN = Number of infill shear panels in the frame.

(8) NTRU = Number of bracing elements in the frame.

*Note: One set of data must be entered for each different frame. Frames with different locations but identical properties and vertical loading need be entered only once (see also section A.5.1.3 on Frame location cards).

1. Frame identification numbers must be entered in numerical sequence beginning with number one (1). This frame may be located (repeated) at different positions in the structure.

2. If a frame does not extend the full height of the building, then only those story levels actually existing in the frame are to be specified in the input file.

3. An isolated shear wall is a single column line frame. For this case all data pertaining to beams is meaningless an must be omitted in the data input section to follow.

4. Column properties may be referenced to any number of columns in the frame. The number of column property sets control A.5.1.2.3.

5. The number of beam property sets control the number sets of data to be read in section A.5.1.2.4.

6. If no vertical static loads act on the structure, then input zero, and skip section A.5.1.2.5.

7. If no panel elements are included in this frame, then input zero, and skip section A.5.1.2.8.

8. If no bracing elements are included in this frame, then input zero, and skip section A.5.1.2.9.

A.5.1.2.2 Vertical Column Line Coordinates

USR_TXT Reference information; upto 80 characters of text.

(M,(CLN(J,I),I=1,2),J=1,NC)

(1)* M = Column line identification number

(2) CLN(J,1) = X-distance to J^{th} column line from frame reference point.

CLN(J,2) = Y-distance to J^{th} column line from frame reference point.

*Note: 1. One set of vertical column line coordinates have to be specified in the input file for each column line in the frame. For frames with a single column line a second column should be specified to define the major axis for column properties entered in section A.5.1.2.7.

2. Coordinates of column lines are measured from the frame (local) axis.

A.5.1.2.3 Column Properties

USR_TXT Reference information; upto 80 characters of text.

(M,(CP(J,I),J=1,9),I=1,NCP)

(1)* M = Identification number for this column property set

CP(1,I) = Modulus of Elasticity, E.

CP(2,I) = Axial Area A.

(2) CP(3,I) = Shear area associated with shear forces in major axis direction.

(2) CP(4,I) = Shear area associated with shear forces in minor axis direction.

CP(5,I) = Torsional inertia.

CP(6,I) = Flexural inertia for bending in the major axis direction.

CP(7,I) = Flexural inertia for bending in the minor axis direction.

(3) CP(8,I) = Rigid zone depth at the top of column (for both axis). DT.

(4) CP(9,I) = Rigid zone depth at the bottom of column. DB.

*Note: One set of data must be supplied for each different column in this frame.

1. Property set identification numbers must be in increasing numerical sequence beginning with one (1).

2. Shearing deformations are ignored if shear areas are zero.

3. The rigid zone depth is used to reduce the effective length of the column about both axis.

4. Usually zero unless beam extends above the floor level.

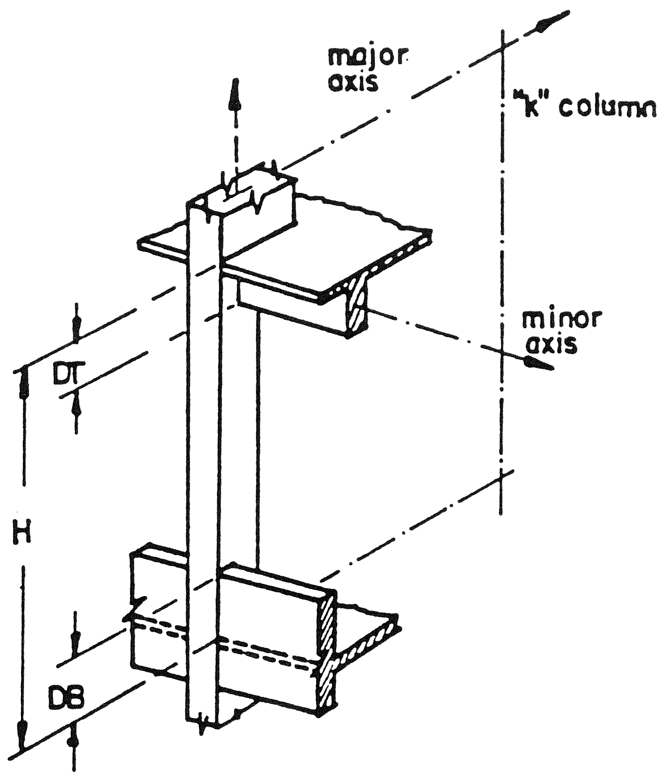

Fig. A-1 - Typical Column Model.

A.5.1.2.4 Beam Properties

USR_TXT	Reference information; upto 80 characters of text.

(M,(BP(J,I),J=1,9),I=1,NBP)

(1)*	M = Identification number for this beam property set
	BP(1,I) = Modulus of Elasticity, E.
(2)	BP(2,I) = Shear Area SA.
	BP(3,I) = Torsional inertia.
	BP(4,I) = Flexural inertia, I.
	BP(5,I) = K_{II} - stiffness factor (eg. 4)
	BP(6,I) = K_{JJ} - stiffness factor (eg. 4)
	BP(7,I) = K_{IJ} - stiffness factor (eg. 2)
(3)	BP(8,I) = Rigid zone depth at the I side of beam.
	BP(9,I) = Rigid zone depth at the J side of beam.

*Note: One set of data must be supplied for each different beam in the frame; skip this input if the frame has only one column line.

1. Property set identification numbers must be input in increasing numerical sequence beginning with one (1).

2. Shearing deformations are ignored if shear areas are zero.

3. The beam rigid zone lengths are used to reduce the effective length of the beam.

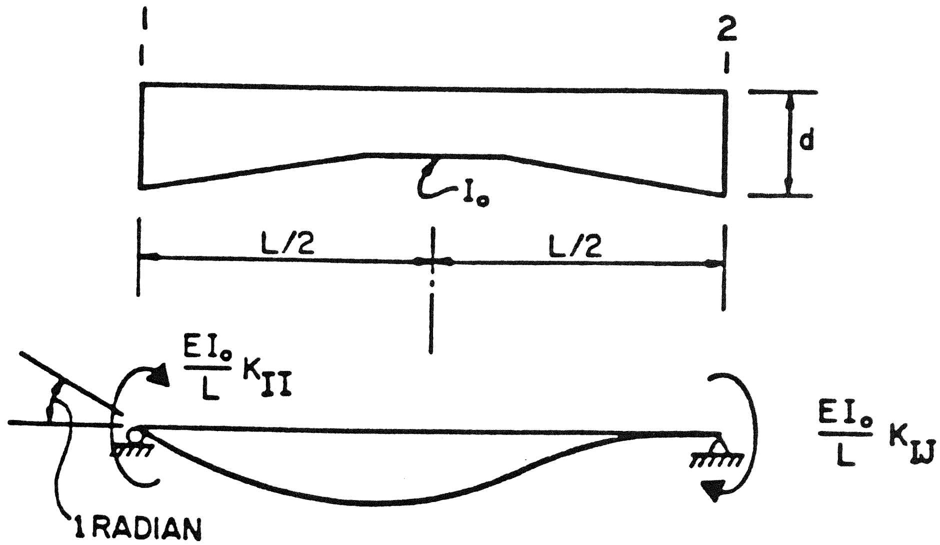

Fig. A-2 - Typical Notation of Beam Stiffness Coefficients

A.5.1.2.5 Fixed-End Beam Loads

(See A.5.1.2.1 If NFEF = 0, skip this.)

USR_TXT Reference information; upto 80 characters of text.

(M,IFEF(I),(FEF(J,I),J=1,5),I=1,NFEF)

(1)* M = Identification number for this vertical loading set

IFEF(I) = Index:

EQ. 0; Fixed-end forces are applied at the column faces

EQ. 1; Fixed-end forces are applied at the column centerlines

(2) FEF(1,I) = Fixed-end reaction, M_1

FEF(2,I) = Fixed-end reaction, V_1

FEF(3,I) = Fixed-end reaction, M_2

FEF(4,I) = Fixed-end reaction, V_2

(3) FEF(5,I) = Uniform force per unit length, W, acting downward to be added to fixed-end reactions

*Note: One set of data must be supplied for each different type of vertical beam loading; omit this data set if this is a single column line frame

1. Load set numbers must be input in sequence.

2. Reactions act on the beam ends and are positive as shown in the sketch.

3. Additional fixed-end forces due to the uniform load $-w$, are calculated using:
$M = wl^2/12; \quad V = wl/2$
and are added to any specified fixed-end reactions. The forces due to w are exact only for prismatic beams.

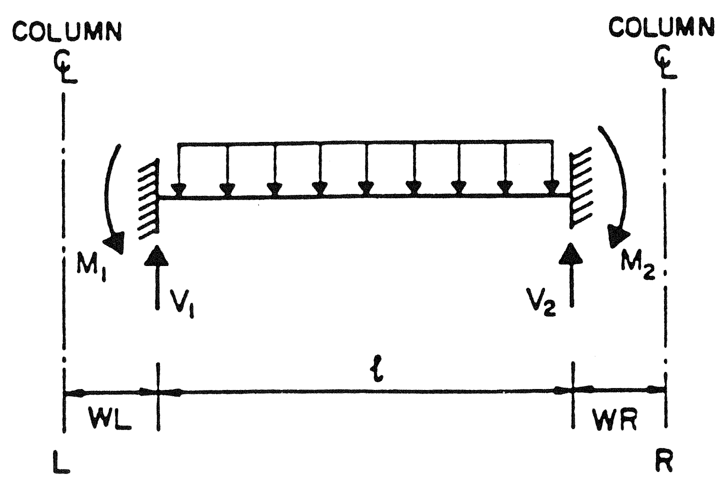

Fig. A-3 - Typical Beam Loading

A.5.1.2.6 Beam Location, Properties and Loads

USR_TXT Reference information; upto 80 characters of text.

[{ I,(LB(N,M,L),L=1,3),K,(LDB(N,M,L),L=1,3) },N=1,NS],M=1,NB

I = Bay identification number for this beam.

(1)* LB(N,M,1) = Column line number at end I.

LB(N,M,2) = Column line number at end J.

(2) LB(N,M,3) = Beam property set identification number for this beam.

(3) K = Number of beams in sequence below to be generated having the same properties and vertical loading as this beam.

(4) LDB(N,M,1) = Vertical loading set identification number for vertical load case I.

LDB(N,M,2) = Vertical loading set identification number for vertical load case II.

LDB(N,M,3) = Vertical loading set identification number for vertical load case III.

*Note: One set of data must be input from top to bottom and from bay to bay in the frame (unless the data generation option is used)

1. Position of I and J ends defines local coordinate axis with local "y" positive from I to J and local "z" positive vertically upwards. A right hand screw rule sign convention applies.

2. Beams with zero stiffness (missing beams) may be input as having a property set number of zero; if the beam has finite stiffness, the set number must reference an existing property set defined previously is section A.5.1.2.4.

3. The generation option can only be used to define girders within the current bay; a new bay must be started with a new beam card.

4. The vertical loading sets defined in section A.5.1.2.5, are applied to the beams defined herein. Three independent vertical load distributions (I,II,III) are allowed, and these distributions are combined to form load cases for the complete building; see section A.9.

A.5.1.2.7 Column Location and properties

USR_TXT   Reference information; upto 80 characters of text.

[{ KK,(LC(N,M,I),I=1,2),K } ,N=1,NS],M=1,NC

KK = Column line identification number for this column.

(1)*   LC(N,M,1) = Column property set identification number.

(2)   LC(N,M,2) = Column line number defining direction of major axis.

(3)   K = Number of columns in sequence below to be generated having the same properties as this column member.

*Note: One card per column must be input from top to bottom and from column line to column line of the frame (unless the data generation option is used).

1. Missing columns may be input as having a property set number of zero (0); if the column has finite stiffness, then the set number referenced must correspond to one of the property sets defined previously in section A.5.1.2.3, above.

2. Defines direction on local "y" axis; local "z" axis is in the vertical plane with positive upwards. A right hand screw rule convention applies.

3. Generation is allowed only within the current column line; begin a new column line with a new column card.

A.5.1.2.8 Panel Properties

USR_TXT   Reference information; upto 80 characters of text.

(LP(1,I),LP(2,I),LP(3,I),(PP(J,I),J=1,5),I=1,NPAN)

(1)*	LP(1,I)	= Level identification number at the top of this panel.
	LP(2,I)	= Column line number at the I side of this panel.
	LP(3,I)	= Column line number at the J side of this panel.
	PP(1,I)	= Modulus of elasticity, E.
	PP(2,I)	= Gross sectional area, A.
(2)	PP(3,I)	= Moment of inertia, I.
	PP(4,I)	= Effective shear area, A_v
	PP(5,I)	= Shear modulus, G.

*Note: Input one set of data per panel in any order; no generation is allowed.

1. Base is defined as level zero, and the roof level number is equal to the total number of stories in the building.

2. A zero (0) value for the moment of inertia selects the pure shear deformation panel model. The pure shear panel uses the gross sectional area, not the effective area, to calculate stiffness and stress values.

A.5.1.2.9 Bracing Properties

USR_TXT — Reference information; upto 80 characters of text.

(LT(1,I),LT(2,I),LT(3,I),TP(1,I),TP(2,I),I=1,NTRU)

LT(1,I) = Level identification number at the top of this brace.

LT(2,I) = Column line number at the upper end of this brace.

LT(3,I) = Column line number at the lower end of this brace.

TP(1,I) = Modulus of elasticity, E.

TP(2,I) = Cross sectional area, A.

*Note: Input one set of data per brace in any order; no generation is allowed.

A.5.1.3 Frame location cards

USR_TXT — Reference information; upto 80 characters of text.

IF,IFC,X1,Y1,ANG

(1)* IF = Frame identification number

(2) IFC = Force calculation code;

EQ. 0; Frame forces will be calculated and printed.

EQ. 1; Frame forces will not be calculated.

(3) X1 = Distance, X_1.

Y1 = Distance, Y_1.

(4) ANG = Angle between the frame x axis and the structure (global) X axis (anti-clockwise from X to x).

*Note: One set of data must be entered in this section for each frame (or single column) in the building; the total number of frame locations to be read is controlled by the entry in section A.4.2.

1. Frame identification numbers may be repeated, but location data set must be input in frame identification number sequence.

2. A frame force calculation code of one (1) will suppress output for the frame.
3. Distance from structure (global) axis to origin of frame (local) axis.
Structure reference axis has to be at the center of mass of the base.

4. Angle is input in degrees and decimal fractions eg. 15° 30' input as 15.5.

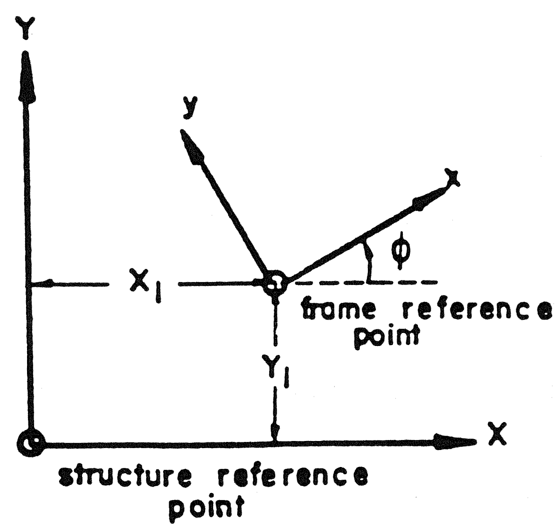

Fig. A-4 - Typical Coordinate Systems.

A.5.2 Shear Stiffness Data for Three Dimensional Shear Building (for ISEV = 1)

USR_TXT	Reference information; upto 80 characters of text

A.5.2.1 Shear Stiffness - X, Y and Torsional Stiffness in Θ Direction

USR_TXT	Reference information; upto 80 characters of text.
SX(I),I=1,NF	SX(I) = Shear stiffness of story I in the X direction.
SY(I),I=1,NF	SY(I) = Shear stiffness of story I in the Y direction.
ST(I),I=1,NF	ST(I) = Torsional stiffness of story I in the θ direction about the center of mass of the floor.

Note: Input shear stiffness in the X and Y direction and torsional stiffness in the θ direction of each individual story starting from the top story to the first story.

A.5.2.2 Eccentricity Data - X and Y Direction

USR_TXT	Reference information; upto 80 characters of text.
EX(I),I=1,NF	EX(I) = Eccentricity of center of resistance from the center of mass of the floor I.
EY(I),I=1,NF	EY(I) = Eccentricity of center of resistance from the center of mass of the floor I.

Note: Input eccentricity at each individual story in the X and Y direction starting from the top story to the first story. If both the eccentricities are zero, a default value of 0.0001 is used to facilitate eigensolution.

A.5.2.3 Superstructure Translational Mass and Rotational Mass (Mass moment of Inertia)

USR_TXT	Reference information; upto 80 characters of text.
CMX(I),I=1,NF	CMX(I) = Translational mass at floor I.
CMT(I),I=1,NF	CMT(I) = Mass moment of inertia of floor I about the center of mass.

Note: Input from the top floor to the first floor.

A.5.3 Eigenvalues and Eigenvectors for Three Dimensional Building (for ISEV = 3)

USR_TXT	Reference information; upto 80 characters of text

A.5.3.1 Eigenvalues

USR_TXT	Reference information; upto 80 characters of text.
W(I),I=1,NFQ	W(I) = Eigenvalue of mode I

Note: Input from the first mode to the NFQ mode given in section A.4.1.

A.5.3.2 Eigenvectors

USR_TXT	Reference information; upto 80 characters of text.
E(3*NF,I),I=1,NFQ	
	E(3*NF,I) = Eigenvector of mode I.

Note: Input from the first mode to the NFQ mode given in section A.4.1.

A.5.4 Superstructure Damping

USR_TXT — Reference information; upto 80 characters of text.

DR(I),I=1,NE

DR(I) = Damping ratio corresponding to mode I.

Note: Input from the first mode to the NE mode.

A.5.5 Eccentricities of center of mass

USR_TXT — Reference information; upto 80 characters of text.

XN(I),YN(I),I=1,NF

XN(I) = Distance of the center of mass of the floor I from the center of mass of the base in the X direction.

YN(I) = Distance of the center of mass of the floor I from the center of mass of the base in the Y direction.
(If ISEV = 1 then XN(I) and YN(I) set = 0)

Note: Input from the top floor to the first floor.

A.5.6 Height of Different Floors and the Base

USR_TXT — Reference information; upto 80 characters of text.

H(I),I=1,NF+1

H(I) = Height from the ground to the floor I.*

*Note: Input heights of floors ordered from the top floor to the base.

A.6 ISOLATION SYSTEM DATA

USR_TXT Isolation data text: up to 80 characters of text.

A.6.1 Stiffness Data for Linear Elastic Isolation System

USR_TXT Reference information; upto 80 characters of text.

SXE,SYE,STE,EXE,EYE

SXE = Resultant stiffness of the linear elastic isolation system in the X direction.

SYE = Resultant stiffness of the linear elastic isolation system in the Y direction.

STE = Resultant torsional stiffness of the linear elastic isolation system in the θ direction about the center of mass of the base.

EXE = Eccentricity of the center of resistance of the linear elastic isolation system in the X direction from the center of mass of the base.

EYE = Eccentricity of the center of resistance of the linear elastic isolation system in the Y direction from the center of mass of the base.

Note: Data for linear elastic elements can also be input individually (refer to A.6.4.1).

A.6.2 Mass Data of the Base

USR_TXT — Reference information; upto 80 characters of text.

CMXB,CMTB — CMXB = Mass of the base in the translational direction.

CMTB = Mass moment of Inertia of the base about the center of mass of the base.

A.6.3 Global Damping Data of the Base

USR_TXT — Reference information; upto 80 characters of text.

CBX,CBY,CBT,ECX,ECY

CBX = Resultant global damping coefficient in the X direction.

CBY = Resultant global damping coefficient in the Y direction.

CBT = Resultant global damping coefficient in the θ direction about the center of mass of the base.

ECX = Eccentricity of the center of global damping of the isolation system in the X direction from the center of mass of the base.

ECY = Eccentricity of the center of global damping of the isolation system in the Y direction from the center of mass of the base.

Note: 1. Data for viscous elements can also be input individually (refer to A.6.4.2).

A.6.4 Isolation Element Data

(i). Data for NP isolation elements to be given using the library of various elements types given in the subsequent subsections.

(ii). The following indices are used in the following subsections to identify the element types in the isolation system. INELEM(NP,2) described below:

INELEM(K,1:2) = Indices for the isolation element K indicating its type and whether it is a uniaxial or biaxial element, as follows below:

INELEM(K,1) = 1 for a uniaxial element in the X direction
INELEM(K,1) = 2 for a uniaxial element in the Y direction
INELEM(K,1) = 3 for a biaxial element

INELEM(K,2) = 1 for a linear elastic element
INELEM(K,2) = 2 for a viscous element
INELEM(K,2) = 3 for a hysteretic element for elastomeric bearing or steel damper
INELEM(K,2) = 4 for a hysteretic element for sliding bearing

A.6.4.1 Linear Elastic Element

USR_TXT Reference information; upto 80 characters of text.

INELEM(K,1:2) INELEM(K,1) can be either 1,2 or 3
INELEM(K,2) = 1
(Refer to A.6.4 for further details).

PS(K,1),PS(K,2)

PS(K,1) = Shear stiffness in the X direction for biaxial element or uniaxial element in the X direction (leave blank if the uniaxial element is in the Y direction only).

PS(K,2) = Shear stiffness in the Y direction for biaxial element or uniaxial element in the Y direction (leave blank if the uniaxial element is in the X direction only).

Note: Biaxial element means elastic stiffness in both X and Y directions (no interaction between forces in the X and Y direction).

A.6.4.2 Viscous Element

USR_TXT — Reference information; upto 80 characters of text.

INELEM(K,1:2) — INELEM(K,1) can be either 1,2 or 3
INELEM(K,2) = 2
(Refer to A.6.4 for further details).

PC(K,1),PC(K,2)

PC(K,1) = Damping coefficient in the X direction for biaxial element or uniaxial element in the X direction (leave blank if the uniaxial element is in the Y direction only).

PC(K,2) = Damping coefficient in the Y direction for biaxial element or

uniaxial element in the Y direction
(leave blank if the uniaxial element
is in the X direction only).

Note: Biaxial element means damping in both X and Y directions (no interaction between forces in the X and Y direction).

A.6.4.3 Hysteretic Element for Elastomeric Bearings/Steel Dampers

USR_TXT Reference information; upto 80 characters of text.

INELEM(K,1:2) INELEM(K,1) can be either 1,2 or 3
INELEM(K,2) = 3
(Refer to A.6.4 for further details).

ALP(K,I),YF(K,I),YD(K,I),I=1,2

ALP(K,1) = Post-to-preyielding
stiffness ratio;
YF(K,1) = Yield force;
YD(K,1) = Yield displacement;
in the X direction for biaxial element or uniaxial
element in the X direction
(leave blank if the uniaxial element
is in the Y direction only).

ALP(K,2) = Post-to-preyielding
stiffness ratio;
YF(K,2) = Yield force;
YD(K,2) = Yield displacement;
in the Y direction for biaxial element or uniaxial
element in the Y direction
(leave blank if the uniaxial element
is in the X direction only).

A.6.4.4 Hysteretic Element for Sliding Bearings

USR_TXT Reference information; upto 80 characters of text.

INELEM(K,1:2) INELEM(K,1) can be either 1,2 or 3
INELEM(K,2) = 4
(Refer to A.6.4 for further details).

(FMAX(K,I),DF(K,I),PA(K,I),YD(K,I),I=1,2),FN(K)

FMAX(K,1) = Maximum coefficient of sliding friction;
DF(K,1) = Difference between the maximum and minimum coefficient of sliding friction;
PA(K,1) = Constant which controls the transition of coefficient of sliding friction from maximum to minimum value;
YD(K,1) = Yield displacement of Friction Interface; in the X direction for biaxial element or uniaxial element in the X direction (leave blank if the uniaxial element is in the Y direction only).

FMAX(K,2) = Maximum coefficient of sliding friction;
DF(K,2) = Difference between the maximum and minimum coefficient of sliding friction;
PA(K,2) = Constant which controls the transition of coefficient of sliding friction from maximum to minimum value;
YD(K,2) = Yield displacement of Friction Interface; in the Y direction for biaxial element or uniaxial

element in the Y direction
(leave blank if the uniaxial element
is in the X direction only).

FN(K) = Initial normal force at the
sliding interface.

A.6.5 Coordinates of Isolation Elements

USR_TXT Reference information; upto 80 characters of text.

XP(I),YP(I),I=1,NP

XP(I) = X Coordinate of isolation
element I from the center of mass
of the base.

YP(I) = Y Coordinate of isolation
element I from the center of mass
of the base.

A.7 EARTHQUAKE DATA

This information is to be specified in additional files outside the main input data file.

A.7.1 Unidirectional Earthquake Record

USR_TXT Frame data information; up to 80 characters

File:WAVEX.DAT

X(I),I=1,LOR X(I) = Unidirectional acceleration component.

Note: 1.If INDGACC as specified in A.4.5 is 1, then the input will be assumed at an angle XTH specified in A.4.5. If INDGACC as specified in A.4.5 is 2, then X(LOR) is considered to be the X component of the bidirectional earthquake.

A.7.2 Earthquake Record in the Y Direction for the Bidirectional Earthquake

File:WAVEY.DAT (Input only if INDGACC = 2)

Y(I),I=1,LOR	Y(I) = Acceleration component in the Y direction.

A.8 OUTPUT INFORMATION DATA

A.8.1 Output Parameters

USR_TXT	Reference information; upto 80 characters of text.

LTMH,KPD,IP1,IP2,IP3,IP4,

LTMH = 0 for both the time history and peak response output.
LTMH = 1 for only peak response output.

KPD = No. of time steps before the next response quantity is output.

IP1,IP2, IP3, IP4 = Bearing numbers of four bearings at which the peak response values and the force - displacement time history response is desired.

A.8.2 Interstory drift output

USR_TXT Reference information; upto 80 characters of text.

CORDX(K), CORDY(K),K=1,6

CORDX(K) = X coordinate of the column line K at which the interstory drift is desired.

CORDY(K) = Y coordinate of the column line K at which the interstory drift is desired.

Note: 1. The coordinates of the column lines are with respect to the reference axis at the center of mass of the base. Six column lines can be specified.

A.9 LOAD CASE DEFINITION:

USR_TXT Reference information; upto 80 characters of text.

[XM(1,L),XM(2,L),XM(3,L),XM(4,L), L=1,NLD]

XM(1,L) = Multiplier for vertical load case I

XM(2,L) = Multiplier for vertical load case II

XM(3,L) = Multiplier for vertical load case III

XM(4,L) = Multiplier for earthquake response

Note: Load cases for the complete building are defined as a combination of vertical load conditions (I,II,III), and earthquake loading. One card must be entered in this section for each different building load case; the total number of building load cases is controlled by the control information in section A.4.2.

APPENDIX B

INPUT FILE FOR THREE STORY R/C SLIDING ISOLATED STRUCTURE

(Refer to Section 4.1)

INPUT FOR CASE STUDY #1

```
THREE STORIES BLDG IN ITALIA
UNIT KN-METER-SEC
GENERAL CONTROL INFORMATION
  2 3 9 16 750
SUPERSTRUCTURE CONTROL INFORMATION
  1 1 1 4 0
INTEGRATION CONTROL PARAMETER
  0.01 0.005 1000 20 1
NEWMARK METHOD CONTROL PARAMETER (DEFAULT VALUES: 0.5 AND 0.25)
  0 0
EARTHQUAKE CONTROL PARAMETER
  1 0.02 0 0.98
SUPERSTRUCTURE INFORMATION
THIRD STORY-GENERAL DATA
  3.5 119.4 2985.6 0 0 0 0
  0 0 0 0 0 0 0 0
SECOND
  3.5 119.4 2985.6 0 0 0 0
  0 0 0 0 0 0 0 0
FIRST
  3.5 119.4 2985.6 0 0 0 0
  0 0 0 0 0 0 0 0
FRAME DATA
FIRST FRAME
   1 3 16 24 2 1 0 3 18
COLUMN LINE COORDINATES
  1 -6 -6
  2 -6 -2
  3 -6 2
  4 -6 6
  5 -2 -6
  6 -2 -2
  7 -2 2
  8 -2 6
  9 2 -6
 10 2 -2
 11 2 2
 12 2 6
 13 6 -6
 14 6 -2
 15 6 2
 16 6 6
COLUMN PROPERTIES
1 29862560 0.09 0.0747 0.0747 0.0011 0.000675 0.0006751 0.2 0.2
2 29862560 0.12 0.0996 0.0996 0.0018 0.0016 0.0009 0.2 0.2
BEAM PROPERTIES
1 29862560 0.0996 0.0018 0.0016 4. 4. 2. 0.15 0.15
BEAM LOCATION
  1  1  2  1 2 0 0 0
  2  2  3  1 2 0 0 0
  3  3  4  1 2 0 0 0
  4  1  5  1 2 0 0 0
  5  2  6  1 2 0 0 0
  6  3  7  1 2 0 0 0
  7  4  8  1 2 0 0 0
  8  5  6  1 2 0 0 0
  9  6  7  1 2 0 0 0
 10 7  8  1 2 0 0 0
 11 5  9  1 2 0 0 0
 12 6  10 1 2 0 0 0
 13 7  11 1 2 0 0 0
 14 8  12 1 2 0 0 0
 15 9  10 1 2 0 0 0
 16 10 11 1 2 0 0 0
 17 11 12 1 2 0 0 0
 18 9  13 1 2 0 0 0
 19 10 14 1 2 0 0 0
 20 11 15 1 2 0 0 0
 21 12 16 1 2 0 0 0
 22 13 14 1 2 0 0 0
 23 14 15 1 2 0 0 0
 24 15 16 1 2 0 0 0
COLUMN LOCATION
     1 1 5  2
     2 1 6  2
     3 1 7  2
     4 1 8  2
     5 1 9  2
     6 2 10 2
     7 2 11 2
     8 1 12 2
     9 1 13 2
    10 2 14 2
    11 2 15 2
    12 1 16 2
    13 1 9  2
    14 1 10 2
    15 1 11 2
    16 1 12 2
PANAL INFORMATION
      3 6 7 29862560 0.37 0.42 0.31 11945024
      2 6 7 29862560 0.37 0.42 0.31 11945024
      1 6 7 29862560 0.37 0.42 0.31 11945024
BRACE INFORMATION
 3 7 11 43280000 0.016
 3 11 7 43280000 0.016
 2 7 11 43280000 0.016
 2 11 7 43280000 0.016
 1 7 11 43280000 0.016
```

```
 1 11 7 43280000 0.016
 3 6 10 43280000 0.016
 3 10 6 43280000 0.016
 2 6 10 43280000 0.016
 2 10 6 43280000 0.016
 1 6 10 43280000 0.016
 1 10 6 43280000 0.016
 3 14 15 43280000 0.01
 3 15 14 43280000 0.01
 2 14 15 43280000 0.01
 2 15 14 43280000 0.01
 1 14 15 43280000 0.01
 1 15 14 43280000 0.01
FIRST FRAME LOCATION
  1 0 0 0 0
SUPERSTRUCTURE DAMPING
 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15
ECCENTRICITYIES OF CENTER OF MASS
  0 0
  0 0
  0 0
HEIGHT OF FLOORS
  10.5 7 3.5 0
** BASE ISOLATION SYSTEM DATA **
STIFFNESS DATA FOR LINEAR ELASTIC BEARING
  2092.64 2092.64 602680.32 0 0
MASS OF BASE
  119.4 2985.6
GLOBAL DAMPING
  0.1 0.1 0.1 0. 0.
BEARNG DATA
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
COORDINATES OF BEARING
  -6 -6
  -6 -2
  -6 2
  -6 6
  -2 -6
  -2 -2
  -2 2
  -2 6
  2 -6
  2 -2
  2 2
  2 6
  6 -6
  6 -2
  6 2
  6 6
OUTPUT CONTROL PARAMETER
  0 1 1 2 3 4
COORDINATES OF DESIRED INTERSTORY DRIFT
  0 0
  0 0
  0 0
  0 0
  0 0
  0 0
LOAD CASE DATA
```

APPENDIX C

OUTPUT FILE FOR THREE STORY R/C SLIDING ISOLATED STRUCTURE

(Refer to Section 4.1)

```
**********************************************************************

PROGRAM 3D-BASIS-TABS ... A GENERAL PROGRAM FOR THE NONLINEAR
                          DYNAMIC ANALYSIS OF THREE DIMENSIONAL
                          BASE ISOLATED BUILDINGS

DEVELOPED BY ... SATISH NAGARAJAIAH
                 CHEN LI
                 ANDREI M. REINHORN
                 AND MICHALAKIS C. CONSTANTINOU
                 DEPARTMENT OF CIVIL ENGINEERING
                 STATE UNIV. OF NEW YORK AT BUFFALO

                 VAX VERSION AND PC VERSION, DEC. 1992

NATIONAL CENTER FOR EARTHQUAKE ENGINEERING RESEARCH
STATE UNIVERSITY OF NEW YORK, BUFFALO

*****************************************************************************

THIS PROGRAM HAS BEEN DEVELOPED USING:
(1) PROGRAM 3D-BASIS
DEVELOPED BY ... SATISH NAGARAJAIAH
                 ANDREI M. REINHORN
                 AND MICHALAKIS C. CONSTANTINOU
                 DEPARTMENT OF CIVIL ENGINEERING
                 STATE UNIV. OF NEW YORK AT BUFFALO, VAX VERSION, 1990
(2) PROGRAM ETABS
DEVELOPED BY ... E. L. WILSON
                 H. H. DOVEY
                 AND J. P. HOLLIN,
                 DEPARTMENT OF CIVIL ENGINEERING
                 UNIVERSITY OF CALIFORNIA, BERKELEY, SEPTEMBER 1974, REVISED MARCH 1979

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```
 ******** MIRROR OF INPUT DATA ********
   THREE STORIES BUILDING IN ITALY
   UNIT KN-METER-SEC
   GENERAL CONTROL INFORMATION
     2 3 9 16 750
   SUPERSTRUCTURE CONTROL INFORMATION
     1 1 1 2 0
   INTEGRATION CONTROL PARAMETERS
     0.01 0.005 1000 20 1
   NEWMARK METHOD CONTROL PARAMETERS (DEFAULT VALUES: 0.5 AND 0.25)
     0 0
   EARTHQUAKE CONTROL PARAMETERS
     1 0.02 0 9.8
   SUPERSTRUCTURE INFORMATION
   THIRD STORY-GENERAL DATA
     3.5 119.4 2985.6 0 0 0 0
   SECOND
     3.5 119.4 2985.6 0 0 0 0
   FIRST
     3.5 119.4 2985.6 0 0 0 0
   FRAME DATA
   FIRST FRAME
      1 3 16 24 2 1 0 3 18
   COLUMN LINE COORDINATES
     1 -6 -6
     2 -6 -2
     3 -6 2
     4 -6 6
     5 -2 -6
     6 -2 -2
     7 -2 2
     8 -2 6
     9 2 -6
    10 2 -2
    11 2 2
    12 2 6
    13 6 -6
    14 6 -2
    15 6 2
    16 6 6
   COLUMN PROPERTIES
   1 29862560 0.09 0.0747 0.0747 0.0011 0.000675 0.0006751 0.2 0.2
   2 29862560 0.12 0.0996 0.0996 0.0018 0.0016 0.0009 0.2 0.2
   BEAM PROPERTIES
   1 29862560 0.0996 0.0018 0.0016 4. 4. 2. 0.15 0.15
   BEAM LOCATION
     1  1  2  1 2 0 0 0
     2  2  3  1 2 0 0 0
     3  3  4  1 2 0 0 0
     4  1  5  1 2 0 0 0
     5  2  6  1 2 0 0 0
     6  3  7  1 2 0 0 0
     7  4  8  1 2 0 0 0
     8  5  6  1 2 0 0 0
     9  6  7  1 2 0 0 0
    10  7  8  1 2 0 0 0
    11  5  9  1 2 0 0 0
    12  6  10 1 2 0 0 0
    13  7  11 1 2 0 0 0
    14  8  12 1 2 0 0 0
```

```
  15 9  10 1 2 0 0 0
  16 10 11 1 2 0 0 0
  17 11 12 1 2 0 0 0
  18 9  13 1 2 0 0 0
  19 10 14 1 2 0 0 0
  20 11 15 1 2 0 0 0
  21 12 16 1 2 0 0 0
  22 13 14 1 2 0 0 0
  23 14 15 1 2 0 0 0
  24 15 16 1 2 0 0 0
COLUMN LOCATION
     1 1 5  2
     2 1 6  2
     3 1 7  2
     4 1 8  2
     5 1 9  2
     6 2 10 2
     7 2 11 2
     8 1 12 2
     9 1 13 2
    10 2 14 2
    11 2 15 2
    12 1 16 2
    13 1 9  2
    14 1 10 2
    15 1 11 2
    16 1 12 2
PANEL INFORMATION
      3 6 7 29862560 0.37 0.42 0.31 11945024
      2 6 7 29862560 0.37 0.42 0.31 11945024
      1 6 7 29862560 0.37 0.42 0.31 11945024
BRACE INFORMATION
      3 7 11 43280000 0.016
      3 11 7 43280000 0.016
      2 7 11 43280000 0.016
      2 11 7 43280000 0.016
      1 7 11 43280000 0.016
      1 11 7 43280000 0.016
      3 6 10 43280000 0.016
      3 10 6 43280000 0.016
      2 6 10 43280000 0.016
      2 10 6 43280000 0.016
      1 6 10 43280000 0.016
      1 10 6 43280000 0.016
      3 14 15 43280000 0.01
      3 15 14 43280000 0.01
      2 14 15 43280000 0.01
      2 15 14 43280000 0.01
      1 14 15 43280000 0.01
      1 15 14 43280000 0.01
FIRST FRAME LOCATION
  1 0 0 0 0
SUPERSTRUCTURE DAMPING
 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
ECCENTRICITIES OF CENTER OF MASS
  0 0
  0 0
  0 0
HEIGHT OF FLOORS
  10.5 7 3.5 0
** BASE ISOLATION SYSTEM DATA **
STIFFNESS DATA FOR LINEAR ELASTIC BEARING
  2092.64 2092.64 602680.32 0 0
MASS OF BASE
  119.4 2985.6
GLOBAL DAMPING
  0.1 0.1 0.1 0. 0.
BEARNG DATA
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
  0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  3 4
```

```
   0.1 0.03 23.6 0.000254 0.1 0.03 23.6 0.000254 292.85
  COORDINATES OF BEARING
    -6 -6
    -6 -2
    -6 2
    -6 6
    -2 -6
    -2 -2
    -2 2
    -2 6
    2 -6
    2 -2
    2 2
    2 6
    6 -6
    6 -2
    6 2
    6 6
  OUTPUT CONTROL PARAMETERS
    1 1 1 2 3 4
  COORDINATES OF DESIRED INTERSTORY DRIFT
    0 0
    0 0
    0 0
    0 0
    0 0
    0 0
  LOAD CASE DATA
    0 0 0 1
******** END OF MIRROR OF INPUT ********

******** START OF PROCESSED DATA *******

THREE STORIES BUILDING IN ITALY

POINTER WITHIN MASTER ARRAY... MAX STORAGE =      3978

SUPERSTRUCTURE CONTROL INFORMATION

UNIT KN-METER-SEC

  TOTAL NUMBER OF STORIES--     3
  NUMBER OF DIFF. FRAMES---     1
  TOTAL NUMBER OF FRAMES---     1
  NUMBER OF LOAD CONDITIONS     1
  TYPE OF ANALYSIS---------     2
  EQ.1-STATIC LOAD ANALYSIS+MODE SHAPES AND FREQUENCIES
  +LATERAL EARTHQUAKE RESPONSE AND PEAK RESPONSE PRINTOUT
  EQ.2-STATIC LOAD ANALYSIS+MODE SHAPES AND FREQUENCIES
  +LATERAL EARTHQUAKE RESPONSE AND TIME HISTORY PRINTOUT
  NUMBER OF FREQUENCIES----     9
  STORY TRANSLATION CODE---     0


  NO. OF FLOORS(EXCL. BASE)...............=              3
  NO. OF BEARINGS..........................=             16
  NO. OF EIGEN VECTORS CONSIDERED.........=              9
  INDEX FOR  SUPERSTRUCTURE STIFFNESS DATA=              2

    INDEX = 1 FOR 3D SHEAR BUILDING  REPRES.
    INDEX = 2 FOR FULL 3D REPRESENTATION

  TIME STEP OF INTEGRATION (NEWMARK)......=         0.0100
  INDEX FOR TYPE OF TIME STEP.............=              1

    INDEX = 1 FOR CONSTANT TIME STEP
    INDEX = 2 FOR VARIABLE TIME STEP

  GAMA FOR NEWMARKS  METHOD...............=           0.50
  BETA FOR NEWMARKS  METHOD...............=           0.25
  TOLERANCE FOR FORCE COMPUTATION.........=         0.0050
  REFERENCE MOMENT OF CONVERGENCE.........=         1000.0
  MAX NUMBER OF ITERATIONS WITHIN T.S.....=             20
  INDEX FOR GROUND MOTION INPUT...........=              1

    INDEX = 1 FOR UNIDIRECTIONAL INPUT
    INDEX = 2 FOR BIDIRECTIONAL INPUT

  TIME STEP OF RECORD ....................=          0.020
  LENGTH OF RECORD........................=            750
  LOAD FACTOR.............................=           9.80
  ANGLE OF EARTHQUAKE INCIDENCE...........=           0.00


    ************** SUPERSTRUCTURE DATA **************
STORY DATA
```

LEVEL	NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
THIRD	STORY-GENERAL DATA								
	3		3.50	119.40	2985.60	0.00	0.00	0.00	0.00
SECOND	2		3.50	119.40	2985.60	0.00	0.00	0.00	0.00
FIRST	1		3.50	119.40	2985.60	0.00	0.00	0.00	0.00

OUTPUT FOR CASE STUDY #1

STRUCTURE LATERAL LOADS...CASES A AND B

LEVEL NO.	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
3	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
2	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
1	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0

FIRST FRAME

FRAME ID NUMBER----------- 1
NUMBER OF STORY LEVELS---- 3
NUMBER OF COLUMN LINES---- 16
NUMBER OF BAYS------------ 24
NUMBER OF DIFF. COL. PROP- 2
NUMBER OF DIFF. BEAM PROP- 1
NUMBER OF DIFF. FEF------- 0
NUMBER OF PANEL ELEMENTS-- 3
NUMBER OF BRACING ELEMENTS 18

OCOLUMN LINE COORDINATES

LINE	X	Y
1	-6.00	-6.00
2	-6.00	-2.00
3	-6.00	2.00
4	-6.00	6.00
5	-2.00	-6.00
6	-2.00	-2.00
7	-2.00	2.00
8	-2.00	6.00
9	2.00	-6.00
10	2.00	-2.00
11	2.00	2.00
12	2.00	6.00
13	6.00	-6.00
14	6.00	-2.00
15	6.00	2.00
16	6.00	6.00

COLUMN ID	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
2	29862560.00	0.12	0.10	0.10	0.00	0.00	0.00	0.20	0.20

BEAM ID	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15

BEAM LOCATIONS

BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	3	1	2	1	2	0	0	0
2	3	2	3	1	2	0	0	0
3	3	3	4	1	2	0	0	0
4	3	1	5	1	2	0	0	0
5	3	2	6	1	2	0	0	0
6	3	3	7	1	2	0	0	0
7	3	4	8	1	2	0	0	0
8	3	5	6	1	2	0	0	0
9	3	6	7	1	2	0	0	0
10	3	7	8	1	2	0	0	0
11	3	5	9	1	2	0	0	0
12	3	6	10	1	2	0	0	0
13	3	7	11	1	2	0	0	0
14	3	8	12	1	2	0	0	0
15	3	9	10	1	2	0	0	0
16	3	10	11	1	2	0	0	0
17	3	11	12	1	2	0	0	0
18	3	9	13	1	2	0	0	0
19	3	10	14	1	2	0	0	0
20	3	11	15	1	2	0	0	0
21	3	12	16	1	2	0	0	0
22	3	13	14	1	2	0	0	0
23	3	14	15	1	2	0	0	0
24	3	15	16	1	2	0	0	0

OUTPUT FOR CASE STUDY #1

GENERATED BEAM LOCATIONS

STORY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

COLUMN LOCATIONS

LINE	LEV	CID	KCOL	GEN
1	3	1	5	2
2	3	1	6	2
3	3	1	7	2
4	3	1	8	2
5	3	1	9	2
6	3	2	10	2
7	3	2	11	2
8	3	1	12	2
9	3	1	13	2
10	3	2	14	2
11	3	2	15	2
12	3	1	16	2
13	3	1	9	2
14	3	1	10	2
15	3	1	11	2
16	3	1	12	2

GENERATED COLUMN LOCATIONS

STORY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
3	1	1	1	1	1	2	2	1	1	2	2	1	1	1	1	1
2	1	1	1	1	1	2	2	1	1	2	2	1	1	1	1	1
1	1	1	1	1	1	2	2	1	1	2	2	1	1	1	1	1

PANEL CARDS

LEVEL	COL I	COL J	E	A	I	SA	G
3	6	7	29862560.00	0.37	0.42	0.31	11945024.00
2	6	7	29862560.00	0.37	0.42	0.31	11945024.00
1	6	7	29862560.00	0.37	0.42	0.31	11945024.00

BRACING ELEMENT CARDS

LEV	UC	LC	E	A
3	7	11	43280000.00000	0.01600
3	11	7	43280000.00000	0.01600
2	7	11	43280000.00000	0.01600
2	11	7	43280000.00000	0.01600
1	7	11	43280000.00000	0.01600
1	11	7	43280000.00000	0.01600
3	6	10	43280000.00000	0.01600
3	10	6	43280000.00000	0.01600
2	6	10	43280000.00000	0.01600
2	10	6	43280000.00000	0.01600
1	6	10	43280000.00000	0.01600
1	10	6	43280000.00000	0.01600
3	14	15	43280000.00000	0.01000
3	15	14	43280000.00000	0.01000
2	14	15	43280000.00000	0.01000
2	15	14	43280000.00000	0.01000
1	14	15	43280000.00000	0.01000
1	15	14	43280000.00000	0.01000

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 2

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 3

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

OUTPUT FOR CASE STUDY #1

BAY NUMBERS 4

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 5

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 6

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 7

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 8

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 9

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 10

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 11

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 12

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 13

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 14

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 15

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 16

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 17

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 18

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 19

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 20

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 21

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 22

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 23

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

BAY NUMBERS 24

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
3	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
2	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0
1	29862560.00	0.10	0.00	0.00	4.00	4.00	2.00	0.15	0.15	0	0	0

COLUMN PROPERTIES

COLUMN LINE NO. 1

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
3	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
2	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
1	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20

COLUMN LINE NO. 2

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
3	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
2	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
1	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20

COLUMN LINE NO. 3

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
3	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
2	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
1	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20

COLUMN LINE NO. 4

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
3	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
2	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
1	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20

COLUMN LINE NO. 5

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
3	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
2	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
1	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20

COLUMN LINE NO. 6

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
3	29862560.00	0.12	0.10	0.10	0.00	0.00	0.00	0.20	0.20
2	29862560.00	0.12	0.10	0.10	0.00	0.00	0.00	0.20	0.20
1	29862560.00	0.12	0.10	0.10	0.00	0.00	0.00	0.20	0.20

COLUMN LINE NO. 7

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
3	29862560.00	0.12	0.10	0.10	0.00	0.00	0.00	0.20	0.20
2	29862560.00	0.12	0.10	0.10	0.00	0.00	0.00	0.20	0.20
1	29862560.00	0.12	0.10	0.10	0.00	0.00	0.00	0.20	0.20

COLUMN LINE NO. 8

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
3	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
2	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
1	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20

COLUMN LINE NO. 9

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
3	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
2	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
1	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20

COLUMN LINE NO. 10

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
3	29862560.00	0.12	0.10	0.10	0.00	0.00	0.00	0.20	0.20
2	29862560.00	0.12	0.10	0.10	0.00	0.00	0.00	0.20	0.20
1	29862560.00	0.12	0.10	0.10	0.00	0.00	0.00	0.20	0.20

COLUMN LINE NO. 11

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
3	29862560.00	0.12	0.10	0.10	0.00	0.00	0.00	0.20	0.20
2	29862560.00	0.12	0.10	0.10	0.00	0.00	0.00	0.20	0.20
1	29862560.00	0.12	0.10	0.10	0.00	0.00	0.00	0.20	0.20

COLUMN LINE NO. 12

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
3	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
2	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
1	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20

COLUMN LINE NO. 13

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
3	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
2	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
1	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20

COLUMN LINE NO. 14

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
3	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
2	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
1	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20

COLUMN LINE NO. 15

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
3	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
2	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20

1	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20

COLUMN LINE NO. 16

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
3	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
2	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20
1	29862560.00	0.09	0.07	0.07	0.00	0.00	0.00	0.20	0.20

FIRST FRAME LOCA

FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG
1	1	0	0.00	0.00	0.00

SUPERSTRUCTURE DAMPING.......

MODE SHAPE	DAMPING RATIO (%)
1	5.0
2	5.0
3	5.0
4	5.0
5	5.0
6	5.0
7	5.0
8	5.0
9	5.0

HEIGHT.........

FLOOR	HEIGHT
3	10.5
2	7.0
1	3.5
0	0.0

************** ISOLATION SYSTEM DATA *************

BASEMAT MASS AT THE CENTER OF MASS OF THE BASE ....

	TRANSL. MASS	ROTATINAL MASS
MASS	119.400	2985.600

BASE ISOLATION DATA: OPTION ONE: EQUIVALENT GLOBAL DEVICE PROPERTIES

GLOBAL ISOLATION DAMPING AT THE CENTER OF MASS OF THE BASE.....

	X	Y	R	ECX	ECY
LINEAR STIFFNESS[F/L]	2092.6400	2092.6400	602680.3200	0.0000	0.0000
VISCOUS DAMPING[F/L/T]	0.1000	0.1000	0.1000	0.0000	0.0000

BASE ISOLATION DATA: OPTION TWO: INDIVIDUAL ISOLATION ELEMENTS

SLIDING BEARING PARAMETERS.......

BEARING	FMAX X	FMAX Y	DF X	DF Y	PA X	PA Y	Y.DIS.X	Y.DIS.Y	NORM. FORCE
1	0.100	0.100	0.030	0.030	23.600	23.600	0.00025	0.00025	292.85000
2	0.100	0.100	0.030	0.030	23.600	23.600	0.00025	0.00025	292.85000
3	0.100	0.100	0.030	0.030	23.600	23.600	0.00025	0.00025	292.85000
4	0.100	0.100	0.030	0.030	23.600	23.600	0.00025	0.00025	292.85000
5	0.100	0.100	0.030	0.030	23.600	23.600	0.00025	0.00025	292.85000
6	0.100	0.100	0.030	0.030	23.600	23.600	0.00025	0.00025	292.85000
7	0.100	0.100	0.030	0.030	23.600	23.600	0.00025	0.00025	292.85000
8	0.100	0.100	0.030	0.030	23.600	23.600	0.00025	0.00025	292.85000
9	0.100	0.100	0.030	0.030	23.600	23.600	0.00025	0.00025	292.85000
10	0.100	0.100	0.030	0.030	23.600	23.600	0.00025	0.00025	292.85000
11	0.100	0.100	0.030	0.030	23.600	23.600	0.00025	0.00025	292.85000
12	0.100	0.100	0.030	0.030	23.600	23.600	0.00025	0.00025	292.85000
13	0.100	0.100	0.030	0.030	23.600	23.600	0.00025	0.00025	292.85000
14	0.100	0.100	0.030	0.030	23.600	23.600	0.00025	0.00025	292.85000
15	0.100	0.100	0.030	0.030	23.600	23.600	0.00025	0.00025	292.85000
16	0.100	0.100	0.030	0.030	23.600	23.600	0.00025	0.00025	292.85000

BEARING LOCATION ....

BEARING	X	Y
1	-6.00	-6.00
2	-6.00	-2.00
3	-6.00	2.00
4	-6.00	6.00
5	-2.00	-6.00
6	-2.00	-2.00
7	-2.00	2.00
8	-2.00	6.00
9	2.00	-6.00

10	2.00	-2.00
11	2.00	2.00
12	2.00	6.00
13	6.00	-6.00
14	6.00	-2.00
15	6.00	2.00
16	6.00	6.00

TIME HISTORY OPTION ....= 1
INDEX = 0 FOR TIME HISTORY OUTPUT
INDEX = 1 FOR NO TIME HISTORY OUTPUT

NO. OF TIME STEPS AT WHICH TIME HISTORY
OUTPUT IS DESIRED ....= 1
FORCE-DISPLACEMENT TIME HISTORY DESIRED
AT BEARINGS NUMBERED....................= 1 2 3 4

COORDINATES OF COLUMN LINES AT WHICH INTERSTORY DRIFTS ARE DESIRED

COL. LINE	X. CORD.	Y. CORD.
1	0.00	0.00
2	0.00	0.00
3	0.00	0.00
4	0.00	0.00
5	0.00	0.00
6	0.00	0.00

1
************************ OUTPUT ************************

MODE SHAPES

LEVEL ID	DIRN	1	2	3	4	5	6	7	8
3	X	0.000000	-0.070705	0.000000	0.000000	0.051357	0.000000	0.000000	0.027174
3	Y	0.028814	0.000000	0.068441	0.017460	0.000000	0.044028	0.008113	0.000000
3	ROTN	0.012811	0.000000	-0.005789	0.009780	0.000000	-0.003318	0.005265	0.000000
2	X	0.000000	-0.052181	0.000000	0.000000	-0.037300	0.000000	0.000000	-0.065277
2	Y	0.020758	0.000000	0.044503	-0.013985	0.000000	-0.041217	-0.021198	0.000000
2	ROTN	0.009659	0.000000	-0.004117	-0.006752	0.000000	0.002711	-0.012361	0.000000
1	X	0.000000	-0.025556	0.000000	0.000000	-0.065927	0.000000	0.000000	0.058101
1	Y	0.009895	0.000000	0.018832	-0.023792	0.000000	-0.060575	0.021215	0.000000
1	ROTN	0.004814	0.000000	-0.001939	-0.012291	0.000000	0.004938	0.010762	0.000000

MODE SHAPES

LEVEL ID	DIRN	9
3	X	0.000000
3	Y	-0.023486
3	ROTN	0.001717
2	X	0.000000
2	Y	0.060167
2	ROTN	-0.004355
1	X	0.000000
1	Y	-0.056896
1	ROTN	0.004091

MODE NUMBER	PERIOD
1	0.269144
2	0.267683
3	0.205015
4	0.090896
5	0.090021
6	0.062462
7	0.058352
8	0.057300
9	0.037163

************* MAX. RESPONSE ************

MAX. REL. DISP. AT THE CENTER OF MASS OF FLOORS
(WITH RESPECT TO THE BASE)

FLOOR	X DISP.	Y DISP.	ROTN.(rad)
3	0.0046	0.0000	0.0000
2	0.0030	0.0000	0.0000
1	0.0014	0.0000	0.0000

MAX INTERSTORY DRIFT

STORY	X DST.	Y DST.	TIME	X DRIFT/FL. HT.(%)	TIME	Y DRIFT/FL. HT.(%)

3	0.00	0.00	4.57	0.04	10.79	0.00
2	0.00	0.00	4.56	0.05	7.48	0.00
1	0.00	0.00	2.58	0.04	6.61	0.00
3	0.00	0.00	4.57	0.04	10.79	0.00
2	0.00	0.00	4.56	0.05	7.48	0.00
1	0.00	0.00	2.58	0.04	6.61	0.00
3	0.00	0.00	4.57	0.04	10.79	0.00
2	0.00	0.00	4.56	0.05	7.48	0.00
1	0.00	0.00	2.58	0.04	6.61	0.00
3	0.00	0.00	4.57	0.04	10.79	0.00
2	0.00	0.00	4.56	0.05	7.48	0.00
1	0.00	0.00	2.58	0.04	6.61	0.00
3	0.00	0.00	4.57	0.04	10.79	0.00
2	0.00	0.00	4.56	0.05	7.48	0.00
1	0.00	0.00	2.58	0.04	6.61	0.00
3	0.00	0.00	4.57	0.04	10.79	0.00
2	0.00	0.00	4.56	0.05	7.48	0.00
1	0.00	0.00	2.58	0.04	6.61	0.00

MAX. DISP. AT THE CENTER OF MASS OF BASE

X DISP.	Y DISP.	ROTN...
0.034	0.000	0.000

MAX RESULTANT DISP. AT THE CENTER OF MASS OF BASE

TIME	RES. DISP.	X COMP.	Y COMP.
5.440	0.034	0.034	0.000

MAX RESULTANT BEARING DISP.

BEARING	TIME	MAX. DISP	ANG. WITH X AXIS
1	5.440	0.034	0.000
2	5.440	0.034	0.000
3	5.440	0.034	0.000
4	5.440	0.034	0.000

MAX BEARING DISP. IN X

BEARING	TIME	MAX. DISP X
1	5.440	0.034
2	5.440	0.034
3	5.440	0.034
4	5.440	0.034

MAX BEARING DISP. IN Y

BEARING	TIME	MAX. DISP Y
1	10.260	0.000
2	10.260	0.000
3	10.260	0.000
4	10.260	0.000

MAX. TOTAL ACCL. AT CENTER OF MASS OF FLOORS

FLOOR	ACCL. X	ACCL. Y	ACCL. R
3	-3.632259	0.000000	0.000000
2	-2.292641	0.000000	0.000000
1	2.342419	0.000000	0.000000

MAX STORY SHEAR

STORY	TIME	X SHEAR	TIME	Y SHEAR
3	2.550	-433.692	10.790	0.000
2	4.550	-540.764	7.480	0.000
1	2.570	-525.501	10.700	0.000

MAX. STRUCTURE SHEAR (TOP OF BASE)

FORCE X	FORCE Y	Z MOMENT
-525.50	0.00	0.00

MAX. BASE SHEAR (BEARING LEVEL)

FORCE X	FORCE Y	Z MOMENT
511.87	0.00	0.00

LOAD CONDITION DEFINITION CARDS

LOAD I II III RESPONSE

OUTPUT FOR CASE STUDY #1

1	0.00	0.00	0.00	1.00

MEMBER FORCES ..... FRAME ID FIRS T FR AME LOCA FRAME TYPE 1

LEVEL NO 1 ... LEVEL ID

COLUMN FORCES

0 LINE	LOAD		TORSIONAL MOMENT	MAJOR AXIS TOP MOMENT	MAJOR AXIS BOT MOMENT	AXIAL FORCE	MINOR AXIS TOP MOMENT	MINOR AXIS BOT MOMENT	MAJOR SHEAR	MINOR SHEAR
1	1	MAX	0.0000	9.7447	13.2903	23.4319	0.0562	0.0300	7.4306	0.0278
	1	MIN	0.0000	-9.7447	-13.2903	-23.4319	-0.0562	-0.0300	-7.4306	-0.0278
2	1	MAX	0.0000	10.9553	13.9376	33.5534	0.0401	0.0215	8.0300	0.0199
	1	MIN	0.0000	-10.9553	-13.9376	-33.5534	-0.0401	-0.0215	-8.0300	-0.0199
3	1	MAX	0.0000	10.9553	13.9376	33.5534	0.0401	0.0215	8.0300	0.0199
	1	MIN	0.0000	-10.9553	-13.9376	-33.5534	-0.0401	-0.0215	-8.0300	-0.0199
4	1	MAX	0.0000	9.7447	13.2903	23.4319	0.0562	0.0300	7.4306	0.0278
	1	MIN	0.0000	-9.7447	-13.2903	-23.4319	-0.0562	-0.0300	-7.4306	-0.0278
5	1	MAX	0.0000	13.1817	15.1279	2.0934	0.4076	0.2179	9.1321	0.2018
	1	MIN	0.0000	-13.1817	-15.1279	-2.0934	-0.4076	-0.2179	-9.1321	-0.2018
6	1	MAX	0.0000	21.7100	30.5115	144.4236	0.3892	0.2081	16.8456	0.1927
	1	MIN	0.0000	-21.7100	-30.5115	-144.4236	-0.3892	-0.2081	-16.8456	-0.1927
7	1	MAX	0.0000	21.7100	30.5115	144.4236	0.3892	0.2081	16.8457	0.1927
	1	MIN	0.0000	-21.7100	-30.5115	-144.4236	-0.3892	-0.2081	-16.8457	-0.1927
8	1	MAX	0.0000	13.1817	15.1279	2.0934	0.4076	0.2179	9.1321	0.2018
	1	MIN	0.0000	-13.1817	-15.1279	-2.0934	-0.4076	-0.2179	-9.1321	-0.2018
9	1	MAX	0.0000	13.1944	15.1347	1.5861	0.9571	0.5117	9.1384	0.4738
	1	MIN	0.0000	-13.1944	-15.1347	-1.5861	-0.9571	-0.5117	-9.1384	-0.4738
10	1	MAX	0.0000	22.2053	30.7727	325.1292	0.8851	0.4732	17.0897	0.4382
	1	MIN	0.0000	-22.2053	-30.7727	-325.1292	-0.8851	-0.4732	-17.0897	-0.4382
11	1	MAX	0.0000	22.2053	30.7727	325.1291	0.8851	0.4732	17.0897	0.4382
	1	MIN	0.0000	-22.2053	-30.7727	-325.1291	-0.8851	-0.4732	-17.0897	-0.4382
12	1	MAX	0.0000	13.1944	15.1347	1.5861	0.9571	0.5117	9.1384	0.4738
	1	MIN	0.0000	-13.1944	-15.1347	-1.5861	-0.9571	-0.5117	-9.1384	-0.4738
13	1	MAX	0.0000	9.7744	13.3062	23.3867	0.0880	0.0471	7.4454	0.0436
	1	MIN	0.0000	-9.7744	-13.3062	-23.3867	-0.0880	-0.0471	-7.4454	-0.0436
14	1	MAX	0.0000	11.4165	14.1842	36.1179	0.0573	0.0307	8.2583	0.0284
	1	MIN	0.0000	-11.4165	-14.1842	-36.1179	-0.0573	-0.0307	-8.2583	-0.0284
15	1	MAX	0.0000	11.4165	14.1842	36.1179	0.0573	0.0307	8.2583	0.0284
	1	MIN	0.0000	-11.4165	-14.1842	-36.1179	-0.0573	-0.0307	-8.2583	-0.0284
16	1	MAX	0.0000	9.7744	13.3062	23.3866	0.0880	0.0471	7.4454	0.0436
	1	MIN	0.0000	-9.7744	-13.3062	-23.3866	-0.0880	-0.0471	-7.4454	-0.0436

BEAM FORCES

BAY	LOAD		TORS MOMENT	I MOMENT	J MOMENT
1	1	MAX	0.2765	0.0895	0.1043
	1	MIN	-0.2765	-0.0895	-0.1043
2	1	MAX	0.0000	0.0371	0.0371
	1	MIN	0.0000	-0.0371	-0.0371
3	1	MAX	0.2765	0.1043	0.0895
	1	MIN	-0.2765	-0.1043	-0.0895
4	1	MAX	0.0756	18.9457	15.6913
	1	MIN	-0.0756	-18.9457	-15.6913
5	1	MAX	0.0542	22.5194	24.1013
	1	MIN	-0.0542	-22.5194	-24.1013
6	1	MAX	0.0542	22.5194	24.1013
	1	MIN	-0.0542	-22.5194	-24.1013
7	1	MAX	0.0756	18.9457	15.6913
	1	MIN	-0.0756	-18.9457	-15.6913
8	1	MAX	0.8504	1.5123	1.6192
	1	MIN	-0.8504	-1.5123	-1.6192
9	1	MAX	0.0000	0.2697	0.2697
	1	MIN	0.0000	-0.2697	-0.2697
10	1	MAX	0.8504	1.6192	1.5123
	1	MIN	-0.8504	-1.6192	-1.5123
11	1	MAX	0.2937	12.7435	12.7298
	1	MIN	-0.2937	-12.7435	-12.7298
12	1	MAX	0.2057	16.5341	16.3104

	1	MIN	-0.2057	-16.5341	-16.3104
13	1	MAX	0.2057	16.5341	16.3104
	1	MIN	-0.2057	-16.5341	-16.3104
14	1	MAX	0.2937	12.7435	12.7298
	1	MIN	-0.2937	-12.7435	-12.7298
15	1	MAX	0.8015	3.1751	3.4460
	1	MIN	-0.8015	-3.1751	-3.4460
16	1	MAX	0.0000	0.6135	0.6135
	1	MIN	0.0000	-0.6135	-0.6135
17	1	MAX	0.8015	3.4460	3.1751
	1	MIN	-0.8015	-3.4460	-3.1751
18	1	MAX	0.1870	15.7039	18.9403
	1	MIN	-0.1870	-15.7039	-18.9403
19	1	MAX	0.1305	25.9289	24.0846
	1	MIN	-0.1305	-25.9289	-24.0846
20	1	MAX	0.1305	25.9289	24.0846
	1	MIN	-0.1305	-25.9289	-24.0846
21	1	MAX	0.1870	15.7039	18.9403
	1	MIN	-0.1870	-15.7039	-18.9403
22	1	MAX	0.3923	0.0725	0.1009
	1	MIN	-0.3923	-0.0725	-0.1009
23	1	MAX	0.0000	0.0530	0.0530
	1	MIN	0.0000	-0.0530	-0.0530
24	1	MAX	0.3923	0.1009	0.0725
	1	MIN	-0.3923	-0.1009	-0.0725

PANEL FORCES

FLEXURAL PANELS

I COL	LOAD		TOP-MOMENT	BOT-MOMENT	AXIAL-FORCE	SHEAR-FORCE
6	1	MAX	0.0001	0.0001	394.4139	0.0000
	1	MIN	-0.0001	-0.0001	-394.4139	0.0000

BRACING ELEMENTS - LISTED IN SAME SEQUENCE AS INPUT

T-COL	LOAD		AXIAL-FORCE
7	1	MAX	130.5494
	1	MIN	-130.5494
11	1	MAX	120.0116
	1	MIN	-120.0116
6	1	MAX	130.5494
	1	MIN	-130.5494
10	1	MAX	120.0116
	1	MIN	-120.0116
14	1	MAX	2.2338
	1	MIN	-2.2338
15	1	MAX	2.2338
	1	MIN	-2.2338

MEMBER FORCES ..... FRAME ID FIRS T FR AME LOCA FRAME TYPE 1

LEVEL NO 2 ... LEVEL ID

COLUMN FORCES

0 LINE	LOAD		TORSIONAL MOMENT	MAJOR AXIS TOP MOMENT	MAJOR AXIS BOT MOMENT	AXIAL FORCE	MINOR AXIS TOP MOMENT	MINOR AXIS BOT MOMENT	MAJOR SHEAR	MINOR SHEAR
1	1	MAX	0.0000	9.6309	9.6128	14.3279	0.1082	0.0979	6.1944	0.0665
	1	MIN	0.0000	-9.6309	-9.6128	-14.3279	-0.1082	-0.0979	-6.1944	-0.0665
2	1	MAX	0.0000	11.5751	11.5917	21.2851	0.0863	0.0748	7.4731	0.0520
	1	MIN	0.0000	-11.5751	-11.5917	-21.2851	-0.0863	-0.0748	-7.4731	-0.0520
3	1	MAX	0.0000	11.5751	11.5917	21.2851	0.0863	0.0748	7.4731	0.0520
	1	MIN	0.0000	-11.5751	-11.5917	-21.2851	-0.0863	-0.0748	-7.4731	-0.0520
4	1	MAX	0.0000	9.6309	9.6128	14.3279	0.1082	0.0979	6.1944	0.0665
	1	MIN	0.0000	-9.6309	-9.6128	-14.3279	-0.1082	-0.0979	-6.1944	-0.0665
5	1	MAX	0.0000	14.5563	14.6782	0.7632	0.8084	0.7233	9.4305	0.4941
	1	MIN	0.0000	-14.5563	-14.6782	-0.7632	-0.8084	-0.7233	-9.4305	-0.4941
6	1	MAX	0.0000	20.3872	20.3207	80.8200	0.7781	0.6939	13.0215	0.4748
	1	MIN	0.0000	-20.3872	-20.3207	-80.8200	-0.7781	-0.6939	-13.0215	-0.4748
7	1	MAX	0.0000	20.3872	20.3207	80.8201	0.7781	0.6939	13.0215	0.4748
	1	MIN	0.0000	-20.3872	-20.3207	-80.8201	-0.7781	-0.6939	-13.0215	-0.4748
8	1	MAX	0.0000	14.5563	14.6782	0.7632	0.8084	0.7233	9.4305	0.4941
	1	MIN	0.0000	-14.5563	-14.6782	-0.7632	-0.8084	-0.7233	-9.4305	-0.4941

9	1	MAX	0.0000	14.5937	14.7102	2.1275	1.8674	1.6819	9.4528	1.1449
	1	MIN	0.0000	-14.5937	-14.7102	-2.1275	-1.8674	-1.6819	-9.4528	-1.1449
10	1	MAX	0.0000	21.4273	21.3795	180.5946	1.7662	1.5764	13.7375	1.0782
	1	MIN	0.0000	-21.4273	-21.3795	-180.5946	-1.7662	-1.5764	-13.7375	-1.0782
11	1	MAX	0.0000	21.4273	21.3795	180.5945	1.7662	1.5764	13.7375	1.0782
	1	MIN	0.0000	-21.4273	-21.3795	-180.5945	-1.7662	-1.5764	-13.7375	-1.0782
12	1	MAX	0.0000	14.5937	14.7102	2.1275	1.8674	1.6819	9.4528	1.1449
	1	MIN	0.0000	-14.5937	-14.7102	-2.1275	-1.8674	-1.6819	-9.4528	-1.1449
13	1	MAX	0.0000	9.6903	9.6756	14.2844	0.1624	0.1497	6.2361	0.1007
	1	MIN	0.0000	-9.6903	-9.6756	-14.2844	-0.1624	-0.1497	-6.2361	-0.1007
14	1	MAX	0.0000	12.6877	12.5982	23.3447	0.1246	0.1075	8.1567	0.0749
	1	MIN	0.0000	-12.6877	-12.5982	-23.3447	-0.1246	-0.1075	-8.1567	-0.0749
15	1	MAX	0.0000	12.6877	12.5982	23.3447	0.1246	0.1075	8.1567	0.0749
	1	MIN	0.0000	-12.6877	-12.5982	-23.3447	-0.1246	-0.1075	-8.1567	-0.0749
16	1	MAX	0.0000	9.6903	9.6756	14.2844	0.1624	0.1497	6.2361	0.1007
	1	MIN	0.0000	-9.6903	-9.6756	-14.2844	-0.1624	-0.1497	-6.2361	-0.1007

BEAM FORCES

BAY	LOAD		TORS MOMENT	I MOMENT	J MOMENT
1	1	MAX	0.2794	0.1856	0.1979
	1	MIN	-0.2794	-0.1856	-0.1979
2	1	MAX	0.0000	0.0599	0.0599
	1	MIN	0.0000	-0.0599	-0.0599
3	1	MAX	0.2794	0.1979	0.1856
	1	MIN	-0.2794	-0.1979	-0.1856
4	1	MAX	0.1103	18.4991	15.5767
	1	MIN	-0.1103	-18.4991	-15.5767
5	1	MAX	0.0781	23.4172	25.2585
	1	MIN	-0.0781	-23.4172	-25.2585
6	1	MAX	0.0781	23.4172	25.2585
	1	MIN	-0.0781	-23.4172	-25.2585
7	1	MAX	0.1103	18.4991	15.5767
	1	MIN	-0.1103	-18.4991	-15.5767
8	1	MAX	0.8299	2.4599	2.6105
	1	MIN	-0.8299	-2.4599	-2.6105
9	1	MAX	0.0000	0.3951	0.3951
	1	MIN	0.0000	-0.3951	-0.3951
10	1	MAX	0.8299	2.6105	2.4599
	1	MIN	-0.8299	-2.6105	-2.4599
11	1	MAX	0.4188	13.3385	13.3123
	1	MIN	-0.4188	-13.3385	-13.3123
12	1	MAX	0.3007	11.4809	11.1505
	1	MIN	-0.3007	-11.4809	-11.1505
13	1	MAX	0.3007	11.4809	11.1505
	1	MIN	-0.3007	-11.4809	-11.1505
14	1	MAX	0.4188	13.3385	13.3123
	1	MIN	-0.4188	-13.3385	-13.3123
15	1	MAX	0.7591	5.2267	5.5832
	1	MIN	-0.7591	-5.2267	-5.5832
16	1	MAX	0.0000	0.8962	0.8962
	1	MIN	0.0000	-0.8962	-0.8962
17	1	MAX	0.7591	5.5832	5.2267
	1	MIN	-0.7591	-5.5832	-5.2267
18	1	MAX	0.2669	15.6282	18.5343
	1	MIN	-0.2669	-15.6282	-18.5343
19	1	MAX	0.1885	28.5609	26.3066
	1	MIN	-0.1885	-28.5609	-26.3066
20	1	MAX	0.1885	28.5609	26.3066
	1	MIN	-0.1885	-28.5609	-26.3066
21	1	MAX	0.2669	15.6282	18.5343
	1	MIN	-0.2669	-15.6282	-18.5343
22	1	MAX	0.4427	0.1960	0.2157
	1	MIN	-0.4427	-0.1960	-0.2157
23	1	MAX	0.0000	0.0868	0.0868
	1	MIN	0.0000	-0.0868	-0.0868
24	1	MAX	0.4427	0.2158	0.1960
	1	MIN	-0.4427	-0.2158	-0.1960

PANEL FORCES

FLEXURAL PANELS

I COL	LOAD		TOP-MOMENT	BOT-MOMENT	AXIAL-FORCE	SHEAR-FORCE
6	1	MAX	0.0002	0.0001	220.7157	0.0000
	1	MIN	-0.0002	-0.0001	-220.7157	0.0000

BRACING ELEMENTS - LISTED IN SAME SEQUENCE AS INPUT

T-COL	LOAD		AXIAL-FORCE
7	1	MAX	131.3472
	1	MIN	-131.3472
11	1	MAX	124.0436
	1	MIN	-124.0436
6	1	MAX	131.3472
	1	MIN	-131.3472
10	1	MAX	124.0436
	1	MIN	-124.0436
14	1	MAX	1.4438
	1	MIN	-1.4438
15	1	MAX	1.4438
	1	MIN	-1.4438

MEMBER FORCES ..... FRAME ID FIRS T FR AME LOCA FRAME TYPE 1

LEVEL NO 3 ... LEVEL ID

COLUMN FORCES

0 LINE	LOAD		TORSIONAL MOMENT	MAJOR AXIS TOP MOMENT	MAJOR AXIS BOT MOMENT	AXIAL FORCE	MINOR AXIS TOP MOMENT	MINOR AXIS BOT MOMENT	MAJOR SHEAR	MINOR SHEAR
1	1	MAX	0.0000	10.2558	8.8238	5.0615	0.2061	0.1660	6.1547	0.1200
	1	MIN	0.0000	-10.2558	-8.8238	-5.0615	-0.2061	-0.1660	-6.1547	-0.1200
2	1	MAX	0.0000	13.0322	11.2294	8.2814	0.1350	0.1185	7.8263	0.0818
	1	MIN	0.0000	-13.0322	-11.2294	-8.2814	-0.1350	-0.1185	-7.8263	-0.0818
3	1	MAX	0.0000	13.0322	11.2294	8.2814	0.1350	0.1185	7.8263	0.0818
	1	MIN	0.0000	-13.0322	-11.2294	-8.2814	-0.1350	-0.1185	-7.8263	-0.0818
4	1	MAX	0.0000	10.2558	8.8238	5.0615	0.2061	0.1660	6.1547	0.1200
	1	MIN	0.0000	-10.2558	-8.8238	-5.0615	-0.2061	-0.1660	-6.1547	-0.1200
5	1	MAX	0.0000	14.1216	13.1272	0.4156	1.2315	1.0801	8.7899	0.7457
	1	MIN	0.0000	-14.1216	-13.1272	-0.4156	-1.2315	-1.0801	-8.7899	-0.7457
6	1	MAX	0.0000	19.7117	17.0956	23.4223	1.1612	1.0279	11.8733	0.7062
	1	MIN	0.0000	-19.7117	-17.0956	-23.4223	-1.1612	-1.0279	-11.8733	-0.7062
7	1	MAX	0.0000	19.7117	17.0956	23.4223	1.1612	1.0279	11.8733	0.7062
	1	MIN	0.0000	-19.7117	-17.0956	-23.4223	-1.1612	-1.0279	-11.8733	-0.7062
8	1	MAX	0.0000	14.1216	13.1272	0.4156	1.2315	1.0801	8.7899	0.7457
	1	MIN	0.0000	-14.1216	-13.1272	-0.4156	-1.2315	-1.0801	-8.7899	-0.7457
9	1	MAX	0.0000	14.1795	13.1785	1.2844	2.9232	2.5310	8.8252	1.7594
	1	MIN	0.0000	-14.1795	-13.1785	-1.2844	-2.9232	-2.5310	-8.8252	-1.7594
10	1	MAX	0.0000	21.6602	18.7282	51.6728	2.6375	2.3335	13.0285	1.6036
	1	MIN	0.0000	-21.6602	-18.7282	-51.6728	-2.6375	-2.3335	-13.0285	-1.6036
11	1	MAX	0.0000	21.6602	18.7282	51.6727	2.6375	2.3335	13.0285	1.6036
	1	MIN	0.0000	-21.6602	-18.7282	-51.6727	-2.6375	-2.3335	-13.0285	-1.6036
12	1	MAX	0.0000	14.1795	13.1785	1.2844	2.9232	2.5310	8.8252	1.7594
	1	MIN	0.0000	-14.1795	-13.1785	-1.2844	-2.9232	-2.5310	-8.8252	-1.7594
13	1	MAX	0.0000	10.4033	8.9356	4.9866	0.3304	0.2590	6.2383	0.1901
	1	MIN	0.0000	-10.4033	-8.9356	-4.9866	-0.3304	-0.2590	-6.2383	-0.1901
14	1	MAX	0.0000	14.8121	12.7581	9.2394	0.1945	0.1710	8.8936	0.1179
	1	MIN	0.0000	-14.8121	-12.7581	-9.2394	-0.1945	-0.1710	-8.8936	-0.1179
15	1	MAX	0.0000	14.8121	12.7581	9.2394	0.1945	0.1710	8.8936	0.1179
	1	MIN	0.0000	-14.8121	-12.7581	-9.2394	-0.1945	-0.1710	-8.8936	-0.1179
16	1	MAX	0.0000	10.4033	8.9356	4.9866	0.3304	0.2590	6.2383	0.1901
	1	MIN	0.0000	-10.4033	-8.9356	-4.9866	-0.3304	-0.2590	-6.2383	-0.1901

BEAM FORCES

BAY	LOAD		TORS MOMENT	I MOMENT	J MOMENT
1	1	MAX	0.4491	0.0610	0.1202
	1	MIN	-0.4491	-0.0610	-0.1202
2	1	MAX	0.0000	0.0927	0.0927
	1	MIN	0.0000	-0.0927	-0.0927
3	1	MAX	0.4491	0.1202	0.0610
	1	MIN	-0.4491	-0.1202	-0.0610

4	1	MAX	0.1617	10.2858	8.2604
	1	MIN	-0.1617	-10.2858	-8.2604
5	1	MAX	0.1166	13.7971	17.0252
	1	MIN	-0.1166	-13.7971	-17.0252
6	1	MAX	0.1166	13.7971	17.0252
	1	MIN	-0.1166	-13.7971	-17.0252
7	1	MAX	0.1617	10.2858	8.2604
	1	MIN	-0.1617	-10.2858	-8.2604
8	1	MAX	0.7743	2.0371	2.2897
	1	MIN	-0.7743	-2.0371	-2.2897
9	1	MAX	0.0000	0.5936	0.5936
	1	MIN	0.0000	-0.5936	-0.5936
10	1	MAX	0.7743	2.2897	2.0371
	1	MIN	-0.7743	-2.2897	-2.0371
11	1	MAX	0.6701	7.0700	7.0305
	1	MIN	-0.6701	-7.0700	-7.0305
12	1	MAX	0.4524	3.1352	2.9438
	1	MIN	-0.4524	-3.1352	-2.9438
13	1	MAX	0.4524	3.1352	2.9438
	1	MIN	-0.4524	-3.1352	-2.9438
14	1	MAX	0.6701	7.0700	7.0305
	1	MIN	-0.6701	-7.0700	-7.0305
15	1	MAX	0.6445	4.0078	4.6902
	1	MIN	-0.6445	-4.0078	-4.6902
16	1	MAX	0.0000	1.3490	1.3490
	1	MIN	0.0000	-1.3490	-1.3490
17	1	MAX	0.6445	4.6902	4.0078
	1	MIN	-0.6445	-4.6902	-4.0078
18	1	MAX	0.4152	8.2397	10.1910
	1	MIN	-0.4152	-8.2397	-10.1910
19	1	MAX	0.2831	19.7375	15.8604
	1	MIN	-0.2831	-19.7375	-15.8604
20	1	MAX	0.2831	19.7375	15.8604
	1	MIN	-0.2831	-19.7375	-15.8604
21	1	MAX	0.4152	8.2397	10.1910
	1	MIN	-0.4152	-8.2397	-10.1910
22	1	MAX	0.7128	0.0476	0.0674
	1	MIN	-0.7128	-0.0476	-0.0674
23	1	MAX	0.0000	0.1333	0.1333
	1	MIN	0.0000	-0.1333	-0.1333
24	1	MAX	0.7128	0.0674	0.0476
	1	MIN	-0.7128	-0.0674	-0.0476

PANEL FORCES

FLEXURAL PANELS

I COL	LOAD		TOP-MOMENT	BOT-MOMENT	AXIAL-FORCE	SHEAR-FORCE
6	1	MAX	0.0002	0.0002	63.9652	0.0001
	1	MIN	-0.0002	-0.0002	-63.9652	-0.0001

BRACING ELEMENTS - LISTED IN SAME SEQUENCE AS INPUT

T-COL	LOAD		AXIAL-FORCE
7	1	MAX	96.4841
	1	MIN	-96.4841
11	1	MAX	94.3960
	1	MIN	-94.3960
6	1	MAX	96.4841
	1	MIN	-96.4841
10	1	MAX	94.3959
	1	MIN	-94.3959
14	1	MAX	0.5714
	1	MIN	-0.5714
15	1	MAX	0.5714
	1	MIN	-0.5714

******** END OF OUTPUT ********

APPENDIX D

INPUT FILE FOR EIGHT STORY R/C BASE ISOLATED STRUCTURE

(Refer to Section 4.2)

INPUT FOR CASE STUDY #2

```
EIGHT STORIES R/C BUILDING IN CALIFORNIA
UNIT KIPS-IN-SEC
GENERAL CONTROL INFORMATION
2   8   12   28   3000
SUPERSTRUCTURE CONTROL INFORMATION
1     1     1     2     0
INTEGRETION CONTROL PARAMETERS
0.005 0.001 5000 200 1
NEWMARK METHOD CONTROL PARAMETERS
0.5 0.25
EARTHQUAKE CONTROL PARAMETERS
2 0.01 0 386.22
**** SUPERSTRUCTURE INFORMATION ****
EIGHTH STORY-GENERAL INFORMATION
147     2.819     589802     421.5     639     0     0
SEVENTH
147     3.529     738351     421.5     639     0     0
SIXTH
147     3.529     738351     421.5     639     0.00  0.00
FIFTH
147     3.529     738351     421.5     639     0.00  0.00
FORTH
147     3.529     738351     421.5     639     0.00  0.00
THIRD
147     3.555     743790     421.5     639     0.00  0.00
SECOND
147     3.555     743790     421.5     639     0.00  0.00
FIRST
147     3.555     743790     421.5     639     0.00  0.00
FRAME DATA
EXTERNAL FRAME
1    8    28    45    7    13    0    0    0
COLUMN LINE COORDINATES
  1    0      0
  2    0.0    237
  3    0.0    474
  4    0     711
  5    0     948
  6    0     1185
  7    0     1422
  8    233    0
  9    233    237
  10   233    474
  11   233    711
  12   233    948
  13   233    1185
  14   233    1422
  15   466    0
  16   466    237
  17   466    474
  18   466    711
  19   466    948
  20   466    1185
  21   466    1422
  22   699    0
  23   699    237
  24   699    474
  25   699    711
  26   699    948
  27   699    1185
  28   699    1422
COLUMN PROPERTIES
1  3150  324  269  269  14762  8748   8748   12.0  12.0
2  3150  576  478  478  46656  27648  27648  12.0  12.0
3  3150  676  561  561  64262  38081  38081  12.0  12.0
4  3150  672  558  558  75866  43904  32256  12    12
5  3150  784  651  651  86436  51221  51221  12.0  12.0
6  3150  768  637  637  80179  65536  36864  12.0  12.0
7  3150  432  359  359  25369  20736  11664  12.0  12.0
BEAM PROPERTIES
1  3150  219  8696   10648  4    4    2    12.0  12.0
2  3150  319  19268  18432  4.0  4.0  2.0  12.0  12.0
3  3150  359  25369  20736  4.0  4.0  2.0  12.0  12.0
4  3150  256  12073  12423  4.0  4.0  2.0  12.0  12.0
5  3150  365  26400  17747  4.0  4.0  2.0  12.0  12.0
6  3150  398  31872  23040  4.0  4.0  2.0  12.0  12.0
7  3150  292  16896  14197  4    4    2    12    12
8  3150  402  32942  19521  4    4    2    14    14
9  3150  438  38333  25344  4    4    2    14    14
10  3150  329  21331  15972  4    4    2    13    13
11  3150  438  21331  21296  4    4    2    14    14
12  3150  478  46656  27648  4    4    2    14    14
13  3150  518  53914  29952  4    4    2    14    14
BEAMS LOCATION
 1  1  2   7  0  0  0  0
 1  1  2   6  2  0  0  0
 1  1  2   9  1  0  0  0
 1  1  2  12  1  0  0  0
 2  2  3  11  0  0  0  0
 2  2  3   6  2  0  0  0
 2  2  3   9  1  0  0  0
 2  2  3  12  1  0  0  0
 3  3  4  11  0  0  0  0
 3  3  4   6  2  0  0  0
 3  3  4   9  1  0  0  0
 3  3  4  12  1  0  0  0
 4  4  5  11  0  0  0  0
 4  4  5   2  0  0  0  0
 4  4  5   4  1  0  0  0
```

INPUT FOR CASE STUDY #2

4	4	5	9	1	0	0	0
4	4	5	12	1	0	0	0
5	5	6	11	0	0	0	0
5	5		2	0	0	0	0
5	5	6	4	1	0	0	0
5	5	6	2	1	0	0	0
5	5	6	3	1	0	0	0
6	6	7	11	0	0	0	0
6	6	7	2	0	0	0	0
6	6	7	4	1	0	0	0
6	6	7	9	1	0	0	0
6	6	7	12	1	0	0	0
7	1	8	11	0	0	0	0
7	1	8	3	0	0	0	0
7	1	8	6	1	0	0	0
7	1	8	9	1	0	0	0
7	1	8	13	1	0	0	0
8	2	9	7	0	0	0	0
8	2	9	6	2	0	0	0
8	2	9	12	3	0	0	0
9	3	10	7	0	0	0	0
9	3	10	6	2	0	0	0
9	3	10	12	3	0	0	0
10	4	11	7	0	0	0	0
10	4	11	6	2	0	0	0
10	4	11	12	3	0	0	0
11	5	12	7	0	0	0	0
11	5	12	6	2	0	0	0
11	5	12	12	3	0	0	0
12	6	13	7	0	0	0	0
12	6	13	6	2	0	0	0
12	6	13	12	3	0	0	0
13	7	14	11	0	0	0	0
13	7	14	3	0	0	0	0
13	7	14	6	1	0	0	0
13	7	14	9	1	0	0	0
13	7	14	13	1	0	0	0
14	8	9	1	0	0	0	0
14	8	9	2	0	0	0	0
14	8	9	3	1	0	0	0
14	8	9	6	1	0	0	0
14	8	9	9	1	0	0	0
15	9	10	1	0	0	0	0
15	9	10	2	0	0	0	0
15	9	10	3	1	0	0	0
15	9	10	6	1	0	0	0
15	9	10	9	1	0	0	0
16	10	11	1	0	0	0	0
16	10	11	2	0	0	0	0
16	10	11	3	1	0	0	0
16	10	11	6	1	0	0	0
16	10	11	9	1	0	0	0
17	11	12	1	0	0	0	0
17	11	12	2	0	0	0	0
17	11	12	3	1	0	0	0
17	11	12	6	1	0	0	0
17	11	12	9	1	0	0	0
18	12	13	1	0	0	0	0
18	12	13	7	0	0	0	0
18	12	13	10	1	0	0	0
18	12	13	5	1	0	0	0
18	12	13	8	1	0	0	0
19	13	14	1	0	0	0	0
19	13	14	2	0	0	0	0
19	13	14	3	1	0	0	0
19	13	14	6	1	0	0	0
19	13	14	9	1	0	0	0
20	8	15	11	0	0	0	0
20	8	15	3	0	0	0	0
20	8	15	6	1	0	0	0
20	8	15	9	1	0	0	0
20	8	15	13	1	0	0	0
21	9	16	7	0	0	0	0
21	9	16	6	2	0	0	0
21	9	16	12	3	0	0	0
22	10	17	7	0	0	0	0
22	10	17	10	0	0	0	0
22	10	17	6	1	0	0	0
22	10	17	12	3	0	0	0
23	11	18	7	0	0	0	0
23	11	18	10	0	0	0	0
23	11	18	5	1	0	0	0
23	11	18	11	3	0	0	0
24	12	19	7	0	0	0	0
24	12	19	3	0	0	0	0
24	12	19	6	1	0	0	0
24	12	19	11	3	0	0	0
25	13	20	7	0	0	0	0
25	13	20	6	2	0	0	0
25	13	20	12	3	0	0	0
26	14	21	11	0	0	0	0
26	14	21	3	0	0	0	0
26	14	21	6	1	0	0	0
26	14	21	9	1	0	0	0
26	14	21	13	1	0	0	0
27	15	16	1	0	0	0	0
27	15	16	2	0	0	0	0
27	15	16	3	1	0	0	0
27	15	16	6	1	0	0	0

```
 27 15 16  9  1  0  0  0
 28 16 17  1  0  0  0  0
 28 16 17  2  0  0  0  0
 28 16 17  3  1  0  0  0
 28 16 17  6  1  0  0  0
 28 16 17  9  1  0  0  0
 29 17 18  1  0  0  0  0
 29 17 18  2  0  0  0  0
 29 17 18  3  1  0  0  0
 29 17 18  6  1  0  0  0
 29 17 18  9  1  0  0  0
 30 18 19  1  0  0  0  0
 30 18 19  2  0  0  0  0
 30 18 19  3  1  0  0  0
 30 18 19  6  1  0  0  0
 30 18 19  9  1  0  0  0
 31 19 20  1  0  0  0  0
 31 19 20  2  0  0  0  0
 31 19 20  3  1  0  0  0
 31 19 20  6  1  0  0  0
 31 19 20  9  1  0  0  0
 32 20 21  1  0  0  0  0
 32 20 21  2  0  0  0  0
 32 20 21  3  1  0  0  0
 32 20 21  6  1  0  0  0
 32 20 21  9  1  0  0  0
 33 15 22 11  0  0  0  0
 33 15 22  3  0  0  0  0
 33 15 22  6  1  0  0  0
 33 15 22  9  1  0  0  0
 33 15 22 13  1  0  0  0
 34 16 23  7  0  0  0  0
 34 16 23  6  2  0  0  0
 34 16 23 12  3  0  0  0
 35 17 24  7  0  0  0  0
 35 17 24  6  2  0  0  0
 35 17 24 12  3  0  0  0
 36 18 25  7  0  0  0  0
 36 18 25  6  2  0  0  0
 36 18 25 12  3  0  0  0
 37 19 26  7  0  0  0  0
 37 19 26  6  2  0  0  0
 37 19 26 12  3  0  0  0
 38 20 27  7  0  0  0  0
 38 20 27  6  2  0  0  0
 38 20 27 12  3  0  0  0
 39 21 28 11  0  0  0  0
 39 21 28  3  0  0  0  0
 39 21 28  6  1  0  0  0
 39 21 28  9  1  0  0  0
 39 21 28 13  1  0  0  0
 40 22 23  7  0  0  0  0
 40 22 23  6  2  0  0  0
 40 22 23  9  1  0  0  0
 40 22 23 12  1  0  0  0
 41 23 24 11  0  0  0  0
 41 23 24  6  2  0  0  0
 41 23 24  9  1  0  0  0
 41 23 24 12  1  0  0  0
 42 24 25 11  0  0  0  0
 42 24 25  6  2  0  0  0
 42 24 25  9  1  0  0  0
 42 24 25 12  1  0  0  0
 43 25 26 11  0  0  0  0
 43 25 26  6  2  0  0  0
 43 25 26  9  1  0  0  0
 43 25 26 12  1  0  0  0
 44 26 27 11  0  0  0  0
 44 26 27  6  2  0  0  0
 44 26 27  9  1  0  0  0
 44 26 27 12  1  0  0  0
 45 27 28 11  0  0  0  0
 45 27 28  6  2  0  0  0
 45 27 28 12  3  0  0  0
COLUMNS LOCATION
  1    3    2   7
  2    7    3   7
  3    7    4   7
  4    7    5   6
  4    2    5   0
  5    1    6   1
  5    2    6   2
  5    3    6   1
  5    5    6   0
  6    1    7   1
  6    2    7   2
  6    3    7   1
  6    5    7   0
  7    3    6   7
  8    7    9   7
  9    1   10   1
  9    2   10   1
  9    3   10   1
  9    5   10   1
 10    2   11   3
 10    4   11   1
 10    6   11   1
 11    1   12   1
 11    2   12   1
```

```
11   3  12   1
11   5  12   1
12   1  13   1
12   2  13   1
12   3  13   1
12   5  13   1
13   1  14   1
13   2  14   1
13   3  14   1
13   5  14   1
14   7  13   7
15   7  16   7
16   1  17   1
16   2  17   1
16   3  17   1
16   5  17   1
17   1  18   1
17   2  18   1
17   3  18   1
17   5  18   1
18   1  19   1
18   2  19   1
18   3  19   1
18   5  19   1
19   1  20   1
19   2  20   1
19   3  20   1
19   5  20   1
20   1  21   1
20   2  21   1
20   3  21   1
20   5  21   1
21   7  20   7
22   3  23   7
23   7  24   7
24   7  25   7
25   7  26   7
26   7  27   7
27   7  28   7
28   3  27   7
FRAME 1 LOCATION
  1  0  0  0  0
SUPERSTRUCTURE DAMPING
0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
ECCENTRICITIES OF MASS
0 0
0 0
0 0
0 0
0 0
0 0
0 0
0 0
HEIGHT OF FLOOR
1176 1029 882 735 588 441 294 147 0
****  BASE ISOLATION SYSTEM DATA ****
STIFFNESS DATA FOR LINEAR ELASTIC BEARING
136.73 136.73 87155787 0 0
MASS OF BASE
3.581 749231
GLOBAL DAMPING
0 0 0 0 0
BEARING DATA
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
```

```
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
COORDINATES OF BEARING
-349.5 711
-349.5 474
-349.5 237
-349.5 0
-349.5 -237
-349.5 -474
-349.5 -711
-116.5 711
-116.5 474
-116.5 237
-116.5 0
-116.5 -237
-116.5 -474
-116.5 -711
116.5 711
116.5 474
116.5 237
116.5 0
116.5 -237
116.5 -474
116.5 -711
349.5 711
349.5 474
349.5 237
349.5 0
349.5 -237
349.5 -474
349.5 -711
OUTPUT CONTROL PARAMETERS
1 10 1 2 3 4
COORDINATES OF DESIRED INTERSTORY DRIFT
349.5 711
-349.5 -711
0 0
0 0
0 0
0 0
LOAD CASE DATA
0 0 0 1
```

APPENDIX E

OUTPUT FILE FOR EIGHT STORY R/C BASE ISOLATED STRUCTURE

(Refer to Section 4.2)

```
***********************************************************************

PROGRAM 3D-BASIS-TABS ... A GENERAL PROGRAM FOR THE NONLINEAR
                          DYNAMIC ANALYSIS OF THREE DIMENSIONAL
                          BASE ISOLATED BUILDINGS

DEVELOPED BY ... SATISH NAGARAJAIAH
                 CHEN LI
                 ANDREI M. REINHORN
                 AND MICHALAKIS C. CONSTANTINOU
                 DEPARTMENT OF CIVIL ENGINEERING
                 STATE UNIV. OF NEW YORK AT BUFFALO

                 VAX VERSION AND PC VERSION, DEC. 1992

NATIONAL CENTER FOR EARTHQUAKE ENGINEERING RESEARCH
STATE UNIVERSITY OF NEW YORK, BUFFALO

*****************************************************************************

THIS PROGRAM HAS BEEN DEVELOPED USING:
(1) PROGRAM 3D-BASIS
DEVELOPED BY ... SATISH NAGARAJAIAH
                 ANDREI M. REINHORN
                 AND MICHALAKIS C. CONSTANTINOU
                 DEPARTMENT OF CIVIL ENGINEERING
                 STATE UNIV. OF NEW YORK AT BUFFALO, VAX VERSION, 1990
(2) PROGRAM ETABS
DEVELOPED BY ... E. L. WILSON
                 H. H. DOVEY
                 AND J. P. HOLLIN,
                 DEPARTMENT OF CIVIL ENGINEERING
                 UNIVERSITY OF CALIFORNIA, BERKELEY, SEPTEMBER 1974, REVISED MARCH 1979

******************************************************************************

 ******** MIRROR OF INPUT DATA ********
      EIGHT STORIES R/C BUILDING IN CALIFORNIA
      UNIT KIPS-IN-SEC
      GENERAL CONTROL INFORMATION
      2   8  12  28  3000
      SUPERSTRUCTURE CONTROL INFORMATION
      1    1    1    2    0
      INTEGRETION CONTROL PARAMETERS
      0.005 0.001 5000 200 1
      NEWMARK METHOD CONTROL PARAMETERS
      0.5 0.25
      EARTHQUAKE CONTROL PARAMETERS
      2 0.01 0 386.22
      **** SUPERSTRUCTURE INFORMATION ****
      EIGHTH STORY-GENERAL INFORMATION
      147     2.819    589802    421.5    639   0    0
      SEVENTH
      147     3.529    738351    421.5    639   0    0
      SIXTH
      147     3.529    738351    421.5    639    0.00  0.00
      FIFTH
      147     3.529    738351     421.5    639   0.00  0.00
      FORTH
      147     3.529    738351    421.5    639   0.00  0.00
      THIRD
      147     3.555    743790    421.5    639    0.00  0.00
      SECOND
      147     3.555    743790    421.5    639   0.00  0.00
      FIRST
      147     3.555    743790    421.5    639   0.00  0.00
      FRAME DATA
      EXTERNAL FRAME
      1    8   28   45    7    13    0    0    0
      COLUMN LINE COORDINATES
        1     0     0
        2     0.0     237
        3     0.0     474
        4     0     711
        5     0     948
        6     0     1185
        7     0     1422
        8     233     0
        9     233     237
        10    233     474
        11    233     711
        12    233     948
        13    233     1185
        14    233     1422
        15    466     0
        16    466     237
        17    466     474
        18    466     711
        19    466     948
        20    466     1185
        21    466     1422
        22    699     0
        23    699     237
        24    699     474
        25    699     711
        26    699     948
        27    699     1185
```

```
  28   699    1422
COLUMN PROPERTIES
1  3150  324   269   269   14762   8748   8748  12.0  12.0
2  3150  576   478   478   46656   27648  27648  12.0  12.0
3  3150  676   561   561   64262   38081  38081  12.0  12.0
4  3150  672   558   558   75866   43904  32256  12    12
5  3150  784   651   651   86436   51221  51221  12.0  12.0
6  3150  768   637   637   80179   65536  36864  12.0  12.0
7  3150  432   359   359   25369   20736  11664  12.0  12.0
BEAM PROPERTIES
1  3150  219   8696   10648   4    4    2    12.0  12.0
2  3150  319   19268  18432   4.0  4.0  2.0  12.0  12.0
3  3150  359   25369  20736   4.0  4.0  2.0  12.0  12.0
4  3150  256   12073  12423   4.0  4.0  2.0  12.0  12.0
5  3150  365   26400  17747   4.0  4.0  2.0  12.0  12.0
6  3150  398   31872  23040   4.0  4.0  2.0  12.0  12.0
7  3150  292   16896  14197   4    4    2    12    12
8  3150  402   32942  19521   4    4    2    14    14
9  3150  438   38333  25344   4    4    2    14    14
10  3150  329   21331  15972   4    4    2    13    13
11  3150  438   21331  21296   4    4    2    14    14
12  3150  478   46656  27648   4    4    2    14    14
13  3150  518   53914  29952   4    4    2    14    14
BEAMS LOCATION
 1  1  2  7  0  0  0  0
 1  1  2  6  2  0  0  0
 1  1  2  9  1  0  0  0
 1  1  2 12  1  0  0  0
 2  2  3 11  0  0  0  0
 2  2  3  6  2  0  0  0
 2  2  3  9  1  0  0  0
 2  2  3 12  1  0  0  0
 3  3  4 11  0  0  0  0
 3  3  4  6  2  0  0  0
 3  3  4  9  1  0  0  0
 3  3  4 12  1  0  0  0
 4  4  5 11  0  0  0  0
 4  4  5  2  0  0  0  0
 4  4  5  4  1  0  0  0
 4  4  5  9  1  0  0  0
 4  4  5 12  1  0  0  0
 5  5  6 11  0  0  0  0
 5  5  6  2  0  0  0  0
 5  5  6  4  1  0  0  0
 5  5  6  2  1  0  0  0
 5  5  6  3  1  0  0  0
 6  6  7 11  0  0  0  0
 6  6  7  2  0  0  0  0
 6  6  7  4  1  0  0  0
 6  6  7  9  1  0  0  0
 6  6  7 12  1  0  0  0
 7  1  8 11  0  0  0  0
 7  1  8  3  0  0  0  0
 7  1  8  6  1  0  0  0
 7  1  8  9  1  0  0  0
 7  1  8 13  1  0  0  0
 8  2  9  7  0  0  0  0
 8  2  9  6  2  0  0  0
 8  2  9 12  3  0  0  0
 9  3 10  7  0  0  0  0
 9  3 10  6  2  0  0  0
 9  3 10 12  3  0  0  0
10  4 11  7  0  0  0  0
10  4 11  6  2  0  0  0
10  4 11 12  3  0  0  0
11  5 12  7  0  0  0  0
11  5 12  6  2  0  0  0
11  5 12 12  3  0  0  0
12  6 13  7  0  0  0  0
12  6 13  6  2  0  0  0
12  6 13 12  3  0  0  0
13  7 14 11  0  0  0  0
13  7 14  3  0  0  0  0
13  7 14  6  1  0  0  0
13  7 14  9  1  0  0  0
13  7 14 13  1  0  0  0
14  8  9  1  0  0  0  0
14  8  9  2  0  0  0  0
14  8  9  3  1  0  0  0
14  8  9  6  1  0  0  0
14  8  9  9  1  0  0  0
15  9 10  1  0  0  0  0
15  9 10  2  0  0  0  0
15  9 10  3  1  0  0  0
15  9 10  6  1  0  0  0
15  9 10  9  1  0  0  0
16 10 11  1  0  0  0  0
16 10 11  2  0  0  0  0
16 10 11  3  1  0  0  0
16 10 11  6  1  0  0  0
16 10 11  9  1  0  0  0
17 11 12  1  0  0  0  0
17 11 12  2  0  0  0  0
17 11 12  3  1  0  0  0
17 11 12  6  1  0  0  0
17 11 12  9  1  0  0  0
18 12 13  1  0  0  0  0
18 12 13  7  0  0  0  0
18 12 13 10  1  0  0  0
```

18	12	13	5	1	0	0	0
18	12	13	8	1	0	0	0
19	13	14	1	0	0	0	0
19	13	14	2	0	0	0	0
19	13	14	3	1	0	0	0
19	13	14	6	1	0	0	0
19	13	14	9	1	0	0	0
20	8	15	11	0	0	0	0
20	8	15	3	0	0	0	0
20	8	15	6	1	0	0	0
20	8	15	9	1	0	0	0
20	8	15	13	1	0	0	0
21	9	16	7	0	0	0	0
21	9	16	6	2	0	0	0
21	9	16	12	3	0	0	0
22	10	17	7	0	0	0	0
22	10	17	10	0	0	0	0
22	10	17	6	1	0	0	0
22	10	17	12	3	0	0	0
23	11	18	7	0	0	0	0
23	11	18	10	0	0	0	0
23	11	18	5	1	0	0	0
23	11	18	11	3	0	0	0
24	12	19	7	0	0	0	0
24	12	19	3	0	0	0	0
24	12	19	6	1	0	0	0
24	12	19	11	3	0	0	0
25	13	20	7	0	0	0	0
25	13	20	6	2	0	0	0
25	13	20	12	3	0	0	0
26	14	21	11	0	0	0	0
26	14	21	3	0	0	0	0
26	14	21	6	1	0	0	0
26	14	21	9	1	0	0	0
26	14	21	13	1	0	0	0
27	15	16	1	0	0	0	0
27	15	16	2	0	0	0	0
27	15	16	3	1	0	0	0
27	15	16	6	1	0	0	0
27	15	16	9	1	0	0	0
28	16	17	1	0	0	0	0
28	16	17	2	0	0	0	0
28	16	17	3	1	0	0	0
28	16	17	6	1	0	0	0
28	16	17	9	1	0	0	0
29	17	18	1	0	0	0	0
29	17	18	2	0	0	0	0
29	17	18	3	1	0	0	0
29	17	18	6	1	0	0	0
29	17	18	9	1	0	0	0
30	18	19	1	0	0	0	0
30	18	19	2	0	0	0	0
30	18	19	3	1	0	0	0
30	18	19	6	1	0	0	0
30	18	19	9	1	0	0	0
31	19	20	1	0	0	0	0
31	19	20	2	0	0	0	0
31	19	20	3	1	0	0	0
31	19	20	6	1	0	0	0
31	19	20	9	1	0	0	0
32	20	21	1	0	0	0	0
32	20	21	2	0	0	0	0
32	20	21	3	1	0	0	0
32	20	21	6	1	0	0	0
32	20	21	9	1	0	0	0
33	15	22	11	0	0	0	0
33	15	22	3	0	0	0	0
33	15	22	6	1	0	0	0
33	15	22	9	1	0	0	0
33	15	22	13	1	0	0	0
34	16	23	7	0	0	0	0
34	16	23	6	2	0	0	0
34	16	23	12	3	0	0	0
35	17	24	7	0	0	0	0
35	17	24	6	2	0	0	0
35	17	24	12	3	0	0	0
36	18	25	7	0	0	0	0
36	18	25	6	2	0	0	0
36	18	25	12	3	0	0	0
37	19	26	7	0	0	0	0
37	19	26	6	2	0	0	0
37	19	26	12	3	0	0	0
38	20	27	7	0	0	0	0
38	20	27	6	2	0	0	0
38	20	27	12	3	0	0	0
39	21	28	11	0	0	0	0
39	21	28	3	0	0	0	0
39	21	28	6	1	0	0	0
39	21	28	9	1	0	0	0
39	21	28	13	1	0	0	0
40	22	23	7	0	0	0	0
40	22	23	6	2	0	0	0
40	22	23	9	1	0	0	0
40	22	23	12	1	0	0	0
41	23	24	11	0	0	0	0
41	23	24	6	2	0	0	0
41	23	24	9	1	0	0	0
41	23	24	12	1	0	0	0
42	24	25	11	0	0	0	0

```
42 24 25  6  2  0  0  0
42 24 25  9  1  0  0  0
42 24 25 12  1  0  0  0
43 25 26 11  0  0  0  0
43 25 26  6  2  0  0  0
43 25 26  9  1  0  0  0
43 25 26 12  1  0  0  0
44 26 27 11  0  0  0  0
44 26 27  6  2  0  0  0
44 26 27  9  1  0  0  0
44 26 27 12  1  0  0  0
45 27 28 11  0  0  0  0
45 27 28  6  2  0  0  0
45 27 28 12  3  0  0  0
COLUMNS LOCATION
  1   3   2   7
  2   7   3   7
  3   7   4   7
  4   7   5   6
  4   2   5   0
  5   1   6   1
  5   2   6   2
  5   3   6   1
  5   5   6   0
  6   1   7   1
  6   2   7   2
  6   3   7   1
  6   5   7   0
  7   3   6   7
  8   7   9   7
  9   1  10   1
  9   2  10   1
  9   3  10   1
  9   5  10   1
 10   2  11   3
 10   4  11   1
 10   6  11   1
 11   1  12   1
 11   2  12   1
 11   3  12   1
 11   5  12   1
 12   1  13   1
 12   2  13   1
 12   3  13   1
 12   5  13   1
 13   1  14   1
 13   2  14   1
 13   3  14   1
 13   5  14   1
 14   7  13   7
 15   7  16   7
 16   1  17   1
 16   2  17   1
 16   3  17   1
 16   5  17   1
 17   1  18   1
 17   2  18   1
 17   3  18   1
 17   5  18   1
 18   1  19   1
 18   2  19   1
 18   3  19   1
 18   5  19   1
 19   1  20   1
 19   2  20   1
 19   3  20   1
 19   5  20   1
 20   1  21   1
 20   2  21   1
 20   3  21   1
 20   5  21   1
 21   7  20   7
 22   3  23   7
 23   7  24   7
 24   7  25   7
 25   7  26   7
 26   7  27   7
 27   7  28   7
 28   3  27   7
FRAME 1 LOCATION
   1  0  0  0  0
SUPERSTRUCTURE DAMPING
0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
ECCENTRICITIES OF MASS
0 0
0 0
0 0
0 0
0 0
0 0
0 0
0 0
HEIGHT OF FLOOR
1176 1029 882 735 588 441 294 147 0
****  BASE ISOLATION SYSTEM DATA ****
STIFFNESS DATA FOR LINEAR ELASTIC BEARING
136.73 136.73 87155787 0 0
MASS OF BASE
3.581 749231
```

```
GLOBAL DAMPING
0 0 0 0 0
BEARING DATA
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
3 4
0.08 0.04 0.6 0.01 0.08 0.04 0.6 0.01 430
COORDINATES OF BEARING
-349.5 711
-349.5 474
-349.5 237
-349.5 0
-349.5 -237
-349.5 -474
-349.5 -711
-116.5 711
-116.5 474
-116.5 237
-116.5 0
-116.5 -237
-116.5 -474
-116.5 -711
116.5 711
116.5 474
116.5 237
116.5 0
116.5 -237
116.5 -474
116.5 -711
349.5 711
349.5 474
349.5 237
349.5 0
349.5 -237
349.5 -474
349.5 -711
OUTPUT CONTROL PARAMETERS
1 10 1 2 3 4
COORDINATES OF DESIRED INTERSTORY DRIFT
349.5 711
-349.5 -711
0 0
0 0
0 0
0 0
LOAD CASE DATA
0 0 0 1
```

OUTPUT FOR CASE STUDY #2

******** END OF MIRROR OF INPUT ********

******** START OF PROCESSED DATA *******

EIGHT STORIES R/C BUILDING IN CALIFORNIA

POINTER WITHIN MASTER ARRAY... MAX STORAGE = 13262

SUPERSTRUCTURE CONTROL INFORMATION

UNIT KIPS-IN-SEC

```
TOTAL NUMBER OF STORIES--    8
NUMBER OF DIFF. FRAMES---    1
TOTAL NUMBER OF FRAMES---    1
NUMBER OF LOAD CONDITIONS    1
TYPE OF ANALYSIS---------    2
EQ.1-STATIC LOAD ANALYSIS+MODE SHAPES AND FREQUENCIES
+LATERAL EARTHQUAKE RESPONSE AND PEAK RESPONSE PRINTOUT
EQ.2-STATIC LOAD ANALYSIS+MODE SHAPES AND FREQUENCIES
+LATERAL EARTHQUAKE RESPONSE AND TIME HISTORY PRINTOUT
NUMBER OF FREQUENCIES----   12
STORY TRANSLATION CODE---    0


NO. OF FLOORS(EXCL. BASE)...............=            8
NO. OF BEARINGS.........................=           28
NO. OF EIGEN VECTORS CONSIDERED.........=           12
INDEX FOR  SUPERSTRUCTURE STIFFNESS DATA=            2

  INDEX = 1 FOR 3D SHEAR BUILDING  REPRES.
  INDEX = 2 FOR FULL 3D REPRESENTATION

TIME STEP OF INTEGRATION (NEWMARK)......=       0.0050
INDEX FOR TYPE OF TIME STEP.............=            1

  INDEX = 1 FOR CONSTANT TIME STEP
  INDEX = 2 FOR VARIABLE TIME STEP

GAMA FOR NEWMARKS  METHOD...............=         0.50
BETA FOR NEWMARKS  METHOD...............=         0.25
TOLERANCE FOR FORCE COMPUTATION.........=       0.0010
REFERENCE MOMENT OF CONVERGENCE.........=       5000.0
MAX NUMBER OF ITERATIONS WITHIN T.S.....=          200
INDEX FOR GROUND MOTION INPUT...........=            2

  INDEX = 1 FOR UNIDIRECTIONAL INPUT
  INDEX = 2 FOR BIDIRECTIONAL INPUT

TIME STEP OF RECORD ....................=        0.010
LENGTH OF RECORD........................=         3000
LOAD FACTOR.............................=       386.22
ANGLE OF EARTHQUAKE INCIDENCE...........=         0.00
```

*************** SUPERSTRUCTURE DATA ***************

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
8	EIGHTH STORY-GENERAL INFORM	147.00	2.82	589802.00	421.50	639.00	0.00	0.00
7	SEVENTH	147.00	3.53	738351.00	421.50	639.00	0.00	0.00
6	SIXTH	147.00	3.53	738351.00	421.50	639.00	0.00	0.00
5	FIFTH	147.00	3.53	738351.00	421.50	639.00	0.00	0.00
4	FORTH	147.00	3.53	738351.00	421.50	639.00	0.00	0.00
3	THIRD	147.00	3.56	743790.00	421.50	639.00	0.00	0.00
2	SECOND	147.00	3.56	743790.00	421.50	639.00	0.00	0.00
1	FIRST	147.00	3.56	743790.00	421.50	639.00	0.00	0.00

STRUCTURE LATERAL LOADS...CASES A AND B

LEVEL NO.	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
8	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
7	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
6	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
5	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
4	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
3	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
2	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
1	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0

EXTERNAL FRAME

FRAME ID NUMBER-----------	1
NUMBER OF STORY LEVELS----	8
NUMBER OF COLUMN LINES----	28
NUMBER OF BAYS------------	45
NUMBER OF DIFF. COL. PROP-	7
NUMBER OF DIFF. BEAM PROP-	13
NUMBER OF DIFF. FEF-------	0
NUMBER OF PANEL ELEMENTS--	0
NUMBER OF BRACING ELEMENTS	0

COLUMN LINE COORDINATES

LINE	X	Y
1	0.00	0.00
2	0.00	237.00
3	0.00	474.00
4	0.00	711.00
5	0.00	948.00
6	0.00	1185.00
7	0.00	1422.00
8	233.00	0.00
9	233.00	237.00
10	233.00	474.00
11	233.00	711.00
12	233.00	948.00
13	233.00	1185.00
14	233.00	1422.00
15	466.00	0.00
16	466.00	237.00
17	466.00	474.00
18	466.00	711.00
19	466.00	948.00
20	466.00	1185.00
21	466.00	1422.00
22	699.00	0.00
23	699.00	237.00
24	699.00	474.00
25	699.00	711.00
26	699.00	948.00
27	699.00	1185.00
28	699.00	1422.00

COLUMN ID	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
2	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
3	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
4	3150.00	672.00	558.00	558.00	75866.00	43904.00	32256.00	12.00	12.00
5	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00
6	3150.00	768.00	637.00	637.00	80179.00	65536.00	36864.00	12.00	12.00
7	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00

BEAM ID	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	3150.00	219.00	8696.00	10648.00	4.00	4.00	2.00	12.00	12.00
2	3150.00	319.00	19268.00	18432.00	4.00	4.00	2.00	12.00	12.00
3	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00
4	3150.00	256.00	12073.00	12423.00	4.00	4.00	2.00	12.00	12.00
5	3150.00	365.00	26400.00	17747.00	4.00	4.00	2.00	12.00	12.00
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00
7	3150.00	292.00	16896.00	14197.00	4.00	4.00	2.00	12.00	12.00
8	3150.00	402.00	32942.00	19521.00	4.00	4.00	2.00	14.00	14.00
9	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00
10	3150.00	329.00	21331.00	15972.00	4.00	4.00	2.00	13.00	13.00
11	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00
12	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00
13	3150.00	518.00	53914.00	29952.00	4.00	4.00	2.00	14.00	14.00

BEAM LOCATIONS

BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	8	1	2	7	0	0	0	0
1	7	1	2	6	2	0	0	0
1	4	1	2	9	1	0	0	0
1	2	1	2	12	1	0	0	0
2	8	2	3	11	0	0	0	0
2	7	2	3	6	2	0	0	0
2	4	2	3	9	1	0	0	0
2	2	2	3	12	1	0	0	0
3	8	3	4	11	0	0	0	0
3	7	3	4	6	2	0	0	0
3	4	3	4	9	1	0	0	0
3	2	3	4	12	1	0	0	0
4	8	4	5	11	0	0	0	0
4	7	4	5	2	0	0	0	0
4	6	4	5	4	1	0	0	0
4	4	4	5	9	1	0	0	0
4	2	4	5	12	1	0	0	0
5	8	5	6	11	0	0	0	0
5	7	5	6	2	0	0	0	0
5	6	5	6	4	1	0	0	0
5	4	5	6	2	1	0	0	0
5	2	5	6	3	1	0	0	0
6	8	6	7	11	0	0	0	0
6	7	6	7	2	0	0	0	0
6	6	6	7	4	1	0	0	0
6	4	6	7	9	1	0	0	0
6	2	6	7	12	1	0	0	0

7	8	1	8	11	0	0	0	0
7	7	1	8	3	0	0	0	0
7	6	1	8	6	1	0	0	0
7	4	1	8	9	1	0	0	0
7	2	1	8	13	1	0	0	0
8	8	2	9	7	0	0	0	0
8	7	2	9	6	2	0	0	0
8	4	2	9	12	3	0	0	0
9	8	3	10	7	0	0	0	0
9	7	3	10	6	2	0	0	0
9	4	3	10	12	3	0	0	0
10	8	4	11	7	0	0	0	0
10	7	4	11	6	2	0	0	0
10	4	4	11	12	3	0	0	0
11	8	5	12	7	0	0	0	0
11	7	5	12	6	2	0	0	0
11	4	5	12	12	3	0	0	0
12	8	6	13	7	0	0	0	0
12	7	6	13	6	2	0	0	0
12	4	6	13	12	3	0	0	0
13	8	7	14	11	0	0	0	0
13	7	7	14	3	0	0	0	0
13	6	7	14	6	1	0	0	0
13	4	7	14	9	1	0	0	0
13	2	7	14	13	1	0	0	0
14	8	8	9	1	0	0	0	0
14	7	8	9	2	0	0	0	0
14	6	8	9	3	1	0	0	0
14	4	8	9	6	1	0	0	0
14	2	8	9	9	1	0	0	0
15	8	9	10	1	0	0	0	0
15	7	9	10	2	0	0	0	0
15	6	9	10	3	1	0	0	0
15	4	9	10	6	1	0	0	0
15	2	9	10	9	1	0	0	0
16	8	10	11	1	0	0	0	0
16	7	10	11	2	0	0	0	0
16	6	10	11	3	1	0	0	0
16	4	10	11	6	1	0	0	0
16	2	10	11	9	1	0	0	0
17	8	11	12	1	0	0	0	0
17	7	11	12	2	0	0	0	0
17	6	11	12	3	1	0	0	0
17	4	11	12	6	1	0	0	0
17	2	11	12	9	1	0	0	0
18	8	12	13	1	0	0	0	0
18	7	12	13	7	0	0	0	0
18	6	12	13	10	1	0	0	0
18	4	12	13	5	1	0	0	0
18	2	12	13	8	1	0	0	0
19	8	13	14	1	0	0	0	0
19	7	13	14	2	0	0	0	0
19	6	13	14	3	1	0	0	0
19	4	13	14	6	1	0	0	0
19	2	13	14	9	1	0	0	0
20	8	8	15	11	0	0	0	0
20	7	8	15	3	0	0	0	0
20	6	8	15	6	1	0	0	0
20	4	8	15	9	1	0	0	0
20	2	8	15	13	1	0	0	0
21	8	9	16	7	0	0	0	0
21	7	9	16	6	2	0	0	0
21	4	9	16	12	3	0	0	0
22	8	10	17	7	0	0	0	0
22	7	10	17	10	0	0	0	0
22	6	10	17	6	1	0	0	0
22	4	10	17	12	3	0	0	0
23	8	11	18	7	0	0	0	0
23	7	11	18	10	0	0	0	0
23	6	11	18	5	1	0	0	0
23	4	11	18	11	3	0	0	0
24	8	12	19	7	0	0	0	0
24	7	12	19	3	0	0	0	0
24	6	12	19	6	1	0	0	0
24	4	12	19	11	3	0	0	0
25	8	13	20	7	0	0	0	0
25	7	13	20	6	2	0	0	0
25	4	13	20	12	3	0	0	0
26	8	14	21	11	0	0	0	0

26	7	14	21	3	0	0	0	0
26	6	14	21	6	1	0	0	0
26	4	14	21	9	1	0	0	0
26	2	14	21	13	1	0	0	0
27	8	15	16	1	0	0	0	0
27	7	15	16	2	0	0	0	0
27	6	15	16	3	1	0	0	0
27	4	15	16	6	1	0	0	0
27	2	15	16	9	1	0	0	0
28	8	16	17	1	0	0	0	0
28	7	16	17	2	0	0	0	0
28	6	16	17	3	1	0	0	0
28	4	16	17	6	1	0	0	0
28	2	16	17	9	1	0	0	0
29	8	17	18	1	0	0	0	0
29	7	17	18	2	0	0	0	0
29	6	17	18	3	1	0	0	0
29	4	17	18	6	1	0	0	0
29	2	17	18	9	1	0	0	0
30	8	18	19	1	0	0	0	0
30	7	18	19	2	0	0	0	0
30	6	18	19	3	1	0	0	0
30	4	18	19	6	1	0	0	0
30	2	18	19	9	1	0	0	0
31	8	19	20	1	0	0	0	0
31	7	19	20	2	0	0	0	0
31	6	19	20	3	1	0	0	0
31	4	19	20	6	1	0	0	0
31	2	19	20	9	1	0	0	0
32	8	20	21	1	0	0	0	0
32	7	20	21	2	0	0	0	0
32	6	20	21	3	1	0	0	0
32	4	20	21	6	1	0	0	0
32	2	20	21	9	1	0	0	0
33	8	15	22	11	0	0	0	0
33	7	15	22	3	0	0	0	0
33	6	15	22	6	1	0	0	0
33	4	15	22	9	1	0	0	0
33	2	15	22	13	1	0	0	0
34	8	16	23	7	0	0	0	0
34	7	16	23	6	2	0	0	0
34	4	16	23	12	3	0	0	0
35	8	17	24	7	0	0	0	0
35	7	17	24	6	2	0	0	0
35	4	17	24	12	3	0	0	0
36	8	18	25	7	0	0	0	0
36	7	18	25	6	2	0	0	0
36	4	18	25	12	3	0	0	0
37	8	19	26	7	0	0	0	0
37	7	19	26	6	2	0	0	0
37	4	19	26	12	3	0	0	0
38	8	20	27	7	0	0	0	0
38	7	20	27	6	2	0	0	0
38	4	20	27	12	3	0	0	0
39	8	21	28	11	0	0	0	0
39	7	21	28	3	0	0	0	0
39	6	21	28	6	1	0	0	0
39	4	21	28	9	1	0	0	0
39	2	21	28	13	1	0	0	0
40	8	22	23	7	0	0	0	0
40	7	22	23	6	2	0	0	0
40	4	22	23	9	1	0	0	0
40	2	22	23	12	1	0	0	0
41	8	23	24	11	0	0	0	0
41	7	23	24	6	2	0	0	0
41	4	23	24	9	1	0	0	0
41	2	23	24	12	1	0	0	0
42	8	24	25	11	0	0	0	0
42	7	24	25	6	2	0	0	0
42	4	24	25	9	1	0	0	0
42	2	24	25	12	1	0	0	0
43	8	25	26	11	0	0	0	0
43	7	25	26	6	2	0	0	0
43	4	25	26	9	1	0	0	0
43	2	25	26	12	1	0	0	0
44	8	26	27	11	0	0	0	0
44	7	26	27	6	2	0	0	0
44	4	26	27	9	1	0	0	0
44	2	26	27	12	1	0	0	0
45	8	27	28	11	0	0	0	0

OUTPUT FOR CASE STUDY #2

45	7	27	28	6	2	0	0	0
45	4	27	28	12	3	0	0	0

GENERATED BEAM LOCATIONS

0STORY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
8	7	11	11	11	11	11	11	7	7	7	7	7	11	1	1
7	6	6	6	2	2	2	3	6	6	6	6	6	3	2	2
6	6	6	6	4	4	4	6	6	6	6	6	6	6	3	3
5	6	6	6	4	4	4	6	6	6	6	6	6	6	3	3
4	9	9	9	9	2	9	9	12	12	12	12	12	9	6	6
3	9	9	9	9	2	9	9	12	12	12	12	12	9	6	6
2	12	12	12	12	3	12	13	12	12	12	12	12	13	9	9
1	12	12	12	12	3	12	13	12	12	12	12	12	13	9	9

0STORY	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
8	1	1	1	1	11	7	7	7	7	7	11	1	1	1	1
7	2	2	7	2	3	6	10	10	3	6	3	2	2	2	2
6	3	3	10	3	6	6	6	5	6	6	6	3	3	3	3
5	3	3	10	3	6	6	6	5	6	6	6	3	3	3	3
4	6	6	5	6	9	12	12	11	11	12	9	6	6	6	6
3	6	6	5	6	9	12	12	11	11	12	9	6	6	6	6
2	9	9	8	9	13	12	12	11	11	12	13	9	9	9	9
1	9	9	8	9	13	12	12	11	11	12	13	9	9	9	9

0STORY	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
8	1	1	11	7	7	7	7	7	11	7	11	11	11	11	11
7	2	2	3	6	6	6	6	6	3	6	6	6	6	6	6
6	3	3	6	6	6	6	6	6	6	6	6	6	6	6	6
5	3	3	6	6	6	6	6	6	6	6	6	6	6	6	6
4	6	6	9	12	12	12	12	12	9	9	9	9	9	9	12
3	6	6	9	12	12	12	12	12	9	9	9	9	9	9	12
2	9	9	13	12	12	12	12	12	13	12	12	12	12	12	12
1	9	9	13	12	12	12	12	12	13	12	12	12	12	12	12

0COLUMN LOCATIONS

0 LINE LEV CID KCOL GEN

1	8	3	2	7
2	8	7	3	7
3	8	7	4	7
4	8	7	5	6
4	1	2	5	0
5	8	1	6	1
5	6	2	6	2
5	3	3	6	1
5	1	5	6	0
6	8	1	7	1
6	6	2	7	2
6	3	3	7	1
6	1	5	7	0
7	8	3	6	7
8	8	7	9	7
9	8	1	10	1
9	6	2	10	1
9	4	3	10	1
9	2	5	10	1
10	8	2	11	3
10	4	4	11	1
10	2	6	11	1
11	8	1	12	1
11	6	2	12	1
11	4	3	12	1
11	2	5	12	1
12	8	1	13	1
12	6	2	13	1
12	4	3	13	1
12	2	5	13	1
13	8	1	14	1
13	6	2	14	1
13	4	3	14	1
13	2	5	14	1
14	8	7	13	7
15	8	7	16	7
16	8	1	17	1
16	6	2	17	1
16	4	3	17	1
16	2	5	17	1
17	8	1	18	1
17	6	2	18	1
17	4	3	18	1
17	2	5	18	1
18	8	1	19	1
18	6	2	19	1
18	4	3	19	1
18	2	5	19	1
19	8	1	20	1
19	6	2	20	1
19	4	3	20	1
19	2	5	20	1

OUTPUT FOR CASE STUDY #2

20	8	1	21	1
20	6	2	21	1
20	4	3	21	1
20	2	5	21	1
21	8	7	20	7
22	8	3	23	7
23	8	7	24	7
24	8	7	25	7
25	8	7	26	7
26	8	7	27	7
27	8	7	28	7
28	8	3	27	7

GENERATED COLUMN LOCATIONS

OSTORY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
8	3	7	7	7	1	1	3	7	1	2	1	1	1	7	7	1	1	1	1	1	7	3	7	7	7	7	7	3
7	3	7	7	7	1	1	3	7	1	2	1	1	1	7	7	1	1	1	1	1	7	3	7	7	7	7	7	3
6	3	7	7	7	2	2	3	7	2	2	2	2	2	7	7	2	2	2	2	2	7	3	7	7	7	7	7	3
5	3	7	7	7	2	2	3	7	2	2	2	2	2	7	7	2	2	2	2	2	7	3	7	7	7	7	7	3
4	3	7	7	7	2	2	3	7	3	4	3	3	3	7	7	3	3	3	3	3	7	3	7	7	7	7	7	3
3	3	7	7	7	3	3	3	7	3	4	3	3	3	7	7	3	3	3	3	3	7	3	7	7	7	7	7	3
2	3	7	7	7	3	3	3	7	5	6	5	5	5	7	7	5	5	5	5	5	7	3	7	7	7	7	7	3
1	3	7	7	2	5	5	3	7	5	6	5	5	5	7	7	5	5	5	5	5	7	3	7	7	7	7	7	3

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	292.00	16896.00	14197.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 2

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 3

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 4

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
7	3150.00	319.00	19268.00	18432.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	256.00	12073.00	12423.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	256.00	12073.00	12423.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 5

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
7	3150.00	319.00	19268.00	18432.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	256.00	12073.00	12423.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	256.00	12073.00	12423.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	319.00	19268.00	18432.00	4.00	4.00	2.00	12.00	12.00	0	0	0
3	3150.00	319.00	19268.00	18432.00	4.00	4.00	2.00	12.00	12.00	0	0	0
2	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
1	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0

BAY NUMBERS 6

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
7	3150.00	319.00	19268.00	18432.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	256.00	12073.00	12423.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	256.00	12073.00	12423.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 7

OUTPUT FOR CASE STUDY #2

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
7	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	518.00	53914.00	29952.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	518.00	53914.00	29952.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 8

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	292.00	16896.00	14197.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 9

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	292.00	16896.00	14197.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 10

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	292.00	16896.00	14197.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 11

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	292.00	16896.00	14197.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 12

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	292.00	16896.00	14197.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 13

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
7	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	518.00	53914.00	29952.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	518.00	53914.00	29952.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 14

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	219.00	8696.00	10648.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	319.00	19268.00	18432.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
3	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
2	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 15

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	219.00	8696.00	10648.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	319.00	19268.00	18432.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
3	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
2	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 16

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	219.00	8696.00	10648.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	319.00	19268.00	18432.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
3	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
2	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 17

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	219.00	8696.00	10648.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	319.00	19268.00	18432.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
3	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
2	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 18

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	219.00	8696.00	10648.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	292.00	16896.00	14197.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	329.00	21331.00	15972.00	4.00	4.00	2.00	13.00	13.00	0	0	0
5	3150.00	329.00	21331.00	15972.00	4.00	4.00	2.00	13.00	13.00	0	0	0
4	3150.00	365.00	26400.00	17747.00	4.00	4.00	2.00	12.00	12.00	0	0	0
3	3150.00	365.00	26400.00	17747.00	4.00	4.00	2.00	12.00	12.00	0	0	0
2	3150.00	402.00	32942.00	19521.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	402.00	32942.00	19521.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 19

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	219.00	8696.00	10648.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	319.00	19268.00	18432.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
3	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
2	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 20

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
7	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	518.00	53914.00	29952.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	518.00	53914.00	29952.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 21

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	292.00	16896.00	14197.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 22

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	292.00	16896.00	14197.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	329.00	21331.00	15972.00	4.00	4.00	2.00	13.00	13.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 23

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	292.00	16896.00	14197.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	329.00	21331.00	15972.00	4.00	4.00	2.00	13.00	13.00	0	0	0
6	3150.00	365.00	26400.00	17747.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	365.00	26400.00	17747.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 24

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	292.00	16896.00	14197.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 25

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	292.00	16896.00	14197.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 26

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
7	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	518.00	53914.00	29952.00	4.00	4.00	2.00	14.00	14.00	0	0	0

1	3150.00	518.00	53914.00	29952.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 27

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	219.00	8696.00	10648.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	319.00	19268.00	18432.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
3	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
2	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 28

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	219.00	8696.00	10648.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	319.00	19268.00	18432.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
3	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
2	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 29

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	219.00	8696.00	10648.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	319.00	19268.00	18432.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
3	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
2	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 30

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	219.00	8696.00	10648.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	319.00	19268.00	18432.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
3	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
2	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 31

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	219.00	8696.00	10648.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	319.00	19268.00	18432.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
3	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
2	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 32

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	219.00	8696.00	10648.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	319.00	19268.00	18432.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
3	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
2	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 33

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
7	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	518.00	53914.00	29952.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	518.00	53914.00	29952.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 34

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	292.00	16896.00	14197.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 35

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	292.00	16896.00	14197.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 36

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	292.00	16896.00	14197.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 37

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	292.00	16896.00	14197.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 38

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	292.00	16896.00	14197.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 39

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
7	3150.00	359.00	25369.00	20736.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	518.00	53914.00	29952.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	518.00	53914.00	29952.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 40

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	292.00	16896.00	14197.00	4.00	4.00	2.00	12.00	12.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 41

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 42

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 43

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 44

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	438.00	38333.00	25344.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

BAY NUMBERS 45

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
8	3150.00	438.00	21331.00	21296.00	4.00	4.00	2.00	14.00	14.00	0	0	0
7	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
6	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
5	3150.00	398.00	31872.00	23040.00	4.00	4.00	2.00	12.00	12.00	0	0	0
4	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
3	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
2	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0
1	3150.00	478.00	46656.00	27648.00	4.00	4.00	2.00	14.00	14.00	0	0	0

COLUMN PROPERTIES

COLUMN LINE NO. 1

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB

8	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
7	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
6	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
5	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
4	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
3	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
2	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
1	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00

COLUMN LINE NO. 2

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
7	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
6	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
5	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
4	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
3	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
2	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
1	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00

COLUMN LINE NO. 3

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
7	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
6	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
5	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
4	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
3	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
2	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
1	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00

COLUMN LINE NO. 4

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
7	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
6	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
5	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
4	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
3	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
2	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
1	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00

COLUMN LINE NO. 5

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
7	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
6	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
5	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
4	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
3	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
2	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
1	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00

COLUMN LINE NO. 6

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
7	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
6	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
5	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
4	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
3	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
2	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
1	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00

COLUMN LINE NO. 7

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
7	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
6	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
5	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
4	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
3	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
2	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
1	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00

COLUMN LINE NO. 8

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
7	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
6	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
5	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
4	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
3	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
2	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
1	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00

COLUMN LINE NO. 9

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
7	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
6	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
5	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
4	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
3	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
2	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00
1	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00

COLUMN LINE NO. 10

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB

8	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
7	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
6	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
5	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
4	3150.00	672.00	558.00	558.00	75866.00	43904.00	32256.00	12.00	12.00
3	3150.00	672.00	558.00	558.00	75866.00	43904.00	32256.00	12.00	12.00
2	3150.00	768.00	637.00	637.00	80179.00	65536.00	36864.00	12.00	12.00
1	3150.00	768.00	637.00	637.00	80179.00	65536.00	36864.00	12.00	12.00
COLUMN LINE NO. 11									
LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
7	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
6	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
5	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
4	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
3	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
2	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00
1	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00
COLUMN LINE NO. 12									
LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
7	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
6	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
5	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
4	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
3	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
2	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00
1	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00
COLUMN LINE NO. 13									
LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
7	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
6	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
5	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
4	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
3	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
2	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00
1	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00
COLUMN LINE NO. 14									
LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
7	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
6	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
5	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
4	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
3	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
2	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
1	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
COLUMN LINE NO. 15									
LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
7	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
6	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
5	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
4	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
3	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
2	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
1	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
COLUMN LINE NO. 16									
LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
7	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
6	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
5	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
4	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
3	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
2	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00
1	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00
COLUMN LINE NO. 17									
LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
7	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
6	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
5	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
4	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
3	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
2	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00
1	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00
COLUMN LINE NO. 18									
LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
7	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
6	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
5	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
4	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
3	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
2	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00
1	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00
COLUMN LINE NO. 19									
LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB

8	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
7	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
6	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
5	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
4	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
3	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
2	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00
1	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00

COLUMN LINE NO. 20

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
7	3150.00	324.00	269.00	269.00	14762.00	8748.00	8748.00	12.00	12.00
6	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
5	3150.00	576.00	478.00	478.00	46656.00	27648.00	27648.00	12.00	12.00
4	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
3	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
2	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00
1	3150.00	784.00	651.00	651.00	86436.00	51221.00	51221.00	12.00	12.00

COLUMN LINE NO. 21

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
7	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
6	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
5	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
4	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
3	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
2	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
1	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00

COLUMN LINE NO. 22

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
7	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
6	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
5	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
4	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
3	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
2	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
1	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00

COLUMN LINE NO. 23

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
7	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
6	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
5	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
4	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
3	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
2	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
1	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00

COLUMN LINE NO. 24

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
7	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
6	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
5	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
4	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
3	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
2	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
1	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00

COLUMN LINE NO. 25

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
7	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
6	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
5	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
4	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
3	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
2	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
1	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00

COLUMN LINE NO. 26

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
7	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
6	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
5	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
4	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
3	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
2	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
1	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00

COLUMN LINE NO. 27

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
8	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
7	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
6	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
5	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
4	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
3	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
2	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00
1	3150.00	432.00	359.00	359.00	25369.00	20736.00	11664.00	12.00	12.00

COLUMN LINE NO. 28

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB

8	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
7	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
6	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
5	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
4	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
3	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
2	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00
1	3150.00	676.00	561.00	561.00	64262.00	38081.00	38081.00	12.00	12.00

FRAME 1 LOCAT

FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG
1	1	0	0.00	0.00	0.00

SUPERSTRUCTURE DAMPING.......

MODE SHAPE	DAMPING RATIO (%)
1	5.0
2	5.0
3	5.0
4	5.0
5	5.0
6	5.0
7	5.0
8	5.0
9	5.0
10	5.0
11	5.0
12	5.0

HEIGHT.........

FLOOR	HEIGHT
8	1176.0
7	1029.0
6	882.0
5	735.0
4	588.0
3	441.0
2	294.0
1	147.0
0	0.0

************** ISOLATION SYSTEM DATA ************

BASEMAT MASS AT THE CENTER OF MASS OF THE BASE ....

	TRANSL. MASS	ROTATIONAL MASS
MASS	3.581	749231.000

BASE ISOLATION DATA: OPTION ONE: EQUIVALENT GLOBAL DEVICE PROPERTIES

GLOBAL ISOLATION DAMPING AT THE CENTER OF MASS OF THE BASE.....

	X	Y	R	ECX	ECY
LINEAR STIFFNESS[F/L]	136.7300	136.7300	87155787.0000	0.0000	0.0000
VISCOUS DAMPING[F/L/T]	0.0000	0.0000	0.0000	0.0000	0.0000

BASE ISOLATION DATA: OPTION TWO: INDIVIDUAL ISOLATION ELEMENTS

SLIDING BEARING PARAMETERS.......

BEARING	FMAX X	FMAX Y	DF X	DF Y	PA X	PA Y	Y.DIS.X	Y.DIS.Y	NORM. FORCE
1	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
2	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
3	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
4	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
5	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
6	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
7	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
8	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
9	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
10	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
11	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
12	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
13	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
14	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
15	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
16	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
17	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
18	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
19	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
20	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
21	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
22	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
23	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
24	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000

25	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
26	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
27	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000
28	0.080	0.080	0.040	0.040	0.600	0.600	0.01000	0.01000	430.00000

BEARING LOCATION ....

BEARING	X	Y
1	-349.50	711.00
2	-349.50	474.00
3	-349.50	237.00
4	-349.50	0.00
5	-349.50	-237.00
6	-349.50	-474.00
7	-349.50	-711.00
8	-116.50	711.00
9	-116.50	474.00
10	-116.50	237.00
11	-116.50	0.00
12	-116.50	-237.00
13	-116.50	-474.00
14	-116.50	-711.00
15	116.50	711.00
16	116.50	474.00
17	116.50	237.00
18	116.50	0.00
19	116.50	-237.00
20	116.50	-474.00
21	116.50	-711.00
22	349.50	711.00
23	349.50	474.00
24	349.50	237.00
25	349.50	0.00
26	349.50	-237.00
27	349.50	-474.00
28	349.50	-711.00

TIME HISTORY OPTION ....= 1
INDEX = 0 FOR TIME HISTORY OUTPUT
INDEX = 1 FOR NO TIME HISTORY OUTPUT

NO. OF TIME STEPS AT WHICH TIME HISTORY
OUTPUT IS DESIRED ....= 10
FORCE-DISPLACEMENT TIME HISTORY DESIRED
AT BEARINGS NUMBERED...................= 1 2 3 4

COORDINATES OF COLUMN LINES AT WHICH INTERSTORY DRIFTS ARE DESIRED

COL. LINE	X. CORD.	Y. CORD.
1	349.50	711.00
2	-349.50	-711.00
3	0.00	0.00
4	0.00	0.00
5	0.00	0.00
6	0.00	0.00

1
************************ OUTPUT ************************

MODE SHAPES

LEVEL ID	DIRN	1	2	3	4	5	6	7	8
8	X	0.249714	-0.122192	0.076935	-0.267828	0.107977	0.083118	-0.243863	-0.107025
8	Y	0.093042	0.252221	0.097560	-0.080031	-0.268304	0.095273	-0.079748	0.249172
8	ROTN	0.000226	0.000122	-0.000560	-0.000210	-0.000130	-0.000574	-0.000224	0.000126
7	X	0.233910	-0.114066	0.071206	-0.155596	0.061064	0.042178	0.005004	0.005005
7	Y	0.087966	0.237689	0.091065	-0.048517	-0.159050	0.051995	-0.001746	0.000642
7	ROTN	0.000215	0.000117	-0.000530	-0.000133	-0.000083	-0.000354	-0.000030	0.000015
6	X	0.207903	-0.100717	0.061870	0.003747	-0.004685	-0.011817	0.216438	0.095711
6	Y	0.079180	0.212550	0.079850	-0.002505	-0.000779	-0.008136	0.067969	-0.214666
6	ROTN	0.000195	0.000106	-0.000477	-0.000019	-0.000013	-0.000025	0.000159	-0.000095
5	X	0.176855	-0.085298	0.052087	0.134722	-0.055207	-0.044239	0.197317	0.080818
5	Y	0.067916	0.181158	0.066616	0.038776	0.134890	-0.052535	0.067704	-0.203153
5	ROTN	0.000167	0.000093	-0.000408	0.000094	0.000055	0.000280	0.000187	-0.000111
4	X	0.140608	-0.067458	0.040836	0.215987	-0.085105	-0.059323	0.013226	0.000691
4	Y	0.054322	0.143850	0.051625	0.065637	0.219596	-0.074855	0.008869	-0.018765
4	ROTN	0.000135	0.000075	-0.000326	0.000169	0.000102	0.000480	0.000058	-0.000033
3	X	0.102575	-0.048933	0.029308	0.224470	-0.086449	-0.055264	-0.169732	-0.072206
3	Y	0.039594	0.104069	0.036484	0.069849	0.228273	-0.070773	-0.054987	0.170202
3	ROTN	0.000099	0.000056	-0.000238	0.000184	0.000114	0.000513	-0.000103	0.000068
2	X	0.062149	-0.029389	0.017245	0.167592	-0.063231	-0.037326	-0.222236	-0.089150
2	Y	0.024022	0.062547	0.021309	0.052948	0.169604	-0.048359	-0.075663	0.224464
2	ROTN	0.000061	0.000034	-0.000145	0.000143	0.000089	0.000390	-0.000169	0.000110
1	X	0.023752	-0.011011	0.006184	0.071487	-0.026246	-0.014160	-0.118005	-0.045499
1	Y	0.009309	0.023805	0.007725	0.023021	0.071913	-0.018726	-0.041169	0.118592
1	ROTN	0.000024	0.000014	-0.000055	0.000064	0.000040	0.000168	-0.000098	0.000063

MODE SHAPES

LEVEL	ID	DIRN	9	10	11	12
8		X	-0.088752	0.197754	0.093476	-0.140636
8		Y	-0.098758	0.060847	-0.210382	-0.101985
8		ROTN	0.000524	0.000248	-0.000122	0.000323
7		X	0.019702	-0.155572	-0.075889	0.175690
7		Y	0.012183	-0.045596	0.153468	0.101504
7		ROTN	0.000035	-0.000100	0.000063	-0.000162
6		X	0.081666	-0.177559	-0.076920	0.014269
6		Y	0.089193	-0.058190	0.190967	0.052718
6		ROTN	-0.000436	-0.000234	0.000121	-0.000374
5		X	0.040525	0.097294	0.046486	-0.131701
5		Y	0.061023	0.029019	-0.089507	-0.076762
5		ROTN	-0.000470	-0.000015	-0.000011	0.000038
4		X	-0.024311	0.225482	0.093653	-0.001483
4		Y	-0.014222	0.074970	-0.229512	-0.054331
4		ROTN	-0.000095	0.000184	-0.000118	0.000458
3		X	-0.050049	0.021889	0.004963	0.091119
3		Y	-0.062996	0.008666	-0.026116	0.037317
3		ROTN	0.000355	0.000093	-0.000045	0.000164
2		X	-0.035951	-0.213495	-0.085799	-0.006917
2		Y	-0.060747	-0.072918	0.211524	0.045573
2		ROTN	0.000522	-0.000102	0.000087	-0.000422
1		X	-0.011222	-0.167508	-0.063636	-0.058080
1		Y	-0.025768	-0.058539	0.165784	0.008413
1		ROTN	0.000289	-0.000112	0.000084	-0.000402

MODE NUMBER	PERIOD
1	1.022028
2	0.945899
3	0.778801
4	0.352704
5	0.326493
6	0.268552
7	0.202725
8	0.188306
9	0.154192
10	0.137615
11	0.127467
12	0.105327

************** MAX. RESPONSE *************

MAX. REL. DISP. AT THE CENTER OF MASS OF FLOORS (WITH RESPECT TO THE BASE)

FLOOR	X DISP.	Y DISP.	ROTN.(rad)
8	2.3783	-2.0325	0.0012
7	2.1318	-1.8459	0.0011
6	1.7578	-1.5539	0.0010
5	1.3803	-1.2939	0.0009
4	1.0863	-1.0447	0.0007
3	0.8074	-0.7713	0.0006
2	0.4962	-0.4707	0.0003
1	0.1904	-0.1805	0.0001

MAX INTERSTORY DRIFT

STORY	X DST.	Y DST.	TIME	X DRIFT/FL. HT.(%)	TIME	Y DRIFT/FL. HT.(%)
8	349.50	711.00	9.44	0.26	7.61	0.13
7	349.50	711.00	9.45	0.36	7.61	0.21
6	349.50	711.00	9.47	0.36	7.62	0.23
5	349.50	711.00	9.49	0.34	3.51	0.25
4	349.50	711.00	9.53	0.31	3.51	0.24
3	349.50	711.00	3.56	0.27	3.53	0.22
2	349.50	711.00	3.58	0.27	7.73	0.21
1	349.50	711.00	3.59	0.17	7.73	0.13
8	-349.50	-711.00	8.10	0.14	7.58	0.15
7	-349.50	-711.00	8.10	0.21	7.59	0.23
6	-349.50	-711.00	8.08	0.21	7.60	0.24
5	-349.50	-711.00	8.06	0.22	7.61	0.23
4	-349.50	-711.00	8.04	0.21	7.65	0.20
3	-349.50	-711.00	8.03	0.20	7.69	0.20
2	-349.50	-711.00	6.43	0.18	7.71	0.19
1	-349.50	-711.00	6.43	0.11	7.72	0.11
8	0.00	0.00	9.43	0.19	7.59	0.14

7	0.00	0.00	9.45	0.26	7.60	0.22
6	0.00	0.00	8.09	0.26	7.61	0.23
5	0.00	0.00	8.09	0.26	7.62	0.22
4	0.00	0.00	8.08	0.23	3.50	0.20
3	0.00	0.00	6.42	0.21	7.70	0.21
2	0.00	0.00	6.43	0.21	7.72	0.20
1	0.00	0.00	6.43	0.13	7.73	0.12

8	0.00	0.00	9.43	0.19	7.59	0.14
7	0.00	0.00	9.45	0.26	7.60	0.22
6	0.00	0.00	8.09	0.26	7.61	0.23
5	0.00	0.00	8.09	0.26	7.62	0.22
4	0.00	0.00	8.08	0.23	3.50	0.20
3	0.00	0.00	6.42	0.21	7.70	0.21
2	0.00	0.00	6.43	0.21	7.72	0.20
1	0.00	0.00	6.43	0.13	7.73	0.12

8	0.00	0.00	9.43	0.19	7.59	0.14
7	0.00	0.00	9.45	0.26	7.60	0.22
6	0.00	0.00	8.09	0.26	7.61	0.23
5	0.00	0.00	8.09	0.26	7.62	0.22
4	0.00	0.00	8.08	0.23	3.50	0.20
3	0.00	0.00	6.42	0.21	7.70	0.21
2	0.00	0.00	6.43	0.21	7.72	0.20
1	0.00	0.00	6.43	0.13	7.73	0.12

8	0.00	0.00	9.43	0.19	7.59	0.14
7	0.00	0.00	9.45	0.26	7.60	0.22
6	0.00	0.00	8.09	0.26	7.61	0.23
5	0.00	0.00	8.09	0.26	7.62	0.22
4	0.00	0.00	8.08	0.23	3.50	0.20
3	0.00	0.00	6.42	0.21	7.70	0.21
2	0.00	0.00	6.43	0.21	7.72	0.20
1	0.00	0.00	6.43	0.13	7.73	0.12

MAX. DISP. AT THE CENTER OF MASS OF BASE

X DISP.	Y DISP.	ROTN...
4.179	-3.885	0.001

MAX RESULTANT DISP. AT THE CENTER OF MASS OF BASE

TIME	RES. DISP.	X COMP.	Y COMP.
6.530	4.181	4.179	-0.139

MAX RESULTANT BEARING DISP.

BEARING	TIME	MAX. DISP	ANG. WITH X AXIS
1	7.950	4.071	-1.199
2	6.530	4.096	-0.050
3	6.530	4.140	-0.049
4	6.530	4.184	-0.049

MAX BEARING DISP. IN X

BEARING	TIME	MAX. DISP X
1	6.530	4.047
2	6.530	4.091
3	6.530	4.135
4	6.525	4.179

MAX BEARING DISP. IN Y

BEARING	TIME	MAX. DISP Y
1	7.910	-3.824
2	7.910	-3.824
3	7.910	-3.824
4	7.910	-3.824

MAX. TOTAL ACCL. AT CENTER OF MASS OF FLOORS

FLOOR	ACCL. X	ACCL. Y	ACCL. R
8	-214.550604	180.995723	0.175983
7	-134.563699	134.638067	0.090314
6	-130.949157	100.961109	0.117748
5	-118.849912	96.802594	0.095176
4	-125.603274	105.409048	-0.108708
3	-147.182195	-95.078372	-0.120051
2	-137.656128	125.215132	-0.085355
1	-130.613581	119.011254	0.076115

MAX STORY SHEAR

STORY	TIME	X SHEAR	TIME	Y SHEAR
8	9.430	-604.818	7.580	510.227
7	9.445	-980.805	7.595	956.330
6	8.090	-1153.268	7.610	1182.156
5	8.085	-1235.748	7.620	1196.858
4	8.070	-1195.793	3.485	-1179.024

3	8.020	-1197.970	7.695	1271.135
2	6.425	-1294.622	7.710	1368.953
1	6.415	-1337.075	7.725	1383.064

MAX. STRUCTURE SHEAR (TOP OF BASE)

FORCE X	FORCE Y	Z MOMENT
-1337.07	1383.06	291671.74

MAX. BASE SHEAR (BEARING LEVEL)

FORCE X	FORCE Y	Z MOMENT
1386.97	-1379.05	-294848.21

LOAD CONDITION DEFINITION CARDS

OLOAD	I	II	III	RESPONSE
1	0.00	0.00	0.00	1.00

MEMBER FORCES ..... FRAME ID   F RAME 1 L OCAT   FRAME TYPE 1

LEVEL NO 1 ... LEVEL ID

COLUMN FORCES

0 LINE	LOAD		TORSIONAL MOMENT	MAJOR AXIS TOP MOMENT	MAJOR AXIS BOT MOMENT	AXIAL FORCE	MINOR AXIS TOP MOMENT	MINOR AXIS BOT MOMENT	MAJOR SHEAR	MINOR SHEAR
1	1	MAX	94.1477	1029.3267	3825.6511	327.0174	1809.7969	5788.9766	38.9714	61.7787
	1	MIN	-94.1477	-1029.3267	-3825.6511	-327.0174	-1809.7969	-5788.9766	-38.9714	-61.7787
2	1	MAX	37.1671	1838.6495	2785.3750	222.9761	1348.4757	2055.4622	37.5937	27.6743
	1	MIN	-37.1671	-1838.6495	-2785.3750	-222.9761	-1348.4757	-2055.4622	-37.5937	-27.6743
3	1	MAX	37.1671	1731.4460	2728.8564	222.7598	1161.5450	1840.4996	36.2626	24.4069
	1	MIN	-37.1671	-1731.4460	-2728.8564	-222.7598	-1161.5450	-1840.4996	-36.2626	-24.4069
4	1	MAX	68.3539	2197.9854	3579.9724	218.3739	1806.7393	3647.1091	46.9753	44.3402
	1	MIN	-68.3539	-2197.9854	-3579.9724	-218.3739	-1806.7393	-3647.1091	-46.9753	-44.3402
5	1	MAX	126.6340	2091.8799	5524.1089	238.1900	1394.9258	5397.3125	61.9186	55.1908
	1	MIN	-126.6340	-2091.8799	-5524.1089	-238.1900	-1394.9258	-5397.3125	-61.9186	-55.1908
6	1	MAX	126.6340	2219.9961	5590.0073	221.3384	1290.5078	5135.1758	63.4960	52.2413
	1	MIN	-126.6340	-2219.9961	-5590.0073	-221.3384	-1290.5078	-5135.1758	-63.4960	-52.2413
7	1	MAX	94.1477	1151.9565	3893.6401	243.3604	923.1533	3666.9253	40.5852	37.3177
	1	MIN	-94.1477	-1151.9565	-3893.6401	-243.3604	-923.1533	-3666.9253	-40.5852	-37.3177
8	1	MAX	37.1671	1077.0076	2433.0559	169.3345	2289.5591	2749.1309	28.3106	40.9650
	1	MIN	-37.1671	-1077.0076	-2433.0559	-169.3345	-2289.5591	-2749.1309	-28.3106	-40.9650
9	1	MAX	126.6340	2199.9312	5693.0391	33.4426	3171.4531	7334.1196	63.4876	85.4112
	1	MIN	-126.6340	-2199.9312	-5693.0391	-33.4426	-3171.4531	-7334.1196	-63.4876	-85.4112
10	1	MAX	117.4671	2170.9502	6861.6440	28.0006	2562.1436	5128.1675	72.4901	62.4220
	1	MIN	-117.4671	-2170.9502	-6861.6440	-28.0006	-2562.1436	-5128.1675	-72.4901	-62.4220
11	1	MAX	126.6340	2245.6377	5722.6982	12.3857	2280.1514	6122.0322	64.1976	68.2922
	1	MIN	-126.6340	-2245.6377	-5722.6982	-12.3857	-2280.1514	-6122.0322	-64.1976	-68.2922
12	1	MAX	126.6340	1973.8369	5577.7104	36.2118	2204.6870	5812.6113	60.7271	65.1605
	1	MIN	-126.6340	-1973.8369	-5577.7104	-36.2118	-2204.6870	-5812.6113	-60.7271	-65.1605
13	1	MAX	126.6340	1926.3296	5548.7983	20.5606	2376.3970	5693.7178	60.0351	65.6107
	1	MIN	-126.6340	-1926.3296	-5548.7983	-20.5606	-2376.3970	-5693.7178	-60.0351	-65.6107
14	1	MAX	37.1671	1086.3875	2439.4609	161.1983	1453.5331	1779.2917	28.4614	26.2831
	1	MIN	-37.1671	-1086.3875	-2439.4609	-161.1983	-1453.5331	-1779.2917	-28.4614	-26.2831
15	1	MAX	37.1671	1133.5432	2533.8875	189.3585	2277.8767	2742.7874	29.8165	40.8184
	1	MIN	-37.1671	-1133.5432	-2533.8875	-189.3585	-2277.8767	-2742.7874	-29.8165	-40.8184
16	1	MAX	126.6340	2308.0303	5929.8271	29.1342	3153.2070	7324.7349	66.9744	85.1865
	1	MIN	-126.6340	-2308.0303	-5929.8271	-29.1342	-3153.2070	-7324.7349	-66.9744	-85.1865
17	1	MAX	126.6340	2352.2622	5952.5786	32.9047	2602.8926	6511.1724	67.5190	73.4417
	1	MIN	-126.6340	-2352.2622	-5952.5786	-32.9047	-2602.8926	-6511.1724	-67.5190	-73.4417
18	1	MAX	126.6340	2354.2632	5953.6079	4.0879	2144.1665	6047.5122	67.5436	66.5085
	1	MIN	-126.6340	-2354.2632	-5953.6079	-4.0879	-2144.1665	-6047.5122	-67.5436	-66.5085
19	1	MAX	126.6340	2351.3081	5952.0879	5.2400	1997.7646	5706.1187	67.5073	62.6129
	1	MIN	-126.6340	-2351.3081	-5952.0879	-5.2400	-1997.7646	-5706.1187	-67.5073	-62.6129
20	1	MAX	126.6340	2308.2773	5929.9541	24.2385	2187.8325	5596.7271	66.9775	63.2891
	1	MIN	-126.6340	-2308.2773	-5929.9541	-24.2385	-2187.8325	-5596.7271	-66.9775	-63.2891
21	1	MAX	37.1671	1138.5903	2536.5483	175.7642	1445.5922	1774.9797	29.8792	26.1835

	1	MIN	-37.1671	-1138.5903	-2536.5483	-175.7642	-1445.5922	-1774.9797	-29.8792	-26.1835
22	1	MAX	94.1477	1341.8486	4400.2866	260.9391	1794.3340	5780.9209	45.8123	61.5875
	1	MIN	-94.1477	-1341.8486	-4400.2866	-260.9391	-1794.3340	-5780.9209	-45.8123	-61.5875
23	1	MAX	37.1671	2148.2896	3186.8110	226.6622	1345.8661	2054.0449	43.3748	27.6416
	1	MIN	-37.1671	-2148.2896	-3186.8110	-226.6622	-1345.8661	-2054.0449	-43.3748	-27.6416
24	1	MAX	37.1671	2021.0852	3119.7478	220.0908	1218.6875	1871.5289	41.7954	25.1237
	1	MIN	-37.1671	-2021.0852	-3119.7478	-220.0908	-1218.6875	-1871.5289	-41.7954	-25.1237
25	1	MAX	37.1671	2035.0054	3127.0867	208.9518	1158.0663	1777.4692	41.9682	23.8661
	1	MIN	-37.1671	-2035.0054	-3127.0867	-208.9518	-1158.0663	-1777.4692	-41.9682	-23.8661
26	1	MAX	37.1671	2021.5325	3119.9836	201.3477	1090.0591	1678.2981	41.8009	22.4955
	1	MIN	-37.1671	-2021.5325	-3119.9836	-201.3477	-1090.0591	-1678.2981	-41.8009	-22.4955
27	1	MAX	37.1671	2155.9839	3190.8677	186.3189	1002.1134	1581.6499	43.4703	21.0062
	1	MIN	-37.1671	-2155.9839	-3190.8677	-186.3189	-1002.1134	-1581.6499	-43.4703	-21.0062
28	1	MAX	94.1477	1351.0234	4406.3740	297.1165	963.3462	3687.8645	45.9568	37.8147
	1	MIN	-94.1477	-1351.0234	-4406.3740	-297.1165	-963.3462	-3687.8645	-45.9568	-37.8147

BEAM FORCES

BAY	LOAD		TORS MOMENT	I MOMENT	J MOMENT
1	1	MAX	249.4030	3344.0308	2865.8228
	1	MIN	-249.4030	-3344.0308	-2865.8228
2	1	MAX	54.6928	2485.5928	2525.3647
	1	MIN	-54.6928	-2485.5928	-2525.3647
3	1	MAX	54.2622	2586.5117	2617.1772
	1	MIN	-54.2622	-2586.5117	-2617.1772
4	1	MAX	81.6601	2957.7395	3234.7288
	1	MIN	-81.6601	-2957.7395	-3234.7288
5	1	MAX	44.5769	2586.2813	2571.7361
	1	MIN	-44.5769	-2586.2813	-2571.7361
6	1	MAX	78.9115	3521.5073	3645.3413
	1	MIN	-78.9115	-3521.5073	-3645.3413
7	1	MAX	108.6672	4742.3906	3572.6155
	1	MIN	-108.6672	-4742.3906	-3572.6155
8	1	MAX	143.6314	3597.0679	3939.7271
	1	MIN	-143.6314	-3597.0679	-3939.7271
9	1	MAX	148.5756	3211.1799	3405.8486
	1	MIN	-148.5756	-3211.1799	-3405.8486
10	1	MAX	115.5135	3633.6721	3774.4333
	1	MIN	-115.5135	-3633.6721	-3774.4333
11	1	MAX	78.8522	3988.4897	3861.5002
	1	MIN	-78.8522	-3988.4897	-3861.5002
12	1	MAX	82.8089	3785.9187	3615.1284
	1	MIN	-82.8089	-3785.9187	-3615.1284
13	1	MAX	104.2521	3206.1194	2413.1873
	1	MIN	-104.2521	-3206.1194	-2413.1873
14	1	MAX	202.9785	3190.3552	3236.5461
	1	MIN	-202.9785	-3190.3552	-3236.5461
15	1	MAX	81.0417	3465.3921	3517.7842
	1	MIN	-81.0417	-3465.3921	-3517.7842
16	1	MAX	51.3041	3513.4780	3452.9314
	1	MIN	-51.3041	-3513.4780	-3452.9314
17	1	MAX	60.5119	3421.6567	3461.5188
	1	MIN	-60.5119	-3421.6567	-3461.5188
18	1	MAX	51.2339	2749.1633	2755.2859
	1	MIN	-51.2339	-2749.1633	-2755.2859
19	1	MAX	172.0992	3298.4895	3208.5107
	1	MIN	-172.0992	-3298.4895	-3208.5107
20	1	MAX	84.2962	2428.9980	2437.2234
	1	MIN	-84.2962	-2428.9980	-2437.2234
21	1	MAX	74.1919	4399.3794	4402.2490
	1	MIN	-74.1919	-4399.3794	-4402.2490
22	1	MAX	77.5491	3922.3855	4054.0017
	1	MIN	-77.5491	-3922.3855	-4054.0017
23	1	MAX	34.0238	3189.7903	3207.3420
	1	MIN	-34.0238	-3189.7903	-3207.3420
24	1	MAX	35.2693	3018.8208	3043.9028
	1	MIN	-35.2693	-3018.8208	-3043.9028
25	1	MAX	76.4073	3549.7737	3579.4309

	1	MIN	-76.4073	-3549.7737	-3579.4309
26	1	MAX	83.9827	1705.5425	1711.1334
	1	MIN	-83.9827	-1705.5425	-1711.1334
27	1	MAX	204.0952	3275.5935	3324.9812
	1	MIN	-204.0952	-3275.5935	-3324.9812
28	1	MAX	57.5715	3512.1895	3505.1768
	1	MIN	-57.5715	-3512.1895	-3505.1768
29	1	MAX	58.8300	3504.3743	3503.8066
	1	MIN	-58.8300	-3504.3743	-3503.8066
30	1	MAX	61.9436	3500.4434	3500.6135
	1	MIN	-61.9436	-3500.4434	-3500.6135
31	1	MAX	61.4767	3508.2043	3516.0969
	1	MIN	-61.4767	-3508.2043	-3516.0969
32	1	MAX	178.9155	3325.8635	3275.6292
	1	MIN	-178.9155	-3325.8635	-3275.6292
33	1	MAX	138.3543	3528.3772	4693.4224
	1	MIN	-138.3543	-3528.3772	-4693.4224
34	1	MAX	129.9458	3920.2236	3576.3906
	1	MIN	-129.9458	-3920.2236	-3576.3906
35	1	MAX	111.2991	3643.0972	3279.6731
	1	MIN	-111.2991	-3643.0972	-3279.6731
36	1	MAX	112.7435	3526.9009	3140.0598
	1	MIN	-112.7435	-3526.9009	-3140.0598
37	1	MAX	111.2087	3359.6506	2992.8967
	1	MIN	-111.2087	-3359.6506	-2992.8967
38	1	MAX	130.3772	3150.9749	2871.1758
	1	MIN	-130.3772	-3150.9749	-2871.1758
39	1	MAX	138.2659	2394.3406	3172.5955
	1	MIN	-138.2659	-2394.3406	-3172.5955
40	1	MAX	249.9274	3694.7761	3157.0652
	1	MIN	-249.9274	-3694.7761	-3157.0652
41	1	MAX	58.3831	2747.8259	2795.0181
	1	MIN	-58.3831	-2747.8259	-2795.0181
42	1	MAX	52.7853	2832.2808	2827.1165
	1	MIN	-52.7853	-2832.2808	-2827.1165
43	1	MAX	52.3023	2827.2385	2832.2368
	1	MIN	-52.3023	-2827.2385	-2832.2368
44	1	MAX	56.3919	2798.6833	2748.8027
	1	MIN	-56.3919	-2798.6833	-2748.8027
45	1	MAX	137.4427	3174.8494	3713.0234
	1	MIN	-137.4427	-3174.8494	-3713.0234

MEMBER FORCES ..... FRAME ID F RAME 1 L OCAT FRAME TYPE 1

LEVEL NO 2 ... LEVEL ID

COLUMN FORCES

0 LINE	LOAD		TORSIONAL MOMENT	MAJOR AXIS TOP MOMENT	MAJOR AXIS BOT MOMENT	AXIAL FORCE	MINOR AXIS TOP MOMENT	MINOR AXIS BOT MOMENT	MAJOR SHEAR	MINOR SHEAR
1	1	MAX	142.2906	1658.3032	2021.6929	294.6620	2600.3848	2664.2676	29.8695	41.5473
	1	MIN	-142.2906	-1658.3032	-2021.6929	-294.6620	-2600.3848	-2664.2676	-29.8695	-41.5473
2	1	MAX	56.1727	2891.0933	3089.6699	199.8299	1824.6326	1881.3312	48.6241	30.0168
	1	MIN	-56.1727	-2891.0933	-3089.6699	-199.8299	-1824.6326	-1881.3312	-48.6241	-30.0168
3	1	MAX	56.1727	2735.8232	2930.4038	200.2973	1695.2843	1807.0782	46.0669	28.4745
	1	MIN	-56.1727	-2735.8232	-2930.4038	-200.2973	-1695.2843	-1807.0782	-46.0669	-28.4745
4	1	MAX	56.1727	2805.3999	2907.4028	191.7336	1527.9084	1486.8330	46.4455	24.5101
	1	MIN	-56.1727	-2805.3999	-2907.4028	-191.7336	-1527.9084	-1486.8330	-46.4455	-24.5101
5	1	MAX	142.2906	2805.1736	3087.8638	207.3650	1903.0852	2164.3232	47.9109	33.0393
	1	MIN	-142.2906	-2805.1736	-3087.8638	-207.3650	-1903.0852	-2164.3232	-47.9109	-33.0393
6	1	MAX	142.2906	2959.2112	3238.4673	190.1634	1782.4370	2051.0195	50.3876	30.8976
	1	MIN	-142.2906	-2959.2112	-3238.4673	-190.1634	-1782.4370	-2051.0195	-50.3876	-30.8976
7	1	MAX	142.2906	1804.7036	2196.2021	219.8750	1610.8267	1913.2593	32.5277	28.2417
	1	MIN	-142.2906	-1804.7036	-2196.2021	-219.8750	-1610.8267	-1913.2593	-32.5277	-28.2417
8	1	MAX	56.1727	1605.6086	1827.4609	154.0992	3237.4624	3288.4668	27.9111	53.0563
	1	MIN	-56.1727	-1605.6086	-1827.4609	-154.0992	-3237.4624	-3288.4668	-27.9111	-53.0563
9	1	MAX	191.3888	3739.0876	4085.7998	26.3811	4752.8560	4795.5469	63.6170	76.2068
	1	MIN	-191.3888	-3739.0876	-4085.7998	-26.3811	-4752.8560	-4795.5469	-63.6170	-76.2068

10	1	MAX	177.5344	3975.5073	4381.8584	22.7412	3898.3882	4167.3359	67.9460	65.5749
	1	MIN	-177.5344	-3975.5073	-4381.8584	-22.7412	-3898.3882	-4167.3359	-67.9460	-65.5749
11	1	MAX	191.3888	3842.1689	4181.2280	10.8394	3726.5615	4090.8438	65.2309	63.5561
	1	MIN	-191.3888	-3842.1689	-4181.2280	-10.8394	-3726.5615	-4090.8438	-65.2309	-63.5561
12	1	MAX	191.3888	3408.8550	3751.0454	29.6323	3757.1040	4099.5352	58.2106	63.8751
	1	MIN	-191.3888	-3408.8550	-3751.0454	-29.6323	-3757.1040	-4099.5352	-58.2106	-63.8751
13	1	MAX	191.3888	3316.6360	3662.2729	18.1679	4039.0559	4375.4292	56.7391	68.2474
	1	MIN	-191.3888	-3316.6360	-3662.2729	-18.1679	-4039.0559	-4375.4292	-56.7391	-68.2474
14	1	MAX	56.1727	1616.5243	1841.9875	139.7222	2269.6921	2349.5764	28.1180	37.5153
	1	MIN	-56.1727	-1616.5243	-1841.9875	-139.7222	-2269.6921	-2349.5764	-28.1180	-37.5153
15	1	MAX	56.1727	1647.7618	1857.9709	153.0584	3210.6912	3265.6917	28.3669	52.6535
	1	MIN	-56.1727	-1647.7618	-1857.9709	-153.0584	-3210.6912	-3265.6917	-28.3669	-52.6535
16	1	MAX	191.3888	3792.7004	4135.4878	22.6338	4724.6489	4785.1084	64.4093	75.8651
	1	MIN	-191.3888	-3792.7004	-4135.4878	-22.6338	-4724.6489	-4785.1084	-64.4093	-75.8651
17	1	MAX	191.3888	3879.0083	4219.3540	28.7697	4210.2427	4460.6328	65.8403	70.4949
	1	MIN	-191.3888	-3879.0083	-4219.3540	-28.7697	-4210.2427	-4460.6328	-65.8403	-70.4949
18	1	MAX	191.3888	3883.7590	4224.7500	3.8809	3680.1001	3960.3994	65.9228	62.1179
	1	MIN	-191.3888	-3883.7590	-4224.7500	-3.8809	-3680.1001	-3960.3994	-65.9228	-62.1179
19	1	MAX	191.3888	3882.8821	4223.4136	5.6390	3505.5840	3817.8999	65.9048	59.5405
	1	MIN	-191.3888	-3882.8821	-4223.4136	-5.6390	-3505.5840	-3817.8999	-65.9048	-59.5405
20	1	MAX	191.3888	3800.0581	4130.8008	19.5833	3800.9580	4114.3809	64.3368	64.1621
	1	MIN	-191.3888	-3800.0581	-4130.8008	-19.5833	-3800.9580	-4114.3809	-64.3368	-64.1621
21	1	MAX	56.1727	1658.0345	1858.7214	152.4532	2257.5120	2336.7952	28.3726	37.3170
	1	MIN	-56.1727	-1658.0345	-1858.7214	-152.4532	-2257.5120	-2336.7952	-28.3726	-37.3170
22	1	MAX	142.2906	1885.2341	2123.1631	246.7505	2563.5049	2627.2744	32.2893	40.9997
	1	MIN	-142.2906	-1885.2341	-2123.1631	-246.7505	-2563.5049	-2627.2744	-32.2893	-40.9997
23	1	MAX	56.1727	3158.2095	3326.3545	201.2463	1814.3341	1889.4198	52.6301	29.8727
	1	MIN	-56.1727	-3158.2095	-3326.3545	-201.2463	-1814.3341	-1889.4198	-52.6301	-29.8727
24	1	MAX	56.1727	3023.2410	3169.8655	196.3856	1741.0988	1872.2490	50.2075	29.3768
	1	MIN	-56.1727	-3023.2410	-3169.8655	-196.3856	-1741.0988	-1872.2490	-50.2075	-29.3768
25	1	MAX	56.1727	3032.2791	3182.9358	185.7559	1674.9229	1808.9227	50.4015	28.3239
	1	MIN	-56.1727	-3032.2791	-3182.9358	-185.7559	-1674.9229	-1808.9227	-50.4015	-28.3239
26	1	MAX	56.1727	3027.6135	3172.7751	176.1627	1601.6174	1735.0878	50.2644	27.1277
	1	MIN	-56.1727	-3027.6135	-3172.7751	-176.1627	-1601.6174	-1735.0878	-50.2644	-27.1277
27	1	MAX	56.1727	3166.4097	3325.1665	162.5540	1484.8125	1609.2052	52.7771	25.1174
	1	MIN	-56.1727	-3166.4097	-3325.1665	-162.5540	-1484.8125	-1609.2052	-52.7771	-25.1174
28	1	MAX	142.2906	1881.7717	2114.6904	267.0108	1649.5930	1959.4063	32.3157	28.9591
	1	MIN	-142.2906	-1881.7717	-2114.6904	-267.0108	-1649.5930	-1959.4063	-32.3157	-28.9591

BEAM FORCES

BAY	LOAD		TORS MOMENT	I MOMENT	J MOMENT
1	1	MAX	229.1980	3772.0181	3291.7744
	1	MIN	-229.1980	-3772.0181	-3291.7744
2	1	MAX	62.0560	2992.7524	3029.3887
	1	MIN	-62.0560	-2992.7524	-3029.3887
3	1	MAX	67.7198	2992.3494	2950.3699
	1	MIN	-67.7198	-2992.3494	-2950.3699
4	1	MAX	129.7722	3246.6750	3564.4124
	1	MIN	-129.7722	-3246.6750	-3564.4124
5	1	MAX	44.4156	2886.2107	2870.5857
	1	MIN	-44.4156	-2886.2107	-2870.5857
6	1	MAX	82.0718	3866.7837	4038.5767
	1	MIN	-82.0718	-3866.7837	-4038.5767
7	1	MAX	109.6167	4975.4741	3850.0625
	1	MIN	-109.6167	-4975.4741	-3850.0625
8	1	MAX	125.6276	3824.5503	4061.4131
	1	MIN	-125.6276	-3824.5503	-4061.4131
9	1	MAX	129.2792	3541.9011	3698.6016
	1	MIN	-129.2792	-3541.9011	-3698.6016
10	1	MAX	122.1807	3487.4133	3804.5718
	1	MIN	-122.1807	-3487.4133	-3804.5718
11	1	MAX	76.6511	4241.4053	4109.9604
	1	MIN	-76.6511	-4241.4053	-4109.9604
12	1	MAX	80.9703	4075.1694	3891.9719
	1	MIN	-80.9703	-4075.1694	-3891.9719
13	1	MAX	106.2854	3579.8809	2752.6924
	1	MIN	-106.2854	-3579.8809	-2752.6924

14	1	MAX	190.1197	3549.3411	3536.9153
	1	MIN	-190.1197	-3549.3411	-3536.9153
15	1	MAX	75.9540	3780.4299	3824.3423
	1	MIN	-75.9540	-3780.4299	-3824.3423
16	1	MAX	54.9509	3821.2178	3766.9226
	1	MIN	-54.9509	-3821.2178	-3766.9226
17	1	MAX	63.8786	3738.9495	3779.7231
	1	MIN	-63.8786	-3738.9495	-3779.7231
18	1	MAX	54.8307	3015.5242	3022.4197
	1	MIN	-54.8307	-3015.5242	-3022.4197
19	1	MAX	170.5765	3586.7485	3558.2969
	1	MIN	-170.5765	-3586.7485	-3558.2969
20	1	MAX	89.8799	2935.7690	2953.4170
	1	MIN	-89.8799	-2935.7690	-2953.4170
21	1	MAX	75.3132	4569.4771	4570.9370
	1	MIN	-75.3132	-4569.4771	-4570.9370
22	1	MAX	76.4758	4247.6138	4339.2964
	1	MIN	-76.4758	-4247.6138	-4339.2964
23	1	MAX	34.0547	3468.0942	3464.6948
	1	MIN	-34.0547	-3468.0942	-3464.6948
24	1	MAX	35.2215	3295.2043	3312.7742
	1	MIN	-35.2215	-3295.2043	-3312.7742
25	1	MAX	76.5932	3901.8381	3924.7578
	1	MIN	-76.5932	-3901.8381	-3924.7578
26	1	MAX	88.5640	2212.4116	2216.3862
	1	MIN	-88.5640	-2212.4116	-2216.3862
27	1	MAX	191.3507	3624.9548	3612.7141
	1	MIN	-191.3507	-3624.9548	-3612.7141
28	1	MAX	58.9131	3837.2739	3827.8496
	1	MIN	-58.9131	-3837.2739	-3827.8496
29	1	MAX	59.2399	3831.4482	3831.0684
	1	MIN	-59.2399	-3831.4482	-3831.0684
30	1	MAX	62.3541	3824.8203	3824.8567
	1	MIN	-62.3541	-3824.8203	-3824.8567
31	1	MAX	65.1969	3833.8882	3844.0061
	1	MIN	-65.1969	-3833.8882	-3844.0061
32	1	MAX	175.4253	3615.0129	3627.1101
	1	MIN	-175.4253	-3615.0129	-3627.1101
33	1	MAX	140.7469	3754.8684	4870.6240
	1	MIN	-140.7469	-3754.8684	-4870.6240
34	1	MAX	109.0518	4053.7178	3816.7939
	1	MIN	-109.0518	-4053.7178	-3816.7939
35	1	MAX	96.3743	3883.0955	3625.1035
	1	MIN	-96.3743	-3883.0955	-3625.1035
36	1	MAX	96.3442	3784.1211	3497.0784
	1	MIN	-96.3442	-3784.1211	-3497.0784
37	1	MAX	96.8486	3648.2114	3370.1333
	1	MIN	-96.8486	-3648.2114	-3370.1333
38	1	MAX	108.0263	3448.4883	3244.8362
	1	MIN	-108.0263	-3448.4883	-3244.8362
39	1	MAX	143.6313	2735.6750	3554.0046
	1	MIN	-143.6313	-2735.6750	-3554.0046
40	1	MAX	229.3925	4065.6443	3547.6235
	1	MIN	-229.3925	-4065.6443	-3547.6235
41	1	MAX	65.7346	3270.7795	3296.0967
	1	MIN	-65.7346	-3270.7795	-3296.0967
42	1	MAX	60.0357	3307.1030	3306.7732
	1	MIN	-60.0357	-3307.1030	-3306.7732
43	1	MAX	59.9143	3305.1333	3303.7566
	1	MIN	-59.9143	-3305.1333	-3303.7566
44	1	MAX	62.8171	3306.4246	3286.0757
	1	MIN	-62.8171	-3306.4246	-3286.0757
45	1	MAX	133.5737	3557.4368	4077.5154
	1	MIN	-133.5737	-3557.4368	-4077.5154

OUTPUT FOR CASE STUDY #2

MEMBER FORCES ..... FRAME ID F RAME 1 L OCAT FRAME TYPE 1

LEVEL NO 3 ... LEVEL ID

COLUMN FORCES

0 LINE	LOAD		TORSIONAL MOMENT	MAJOR AXIS TOP MOMENT	MAJOR AXIS BOT MOMENT	AXIAL FORCE	MINOR AXIS TOP MOMENT	MINOR AXIS BOT MOMENT	MAJOR SHEAR	MINOR SHEAR
1	1	MAX	146.2077	1956.4485	1932.9634	249.1122	2748.5483	3172.0273	31.4066	44.5043
	1	MIN	-146.2077	-1956.4485	-1932.9634	-249.1122	-2748.5483	-3172.0273	-31.4066	-44.5043
2	1	MAX	57.7191	2964.0745	2982.5095	171.1200	1862.4192	1820.1161	48.3462	29.9393
	1	MIN	-57.7191	-2964.0745	-2982.5095	-171.1200	-1862.4192	-1820.1161	-48.3462	-29.9393
3	1	MAX	57.7191	2849.1975	2850.6421	172.1930	1702.2511	1678.9120	46.3402	27.4891
	1	MIN	-57.7191	-2849.1975	-2850.6421	-172.1930	-1702.2511	-1678.9120	-46.3402	-27.4891
4	1	MAX	57.7191	2953.4636	2987.3149	162.8062	1674.6465	1682.0414	48.2990	27.2901
	1	MIN	-57.7191	-2953.4636	-2987.3149	-162.8062	-1674.6465	-1682.0414	-48.2990	-27.2901
5	1	MAX	146.2077	3282.2939	3206.8408	170.6651	2358.5569	2425.5874	52.6591	37.1089
	1	MIN	-146.2077	-3282.2939	-3206.8408	-170.6651	-2358.5569	-2425.5874	-52.6591	-37.1089
6	1	MAX	146.2077	3405.2544	3334.4048	153.1593	2226.0444	2328.0903	54.7940	35.8884
	1	MIN	-146.2077	-3405.2544	-3334.4048	-153.1593	-2226.0444	-2328.0903	-54.7940	-35.8884
7	1	MAX	146.2077	2052.9773	2046.6533	191.8948	1735.9031	1992.7598	33.1006	29.9848
	1	MIN	-146.2077	-2052.9773	-2046.6533	-191.8948	-1735.9031	-1992.7598	-33.1006	-29.9848
8	1	MAX	57.7191	1649.3832	1692.8728	134.1147	3243.8760	3290.5154	27.1728	53.1251
	1	MIN	-57.7191	-1649.3832	-1692.8728	-134.1147	-3243.8760	-3290.5154	-27.1728	-53.1251
9	1	MAX	146.2077	3292.0710	3269.1089	20.4467	4347.3594	4448.4390	53.3430	68.1663
	1	MIN	-146.2077	-3292.0710	-3269.1089	-20.4467	-4347.3594	-4448.4390	-53.3430	-68.1663
10	1	MAX	172.6089	3419.8813	3347.2153	16.6567	3736.7764	3625.9790	55.0170	59.4038
	1	MIN	-172.6089	-3419.8813	-3347.2153	-16.6567	-3736.7764	-3625.9790	-55.0170	-59.4038
11	1	MAX	146.2077	3373.9414	3352.0796	10.1357	3415.3984	3360.9795	54.6832	53.4469
	1	MIN	-146.2077	-3373.9414	-3352.0796	-10.1357	-3415.3984	-3360.9795	-54.6832	-53.4469
12	1	MAX	146.2077	3055.4153	3027.8022	21.0389	3479.1475	3493.6646	49.4571	54.6969
	1	MIN	-146.2077	-3055.4153	-3027.8022	-21.0389	-3479.1475	-3493.6646	-49.4571	-54.6969
13	1	MAX	146.2077	2978.6626	2953.0522	15.9444	3683.7666	3767.1909	48.2254	59.7342
	1	MIN	-146.2077	-2978.6626	-2953.0522	-15.9444	-3683.7666	-3767.1909	-48.2254	-59.7342
14	1	MAX	57.7191	1651.7037	1697.3535	114.8672	2366.6143	2456.6250	27.2281	39.2133
	1	MIN	-57.7191	-1651.7037	-1697.3535	-114.8672	-2366.6143	-2456.6250	-27.2281	-39.2133
15	1	MAX	57.7191	1674.5131	1739.0991	117.6532	3201.1384	3249.6340	27.7530	52.4453
	1	MIN	-57.7191	-1674.5131	-1739.0991	-117.6532	-3201.1384	-3249.6340	-27.7530	-52.4453
16	1	MAX	146.2077	3346.5608	3357.0923	17.3772	4320.7515	4447.9346	54.5012	67.7423
	1	MIN	-146.2077	-3346.5608	-3357.0923	-17.3772	-4320.7515	-4447.9346	-54.5012	-67.7423
17	1	MAX	146.2077	3428.5452	3436.4004	23.8218	3803.3152	3796.0015	55.8126	59.7220
	1	MIN	-146.2077	-3428.5452	-3436.4004	-23.8218	-3803.3152	-3796.0015	-55.8126	-59.7220
18	1	MAX	146.2077	3430.9648	3439.1372	4.9540	3396.7344	3358.2417	55.8545	53.3414
	1	MIN	-146.2077	-3430.9648	-3439.1372	-4.9540	-3396.7344	-3358.2417	-55.8545	-53.3414
19	1	MAX	146.2077	3428.5959	3437.7607	6.7049	3280.8335	3303.7515	55.8241	51.5971
	1	MIN	-146.2077	-3428.5959	-3437.7607	-6.7049	-3280.8335	-3303.7515	-55.8241	-51.5971
20	1	MAX	146.2077	3347.4492	3356.1958	14.8231	3492.1252	3584.3994	54.5012	56.6724
	1	MIN	-146.2077	-3347.4492	-3356.1958	-14.8231	-3492.1252	-3584.3994	-54.5012	-56.6724
21	1	MAX	57.7191	1676.8721	1739.9041	128.2196	2356.9417	2447.3931	27.7787	39.0596
	1	MIN	-57.7191	-1676.8721	-1739.9041	-128.2196	-2356.9417	-2447.3931	-27.7787	-39.0596
22	1	MAX	146.2077	2088.6899	2320.2866	225.7012	2693.2334	3180.5972	34.0454	43.6109
	1	MIN	-146.2077	-2088.6899	-2320.2866	-225.7012	-2693.2334	-3180.5972	-34.0454	-43.6109
23	1	MAX	57.7191	3225.6672	3310.6965	170.4969	1843.3805	1820.4991	52.9367	29.6404
	1	MIN	-57.7191	-3225.6672	-3310.6965	-170.4969	-1843.3805	-1820.4991	-52.9367	-29.6404
24	1	MAX	57.7191	3143.6011	3264.9714	166.9194	1729.5140	1704.1423	51.5171	27.9159
	1	MIN	-57.7191	-3143.6011	-3264.9714	-166.9194	-1729.5140	-1704.1423	-51.5171	-27.9159
25	1	MAX	57.7191	3145.5256	3265.2368	157.2298	1674.8702	1654.2770	51.5463	27.0662
	1	MIN	-57.7191	-3145.5256	-3265.2368	-157.2298	-1674.8702	-1654.2770	-51.5463	-27.0662
26	1	MAX	57.7191	3141.5784	3268.6262	146.7174	1618.1818	1630.6547	51.5190	26.1793
	1	MIN	-57.7191	-3141.5784	-3268.6262	-146.7174	-1618.1818	-1630.6547	-51.5190	-26.1793
27	1	MAX	57.7191	3292.3970	3381.3738	132.9351	1518.6025	1570.7178	53.7136	25.0075
	1	MIN	-57.7191	-3292.3970	-3381.3738	-132.9351	-1518.6025	-1570.7178	-53.7136	-25.0075
28	1	MAX	146.2077	2200.9941	2396.6289	225.7128	1764.7593	2029.8564	35.0490	30.5826
	1	MIN	-146.2077	-2200.9941	-2396.6289	-225.7128	-1764.7593	-2029.8564	-35.0490	-30.5826

BEAM FORCES

BAY	LOAD		TORS MOMENT	I MOMENT	J MOMENT
1	1	MAX	209.1411	3412.3125	2998.9836
	1	MIN	-209.1411	-3412.3125	-2998.9836
2	1	MAX	52.3894	2890.1619	2902.7236
	1	MIN	-52.3894	-2890.1619	-2902.7236

3	1	MAX	50.7290	2865.2039	2848.4329
	1	MIN	-50.7290	-2865.2039	-2848.4329
4	1	MAX	94.8361	3130.4844	3362.4673
	1	MIN	-94.8361	-3130.4844	-3362.4673
5	1	MAX	33.5451	2586.7854	2581.9231
	1	MIN	-33.5451	-2586.7854	-2581.9231
6	1	MAX	70.5950	3472.2056	3655.4978
	1	MIN	-70.5950	-3472.2056	-3655.4978
7	1	MAX	69.5007	4503.4082	3541.9055
	1	MIN	-69.5007	-4503.4082	-3541.9055
8	1	MAX	134.6584	3864.2068	4060.4946
	1	MIN	-134.6584	-3864.2068	-4060.4946
9	1	MAX	136.9990	3369.0767	3474.1042
	1	MIN	-136.9990	-3369.0767	-3474.1042
10	1	MAX	128.1462	3442.4512	3656.8870
	1	MIN	-128.1462	-3442.4512	-3656.8870
11	1	MAX	88.3678	4209.8120	4049.5261
	1	MIN	-88.3678	-4209.8120	-4049.5261
12	1	MAX	94.5981	4153.4961	3940.9814
	1	MIN	-94.5981	-4153.4961	-3940.9814
13	1	MAX	68.2778	3390.1367	2679.3318
	1	MIN	-68.2778	-3390.1367	-2679.3318
14	1	MAX	121.8885	3103.6917	3056.6804
	1	MIN	-121.8885	-3103.6917	-3056.6804
15	1	MAX	57.3012	3266.7349	3291.9080
	1	MIN	-57.3012	-3266.7349	-3291.9080
16	1	MAX	42.1942	3292.0847	3258.0342
	1	MIN	-42.1942	-3292.0847	-3258.0342
17	1	MAX	52.6691	3245.7092	3280.0715
	1	MIN	-52.6691	-3245.7092	-3280.0715
18	1	MAX	42.8495	2627.3247	2636.7415
	1	MIN	-42.8495	-2627.3247	-2636.7415
19	1	MAX	113.0368	3088.4534	3101.3120
	1	MIN	-113.0368	-3088.4534	-3101.3120
20	1	MAX	69.8715	3007.6838	3005.4497
	1	MIN	-69.8715	-3007.6838	-3005.4497
21	1	MAX	78.5655	4652.3691	4652.7197
	1	MIN	-78.5655	-4652.3691	-4652.7197
22	1	MAX	67.0153	4164.3267	4236.7026
	1	MIN	-67.0153	-4164.3267	-4236.7026
23	1	MAX	34.7884	3477.9260	3482.2905
	1	MIN	-34.7884	-3477.9260	-3482.2905
24	1	MAX	32.1977	3374.7661	3399.0413
	1	MIN	-32.1977	-3374.7661	-3399.0413
25	1	MAX	68.7824	4075.4050	4104.9053
	1	MIN	-68.7824	-4075.4050	-4104.9053
26	1	MAX	65.5807	2376.8516	2380.3286
	1	MIN	-65.5807	-2376.8516	-2380.3286
27	1	MAX	122.2211	3195.4094	3146.7300
	1	MIN	-122.2211	-3195.4094	-3146.7300
28	1	MAX	46.1371	3381.7422	3367.0476
	1	MIN	-46.1371	-3381.7422	-3367.0476
29	1	MAX	43.8478	3390.3833	3391.3147
	1	MIN	-43.8478	-3390.3833	-3391.3147
30	1	MAX	50.1178	3362.2644	3363.5063
	1	MIN	-50.1178	-3362.2644	-3363.5063
31	1	MAX	53.4379	3368.8159	3377.6956
	1	MIN	-53.4379	-3368.8159	-3377.6956
32	1	MAX	118.9407	3149.3408	3197.5188
	1	MIN	-118.9407	-3149.3408	-3197.5188
33	1	MAX	101.9316	3556.7041	4519.4971
	1	MIN	-101.9316	-3556.7041	-4519.4971
34	1	MAX	102.7289	4072.0442	3872.9221
	1	MIN	-102.7289	-4072.0442	-3872.9221
35	1	MAX	93.7896	3631.3220	3436.4165
	1	MIN	-93.7896	-3631.3220	-3436.4165

36	1	MAX	93.4186	3618.8357	3385.7141
	1	MIN	-93.4186	-3618.8357	-3385.7141
37	1	MAX	92.9348	3587.9873	3359.0962
	1	MIN	-92.9348	-3587.9873	-3359.0962
38	1	MAX	109.5751	3504.4387	3346.0718
	1	MIN	-109.5751	-3504.4387	-3346.0718
39	1	MAX	96.2729	2663.2458	3365.4341
	1	MIN	-96.2729	-2663.2458	-3365.4341
40	1	MAX	209.5505	3947.1025	3457.4055
	1	MIN	-209.5505	-3947.1025	-3457.4055
41	1	MAX	56.6408	3386.3550	3393.8904
	1	MIN	-56.6408	-3386.3550	-3393.8904
42	1	MAX	51.0472	3395.4502	3395.1106
	1	MIN	-51.0472	-3395.4502	-3395.1106
43	1	MAX	50.0761	3397.5232	3398.9163
	1	MIN	-50.0761	-3397.5232	-3398.9163
44	1	MAX	50.7266	3388.2974	3344.0254
	1	MIN	-50.7266	-3388.2974	-3344.0254
45	1	MAX	143.8351	3795.9084	4339.8530
	1	MIN	-143.8351	-3795.9084	-4339.8530

MEMBER FORCES ..... FRAME ID F RAME 1 L OCAT FRAME TYPE 1

LEVEL NO 4 ... LEVEL ID

COLUMN FORCES

0 LINE	LOAD		TORSIONAL MOMENT	MAJOR AXIS TOP MOMENT	MAJOR AXIS BOT MOMENT	AXIAL FORCE	MINOR AXIS TOP MOMENT	MINOR AXIS BOT MOMENT	MAJOR SHEAR	MINOR SHEAR
1	1	MAX	135.7873	1742.0203	1673.2715	197.8210	2528.6758	2626.5801	25.9279	41.4199
	1	MIN	-135.7873	-1742.0203	-1673.2715	-197.8210	-2528.6758	-2626.5801	-25.9279	-41.4199
2	1	MAX	53.6053	2791.8853	2825.9282	138.3190	1937.9519	1967.5487	45.6733	31.7521
	1	MIN	-53.6053	-2791.8853	-2825.9282	-138.3190	-1937.9519	-1967.5487	-45.6733	-31.7521
3	1	MAX	53.6053	2710.5225	2756.3613	139.4363	1718.2511	1757.4067	44.4462	28.1713
	1	MIN	-53.6053	-2710.5225	-2756.3613	-139.4363	-1718.2511	-1757.4067	-44.4462	-28.1713
4	1	MAX	53.6053	2856.4771	2868.9187	130.3550	1580.9030	1656.4104	46.5479	26.3196
	1	MIN	-53.6053	-2856.4771	-2868.9187	-130.3550	-1580.9030	-1656.4104	-46.5479	-26.3196
5	1	MAX	98.5853	2717.4297	2593.0327	133.7252	1872.2483	1951.5322	43.1745	31.0877
	1	MIN	-98.5853	-2717.4297	-2593.0327	-133.7252	-1872.2483	-1951.5322	-43.1745	-31.0877
6	1	MAX	98.5853	2764.0989	2636.9238	115.2685	1798.1177	1876.6699	43.9107	29.8764
	1	MIN	-98.5853	-2764.0989	-2636.9238	-115.2685	-1798.1177	-1876.6699	-43.9107	-29.8764
7	1	MAX	135.7873	1865.8254	1818.9912	159.4647	1571.9280	1663.2832	28.7119	25.1343
	1	MIN	-135.7873	-1865.8254	-1818.9912	-159.4647	-1571.9280	-1663.2832	-28.7119	-25.1343
8	1	MAX	53.6053	1428.1069	1399.4673	111.6129	3333.6763	3336.3750	21.9929	54.2281
	1	MIN	-53.6053	-1428.1069	-1399.4673	-111.6129	-3333.6763	-3336.3750	-21.9929	-54.2281
9	1	MAX	135.7873	3153.4104	3106.6904	13.5551	4947.9155	4903.5659	50.6375	79.5576
	1	MIN	-135.7873	-3153.4104	-3106.6904	-13.5551	-4947.9155	-4903.5659	-50.6375	-79.5576
10	1	MAX	160.3068	3382.2607	3319.1807	10.4381	3962.5198	4085.8921	54.2561	64.4267
	1	MIN	-160.3068	-3382.2607	-3319.1807	-10.4381	-3962.5198	-4085.8921	-54.2561	-64.4267
11	1	MAX	135.7873	3250.1133	3229.7637	10.0928	3645.9380	3748.1782	52.6820	59.8748
	1	MIN	-135.7873	-3250.1133	-3229.7637	-10.0928	-3645.9380	-3748.1782	-52.6820	-59.8748
12	1	MAX	135.7873	2961.2808	2913.2349	11.9989	3755.6882	3839.3828	47.4210	61.7486
	1	MIN	-135.7873	-2961.2808	-2913.2349	-11.9989	-3755.6882	-3839.3828	-47.4210	-61.7486
13	1	MAX	135.7873	2865.6160	2802.6138	14.5793	4165.9077	4186.3643	45.6259	67.9047
	1	MIN	-135.7873	-2865.6160	-2802.6138	-14.5793	-4165.9077	-4186.3643	-45.6259	-67.9047
14	1	MAX	53.6053	1427.7875	1408.8296	90.4364	2415.4453	2438.5432	22.1747	39.4633
	1	MIN	-53.6053	-1427.7875	-1408.8296	-90.4364	-2415.4453	-2438.5432	-22.1747	-39.4633
15	1	MAX	53.6053	1459.5532	1484.1270	85.8123	3339.2908	3342.0684	23.5345	54.3200
	1	MIN	-53.6053	-1459.5532	-1484.1270	-85.8123	-3339.2908	-3342.0684	-23.5345	-54.3200
16	1	MAX	135.7873	3316.1443	3277.0396	11.1997	4948.6567	4894.8877	53.6032	79.5568
	1	MIN	-135.7873	-3316.1443	-3277.0396	-11.1997	-4948.6567	-4894.8877	-53.6032	-79.5568
17	1	MAX	135.7873	3460.0881	3415.9990	17.6221	4236.0825	4334.9102	55.9032	68.2444
	1	MIN	-135.7873	-3460.0881	-3415.9990	-17.6221	-4236.0825	-4334.9102	-55.9032	-68.2444
18	1	MAX	135.7873	3450.4358	3406.9155	6.7389	3621.8115	3718.6831	55.7509	59.4156
	1	MIN	-135.7873	-3450.4358	-3406.9155	-6.7389	-3621.8115	-3718.6831	-55.7509	-59.4156
19	1	MAX	135.7873	3433.9333	3392.9136	7.7168	3532.9412	3613.3042	55.5029	58.0995
	1	MIN	-135.7873	-3433.9333	-3392.9136	-7.7168	-3532.9412	-3613.3042	-55.5029	-58.0995
20	1	MAX	135.7873	3355.1008	3312.0176	9.5497	3955.5017	3973.7500	54.2043	64.4655

	1	MIN	-135.7873	-3355.1008	-3312.0176	-9.5497	-3955.5017	-3973.7500	-54.2043	-64.4655
21	1	MAX	53.6053	1464.6024	1520.3826	105.1590	2405.2351	2428.8838	24.1414	39.3018
	1	MIN	-53.6053	-1464.6024	-1520.3826	-105.1590	-2405.2351	-2428.8838	-24.1414	-39.3018
22	1	MAX	135.7873	1869.3359	2057.4580	196.7046	2535.8325	2613.8682	31.8696	41.5414
	1	MIN	-135.7873	-1869.3359	-2057.4580	-196.7046	-2535.8325	-2613.8682	-31.8696	-41.5414
23	1	MAX	53.6053	3342.9102	3396.5415	138.6699	1942.9109	1972.9359	54.7923	31.8362
	1	MIN	-53.6053	-3342.9102	-3396.5415	-138.6699	-1942.9109	-1972.9359	-54.7923	-31.8362
24	1	MAX	53.6053	3313.0681	3364.8091	132.7991	1739.8539	1789.2501	54.2917	28.5636
	1	MIN	-53.6053	-3313.0681	-3364.8091	-132.7991	-1739.8539	-1789.2501	-54.2917	-28.5636
25	1	MAX	53.6053	3316.1475	3367.1536	124.8547	1601.3656	1681.6464	54.3358	26.6912
	1	MIN	-53.6053	-3316.1475	-3367.1536	-124.8547	-1601.3656	-1681.6464	-54.3358	-26.6912
26	1	MAX	53.6053	3308.5789	3360.2046	115.9136	1598.3613	1667.1257	54.2177	26.5487
	1	MIN	-53.6053	-3308.5789	-3360.2046	-115.9136	-1598.3613	-1667.1257	-54.2177	-26.5487
27	1	MAX	53.6053	3513.6558	3562.3208	103.9625	1529.5621	1596.8514	57.5282	25.4180
	1	MIN	-53.6053	-3513.6558	-3562.3208	-103.9625	-1529.5621	-1596.8514	-57.5282	-25.4180
28	1	MAX	135.7873	2096.0840	2283.0762	178.1348	1603.7551	1701.6055	35.6029	25.7385
	1	MIN	-135.7873	-2096.0840	-2283.0762	-178.1348	-1603.7551	-1701.6055	-35.6029	-25.7385

BEAM FORCES

BAY	LOAD		TORS MOMENT	I MOMENT	J MOMENT
1	1	MAX	219.9478	3496.1895	3045.6892
	1	MIN	-219.9478	-3496.1895	-3045.6892
2	1	MAX	50.0025	3033.6658	3050.8096
	1	MIN	-50.0025	-3033.6658	-3050.8096
3	1	MAX	46.0920	2979.4575	2929.8989
	1	MIN	-46.0920	-2979.4575	-2929.8989
4	1	MAX	74.8228	3175.5911	3332.6030
	1	MIN	-74.8228	-3175.5911	-3332.6030
5	1	MAX	27.6624	2476.8728	2474.5955
	1	MIN	-27.6624	-2476.8728	-2474.5955
6	1	MAX	68.5735	3328.5718	3618.5671
	1	MIN	-68.5735	-3328.5718	-3618.5671
7	1	MAX	63.2299	4999.7749	3909.5632
	1	MIN	-63.2299	-4999.7749	-3909.5632
8	1	MAX	124.6875	4264.6143	4348.4375
	1	MIN	-124.6875	-4264.6143	-4348.4375
9	1	MAX	121.5614	3833.4541	3901.4041
	1	MIN	-121.5614	-3833.4541	-3901.4041
10	1	MAX	118.9506	3642.6475	3779.3230
	1	MIN	-118.9506	-3642.6475	-3779.3230
11	1	MAX	87.3449	4247.5435	4076.1475
	1	MIN	-87.3449	-4247.5435	-4076.1475
12	1	MAX	97.3986	4170.4839	3919.7507
	1	MIN	-97.3986	-4170.4839	-3919.7507
13	1	MAX	60.2183	3548.2563	2773.7085
	1	MIN	-60.2183	-3548.2563	-2773.7085
14	1	MAX	119.7386	3059.0723	2952.3362
	1	MIN	-119.7386	-3059.0723	-2952.3362
15	1	MAX	44.2912	3237.4292	3253.1440
	1	MIN	-44.2912	-3237.4292	-3253.1440
16	1	MAX	36.5845	3254.7776	3224.2979
	1	MIN	-36.5845	-3254.7776	-3224.2979
17	1	MAX	44.6517	3211.7380	3249.7944
	1	MIN	-44.6517	-3211.7380	-3249.7944
18	1	MAX	42.8793	2629.8242	2639.1226
	1	MIN	-42.8793	-2629.8242	-2639.1226
19	1	MAX	107.5391	3002.8296	3070.8181
	1	MIN	-107.5391	-3002.8296	-3070.8181
20	1	MAX	65.2412	3502.6165	3507.0520
	1	MIN	-65.2412	-3502.6165	-3507.0520
21	1	MAX	68.8258	5035.6753	5036.1680
	1	MIN	-68.8258	-5035.6753	-5036.1680
22	1	MAX	59.8411	4637.6426	4661.8320
	1	MIN	-59.8411	-4637.6426	-4661.8320
23	1	MAX	28.6050	3627.8184	3629.1301
	1	MIN	-28.6050	-3627.8184	-3629.1301
24	1	MAX	28.8896	3463.4673	3486.6233

	1	MIN	-28.8896	-3463.4673	-3486.6233
25	1	MAX	60.8497	4098.6704	4127.2085
	1	MIN	-60.8497	-4098.6704	-4127.2085
26	1	MAX	56.1406	2489.6665	2493.8613
	1	MIN	-56.1406	-2489.6665	-2493.8613
27	1	MAX	119.2743	3126.7734	3021.1062
	1	MIN	-119.2743	-3126.7734	-3021.1062
28	1	MAX	37.9130	3332.1628	3315.7271
	1	MIN	-37.9130	-3332.1628	-3315.7271
29	1	MAX	38.2677	3346.9072	3348.0376
	1	MIN	-38.2677	-3346.9072	-3348.0376
30	1	MAX	40.4008	3311.8523	3313.9668
	1	MIN	-40.4008	-3311.8523	-3313.9668
31	1	MAX	52.9128	3320.4934	3328.9211
	1	MIN	-52.9128	-3320.4934	-3328.9211
32	1	MAX	113.0422	3104.3411	3206.6716
	1	MIN	-113.0422	-3104.3411	-3206.6716
33	1	MAX	92.2180	3881.6941	4969.4219
	1	MIN	-92.2180	-3881.6941	-4969.4219
34	1	MAX	87.3385	4341.0972	4258.3237
	1	MIN	-87.3385	-4341.0972	-4258.3237
35	1	MAX	79.0352	3983.8193	3886.5205
	1	MIN	-79.0352	-3983.8193	-3886.5205
36	1	MAX	78.2324	3751.4966	3606.7642
	1	MIN	-78.2324	-3751.4966	-3606.7642
37	1	MAX	77.3893	3659.3708	3493.2712
	1	MIN	-77.3893	-3659.3708	-3493.2712
38	1	MAX	93.1536	3528.1594	3457.5417
	1	MIN	-93.1536	-3528.1594	-3457.5417
39	1	MAX	85.5783	2753.6790	3519.8269
	1	MIN	-85.5783	-2753.6790	-3519.8269
40	1	MAX	220.1129	4074.3262	3546.8479
	1	MIN	-220.1129	-4074.3262	-3546.8479
41	1	MAX	51.7754	3517.2505	3523.4263
	1	MIN	-51.7754	-3517.2505	-3523.4263
42	1	MAX	45.8690	3527.3511	3526.4834
	1	MIN	-45.8690	-3527.3511	-3526.4834
43	1	MAX	47.1756	3529.2983	3531.1375
	1	MIN	-47.1756	-3529.2983	-3531.1375
44	1	MAX	45.8026	3520.4194	3474.0181
	1	MIN	-45.8026	-3520.4194	-3474.0181
45	1	MAX	141.9179	3907.5469	4493.2031
	1	MIN	-141.9179	-3907.5469	-4493.2031

MEMBER FORCES ..... FRAME ID F RAME 1 L OCAT FRAME TYPE 1

LEVEL NO 5 ... LEVEL ID

COLUMN FORCES

0 LINE	LOAD		TORSIONAL MOMENT	MAJOR AXIS TOP MOMENT	MAJOR AXIS BOT MOMENT	AXIAL FORCE	MINOR AXIS TOP MOMENT	MINOR AXIS BOT MOMENT	MAJOR SHEAR	MINOR SHEAR
1	1	MAX	138.6134	1805.7783	2260.4854	148.3398	2671.8408	3117.1943	32.0693	47.0654
	1	MIN	-138.6134	-1805.7783	-2260.4854	-148.3398	-2671.8408	-3117.1943	-32.0693	-47.0654
2	1	MAX	54.7210	2969.4658	3278.2783	106.7984	1981.5580	2175.4514	50.7947	33.6504
	1	MIN	-54.7210	-2969.4658	-3278.2783	-106.7984	-1981.5580	-2175.4514	-50.7947	-33.6504
3	1	MAX	54.7210	2987.4255	3251.3472	107.1642	1834.3805	2040.0127	50.7217	31.4992
	1	MIN	-54.7210	-2987.4255	-3251.3472	-107.1642	-1834.3805	-2040.0127	-50.7217	-31.4992
4	1	MAX	54.7210	2666.1077	3187.1680	94.9360	1715.9137	1893.5526	47.5876	29.3453
	1	MIN	-54.7210	-2666.1077	-3187.1680	-94.9360	-1715.9137	-1893.5526	-47.5876	-29.3453
5	1	MAX	100.6372	2184.2231	3076.4209	93.3191	1926.3389	2318.0474	42.6786	33.8834
	1	MIN	-100.6372	-2184.2231	-3076.4209	-93.3191	-1926.3389	-2318.0474	-42.6786	-33.8834
6	1	MAX	100.6372	2188.6714	3080.6150	80.0938	1917.4390	2133.2949	42.6380	32.9328
	1	MIN	-100.6372	-2188.6714	-3080.6150	-80.0938	-1917.4390	-2133.2949	-42.6380	-32.9328
7	1	MAX	138.6134	1413.9712	2185.0830	118.2079	1942.4133	1909.7661	27.9101	31.3186
	1	MIN	-138.6134	-1413.9712	-2185.0830	-118.2079	-1942.4133	-1909.7661	-27.9101	-31.3186
8	1	MAX	54.7210	1477.8147	1696.7358	83.0975	3669.6863	3819.1331	25.4261	60.8847
	1	MIN	-54.7210	-1477.8147	-1696.7358	-83.0975	-3669.6863	-3819.1331	-25.4261	-60.8847

9	1	MAX	100.6372	2688.3606	3027.2358	8.3798	4152.0757	4567.6870	46.1784	70.4435
	1	MIN	-100.6372	-2688.3606	-3027.2358	-8.3798	-4152.0757	-4567.6870	-46.1784	-70.4435
10	1	MAX	100.6372	2934.0222	3131.4346	7.2769	3948.3557	4357.4829	49.3126	67.5272
	1	MIN	-100.6372	-2934.0222	-3131.4346	-7.2769	-3948.3557	-4357.4829	-49.3126	-67.5272
11	1	MAX	100.6372	2791.2585	3142.7485	9.9975	3183.7788	3586.8267	48.1288	55.0456
	1	MIN	-100.6372	-2791.2585	-3142.7485	-9.9975	-3183.7788	-3586.8267	-48.1288	-55.0456
12	1	MAX	100.6372	2592.0867	2912.7510	8.4772	3357.2195	3523.4917	44.5562	55.4585
	1	MIN	-100.6372	-2592.0867	-2912.7510	-8.4772	-3357.2195	-3523.4917	-44.5562	-55.4585
13	1	MAX	100.6372	2485.6316	2810.2168	11.7167	3414.3708	3560.6001	42.7155	56.7071
	1	MIN	-100.6372	-2485.6316	-2810.2168	-11.7167	-3414.3708	-3560.6001	-42.7155	-56.7071
14	1	MAX	54.7210	1475.8822	1712.5652	64.5379	2489.4143	2547.5088	25.6101	40.9506
	1	MIN	-54.7210	-1475.8822	-1712.5652	-64.5379	-2489.4143	-2547.5088	-25.6101	-40.9506
15	1	MAX	54.7210	1537.1143	1659.8911	61.2324	3658.3076	3807.7056	24.9873	60.6993
	1	MIN	-54.7210	-1537.1143	-1659.8911	-61.2324	-3658.3076	-3807.7056	-24.9873	-60.6993
16	1	MAX	100.6372	2831.5361	2955.3823	6.8309	4143.4644	4563.2568	45.4045	70.3263
	1	MIN	-100.6372	-2831.5361	-2955.3823	-6.8309	-4143.4644	-4563.2568	-45.4045	-70.3263
17	1	MAX	100.6372	2958.6729	3044.9814	11.1954	3712.0806	4171.3613	47.0477	64.0930
	1	MIN	-100.6372	-2958.6729	-3044.9814	-11.1954	-3712.0806	-4171.3613	-47.0477	-64.0930
18	1	MAX	100.6372	2948.5574	3045.1147	7.5608	3167.0669	3573.6826	46.9715	54.8028
	1	MIN	-100.6372	-2948.5574	-3045.1147	-7.5608	-3167.0669	-3573.6826	-46.9715	-54.8028
19	1	MAX	100.6372	2938.4163	3055.9487	8.8492	3190.8586	3359.6392	47.1733	52.7435
	1	MIN	-100.6372	-2938.4163	-3055.9487	-8.8492	-3190.8586	-3359.6392	-47.1733	-52.7435
20	1	MAX	100.6372	2863.4688	2933.2773	5.5210	3257.9724	3405.5166	45.3684	54.1747
	1	MIN	-100.6372	-2863.4688	-2933.2773	-5.5210	-3257.9724	-3405.5166	-45.3684	-54.1747
21	1	MAX	54.7210	1572.6184	1637.3203	78.3139	2479.2471	2537.0242	24.9080	40.7827
	1	MIN	-54.7210	-1572.6184	-1637.3203	-78.3139	-2479.2471	-2537.0242	-24.9080	-40.7827
22	1	MAX	138.6134	2224.4556	2059.0024	155.3374	2657.9199	3102.5068	34.4930	46.8327
	1	MIN	-138.6134	-2224.4556	-2059.0024	-155.3374	-2657.9199	-3102.5068	-34.4930	-46.8327
23	1	MAX	54.7210	3333.7148	3347.3367	104.5696	1980.4563	2175.0886	54.3174	33.6480
	1	MIN	-54.7210	-3333.7148	-3347.3367	-104.5696	-1980.4563	-2175.0886	-54.3174	-33.6480
24	1	MAX	54.7210	3346.2520	3340.8328	98.5339	1872.6831	2066.4075	54.3665	32.0251
	1	MIN	-54.7210	-3346.2520	-3340.8328	-98.5339	-1872.6831	-2066.4075	-54.3665	-32.0251
25	1	MAX	54.7210	3346.0544	3342.5725	88.9832	1729.4380	1907.7894	54.3790	29.5710
	1	MIN	-54.7210	-3346.0544	-3342.5725	-88.9832	-1729.4380	-1907.7894	-54.3790	-29.5710
26	1	MAX	54.7210	3353.2441	3342.4570	82.2348	1609.1064	1757.4105	54.4366	27.1978
	1	MIN	-54.7210	-3353.2441	-3342.4570	-82.2348	-1609.1064	-1757.4105	-54.4366	-27.1978
27	1	MAX	54.7210	3420.0261	3476.1860	75.8605	1562.3010	1644.5121	56.0667	26.0717
	1	MIN	-54.7210	-3420.0261	-3476.1860	-75.8605	-1562.3010	-1644.5121	-56.0667	-26.0717
28	1	MAX	138.6134	2312.1870	2179.9229	127.5383	1963.2017	1936.6123	36.5212	31.7059
	1	MIN	-138.6134	-2312.1870	-2179.9229	-127.5383	-1963.2017	-1936.6123	-36.5212	-31.7059

BEAM FORCES

BAY	LOAD		TORS MOMENT	I MOMENT	J MOMENT
1	1	MAX	166.5486	3649.8232	3244.7097
	1	MIN	-166.5486	-3649.8232	-3244.7097
2	1	MAX	45.4031	3261.2966	3247.7864
	1	MIN	-45.4031	-3261.2966	-3247.7864
3	1	MAX	47.7214	3320.8445	3441.6245
	1	MIN	-47.7214	-3320.8445	-3441.6245
4	1	MAX	23.7649	2170.8479	2300.4990
	1	MIN	-23.7649	-2170.8479	-2300.4990
5	1	MAX	21.5370	2445.3176	2447.2529
	1	MIN	-21.5370	-2445.3176	-2447.2529
6	1	MAX	23.1800	2262.7856	2340.9531
	1	MIN	-23.1800	-2262.7856	-2340.9531
7	1	MAX	53.8517	4852.6313	3895.6548
	1	MIN	-53.8517	-4852.6313	-3895.6548
8	1	MAX	65.9947	4069.4414	4118.3354
	1	MIN	-65.9947	-4069.4414	-4118.3354
9	1	MAX	55.7558	3717.4795	3734.6230
	1	MIN	-55.7558	-3717.4795	-3734.6230
10	1	MAX	48.4639	3493.4258	3596.3047
	1	MIN	-48.4639	-3493.4258	-3596.3047
11	1	MAX	57.0619	3846.5464	3583.3606
	1	MIN	-57.0619	-3846.5464	-3583.3606
12	1	MAX	54.3973	3602.6484	3363.5544
	1	MIN	-54.3973	-3602.6484	-3363.5544

13	1	MAX	69.0806	3119.2715	2507.7737
	1	MIN	-69.0806	-3119.2715	-2507.7737
14	1	MAX	102.6446	3125.0261	3028.0205
	1	MIN	-102.6446	-3125.0261	-3028.0205
15	1	MAX	41.5641	3300.0542	3235.8540
	1	MIN	-41.5641	-3300.0542	-3235.8540
16	1	MAX	29.9255	3232.2275	3278.4216
	1	MIN	-29.9255	-3232.2275	-3278.4216
17	1	MAX	52.2100	3335.1885	3360.1987
	1	MIN	-52.2100	-3335.1885	-3360.1987
18	1	MAX	31.5987	2769.3162	2784.7109
	1	MIN	-31.5987	-2769.3162	-2784.7109
19	1	MAX	92.6872	3090.4373	3161.2192
	1	MIN	-92.6872	-3090.4373	-3161.2192
20	1	MAX	58.1948	3648.8022	3652.6992
	1	MIN	-58.1948	-3648.8022	-3652.6992
21	1	MAX	50.3753	4763.7744	4765.7378
	1	MIN	-50.3753	-4763.7744	-4765.7378
22	1	MAX	51.1692	4388.4678	4432.8359
	1	MIN	-51.1692	-4388.4678	-4432.8359
23	1	MAX	39.5152	3411.8794	3414.2993
	1	MIN	-39.5152	-3411.8794	-3414.2993
24	1	MAX	45.8597	3819.8513	3846.7356
	1	MIN	-45.8597	-3819.8513	-3846.7356
25	1	MAX	45.0308	3520.7014	3544.6724
	1	MIN	-45.0308	-3520.7014	-3544.6724
26	1	MAX	55.7331	2399.8193	2403.1897
	1	MIN	-55.7331	-2399.8193	-2403.1897
27	1	MAX	102.7874	3071.4163	2971.1567
	1	MIN	-102.7874	-3071.4163	-2971.1567
28	1	MAX	36.1796	3247.0356	3228.5229
	1	MIN	-36.1796	-3247.0356	-3228.5229
29	1	MAX	35.4761	3191.7651	3194.4788
	1	MIN	-35.4761	-3191.7651	-3194.4788
30	1	MAX	48.4022	3229.8848	3227.5371
	1	MIN	-48.4022	-3229.8848	-3227.5371
31	1	MAX	37.9324	3235.9170	3257.0020
	1	MIN	-37.9324	-3235.9170	-3257.0020
32	1	MAX	97.8395	2912.7224	3015.0320
	1	MIN	-97.8395	-2912.7224	-3015.0320
33	1	MAX	76.5347	3867.3774	4821.9253
	1	MIN	-76.5347	-3867.3774	-4821.9253
34	1	MAX	57.7264	4119.4019	4067.4846
	1	MIN	-57.7264	-4119.4019	-4067.4846
35	1	MAX	50.9320	3850.1448	3770.5745
	1	MIN	-50.9320	-3850.1448	-3770.5745
36	1	MAX	51.3907	3584.0693	3473.6836
	1	MIN	-51.3907	-3584.0693	-3473.6836
37	1	MAX	51.4086	3218.0417	3176.3792
	1	MIN	-51.4086	-3218.0417	-3176.3792
38	1	MAX	55.3796	3036.4026	3001.8926
	1	MIN	-55.3796	-3036.4026	-3001.8926
39	1	MAX	77.4934	2487.2839	3093.8193
	1	MIN	-77.4934	-2487.2839	-3093.8193
40	1	MAX	166.9890	3419.1577	3044.6604
	1	MIN	-166.9890	-3419.1577	-3044.6604
41	1	MAX	49.2652	3096.6497	3089.9417
	1	MIN	-49.2652	-3096.6497	-3089.9417
42	1	MAX	45.7714	3087.4910	3087.9590
	1	MIN	-45.7714	-3087.4910	-3087.9590
43	1	MAX	45.5635	3087.3323	3084.2859
	1	MIN	-45.5635	-3087.3323	-3084.2859
44	1	MAX	46.3505	3113.2642	3114.8271
	1	MIN	-46.3505	-3113.2642	-3114.8271
45	1	MAX	72.3318	3133.0249	3529.6636
	1	MIN	-72.3318	-3133.0249	-3529.6636

OUTPUT FOR CASE STUDY #2

MEMBER FORCES ..... FRAME ID F RAME 1 L OCAT FRAME TYPE 1

LEVEL NO 6 ... LEVEL ID

COLUMN FORCES

0 LINE	LOAD		TORSIONAL MOMENT	MAJOR AXIS TOP MOMENT	MAJOR AXIS BOT MOMENT	AXIAL FORCE	MINOR AXIS TOP MOMENT	MINOR AXIS BOT MOMENT	MAJOR SHEAR	MINOR SHEAR
1	1	MAX	136.1103	1601.0854	1690.8662	102.1211	2427.7197	2564.2852	26.7638	35.9845
	1	MIN	-136.1103	-1601.0854	-1690.8662	-102.1211	-2427.7197	-2564.2852	-26.7638	-35.9845
2	1	MAX	53.7329	3054.6401	3043.1233	71.5000	1734.4032	1844.1321	49.5753	28.5603
	1	MIN	-53.7329	-3054.6401	-3043.1233	-71.5000	-1734.4032	-1844.1321	-49.5753	-28.5603
3	1	MAX	53.7329	3083.7378	3090.6213	75.4920	1645.9304	1652.4099	50.1980	26.5349
	1	MIN	-53.7329	-3083.7378	-3090.6213	-75.4920	-1645.9304	-1652.4099	-50.1980	-26.5349
4	1	MAX	53.7329	2527.3533	2509.8093	59.8046	1479.6669	1493.0300	40.9525	24.1683
	1	MIN	-53.7329	-2527.3533	-2509.8093	-59.8046	-1479.6669	-1493.0300	-40.9525	-24.1683
5	1	MAX	98.8198	2599.8604	2177.2266	57.4941	2010.3728	1695.3931	38.8381	30.1282
	1	MIN	-98.8198	-2599.8604	-2177.2266	-57.4941	-2010.3728	-1695.3931	-38.8381	-30.1282
6	1	MAX	98.8198	2582.8018	2156.8452	47.2548	1818.0212	1566.8560	38.5337	27.5193
	1	MIN	-98.8198	-2582.8018	-2156.8452	-47.2548	-1818.0212	-1566.8560	-38.5337	-27.5193
7	1	MAX	136.1103	952.9568	912.7432	84.1323	1258.3242	1128.0190	14.4883	17.6363
	1	MIN	-136.1103	-952.9568	-912.7432	-84.1323	-1258.3242	-1128.0190	-14.4883	-17.6363
8	1	MAX	53.7329	1368.5593	1431.2354	51.9779	3558.2610	3626.7307	22.7626	58.4146
	1	MIN	-53.7329	-1368.5593	-1431.2354	-51.9779	-3558.2610	-3626.7307	-22.7626	-58.4146
9	1	MAX	98.8198	3665.4875	3220.6079	8.5447	4903.3267	4589.3667	55.9845	77.1763
	1	MIN	-98.8198	-3665.4875	-3220.6079	-8.5447	-4903.3267	-4589.3667	-55.9845	-77.1763
10	1	MAX	98.8198	3016.3289	3104.7778	8.7274	3651.9333	3671.3809	49.7651	58.7188
	1	MIN	-98.8198	-3016.3289	-3104.7778	-8.7274	-3651.9333	-3671.3809	-49.7651	-58.7188
11	1	MAX	98.8198	3750.3071	3328.8149	9.5509	3808.7932	3305.1606	57.5539	57.8370
	1	MIN	-98.8198	-3750.3071	-3328.8149	-9.5509	-3808.7932	-3305.1606	-57.5539	-57.8370
12	1	MAX	98.8198	3438.5159	3076.2603	6.0021	3972.8987	3549.4946	52.9657	61.1577
	1	MIN	-98.8198	-3438.5159	-3076.2603	-6.0021	-3972.8987	-3549.4946	-52.9657	-61.1577
13	1	MAX	98.8198	3361.8464	2966.0283	9.1430	3631.3486	3248.3032	51.4461	55.9321
	1	MIN	-98.8198	-3361.8464	-2966.0283	-9.1430	-3631.3486	-3248.3032	-51.4461	-55.9321
14	1	MAX	53.7329	1378.2676	1434.8198	38.0595	2106.7639	2057.0652	22.8707	33.6731
	1	MIN	-53.7329	-1378.2676	-1434.8198	-38.0595	-2106.7639	-2057.0652	-22.8707	-33.6731
15	1	MAX	53.7329	1340.5479	1400.7874	36.9241	3536.8538	3605.4761	22.2873	58.0678
	1	MIN	-53.7329	-1340.5479	-1400.7874	-36.9241	-3536.8538	-3605.4761	-22.2873	-58.0678
16	1	MAX	98.8198	3536.3181	3143.0825	7.0522	4914.5313	4585.3252	54.3041	77.2345
	1	MIN	-98.8198	-3536.3181	-3143.0825	-7.0522	-4914.5313	-4585.3252	-54.3041	-77.2345
17	1	MAX	98.8198	3574.1804	3228.3188	6.0823	4565.0488	4064.7383	55.3049	69.2594
	1	MIN	-98.8198	-3574.1804	-3228.3188	-6.0823	-4565.0488	-4064.7383	-55.3049	-69.2594
18	1	MAX	98.8198	3592.3826	3228.3447	8.4617	3814.9512	3298.6230	55.4531	57.8340
	1	MIN	-98.8198	-3592.3826	-3228.3447	-8.4617	-3814.9512	-3298.6230	-55.4531	-57.8340
19	1	MAX	98.8198	3605.3552	3243.4644	6.1538	3833.3506	3392.2148	55.6814	58.7445
	1	MIN	-98.8198	-3605.3552	-3243.4644	-6.1538	-3833.3506	-3392.2148	-55.6814	-58.7445
20	1	MAX	98.8198	3497.3362	3112.1714	6.1873	3509.0515	3107.0327	53.7358	53.7893
	1	MIN	-98.8198	-3497.3362	-3112.1714	-6.1873	-3509.0515	-3107.0327	-53.7358	-53.7893
21	1	MAX	53.7329	1313.0981	1373.1206	49.5349	2096.2764	2051.7451	21.8392	33.5051
	1	MIN	-53.7329	-1313.0981	-1373.1206	-49.5349	-2096.2764	-2051.7451	-21.8392	-33.5051
22	1	MAX	136.1103	1804.9907	1542.0332	107.6692	2412.7031	2538.0479	24.2723	35.5441
	1	MIN	-136.1103	-1804.9907	-1542.0332	-107.6692	-2412.7031	-2538.0479	-24.2723	-35.5441
23	1	MAX	53.7329	2811.1306	2805.3901	68.0496	1733.6973	1840.6621	45.6628	28.4851
	1	MIN	-53.7329	-2811.1306	-2805.3901	-68.0496	-1733.6973	-1840.6621	-45.6628	-28.4851
24	1	MAX	53.7329	2787.9189	2786.6995	65.4426	1621.7537	1666.5396	45.3221	26.4264
	1	MIN	-53.7329	-2787.9189	-2786.6995	-65.4426	-1621.7537	-1666.5396	-45.3221	-26.4264
25	1	MAX	53.7329	2781.7813	2780.0264	57.9753	1486.3585	1502.4565	45.2180	24.2994
	1	MIN	-53.7329	-2781.7813	-2780.0264	-57.9753	-1486.3585	-1502.4565	-45.2180	-24.2994
26	1	MAX	53.7329	2790.1533	2790.7959	51.6837	1339.6554	1367.3357	45.3736	22.0081
	1	MIN	-53.7329	-2790.1533	-2790.7959	-51.6837	-1339.6554	-1367.3357	-45.3736	-22.0081
27	1	MAX	53.7329	2765.7695	2754.5635	48.9139	1206.0896	1245.5237	44.8808	19.8679
	1	MIN	-53.7329	-2765.7695	-2754.5635	-48.9139	-1206.0896	-1245.5237	-44.8808	-19.8679
28	1	MAX	136.1103	1864.0796	1474.9673	84.3440	1267.5388	1142.3359	23.3752	17.8055
	1	MIN	-136.1103	-1864.0796	-1474.9673	-84.3440	-1267.5388	-1142.3359	-23.3752	-17.8055

BEAM FORCES

BAY	LOAD		TORS MOMENT	I MOMENT	J MOMENT
1	1	MAX	167.4233	3668.7158	3224.8442
	1	MIN	-167.4233	-3668.7158	-3224.8442

2	1	MAX	53.0356	3243.7249	3242.0200
	1	MIN	-53.0356	-3243.7249	-3242.0200
3	1	MAX	37.5367	3307.8459	3412.9529
	1	MIN	-37.5367	-3307.8459	-3412.9529
4	1	MAX	16.4488	2046.2998	2072.3601
	1	MIN	-16.4488	-2046.2998	-2072.3601
5	1	MAX	18.4794	2093.5417	2094.6143
	1	MIN	-18.4794	-2093.5417	-2094.6143
6	1	MAX	20.6383	2021.9642	2218.8364
	1	MIN	-20.6383	-2021.9642	-2218.8364
7	1	MAX	55.1051	5162.0044	4088.0618
	1	MIN	-55.1051	-5162.0044	-4088.0618
8	1	MAX	39.6391	4021.0686	3726.1577
	1	MIN	-39.6391	-4021.0686	-3726.1577
9	1	MAX	50.3387	3743.3569	3755.0471
	1	MIN	-50.3387	-3743.3569	-3755.0471
10	1	MAX	57.1516	3197.4094	3037.7583
	1	MIN	-57.1516	-3197.4094	-3037.7583
11	1	MAX	53.3982	3253.4309	2937.0701
	1	MIN	-53.3982	-3253.4309	-2937.0701
12	1	MAX	52.3736	3046.1460	2748.4697
	1	MIN	-52.3736	-3046.1460	-2748.4697
13	1	MAX	73.3911	2995.5129	2370.7012
	1	MIN	-73.3911	-2995.5129	-2370.7012
14	1	MAX	50.5004	2952.5615	2626.6860
	1	MIN	-50.5004	-2952.5615	-2626.6860
15	1	MAX	34.2742	2934.5815	3101.3643
	1	MIN	-34.2742	-2934.5815	-3101.3643
16	1	MAX	73.1989	3106.3857	2931.7249
	1	MIN	-73.1989	-3106.3857	-2931.7249
17	1	MAX	44.4551	2776.3274	2826.9937
	1	MIN	-44.4551	-2776.3274	-2826.9937
18	1	MAX	24.6782	2362.6890	2366.7822
	1	MIN	-24.6782	-2362.6890	-2366.7822
19	1	MAX	50.1613	2731.1460	3006.0129
	1	MIN	-50.1613	-2731.1460	-3006.0129
20	1	MAX	57.5449	3828.2866	3835.7200
	1	MIN	-57.5449	-3828.2866	-3835.7200
21	1	MAX	44.4723	4049.9121	4045.6294
	1	MIN	-44.4723	-4049.9121	-4045.6294
22	1	MAX	61.8113	4113.0620	3834.4541
	1	MIN	-61.8113	-4113.0620	-3834.4541
23	1	MAX	30.8520	2794.0532	2791.6772
	1	MIN	-30.8520	-2794.0532	-2791.6772
24	1	MAX	37.1659	3139.3110	3157.4993
	1	MIN	-37.1659	-3139.3110	-3157.4993
25	1	MAX	36.1576	2867.2007	2882.5588
	1	MIN	-36.1576	-2867.2007	-2882.5588
26	1	MAX	49.5911	2277.7922	2280.0039
	1	MIN	-49.5911	-2277.7922	-2280.0039
27	1	MAX	49.2664	2925.9241	2620.5686
	1	MIN	-49.2664	-2925.9241	-2620.5686
28	1	MAX	34.9963	2724.3162	2726.3220
	1	MIN	-34.9963	-2724.3162	-2726.3220
29	1	MAX	20.8379	2696.6262	2691.4683
	1	MIN	-20.8379	-2696.6262	-2691.4683
30	1	MAX	40.6791	2725.0894	2723.6702
	1	MIN	-40.6791	-2725.0894	-2723.6702
31	1	MAX	29.8667	2721.9751	2732.9807
	1	MIN	-29.8667	-2721.9751	-2732.9807
32	1	MAX	53.8537	2561.5835	2865.3689
	1	MIN	-53.8537	-2561.5835	-2865.3689
33	1	MAX	64.5335	4035.2686	5105.1167
	1	MIN	-64.5335	-4035.2686	-5105.1167
34	1	MAX	35.8223	3705.8040	4007.9280
	1	MIN	-35.8223	-3705.8040	-4007.9280

35	1	MAX	37.3883	3265.1714	3559.9463
	1	MIN	-37.3883	-3265.1714	-3559.9463
36	1	MAX	36.9058	3019.7029	3181.2534
	1	MIN	-36.9058	-3019.7029	-3181.2534
37	1	MAX	34.9183	2753.1714	2960.0344
	1	MIN	-34.9183	-2753.1714	-2960.0344
38	1	MAX	33.6543	2595.5034	2803.2231
	1	MIN	-33.6543	-2595.5034	-2803.2231
39	1	MAX	63.9696	2360.2395	2981.2258
	1	MIN	-63.9696	-2360.2395	-2981.2258
40	1	MAX	167.5380	3461.0923	3048.4741
	1	MIN	-167.5380	-3461.0923	-3048.4741
41	1	MAX	46.0320	3003.7786	3009.3901
	1	MIN	-46.0320	-3003.7786	-3009.3901
42	1	MAX	45.4346	3003.2979	3004.3984
	1	MIN	-45.4346	-3003.2979	-3004.3984
43	1	MAX	43.6499	3002.2302	3001.0981
	1	MIN	-43.6499	-3002.2302	-3001.0981
44	1	MAX	44.0021	3018.1321	3020.3513
	1	MIN	-44.0021	-3018.1321	-3020.3513
45	1	MAX	64.9799	2922.4973	3329.2334
	1	MIN	-64.9799	-2922.4973	-3329.2334

MEMBER FORCES ..... FRAME ID F RAME 1 L OCAT FRAME TYPE 1

LEVEL NO 7 ... LEVEL ID

COLUMN FORCES

0 LINE	LOAD		TORSIONAL MOMENT	MAJOR AXIS TOP MOMENT	MAJOR AXIS BOT MOMENT	AXIAL FORCE	MINOR AXIS TOP MOMENT	MINOR AXIS BOT MOMENT	MAJOR SHEAR	MINOR SHEAR
1	1	MAX	129.6341	2716.2295	1740.1348	54.5745	3695.7734	2921.3154	36.2306	53.7976
	1	MIN	-129.6341	-2716.2295	-1740.1348	-54.5745	-3695.7734	-2921.3154	-36.2306	-53.7976
2	1	MAX	51.1763	3304.2529	2976.2690	35.4478	2080.0493	1947.1106	51.0612	32.7411
	1	MIN	-51.1763	-3304.2529	-2976.2690	-35.4478	-2080.0493	-1947.1106	-51.0612	-32.7411
3	1	MAX	51.1763	3268.6956	2961.5828	40.4407	2101.9641	1926.7761	50.6527	32.7540
	1	MIN	-51.1763	-3268.6956	-2961.5828	-40.4407	-2101.9641	-1926.7761	-50.6527	-32.7540
4	1	MAX	51.1763	2980.6965	2559.5681	28.8608	1722.1018	1615.0532	45.0429	27.1314
	1	MIN	-51.1763	-2980.6965	-2559.5681	-28.8608	-1722.1018	-1615.0532	-45.0429	-27.1314
5	1	MAX	29.7790	1739.1404	1316.4875	27.2944	1274.0967	1064.3397	24.8425	18.8121
	1	MIN	-29.7790	-1739.1404	-1316.4875	-27.2944	-1274.0967	-1064.3397	-24.8425	-18.8121
6	1	MAX	29.7790	1709.3755	1298.3093	20.0317	1208.0992	994.5546	24.4527	17.9077
	1	MIN	-29.7790	-1709.3755	-1298.3093	-20.0317	-1208.0992	-994.5546	-24.4527	-17.9077
7	1	MAX	129.6341	2209.4971	1149.7529	47.6493	2232.7007	1793.6924	27.3110	32.7349
	1	MIN	-129.6341	-2209.4971	-1149.7529	-47.6493	-2232.7007	-1793.6924	-27.3110	-32.7349
8	1	MAX	51.1763	1681.0847	1305.3472	22.2234	3868.5972	3835.6570	24.2799	62.6362
	1	MIN	-51.1763	-1681.0847	-1305.3472	-22.2234	-3868.5972	-3835.6570	-24.2799	-62.6362
9	1	MAX	29.7790	1828.1212	1538.6331	6.9409	2704.4495	2375.2859	27.3720	41.2987
	1	MIN	-29.7790	-1828.1212	-1538.6331	-6.9409	-2704.4495	-2375.2859	-27.3720	-41.2987
10	1	MAX	94.1180	3168.3406	2789.9312	9.1043	4148.6450	3993.0801	48.4412	66.1929
	1	MIN	-94.1180	-3168.3406	-2789.9312	-9.1043	-4148.6450	-3993.0801	-48.4412	-66.1929
11	1	MAX	29.7790	1828.1395	1547.5222	6.5596	2050.7705	1804.6908	27.4444	31.3452
	1	MIN	-29.7790	-1828.1395	-1547.5222	-6.5596	-2050.7705	-1804.6908	-27.4444	-31.3452
12	1	MAX	29.7790	1658.2588	1398.1636	4.4161	1958.3862	1715.5333	24.8490	29.8281
	1	MIN	-29.7790	-1658.2588	-1398.1636	-4.4161	-1958.3862	-1715.5333	-24.8490	-29.8281
13	1	MAX	29.7790	1682.0021	1405.1217	4.6406	1895.3668	1664.0703	25.0986	28.9385
	1	MIN	-29.7790	-1682.0021	-1405.1217	-4.6406	-1895.3668	-1664.0703	-25.0986	-28.9385
14	1	MAX	51.1763	1706.8052	1326.7227	15.5406	2293.5386	2270.6851	24.6629	37.1075
	1	MIN	-51.1763	-1706.8052	-1326.7227	-15.5406	-2293.5386	-2270.6851	-24.6629	-37.1075
15	1	MAX	51.1763	1672.5371	1309.9844	20.5570	3850.3818	3815.8984	24.2482	62.3275
	1	MIN	-51.1763	-1672.5371	-1309.9844	-20.5570	-3850.3818	-3815.8984	-24.2482	-62.3275
16	1	MAX	29.7790	1725.8984	1463.8926	5.7079	2726.9219	2391.7537	25.9333	41.6153
	1	MIN	-29.7790	-1725.8984	-1463.8926	-5.7079	-2726.9219	-2391.7537	-25.9333	-41.6153
17	1	MAX	29.7790	1678.8038	1436.0592	2.6143	2452.5820	2186.4829	25.3241	37.7160
	1	MIN	-29.7790	-1678.8038	-1436.0592	-2.6143	-2452.5820	-2186.4829	-25.3241	-37.7160
18	1	MAX	29.7790	1708.6503	1458.0801	6.3533	2072.3992	1819.3157	25.7458	31.6399
	1	MIN	-29.7790	-1708.6503	-1458.0801	-6.3533	-2072.3992	-1819.3157	-25.7458	-31.6399
19	1	MAX	29.7790	1705.4485	1457.9406	4.8730	1962.9341	1705.9808	25.7186	29.7380

	1	MIN	-29.7790	-1705.4485	-1457.9406	-4.8730	-1962.9341	-1705.9808	-25.7186	-29.7380
20	1	MAX	29.7790	1701.7664	1443.5364	4.6024	1901.4982	1652.1116	25.5716	28.8911
	1	MIN	-29.7790	-1701.7664	-1443.5364	-4.6024	-1901.4982	-1652.1116	-25.5716	-28.8911
21	1	MAX	51.1763	1647.7100	1284.0342	21.6214	2289.9810	2265.8186	23.8354	37.0390
	1	MIN	-51.1763	-1647.7100	-1284.0342	-21.6214	-2289.9810	-2265.8186	-23.8354	-37.0390
22	1	MAX	129.6341	2562.0664	1709.7153	57.3619	3674.5684	2896.0068	34.6146	53.4193
	1	MIN	-129.6341	-2562.0664	-1709.7153	-57.3619	-3674.5684	-2896.0068	-34.6146	-53.4193
23	1	MAX	51.1763	3106.5381	2817.1758	31.7244	2063.8567	1934.4285	48.1603	32.5064
	1	MIN	-51.1763	-3106.5381	-2817.1758	-31.7244	-2063.8567	-1934.4285	-48.1603	-32.5064
24	1	MAX	51.1763	3069.7075	2784.4001	32.8008	1906.1597	1783.4758	47.5944	29.9971
	1	MIN	-51.1763	-3069.7075	-2784.4001	-32.8008	-1906.1597	-1783.4758	-47.5944	-29.9971
25	1	MAX	51.1763	3078.0603	2786.1860	28.6660	1703.4673	1605.2686	47.6769	26.9003
	1	MIN	-51.1763	-3078.0603	-2786.1860	-28.6660	-1703.4673	-1605.2686	-47.6769	-26.9003
26	1	MAX	51.1763	3079.9417	2789.8704	24.6652	1535.2988	1413.9512	47.7221	23.8459
	1	MIN	-51.1763	-3079.9417	-2789.8704	-24.6652	-1535.2988	-1413.9512	-47.7221	-23.8459
27	1	MAX	51.1763	3036.7490	2761.8169	23.7676	1442.8929	1333.9492	47.1429	22.5760
	1	MIN	-51.1763	-3036.7490	-2761.8169	-23.7676	-1442.8929	-1333.9492	-47.1429	-22.5760
28	1	MAX	129.6341	2436.2769	1621.6665	44.9146	2230.6797	1799.5352	32.9912	32.7659
	1	MIN	-129.6341	-2436.2769	-1621.6665	-44.9146	-2230.6797	-1799.5352	-32.9912	-32.7659

BEAM FORCES

BAY	LOAD		TORS MOMENT	I MOMENT	J MOMENT
1	1	MAX	133.3639	2699.8481	2386.5623
	1	MIN	-133.3639	-2699.8481	-2386.5623
2	1	MAX	66.8357	2572.4229	2584.1072
	1	MIN	-66.8357	-2572.4229	-2584.1072
3	1	MAX	27.5547	2591.3452	2623.2986
	1	MIN	-27.5547	-2591.3452	-2623.2986
4	1	MAX	42.6373	1988.9243	1729.5084
	1	MIN	-42.6373	-1988.9243	-1729.5084
5	1	MAX	19.6066	1458.9984	1474.6842
	1	MIN	-19.6066	-1458.9984	-1474.6842
6	1	MAX	47.7399	1586.4567	2082.5042
	1	MIN	-47.7399	-1586.4567	-2082.5042
7	1	MAX	35.4737	4056.2842	3303.4558
	1	MIN	-35.4737	-4056.2842	-3303.4558
8	1	MAX	83.7537	3093.3101	2442.7375
	1	MIN	-83.7537	-3093.3101	-2442.7375
9	1	MAX	46.8796	3187.7148	3326.7688
	1	MIN	-46.8796	-3187.7148	-3326.7688
10	1	MAX	94.7059	2468.8359	2029.8429
	1	MIN	-94.7059	-2468.8359	-2029.8429
11	1	MAX	26.1888	1985.4076	1674.4193
	1	MIN	-26.1888	-1985.4076	-1674.4193
12	1	MAX	22.7621	1922.9381	1597.7458
	1	MIN	-22.7621	-1922.9381	-1597.7458
13	1	MAX	38.9651	2356.6677	1911.1116
	1	MIN	-38.9651	-2356.6677	-1911.1116
14	1	MAX	49.0467	1816.9645	1367.9382
	1	MIN	-49.0467	-1816.9645	-1367.9382
15	1	MAX	93.7209	1701.0059	2055.8049
	1	MIN	-93.7209	-1701.0059	-2055.8049
16	1	MAX	107.4249	2069.8511	1718.8448
	1	MIN	-107.4249	-2069.8511	-1718.8448
17	1	MAX	20.8945	1399.6082	1469.6136
	1	MIN	-20.8945	-1399.6082	-1469.6136
18	1	MAX	13.9466	1257.0272	1244.9022
	1	MIN	-13.9466	-1257.0272	-1244.9022
19	1	MAX	18.8858	1486.1765	1872.2904
	1	MIN	-18.8858	-1486.1765	-1872.2904
20	1	MAX	38.3963	3340.6702	3345.7466
	1	MIN	-38.3963	-3340.6702	-3345.7466
21	1	MAX	34.0985	2404.3220	2390.7283
	1	MIN	-34.0985	-2404.3220	-2390.7283
22	1	MAX	76.3501	2483.0703	2052.7751
	1	MIN	-76.3501	-2483.0703	-2052.7751
23	1	MAX	16.7558	1609.5995	1599.9764

	1	MIN	-16.7558	-1609.5995	-1599.9764
24	1	MAX	21.0474	1681.0651	1669.2765
	1	MIN	-21.0474	-1681.0651	-1669.2765
25	1	MAX	22.6210	1685.2341	1672.5522
	1	MIN	-22.6210	-1685.2341	-1672.5522
26	1	MAX	34.0108	1972.6283	1973.2485
	1	MIN	-34.0108	-1972.6283	-1973.2485
27	1	MAX	52.3138	1840.4578	1436.3422
	1	MIN	-52.3138	-1840.4578	-1436.3422
28	1	MAX	10.6584	1423.7849	1449.0029
	1	MIN	-10.6584	-1423.7849	-1449.0029
29	1	MAX	9.6826	1432.8503	1418.7445
	1	MIN	-9.6826	-1432.8503	-1418.7445
30	1	MAX	20.8188	1445.4209	1447.8861
	1	MIN	-20.8188	-1445.4209	-1447.8861
31	1	MAX	15.7170	1437.8636	1434.5988
	1	MIN	-15.7170	-1437.8636	-1434.5988
32	1	MAX	21.1570	1392.3535	1789.9015
	1	MIN	-21.1570	-1392.3535	-1789.9015
33	1	MAX	36.4607	3252.1411	4001.5835
	1	MIN	-36.4607	-3252.1411	-4001.5835
34	1	MAX	62.0149	2410.2517	3081.4285
	1	MIN	-62.0149	-2410.2517	-3081.4285
35	1	MAX	59.6890	2208.0076	2772.6177
	1	MIN	-59.6890	-2208.0076	-2772.6177
36	1	MAX	61.5327	1988.4473	2451.2256
	1	MIN	-61.5327	-1988.4473	-2451.2256
37	1	MAX	59.4712	1693.0084	2146.2380
	1	MIN	-59.4712	-1693.0084	-2146.2380
38	1	MAX	63.2699	1617.3054	2084.9272
	1	MIN	-63.2699	-1617.3054	-2084.9272
39	1	MAX	38.1092	1900.2225	2346.2253
	1	MIN	-38.1092	-1900.2225	-2346.2253
40	1	MAX	131.9219	2603.9749	2308.4385
	1	MIN	-131.9219	-2603.9749	-2308.4385
41	1	MAX	43.8291	2404.9746	2413.1892
	1	MIN	-43.8291	-2404.9746	-2413.1892
42	1	MAX	37.4370	2409.5886	2406.4739
	1	MIN	-37.4370	-2409.5886	-2406.4739
43	1	MAX	37.1202	2400.6765	2400.7031
	1	MIN	-37.1202	-2400.6765	-2400.7031
44	1	MAX	37.3921	2426.7361	2438.6687
	1	MIN	-37.3921	-2426.7361	-2438.6687
45	1	MAX	49.5903	2215.9927	2514.5232
	1	MIN	-49.5903	-2215.9927	-2514.5232

MEMBER FORCES ..... FRAME ID F RAME 1 L OCAT FRAME TYPE 1

LEVEL NO 8 ... LEVEL ID

COLUMN FORCES

0 LINE	LOAD		TORSIONAL MOMENT	MAJOR AXIS TOP MOMENT	MAJOR AXIS BOT MOMENT	AXIAL FORCE	MINOR AXIS TOP MOMENT	MINOR AXIS BOT MOMENT	MAJOR SHEAR	MINOR SHEAR
1	1	MAX	89.7368	929.7590	487.1994	17.7283	2161.1245	1167.8690	8.0224	22.6683
	1	MIN	-89.7368	-929.7590	-487.1994	-17.7283	-2161.1245	-1167.8690	-8.0224	-22.6683
2	1	MAX	35.4258	1936.4495	1432.0862	10.0954	1096.3877	806.9303	26.9541	14.5785
	1	MIN	-35.4258	-1936.4495	-1432.0862	-10.0954	-1096.3877	-806.9303	-26.9541	-14.5785
3	1	MAX	35.4258	2185.8660	1536.0432	10.3123	1113.3932	857.3949	29.8248	15.7673
	1	MIN	-35.4258	-2185.8660	-1536.0432	-10.3123	-1113.3932	-857.3949	-29.8248	-15.7673
4	1	MAX	35.4258	2085.1770	1416.0127	7.5063	864.2968	678.0115	27.9716	11.6379
	1	MIN	-35.4258	-2085.1770	-1416.0127	-7.5063	-864.2968	-678.0115	-27.9716	-11.6379
5	1	MAX	20.6140	1471.4948	1236.3197	8.1160	726.0688	570.6970	22.0147	10.5428
	1	MIN	-20.6140	-1471.4948	-1236.3197	-8.1160	-726.0688	-570.6970	-22.0147	-10.5428
6	1	MAX	20.6140	1381.4955	1167.5594	4.9681	689.9543	529.3088	20.7240	9.9127
	1	MIN	-20.6140	-1381.4955	-1167.5594	-4.9681	-689.9543	-529.3088	-20.7240	-9.9127
7	1	MAX	89.7368	1149.6194	471.2644	16.0289	1207.3540	617.3839	9.2191	10.7835
	1	MIN	-89.7368	-1149.6194	-471.2644	-16.0289	-1207.3540	-617.3839	-9.2191	-10.7835

8	1	MAX	35.4258	599.1083	322.9354	8.1655	2921.4209	2363.7925	5.9041	42.9692
	1	MIN	-35.4258	-599.1083	-322.9354	-8.1655	-2921.4209	-2363.7925	-5.9041	-42.9692
9	1	MAX	20.6140	1082.8497	1008.8514	2.0843	1878.9966	1743.9757	17.0057	29.4551
	1	MIN	-20.6140	-1082.8497	-1008.8514	-2.0843	-1878.9966	-1743.9757	-17.0057	-29.4551
10	1	MAX	65.1514	1508.5974	763.4995	1.7259	2413.8521	1552.2207	17.9911	30.6727
	1	MIN	-65.1514	-1508.5974	-763.4995	-1.7259	-2413.8521	-1552.2207	-17.9911	-30.6727
11	1	MAX	20.6140	1121.9293	1025.2610	2.3532	1478.9301	1313.4380	17.4568	22.7022
	1	MIN	-20.6140	-1121.9293	-1025.2610	-2.3532	-1478.9301	-1313.4380	-17.4568	-22.7022
12	1	MAX	20.6140	1082.6305	915.1426	1.8089	1327.4314	1206.8198	16.2421	20.6037
	1	MIN	-20.6140	-1082.6305	-915.1426	-1.8089	-1327.4314	-1206.8198	-16.2421	-20.6037
13	1	MAX	20.6140	1039.8743	911.8909	1.7044	1274.8926	1170.6517	15.8680	19.8825
	1	MIN	-20.6140	-1039.8743	-911.8909	-1.7044	-1274.8926	-1170.6517	-15.8680	-19.8825
14	1	MAX	35.4258	605.6146	339.1918	4.6402	1669.4769	1341.6371	6.3397	24.4806
	1	MIN	-35.4258	-605.6146	-339.1918	-4.6402	-1669.4769	-1341.6371	-6.3397	-24.4806
15	1	MAX	35.4258	609.0793	345.1502	7.2839	2894.1399	2341.4915	6.9688	42.5661
	1	MIN	-35.4258	-609.0793	-345.1502	-7.2839	-2894.1399	-2341.4915	-6.9688	-42.5661
16	1	MAX	20.6140	1019.7601	928.1563	1.9917	1892.1064	1764.6272	15.8367	29.7296
	1	MIN	-20.6140	-1019.7601	-928.1563	-1.9917	-1892.1064	-1764.6272	-15.8367	-29.7296
17	1	MAX	20.6140	1034.8856	904.3895	2.7644	1761.0823	1595.8723	15.7665	27.2923
	1	MIN	-20.6140	-1034.8856	-904.3895	-2.7644	-1761.0823	-1595.8723	-15.7665	-27.2923
18	1	MAX	20.6140	1046.0375	928.3337	2.2827	1489.6333	1332.9352	16.0518	22.9477
	1	MIN	-20.6140	-1046.0375	-928.3337	-2.2827	-1489.6333	-1332.9352	-16.0518	-22.9477
19	1	MAX	20.6140	1063.6202	934.7557	1.8809	1322.1233	1217.1804	16.2469	20.6447
	1	MIN	-20.6140	-1063.6202	-934.7557	-1.8809	-1322.1233	-1217.1804	-16.2469	-20.6447
20	1	MAX	20.6140	999.1075	903.8638	1.5023	1267.2117	1179.1057	15.4713	19.8887
	1	MIN	-20.6140	-999.1075	-903.8638	-1.5023	-1267.2117	-1179.1057	-15.4713	-19.8887
21	1	MAX	35.4258	586.9789	331.1080	5.5078	1663.9386	1337.7148	6.5358	24.4036
	1	MIN	-35.4258	-586.9789	-331.1080	-5.5078	-1663.9386	-1337.7148	-6.5358	-24.4036
22	1	MAX	89.7368	909.0540	512.5140	18.6869	2119.7783	1137.2155	10.4802	22.4885
	1	MIN	-89.7368	-909.0540	-512.5140	-18.6869	-2119.7783	-1137.2155	-10.4802	-22.4885
23	1	MAX	35.4258	1848.9153	1396.0402	9.8562	1086.6282	799.4589	25.8118	14.3804
	1	MIN	-35.4258	-1848.9153	-1396.0402	-9.8562	-1086.6282	-799.4589	-25.8118	-14.3804
24	1	MAX	35.4258	2088.8113	1432.8623	9.0125	969.7593	744.1896	28.6315	13.0061
	1	MIN	-35.4258	-2088.8113	-1432.8623	-9.0125	-969.7593	-744.1896	-28.6315	-13.0061
25	1	MAX	35.4258	2044.7202	1417.0317	7.4082	846.0729	673.6450	28.1443	11.3009
	1	MIN	-35.4258	-2044.7202	-1417.0317	-7.4082	-846.0729	-673.6450	-28.1443	-11.3009
26	1	MAX	35.4258	2074.0220	1432.4172	6.5237	751.0479	593.6089	28.5076	9.9784
	1	MIN	-35.4258	-2074.0220	-1432.4172	-6.5237	-751.0479	-593.6089	-28.5076	-9.9784
27	1	MAX	35.4258	1939.7800	1393.5238	6.3102	708.7458	505.8489	26.6099	9.1676
	1	MIN	-35.4258	-1939.7800	-1393.5238	-6.3102	-708.7458	-505.8489	-26.6099	-9.1676
28	1	MAX	89.7368	1125.3469	529.6689	14.4446	1193.3586	602.7162	12.3962	10.8251
	1	MIN	-89.7368	-1125.3469	-529.6689	-14.4446	-1193.3586	-602.7162	-12.3962	-10.8251

BEAM FORCES

BAY	LOAD		TORS MOMENT	I MOMENT	J MOMENT
1	1	MAX	28.1772	902.3298	735.5128
	1	MIN	-28.1772	-902.3298	-735.5128
2	1	MAX	20.5866	1263.7657	1186.6898
	1	MIN	-20.5866	-1263.7657	-1186.6898
3	1	MAX	15.1754	1079.9634	1092.8671
	1	MIN	-15.1754	-1079.9634	-1092.8671
4	1	MAX	28.0603	1054.1366	854.0094
	1	MIN	-28.0603	-1054.1366	-854.0094
5	1	MAX	18.4095	687.8702	736.7662
	1	MIN	-18.4095	-687.8702	-736.7662
6	1	MAX	18.9679	704.0169	1119.3383
	1	MIN	-18.9679	-704.0169	-1119.3383
7	1	MAX	20.5804	2108.4492	1416.1329
	1	MIN	-20.5804	-2108.4492	-1416.1329
8	1	MAX	12.0606	1159.7278	916.1546
	1	MIN	-12.0606	-1159.7278	-916.1546
9	1	MAX	32.5837	1176.9991	1149.7449
	1	MIN	-32.5837	-1176.9991	-1149.7449
10	1	MAX	7.3451	897.7686	682.0495
	1	MIN	-7.3451	-897.7686	-682.0495
11	1	MAX	29.4603	781.5832	623.1533
	1	MIN	-29.4603	-781.5832	-623.1533

12	1	MAX	27.6806	750.9717	604.4639
	1	MIN	-27.6806	-750.9717	-604.4639
13	1	MAX	20.3720	1170.3627	778.5148
	1	MIN	-20.3720	-1170.3627	-778.5148
14	1	MAX	11.5156	598.1299	474.0742
	1	MIN	-11.5156	-598.1299	-474.0742
15	1	MAX	18.9204	677.6002	755.7054
	1	MIN	-18.9204	-677.6002	-755.7054
16	1	MAX	28.4834	745.8597	654.0120
	1	MIN	-28.4834	-745.8597	-654.0120
17	1	MAX	4.0971	538.9183	529.5817
	1	MIN	-4.0971	-538.9183	-529.5817
18	1	MAX	3.7786	591.8357	610.5081
	1	MIN	-3.7786	-591.8357	-610.5081
19	1	MAX	8.5003	466.8046	595.8339
	1	MIN	-8.5003	-466.8046	-595.8339
20	1	MAX	24.7828	1575.7643	1586.5364
	1	MIN	-24.7828	-1575.7643	-1586.5364
21	1	MAX	14.5046	1080.2891	1079.1152
	1	MIN	-14.5046	-1080.2891	-1079.1152
22	1	MAX	33.1847	1313.1357	1095.3445
	1	MIN	-33.1847	-1313.1357	-1095.3445
23	1	MAX	9.2220	899.6746	899.6032
	1	MIN	-9.2220	-899.6746	-899.6032
24	1	MAX	10.6214	784.7834	793.5724
	1	MIN	-10.6214	-784.7834	-793.5724
25	1	MAX	9.8098	738.7153	746.3109
	1	MIN	-9.8098	-738.7153	-746.3109
26	1	MAX	20.7514	932.4158	934.8359
	1	MIN	-20.7514	-932.4158	-934.8359
27	1	MAX	10.4932	610.9067	494.5019
	1	MIN	-10.4932	-610.9067	-494.5019
28	1	MAX	8.2721	588.4127	575.6437
	1	MIN	-8.2721	-588.4127	-575.6437
29	1	MAX	3.4524	545.1218	545.9642
	1	MIN	-3.4524	-545.1218	-545.9642
30	1	MAX	3.6154	562.9102	556.4888
	1	MIN	-3.6154	-562.9102	-556.4888
31	1	MAX	3.8797	568.3186	590.0662
	1	MIN	-3.8797	-568.3186	-590.0662
32	1	MAX	9.8070	462.4177	577.3806
	1	MIN	-9.8070	-462.4177	-577.3806
33	1	MAX	22.8490	1377.7974	2065.0649
	1	MIN	-22.8490	-1377.7974	-2065.0649
34	1	MAX	9.2374	908.5609	1154.1569
	1	MIN	-9.2374	-908.5609	-1154.1569
35	1	MAX	10.0610	759.5526	1021.8728
	1	MIN	-10.0610	-759.5526	-1021.8728
36	1	MAX	8.2860	670.6888	889.0862
	1	MIN	-8.2860	-670.6888	-889.0862
37	1	MAX	7.5645	610.6864	790.2698
	1	MIN	-7.5645	-610.6864	-790.2698
38	1	MAX	8.6069	589.3568	754.0040
	1	MIN	-8.6069	-589.3568	-754.0040
39	1	MAX	18.0887	771.4008	1162.4958
	1	MIN	-18.0887	-771.4008	-1162.4958
40	1	MAX	28.8766	929.7326	779.5750
	1	MIN	-28.8766	-929.7326	-779.5750
41	1	MAX	16.4156	1181.4661	1108.8330
	1	MIN	-16.4156	-1181.4661	-1108.8330
42	1	MAX	17.7415	1037.2198	1051.3666
	1	MIN	-17.7415	-1037.2198	-1051.3666
43	1	MAX	20.1869	1055.3052	1046.9182
	1	MIN	-20.1869	-1055.3052	-1046.9182
44	1	MAX	19.8406	1085.0139	1117.4492
	1	MIN	-19.8406	-1085.0139	-1117.4492

45	1	MAX	17.1313	918.4484	1137.4172
	1	MIN	-17.1313	-918.4484	-1137.4172

******** END OF OUTPUT ********

NATIONAL CENTER FOR EARTHQUAKE ENGINEERING RESEARCH
LIST OF TECHNICAL REPORTS

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NCEER-87-0002 "Experimental Evaluation of Instantaneous Optimal Algorithms for Structural Control," by R.C. Lin, T.T. Soong and A.M. Reinhorn, 4/20/87, (PB88-134341).

NCEER-87-0003 "Experimentation Using the Earthquake Simulation Facilities at University at Buffalo," by A.M. Reinhorn and R.L. Ketter, to be published.

NCEER-87-0004 "The System Characteristics and Performance of a Shaking Table," by J.S. Hwang, K.C. Chang and G.C. Lee, 6/1/87, (PB88-134259). This report is available only through NTIS (see address given above).

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CENTER FOR
EARTHQUAKE
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Headquartered at the State University of New York at Buffalo

State University of New York at Buffalo
Red Jacket Quadrangle
Buffalo, New York 14261
Telephone: 716/645-3391
FAX: 716/645-3399

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